

**PURCHASING AND SUPPLY COMPETENCY FRAMEWORK –
A SOUTH AFRICAN PERSPECTIVE**

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DECLARATION

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PURCHASING AND SUPPLY COMPETENCIES – A SOUTH AFRICAN PERSPECTIVE

I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality-checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at UNISA for another qualification or at any other higher education institution.



June 2024

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*For I know the plans I have for you, declares the Lord, plans to prosper you and not to harm you, plans to give you hope and a future.
Jeremiah 29:11*

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ABSTRACT

The internal support function of purchasing and supply management has evolved into a strategically important human-centric discipline on which a business's effectiveness is strongly dependent. In South Africa there is a dearth of suitably trained and competent purchasing and supply professionals (PSPs) and no current framework to assist PSPs to identify lacking competencies. Due to this shortage, the primary objective of this study was to make a contribution to the development of purchasing and supply competency framework for PSPs in the private sector of the South African business environment.

The competency framework is based on the specific purchasing and supply objectives PSPs may be assigned, the purchasing and supply processes that they may be involved in and the different purchasing and supply management activities they are predominantly involved in.

A theoretical framework was developed by the researcher through conducting a traditional literature review on purchasing and supply as an internal management function and the different purchasing and supply competencies. Subsequently, an anonymous online self-administered questionnaire was developed to gather primary quantitative data on the competencies PSPs use to perform their tasks and responsibilities efficiently and effectively.

Through exploratory factor analyses and 60 structural equation models, the sub-category competencies that contribute significantly to the overall competence of PSPs were identified.

The final framework of competencies will assist PSPs in identifying the technical-, internal and external enterprise-, interpersonal- and strategic competencies they require to perform their tasks and responsibilities efficiently and effectively.

KEYWORDS

Purchasing and supply management; Purchasing and supply professionals; Competency framework; Competency categories; Competency set; Competencies; Purchasing and supply objectives; Purchasing and supply processes; Purchasing and supply management activities

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Chapter 8

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ABBREVIATIONS AND ACRONYMS

AISCR	African Institute for Supply Chain Research
APICS	American Production and Inventory Control Society
APP	Advanced procurement-process
AVE	Average variance extracted
CA	Cronbach's alpha
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CFT	Cross-functional teams
CIPS	Chartered Institute of Procurement and Supply
CR	Composite reliability
EFA	Exploratory factor analysis
IFI	Incremental fit index
IPSERA	International Purchasing and Supply Education Research Association
JIT	Just-in-time
KMO	Kaiser-Meyer-Olkin
MAP	Minimum average partial
NDP	National Development Plan
OECD	Organization for Economic Co-operation and Development
PA	Parallel analysis
PAF	Principal axis factoring
PCA	Principal component analysis
PRQ	Primary research question
PS	Purchasing and supply
PSM	Purchasing and supply management
PSP	Purchasing and supply professionals
RMSEA	Root mean square error of approximation
SAPICS	South African Production and Inventory Control Society

SCM	Supply chain management
SCOR	Supply Chain Operations Reference
SEM	Structural equation modelling
SPSM	Sustainable purchasing and supply management
SRM	Supplier relationship management
SRO	Secondary research objectives

Chapter 1 – Introduction to the study

In recent years, purchasing and supply management has gained increased relevance and has become an essential developing academic discipline gaining greater scholarly recognition (Bäckstrand & Hallodórsson, 2019:1-2).

1.1 Introduction

The internal support function of purchasing and supply management (PSM) has evolved into a strategically important human-centric discipline. A business's effectiveness is strongly dependent on individual purchasing and supply professionals (PSPs) and their competency (Stek & Schiele, 2021:1). This study aims to develop a purchasing and supply (PS) competency framework for PSPs¹ in the private sector of the South African business environment. At the conclusion of this study, a South African PS competency framework will be presented to assist PSPs in the private sector of the South African business environment in evaluating their competencies and determining whether additional skills are required to perform their tasks and responsibilities efficiently and effectively. This chapter provides an overview of the three constructs wherein this study resides, namely PSM, PS competence, and competency frameworks. Additionally, the study's problem statement and the research methodology are outlined. Finally, the chapter concludes with an outline of the thesis chapters.

1.2 The three constructs

This study is built on three constructs: PSM, PS competence, and competency frameworks. In order to provide a sound theoretical foundation for the study, each of these constructs will be discussed thoroughly in chapters two and three, but they are briefly introduced below.

¹ For this study, the term *purchasing and supply professional (PSP)* refers to an individual working within the PS profession. A PSP is defined as a skilled individual who earns a living from the activities they perform within the profession and commits to performing their tasks at a high standard with integrity (Balthazard, 2015:3). The decision to use the term is validated by numerous researchers in the field who use the term in the same way (Klélz, Kelly, Stek & Vašek, 2022; Aslami, 2020; Schulze & Bals, 2020; Bals, Schulze & Johnsen, 2019; Bals, Schulze, Kelly & Stek, 2019; Klélz, Vašek, Kotrle & Saghiri, 2018; Feisel, Hartmann & Giunipero, 2011; Lau, 2010; Tassabehji & Moorhouse, 2008). Therefore, individuals working within the South African PS profession will be referred to as PSPs.

1.2.1 Construct one: Purchasing and supply management

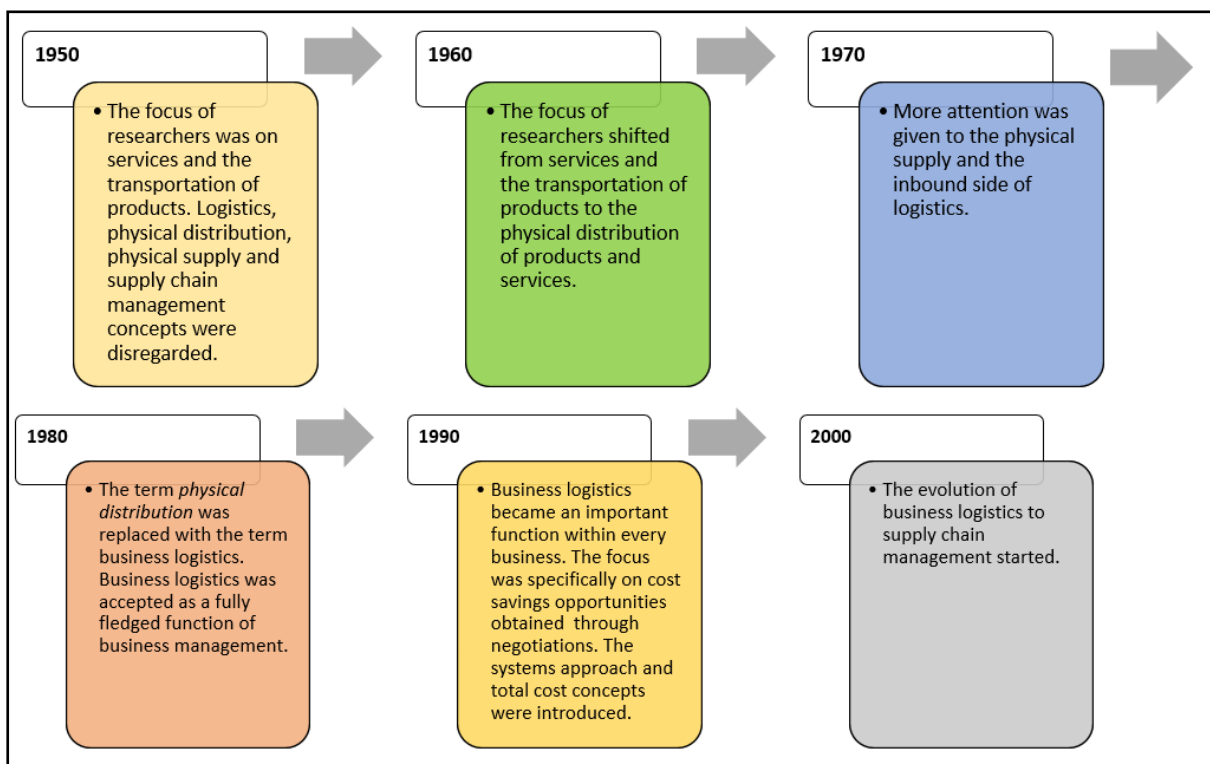
In the current business and economic environment, businesses are obliged to be competitive due to the increasing number of world-class competitors. The abundance of local and international competitors has cultivated a customer culture that demands personalised products and services at lower prices within the shortest possible time. Consequently, businesses must strive to satisfy customer needs in the most competitive way possible (Badenhorst-Weiss, Cilliers, Dlamini & Ambe, 2018:13; Feisel, Hartmann & Giunipero, 2011:54). One area that directly contributes to the competitiveness of a business is the efficient and effective management of its internal functions. One such internal function, and the focus of this thesis, is the PSM function (Monczka, Handfield, Giunipero & Patterson, 2021:7).

Based on Michael Porter's (1985) value chain philosophy, the PSM function is classified as an internal support function. According to Porter's philosophy, a value chain comprises different internal business functions that should be managed as a cohesive unit to ensure that the value created by the internal functions exceeds the cost of performing the functions (ensuring the highest possible return on investment). Porter (1985) identified five primary internal functions and four internal support functions. The primary internal functions are: inbound logistics, operations, outbound logistics, marketing and sales, and customer service. In contrast, the internal support functions are a business's infrastructure, human resource management, technology development, and purchasing (Van Weele, 2018:5-6). Together, these internal functions form a business's value chain, and the management of these internal functions is referred to as value chain management.

Globalisation and rapid technological advances have forced businesses to compete not only with their value chains but also with their entire supply chains (Simon, Serio, Pires & Martins, 2015:28; Alfalla-Luque, Mendina-Lopez & Dey, 2013:800; Qrunfleh & Tarafdar, 2013:571). Therefore, businesses are compelled to become more involved with their customers and suppliers in order to achieve a competitive advantage and to operate successfully (Wisner, Tan & Leong, 2019:8). Business success depends on building relationships and processes beyond its doors to optimise the design, production and delivery of goods and services to satisfy customer demands (Fawcett, Ellram & Ogden, 2007:6).

Supply chain management is an extension of the value chain. It entails managing all internal and external business processes associated with producing goods and services (Badenhorst-Weiss, Van Biljon & Ambe, 2017:3). Therefore, it can be argued that PSM is an essential and critical internal support function that resonates within the more comprehensive process-orientated supply chain management framework (Bäckstrand, Suurmond, Van Raaij & Chen, 2019:1). However, before PSM as an internal support business function is considered, the broader process-orientated concept of supply chain management must be examined.

Traditionally, supply chain management has been a melting pot of various disciplines, with influences from logistics and transportation, operations management, materials/distribution management, marketing, purchasing, and information technology (Soni & Kodali, 2011:263). In 2011, Southern reviewed the evolution of the supply chain management discipline from 1950 to 2000 – summarised in figure 1.1 below.

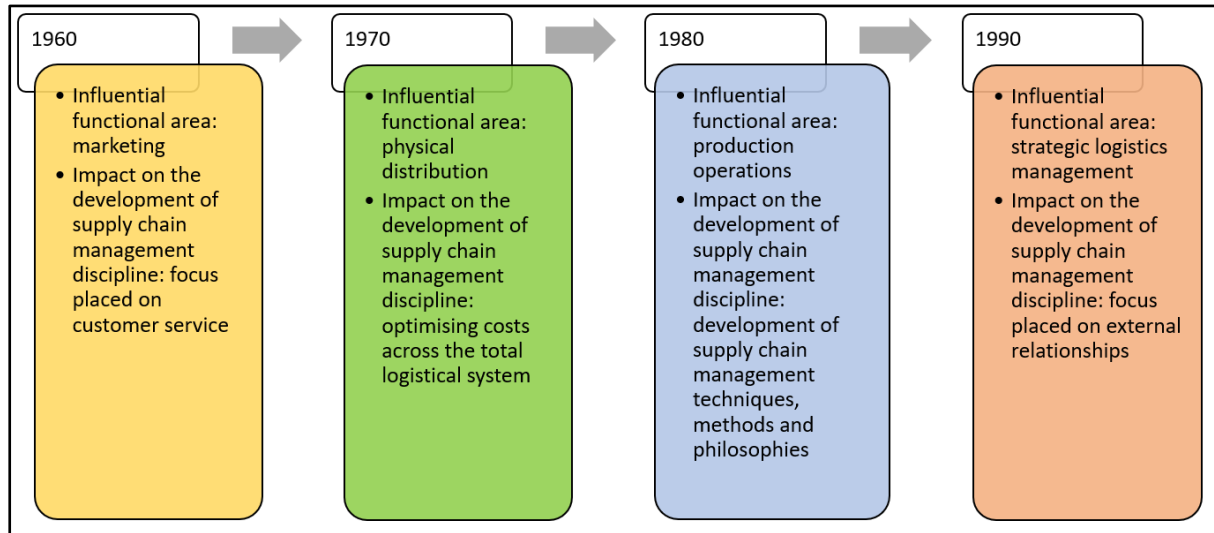


Source: Southern, 2011:53-64.

Figure 1.1: The evolution of the supply chain management discipline

From figure 1.1, it can be deduced that the supply chain management discipline originated from the logistics and purchasing (1970) functions. However, in 2017, Badenhorst-Weiss, Van

Biljon and Ambe offered another perspective on the evolution of this discipline between 1960 and 1990, specifically focusing on the influence of the different functional areas. This perspective is illustrated in figure 1.2.



Source: Badenhorst-Weiss, Van Biljon & Ambe, 2017:3-5.

Figure 1.2: The influence of different functional areas on the evolution of supply chain management as a discipline

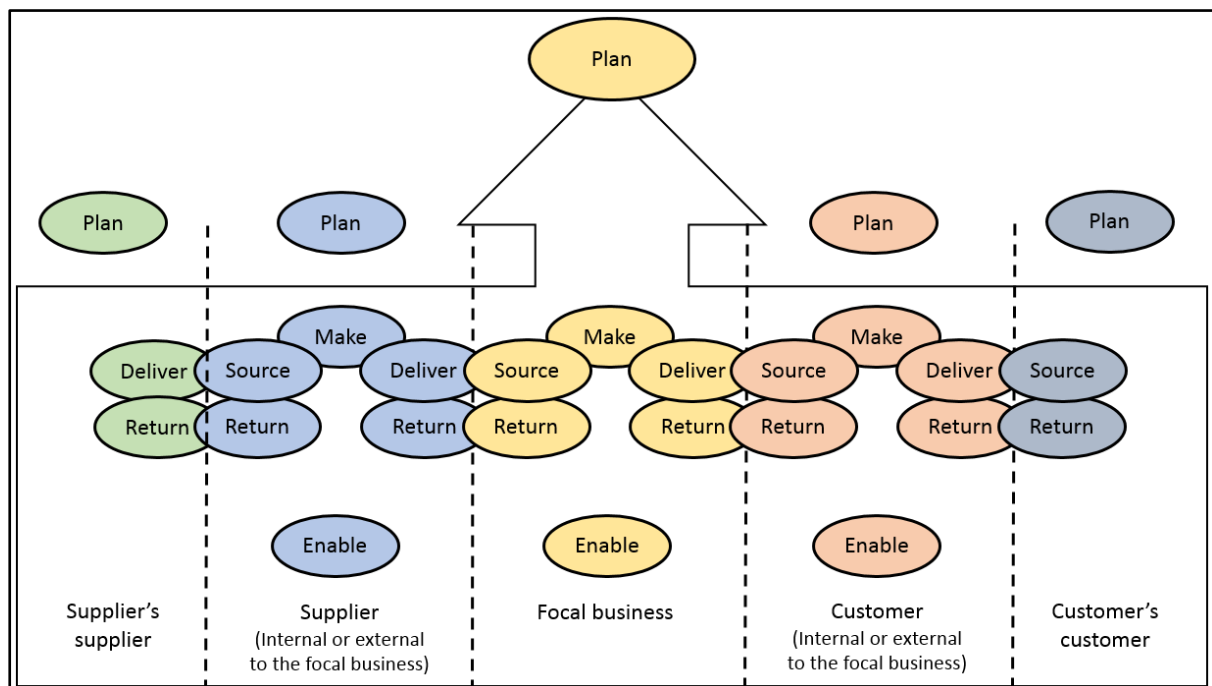
Figure 1.2 shows the influence of marketing, operations, logistics, and strategic management as functional areas of business management. Additionally, these influences can be identified in the definition of supply chain management, developed by The Council of Supply Chain Management Professionals (CSCMP) (2019), which states:

The planning and management of **all activities involved in sourcing and procurement**, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies. Supply chain management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across

marketing, sales, product design, finance and information technology (Chartered Institute of Procurement and Supply (CIPS), 2019).

Considering the definition above, '*all activities involved in sourcing and procurement*' refers to the internal support business function of PSM.

To help integrate and coordinate the different processes and activities among the different supply chain partners, the Supply Chain Council developed the well-known Supply Chain Operations Reference (SCOR) model in 1996 (Supply Chain Research Cooperative, 2004). The SCOR model links the seller's delivery operation with the buyer's sourcing process (Wisner, Tan & Leong, 2019:513) by identifying six processes that span the different supply chain partners, namely, plan, source, make, deliver, return, and enable. This model is illustrated in figure 1.3.



Source: Wisner Tan & Leong, 2019:513.

Figure 1.3: The SCOR model

Referring to the SCOR model illustrated above, PSM² is concerned with managing the acquisition of external resources to ensure that a business's primary and support functions

² The term *purchasing and supply management* refers to purchasing and supply management as the internal support function of a business.

operate most efficiently and effectively to create a competitive advantage for the business (Van Weele, 2018:6; Van Weele & Van Raaij, 2014:57; Spina, Caniato, Luzzini & Ronchi, 2013:1202). Therefore, it can be stated that PSM is responsible for managing the acquisition of external resources of a business and is predominately focused on managing the upstream supply network of a business (Bals et al., 2019:1; Schulze, Bals & Johnsen, 2019:288). PSM tasks are set to assist in managing acquisitions of external resources. In recent years, the increasing purchase volume and dependency on external suppliers have significantly broadened the responsibilities of PSM professionals. Although the tasks and responsibilities of PSPs have evolved along with the global business environment, several core tasks and responsibilities of PSPs remain (Badenhorst-Weiss et al., 2018:13). Table 1.1 summarises these core tasks and responsibilities.

Table 1.1: The core purchasing and supply management tasks and responsibilities

Core PSM tasks and responsibilities	Author(s)
Supply tasks – Assure operational excellence by guaranteeing a sustainable flow of goods and services that comply with the specifications and quality requirements set by internal customers. Identify suitable suppliers to fulfil a business’s current and future needs. Improve relationships with current suppliers. Engage and participate in strategic planning within the business.	Badenhorst-Weiss et al., 2018:13,14; Van Weele, 2018:56; Monczka et al., 2021:9-10; 42-43.
Spend-management tasks – Ensure that goods and services are obtained at the lowest total cost of ownership and best value.	Badenhorst-Weiss et al., 2018:14; Van Weele, 2018:56; Monczka et al., 2021:10; 42-43.
Risk-management tasks – Develop strategies to mitigate risks and costs associated with non-availability of critical products or components. Monitor and adjust, if necessary, a business’s supply base risk exposure by avoiding captive suppliers.	Badenhorst-Weiss et al., 2018:14; Van Weele, 2018:56; Monczka et al., 2021:8-9.

Core PSM tasks and responsibilities	Author(s)
Development tasks – Keep up to date with new product and process developments. Identify training opportunities for staff. Develop long-term collaborative relationships with suppliers and foster a climate of trust and openness to share innovative ideas to benefit the business, the environment, and the community.	Van Weele, 2018:56; Monczka et al., 2021:44-45.

Source: Compiled by the researcher, 2020.

Although PSM experts tend to agree on the core tasks and responsibilities of PSM, they are, regrettably, not unanimous on a universal definition for PSM (Van Weele, 2018:7). Therefore, in addition to the different definitions of PSM, experts also use the terms *purchasing*, *procurement*, *supply management*, and *PSM* interchangeably. Some definitions of purchasing, procurement, supply management, and PSM by well-known experts and professional councils in the PSM field are presented below.

Badenhorst-Weiss et al. (2018:10) defined **purchasing** as:

a functional group in the organisational structure and a functional activity of buying materials, goods and services ... Purchasing can have a short-term transactional approach to buying standard, often used products, or services.

Coyle, Langley, Novack and Gibson (2017:141) defined **purchasing** as:

the function responsible for managing an organisation's acquisition procedures and standards. In a business setting this is a largely transactional activity that consists of the buying of products and services.

The CSCMP (2019) defined **purchasing** as:

The functions associated with buying the goods and services required by the firm.

Monczka et al. (2021:11) defined **purchasing** as:

the functional group (i.e., a formal entity) on the organisational chart as well as a functional activity (i.e., buying goods and services).

Schiele (2019:47) defined **procurement** as:

ordering of material and services, ensuring its delivery and, finally, activating the payment, thus executing the order.

Boateng (2016:439) defined **procurement** as:

one of the elements of supply chain management primarily focusing on the sourcing and purchasing of goods and services within the supply value chain.

The CSCMP (2019) defined **procurement** as:

The activities associated with acquiring products or services. The range of activities can vary widely between organisations to include all or parts of the functions of procurement planning, purchasing, inventory control, traffic, receiving, incoming inspection, and salvage operations.

Badenhorst-Weiss et al. (2018:11) defined **supply management** by referring to Boateng's (2016:535) definition, as:

the broad set of activities carried out by an organisation to analyse sourcing opportunities, develop sourcing strategies, select suppliers, and carry out all the activities to procure goods and services. ... Supply management means that the purchasing function is directly involved in the strategic vision of the organisation.

Monczka et al. (2021:11) defined **supply management** as:

a strategic approach to planning for and acquiring the organisation's current and future needs through effectively managing the supply base, utilising a process orientation in conjunction with cross-functional teams (CFTs) to achieve the organisational mission.

As stated by Monczka et al. (2021:11), The Institute for Supply Chain Management defined **supply management** as:

the identification, acquisition, access, positioning, and management of resources and related capabilities an organisation needs or potentially needs in the attainment of its strategic objectives.

Wisner, Tan and Leong (2016:14) defined **supply management** as:

[having] smaller supply bases and the development of more long-term supplier relationships to achieve competitive benefits.

Wynstra, Suurmond and Nullmeier (2019:1) defined **PSM** as:

the design, initiation, control and evaluation of strategic, tactical and operational processes within and between organisations, aimed at acquiring products and services at the most favourable conditions.

Schiele (2019:47) defined **PSM** as:

the strategic and operative process of supplying an organisation with materials and services from sources external to that organisation.

Van Weele and Van Raaij (2014:57) defined **PSM** as:

the management of the acquisition of external resources – goods, services capabilities, and knowledge – that are necessary for running, maintaining, and managing the primary and support processes of a firm at the most favourable conditions.

After contextualising the different definitions of purchasing, procurement, supply management and PSM, the following observations are pertinent:

Purchasing and **procurement** refer to the tactical and operational approach of acquiring goods and services from external sources and generally include the following activities:

- Responding to material requests from other departments.
- Identifying suitable suppliers, predominantly from the current supply base.
- Negotiating terms to establish contracts with suppliers.
- Sourcing material from suppliers – which includes placing orders, ensuring that the correct items are received at the right place and time, that the quality of items received is acceptable, and that the payment to suppliers is activated.
- Identifying possible supply disruptions.
- Managing supplier performance measurements, improvements and purchasing systems.

Supply management is a more inclusive concept and includes a more strategic approach to purchasing. Supply management is responsible for the strategic process of:

- Identifying, accessing, positioning and managing all resources a business needs from an external source to achieve its long-term (strategic) goals.
- Efficiently and effectively managing the supply base in conjunction with a cross-functional team.

In light of the above, the following definition of PSM was developed for this study:

PSM is demarcated as the internal support business function that consists of all activities related to procuring goods and services that a business needs to operate efficiently and effectively. This includes analysing sourcing opportunities, developing sourcing strategies, and selecting suitable suppliers. Therefore, PSM professionals focus on acquiring and paying for a business's goods, materials and services in the short term, known as the purchasing process. They also focus on the business's strategic vision by considering its long-term goals when making PSM decisions. The latter is often referred to as strategic sourcing.

This definition shows that PSM has evolved from an administrative process to include attaining a business's strategic objectives (Kakwezi & Nyeko, 2019:173; Wynstra, Suurmond & Nullmeier, 2019:1; Vitasek, 2016:127). It can, therefore, be stated that PSM professionals focus on (1) the short-term tactical and operational approach to acquiring goods, materials and services (**purchasing**) and (2) the strategic vision of the business by considering the long-term goals when making PSM decisions (**supply management**).

Accordingly, each PSM task and responsibility can be classified as tactical, operational or strategic. Tactical and operational tasks and responsibilities aim to achieve a business's short-term objectives, whereas strategic tasks and responsibilities aim at long-term goals. Furthermore, middle- and lower management generally formulate tactical and operational tasks and responsibilities, whereas strategic tasks and responsibilities are formulated by top management (Badenhorst-Weiss et al., 2018:13).

Schiele (2019:47) emphasised the importance of dividing different PSM tasks and responsibilities into tactical, operational and strategically orientated tasks and responsibilities as each requires different competencies and, therefore, differently skilled professionals. Bals

et al. (2019:1) agreed with Schiele's (2019:47) view when they remarked that PS management professionals' competencies create PSM success. Therefore, these professionals must have the necessary competencies to manage all tactically-, operationally- and strategically-orientated tasks and responsibilities.

1.2.2 Construct two: Purchasing and supply competence

Numerous authors have acknowledged the importance of the concepts of *competence* and *competency* (Taljaard, 2020:55; Adefe, 2017:54; Prifti, Knigge, Kienegger & Krcmar, 2017:47; Morris, Webb, Fu & Singhal, 2013:353; Guerrero & De los Ríos, 2012:1291; Winterton, 2009:681). Currently, no consensus exists among scholars on the definitions of competence and competency since these concepts depend heavily on the perspective of the discipline in which they are researched (Taljaard, 2020:54; Derwik & Hellström, 2017:200; Knight, Tu & Preston, 2014:272; Delamare-Le Deist & Winterton, 2005:29). Additionally, competence and competency have been used interchangeably and utilised as synonyms for terms such as skills, knowledge, resources, assets and capabilities (Taljaard, 2020:54; Adefe, 2017:54; Derwik & Hellström, 2017:200; Knight, Tu & Preston, 2014:272; Delamare-Le Deist & Winterton, 2005:29; Hoffmann, 1999:275). This lack of consensus on definitions is further discussed in chapter three when suitable definitions for PS competency and competence are developed for this study. For the sake of clarity, the definitions developed in chapter three are provided here: *Purchasing and supply competency* (plural: *competencies*) refers to a specific characteristic or attribute required to ensure superior job performance. *Purchasing and supply competence* (plural: *competences*), however, is categorised into different groups: technical, internal and external enterprise, interpersonal, and strategic. A list of individual PS competencies is presented within each PS competence category. Therefore, for PSPs to be competent in their work, they must have a particular set of competencies – also called a *competency set*.

Changes in the business environment have led to changes in PS tasks and responsibilities. These changes include globalisation, expanding product variety, short life cycles of products, sourcing innovations, changing customer patterns, technological advances in internet-based systems, supply chain integration, shifts towards outsourcing, increased focus on social and environmental responsibilities, working in multidisciplinary teams, and handling of supplier

disruptions, such as those stemming from the COVID-19 pandemic. Consequently, the competency set required for PSPs has also evolved (Bals et al., 2019:1; Karttunen, 2018:3906; Knight, Tu & Preston, 2014:271; Tassabehji & Moorhouse, 2008:56; Mangan & Christopher, 2005:179).

In addition to their technical and administrative duties (hard skills), PSM professionals must now develop long-term and strategic relationships with suppliers and provide leadership (soft skills) while simultaneously reducing costs, managing supply risks and leveraging innovation capabilities (Feisel, Hartmann & Giunipero, 2011:55; Mangan & Christopher, 2005:180). Bak, Jordan and Midgley (2019:1063) agreed that a combination of hard and soft skills is required to handle PSM effectively. In recent years, the focus has shifted to developing PSM professionals' soft skills without implying that the hard skills are any less critical. These PSM soft skills include decision-making, management, behavioural-, and negotiation skills (Giunipero & Percy, 2000:4; Jordan & Bak, 2016:611). Moreover, in future, to assist with integrating supply chains, PSM professionals will be required to possess technical, interpersonal, collaboration and strategic skills (Tassabehji & Moorhouse, 2008:59; Russel, 2016; Jordan & Bak, 2016:611).

It can therefore be stated that PSPs operate in a changing and dynamic business environment that necessitates the re-evaluation and updating of their existing set of competencies to contribute to the operational, financial and strategic success of their businesses, the environment, and the community (Tassabehji & Moorhouse, 2008:56; Giunipero & Percy, 2000:602). In other words, it is imperative that PSPs update their existing competency set to contribute to the financial, operational, and strategic success of their businesses – as the competencies required in the past will not suffice (Bals et al., 2019:1; Tassabehji & Moorhouse, 2008:56-57; Giunipero & Percy, 2000:4; Henke, 2000:272; Giunipero, Denslow & Eltantawy, 2005:603).

Schulze, Bals and Johansen (2019:2) stated that an individual's competency set can be developed through learning and experience. Therefore, PSPs should ensure that they have the necessary competencies to effectively perform their duties and identify the competencies they need to develop. One mechanism that can assist in identifying the set of competencies these professionals need is a competency framework – the construct discussed below.

1.2.3 Construct three: Competency framework

Campion, Fink, Ruggeberg, Carr, Phillips and Odman (2011:226) stated that a competency framework establishes a competency set necessary for a specific profession. A competency framework identifies the competencies required to perform a given task competently, and according to Prifti et al. (2017:48), it may also be used to measure individual performance or a specific outcome. A competency framework assists in creating and updating job descriptions, recognising and selecting the most appropriate employee for a certain position, developing incentive systems, evaluating career education, and creating succession plans (Adefe, 2017:73; Knight, Tu & Person, 2014:272).

A competency framework describes what each employee must consistently do in order to achieve the business's strategic goals (Schulze, Bals & Warwick, 2022:4; Delamare-Le Deist & Winterton, 2005:28). Therefore, an employee who exhibits the competencies described in a competency framework should be more successful than an employee without them (Schulze, Bals & Johnsen, 2019). A competency framework also allows employees to identify and develop competencies required to be skilled within their work and working environment; and to identify the competencies necessary for different positions within the business, such as lower-level-, management-level- or top-level positions (Abdul Muhi, 2022:23; Adefe, 2017:74). Creating competency frameworks for each position within a business ensures that competent employees are selected for each position, thereby contributing to business success (Adefe, 2017:74).

Many competency frameworks have been developed, particularly in the management and leadership fields (Bassellier, Reich & Benbasat, 2001; Miller, 1991; Boyatzis, 1982). Campion et al. (2011:226–228) conducted an in-depth study on best practices for developing competency frameworks, from both an academic and a professional perspective. They outlined the advantages of a competency framework for professionals and businesses.

Advantages of using a competency framework from a professional's perspective:

- A competency framework clarifies how competency levels vary based on professional proficiency. For example, an executive must be an expert in a particular competency

set, while it is acceptable for a junior-level professional to be a novice in the same competency set.

- A competency framework will allow for future competency requirements, either directly or indirectly, when a specific profession's competency set is developed.
- Competency frameworks are easily understood, and help professionals understand which competencies they need to master.
- A competency framework defines the minimum competencies for a professional at a certain level in a business.

Advantages of using a competency framework from a business's perspective:

- Top management recognises the value of a competency framework when managing employees since it allows them to consider each employee's set of competencies.
- By incorporating only relevant descriptors, tasks, and competencies into the competency framework, top management can distinguish between high- and average-performing employees.
- Since the business's strategies and objectives are linked to the competency framework, it can be used to identify the competencies required to implement them and achieve their objectives.
- Competency frameworks are generally developed using the top-down approach. By first identifying top management's competency sets, businesses will establish clear and consistent competency sets for lower-level employees.

Considering the abovementioned advantages, developing and using competency frameworks would benefit a business – and their use should ideally form part of the business policy (Adefe, 2017:74-75).

1.3 Problem statement

This section discusses the research problem (section 1.3.1), and the primary research question is formulated. Thereafter, the primary and secondary research objectives are presented in section 1.3.2.

1.3.1 Research problem

Research has emphasised that personnel's professional efficiency and effectiveness are vital prerequisites for success (Feisel, Hartmann & Giunipero, 2011:55; Mangan & Christopher, 2005:180). Therefore, particularly in South Africa, businesses must identify the occupations and professions that lack competent personnel and intervene as soon as possible since this is one of the main contributors to poor economic growth (Luke & Heyns, 2012:107).

The Association of Operations Management (APICS) (2014:2) stated that PSPs are crucial to the global economy – they represent a unique discipline responsible for supporting the global network of delivering products and services across the entire supply chain, from raw materials to end customers. In this milieu, PSPs are crucial to ensure continued competitiveness and success in the business environment. PSPs with high skill levels and relevant knowledge will contribute significantly to a business's financial performance and operational efficiency (Tassabehji & Moorhouse, 2008:56-57). Furthermore, since 60 to 80 per cent of all costs are external to a business (Bals et al., 2019:1; Tayles & Drury, 2001:605), focusing on a business's supply base and the competencies of PSPs directly impacts the survival of a business (Monczka et al., 2021:6-7).

According to the CIPS (2018), the demand for PSPs outweighs the supply, and South Africa has an enormous shortage of competent PSPs. Professor Douglas Boateng, Africa's first appointed Professor Extraordinaire in supply and value chain management, stated that this shortage of competent PSPs, especially at the executive level, directly contributes to the inadequate South African economic growth (Smart Procurement, 2014). However, identifying the lack of competencies can be addressed through development programmes and education interventions (Ntshabele, 2018:3).

Additionally, the South African Government identified the need to develop purchasing and supply competencies as a priority by highlighting that one of the significant reasons for the weak South African economic growth is skill shortages, particularly in PSM. Hence, the 2030 South African National Development Plan frequently refers to the necessity of developing professional competencies in areas such as PSM within the private sector (South Africa, National Planning Commission, 2012).

Numerous studies (Schulze & Bals, 2020:1; Bals et al., 2019:1; Knight, Tu & Preston, 2014:271; Feisel, Hartmann & Giunipero, 2011:54; Tassabehji & Moorhouse, 2008:55) have focused on

developing PS competencies. Mapanga (2024:2) stated that research on the competencies needed by PSP is crucial as the lack of a clear competency framework directly influences the competitiveness of South African businesses. Thus, more analytic attention must be paid to developing PS competencies within the South African context – specifically referring to the private sector as the private sector is the primary driver of economic growth and job creation. Professionals and researchers agree that although competency development remains a challenge, it is a valuable concept that bridges the gap between education and work requirements (Prifti et al., 2017:47; Boon & Van der Klink, 2002:6). Consequently, research should be conducted on competency and PSM to achieve a coherent view of the competencies for PSPs (Derwik & Hellström, 2017:201).

Hence, the primary research question (PRQ) of this study was formulated as follows:

What competency set will support PSPs in the South African business environment's private³ sector in performing their tasks efficiently and effectively?

³ For this study, the *private sector* is defined as the part of the economy that is not under the control of the government. The public sector was not included in this study as procurement in the public sector differs significantly from that in the private sector. Public procurement is generally more budget-driven and subjected to regulations and politically motivated policies (Stek & Schiele, 2021:6).

1.3.2 Research objectives

Primary and secondary research objectives were formulated to ensure the PRQ was answered. These objectives are presented in sections 1.3.2.1 and 1.3.2.2.

1.3.2.1 Primary research objective

The primary research objective (PRO) of this study is:

PRO: To develop a PS competency framework for PSPs working in the private sector in South Africa.

1.3.2.2 Secondary research objectives

In order to achieve the PRO, the following eleven secondary research objectives (SRO) were formulated:

- SRO₁ Examine PS as an internal support function to understand the different PS objectives a PSP may be assigned.
- SRO₂ Analyse PS as an internal support function to understand the different PS processes that a PSP may be involved in.
- SRO₃ Examine PS as an internal support function to understand the different PS management activities that a PSP may predominantly be involved in.
- SRO₄ Develop definitions of PS competence and PS competency.
- SRO₅ Select the most appropriate research approach to use as a foundation for the South African PS competency framework.
- SRO₆ Determine the different PS competency categories that will be included in the South African PS competency framework for PSPs in the South African private sector.
- SRO₇ Identify PS competencies from the literature that may form part of the competency set of a PSP in the private sector of the South African business environment.
- SRO₈ Determine from empirical findings the PS sub-category competency factors that will be used as independent variables in the South African PS competency framework.

SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

In section 1.4, the research methodology employed to conduct the study is briefly outlined; a detailed discussion is provided in chapter five.

1.4 Theoretical lens of the study

Previous research within the PS competency field had primarily been conducted from the knowledge-based view, which is derived from the resource-based view and refers to the knowledge distributed within a professional and embedded within the professional's daily business activities (Stek, 2021:13).

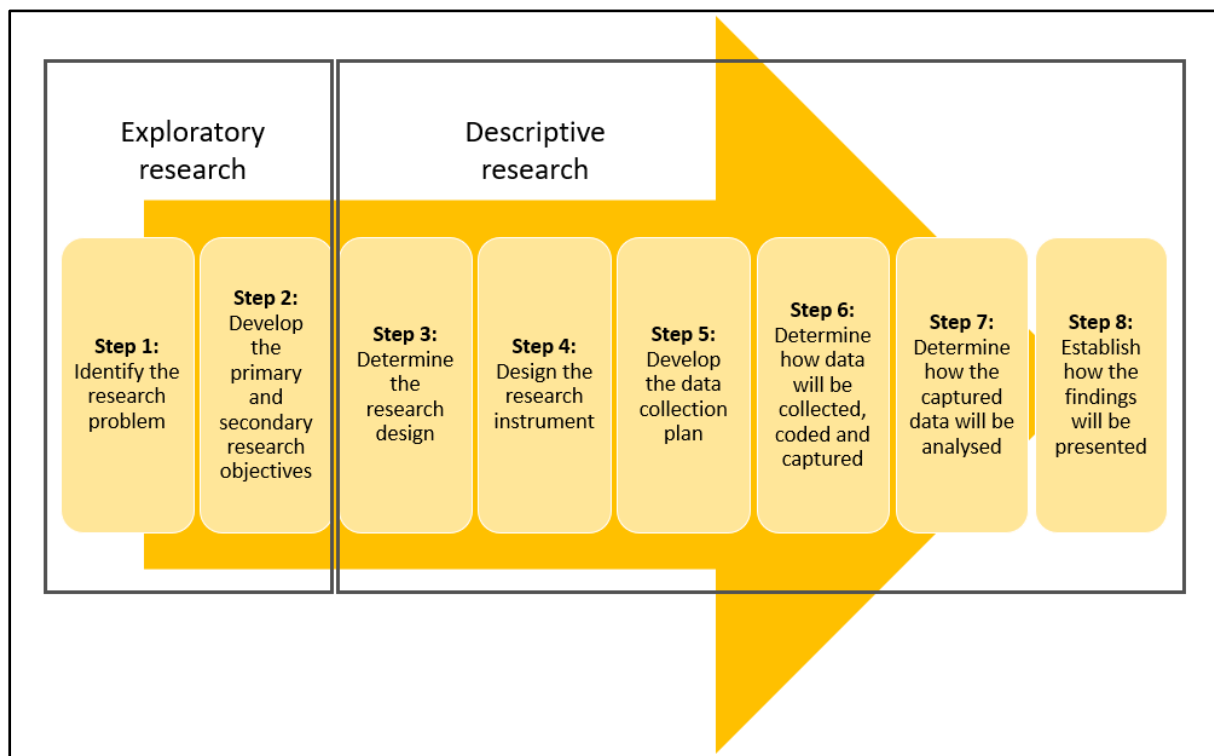
Grant (1996:375) stated that the essence of organisational capability is the professionals' knowledge, as knowledge is one of a business's most important strategic resources and only resides within these professionals. Thus, employing competent professionals can create a competitive advantage for a business. Stek (2021:13) stated that 'personnel's knowledge, skills, and traits within organisations are probably the most critical sources for competitive advantage since organisations seek to exploit the competences and capabilities dynamically and differentiate themselves from competitors.' Astute businesses have focused more on intellectual capital and intangible assets, including employing competent professionals, to obtain a competitive advantage.

The knowledge-based view theorises that a business's competitive advantage is grounded in the management of tangible and intangible resources, such as the development, capturing, organising, and storing of information and experiences of employees – and making the information available to others (Girard & Girard, 2015:4; Curado & Bontis, 2006:367). The knowledge-based view provides a strong theoretical underpinning for intellectual capital development (Curado & Bontis, 2006:367). It refers to the development of a professional's

skills, abilities and competencies (Bollinger & Smith, 2001:9). Thus, this study was conducted through the knowledge-based theoretical lens to identify the competencies a South African PSP should possess (or develop) in order to perform their tasks and responsibilities efficiently and effectively.

1.5 Research methodology

The purpose of section 1.5 is to provide a summary of the research process used to answer the PRQ of this study (an in-depth discussion of the research process is presented in chapter five). Zikmund, Babin, Carr and Griffin (2013:5) described the research process as a process whereby a researcher identifies problems, collects and searches for relevant information, analyses data, communicates findings, makes recommendations and develops ideas and theories. The research process advocated by Zikmund, D’Allesandro, Lowe, Winzar and Babin (2017:17), Babbie (2016:114), and Tustin, Ligthelm, Martins and Van Wyk (2005:76) was used to structure this study – figure 1.4 presents this eight-step research process.



Source: Compiled by the researcher, 2022.

Figure 1.4 Eight-step research process of this study

As indicated in figure 1.4, the eight-step research process consisted of two research approaches: exploratory and descriptive.

1.5.1 Exploratory research

Exploratory research is conducted when the researcher aims to determine the general nature of a research problem or question and is not intended to provide evidence from which a particular course of action should be determined (Cooper & Schindler, 2014:127; Saunders, Lewis & Thornhill, 2012:171). In this study, exploratory research was conducted during steps one and two of the research process: identifying the research problem and developing the PRO and SROs. Cooper and Schindler (2014:94) stated that during the exploratory research phase, a researcher analyses the research problem to determine which questions to ask in order to solve the research problem and ultimately arrive at grounded conclusions and recommendations.

The exploratory phase in this study included a traditional literature review to gain an in-depth understanding of PS as an internal management function with a specific focus on PS's objectives, the different PS processes, and the different PS management activities (presented in chapter two). Thereafter, the researcher examined the different PS competencies required by PSPs as identified in previous research (presented in chapter three). Based on this phase, the researcher refined the research problem, identified the PRO and established achievable secondary objectives (see sections 1.3.1 and 1.3.1).

1.5.2 Descriptive research

Following the exploratory phase, descriptive research was conducted to identify the competencies PSPs need to perform their tasks and responsibilities. In other words, descriptive research was conducted to answer the *what* question, enabling the researcher to answer the research question and achieve the primary and secondary goals (Zikmund et al., 2013:16;55).

In the descriptive phase, primary data were gathered through an anonymous online self-administered questionnaire from a sample of South African private business sector PSPs. Thus, the researcher conducted descriptive research in steps three to eight of the research process. Each step is briefly discussed below.

1.5.2.1 Determine the research design

Zikmund et al. (2013:64) defined a *research design* as the master plan describing the different procedures and methods to collect and analyse data to produce research conclusions and recommendations. Five critical aspects relating to the research design were considered for this study: the research philosophy, the approach to theory, the methodological choices, the research strategy and the time horizon. Below is a short description of each aspect and the researcher's selection in terms of each aspect.

a) Research philosophy

Five research philosophies were considered, namely pragmatism, postmodernism, interpretivism (constructivism), realism and positivism (post-positivism) – and the positivist (post-positivist) approach was identified as the most appropriate for this study (refer to section 5.5.3).

b) Approach to theory development

A researcher's approach to developing theory is another aspect to be considered before undertaking a research project (Saunders, Lewis & Thornhill, 2020:130). The three approaches to theory development identified from the literature and considered by the researcher were deduction, induction and abduction (Saunders, Lewis & Thornhill, 2020:130; Cassell, Cunliffe & Grandy, 2018:59; Mir & Jain, 2018:115). These approaches to theory development are discussed in detail in section 5.5.2. In this study, a deductive approach to theory development was utilised. Existing theories on PSM as an internal management function and PS competencies were presented and analysed (see chapters two and three) to develop the study's theoretical framework (see chapter four). Deductive conclusions were then drawn (in chapters six and seven) from the statistical analyses of the data gathered from the participants. Finally, a South African PS competency framework was developed (see chapter eight).

c) Methodological choice

A researcher's methodological choices relate to the techniques and methods used to collect and analyse data (Saunders, Lewis & Thornhill, 2020:144). Primary data are gathered to

address specific research problems or achieve specific research objectives when secondary data are deemed inadequate (Tustin et al., 2005:89). Therefore, the most appropriate methodology must be identified when conducting primary research (Tustin et al., 2005:89). Methodologies are generally classified as qualitative or quantitative, where qualitative is described as providing understanding through interpretive techniques and quantitative is defined as delivering interpretations and conclusions based on numerical measurements (Cooper & Schindler, 2014:664; Zikmund et al., 2013:113). For this study, the researcher employed a quantitative mono-method research methodology (which is aligned with the positivist philosophy), where findings and conclusions are made deductively and precisely to address the identified research problem.

d) Research strategy and time horizon

Surveys were selected as the most suitable research strategy to achieve this study’s objectives. Surveys are particularly suitable for descriptive research that uses quantitative research methods and approaches theory development deductively (Saunders, Lewis & Thornhill, 2012:141; Strydom, Jooste & Cant, 2000:156). A survey research strategy with a cross-sectional time horizon was used to gather primary data. The survey was conducted through an anonymous online self-administered questionnaire and data was gathered from PSPs in the private business sector in South Africa on the competency set required to perform their tasks efficiently and effectively.

To conclude section 1.5.2.1, a summary of the study’s research design is presented.

Table 1.2: Summary of the study’s research design

Aspects relating to the research design	
Research philosophy	Positivism (post-positivism) philosophy
Approach to theory development	A deductive approach to theory development
Methodological choice	Quantitative mono-method research methodology
Research strategy	Survey research
Time horizon	Cross-sectional

Source: Compiled by the researcher, 2024.

1.5.2.2 Design the research instrument

While developing the research instrument, the researcher kept in mind that a research instrument should aim to ensure respondents are motivated to participate, relevant data are collected, and bias is minimised. When conducting survey research, a questionnaire is generally developed by formulating questions and response options based on the research objectives (Weathington Cunningham & Pittenger, 2012:100; Tustin et al., 2005:98). For this study, an anonymous online self-administered questionnaire was developed and used to collect primary data from PSPs in the South African business environment (see appendix B). The questionnaire was hosted on an online hosting platform, LimeSurvey, which respondents could access through a direct link. The questionnaire consisted of 11 sections and 33 questions. Table 1.3 provides an overview of each section.

Table 1.3: Overview of the 11 sections of the anonymous online self-administered questionnaire

Section	Description of the section
Introductory page	General information relating to the study was provided; for example, the purpose of the study, why they were selected to participate, what the gathered data would be used for, and the time it would take to complete the questionnaire. The introductory page also informed prospective respondents that their participation would be voluntary and they could withdraw any time before submitting the questionnaire. It was mentioned that ethical clearance had been obtained from the Ethical Review Committee of the Department of Applied Management Research, and all data would be treated confidentially and stored on a password-protected computer for five years. Lastly, respondents were requested to complete the questionnaire only once.
Qualifying questions	Three qualifying questions were asked to ensure only PSPs in the private sector of the South African business environment completed

Section	Description of the section
	the questionnaire. If a respondent answered 'no' to any of these questions, they were thanked for participating but not allowed to continue with the questionnaire.
Section A	Questions aimed to establish how the respondent obtained the link to the questionnaire.
Section B	Questions on the importance of and time spent on the different PS objectives by the PSP.
Section C	Questions on the importance of and time spent on the different PS processes by the PSP.
Section D	Questions on the importance of and time spent on the different PS management activities by the PSP.
Section E	Questions on the PSP's level of agreement on requiring the specific technical PS competency to perform their tasks and responsibilities as efficiently and effectively as possible.
Section F	Questions on the PSP's level of agreement on requiring the specific internal and external enterprise PS competency to perform their tasks and responsibilities as efficiently and effectively as possible.
Section G	Questions on the PSP's level of agreement on requiring the specific interpersonal PS competency to perform their tasks and responsibilities as efficiently and effectively as possible.
Section H	Questions on the PSP's level of agreement on requiring the specific strategic PS competency to perform their tasks and responsibilities as efficiently and effectively as possible.
Demographic information	In order to present a profile of the respondents who took part in the study, information regarding the number of years they had been working in the PSM field, their line of study and their highest level of formal education were included in this section.

Section	Description of the section
Organisational information	Questions in this section regarded the industry in which the respondent worked and the position and management level of their position.

Source: Compiled by the researcher, 2024.

1.5.2.3 Data collection

The target population for the study was PSPs in the private sector of the South African business environment. Three data-collection methods were used to gather primary data for the study: a census approach and two non-probability approaches – purposive (judgemental) and multiplicity (snowball) sampling. Data collection took place from November 2022 to April 2023, and all three data-collection approaches were deployed simultaneously to increase the response rate.

For the census data-collection phase, multiple-frame sampling was used since three sample frames were identified: the membership list of the South African Production and Inventory Control Society (SAPICS), the membership list of the African Institute for Supply Chain Research (AISCR) and the membership list of the South African region of the Chartered Institute of Procurement and Supply (CIPS). The questionnaire was sent to all potential respondents within the sample frames (SAPICS, AISCR and CIPS membership lists). The process used by the researcher to contact, gain permission and distribute the questionnaire to members of SAPICS, AISCR and CIPS, is further discussed in section 5.8; however, it should be noted that a PSP may be a member of more than one organisation and therefore receive the questionnaire link more than once. They were asked to complete the questionnaire only once.

The researcher followed a purposive (judgemental) non-probability data-collection approach by identifying PSPs through LinkedIn. Key terms such as *sourcing*, *strategic sourcing*, *purchasing*, *buyer*, and *procurement* were used to identify qualifying PSPs. After viewing a professional’s profile, the researcher invited only those in the private sector of the South African PS field to complete the questionnaire. Those who accepted the invitation were provided additional information on the project and the link to the questionnaire.

As surveys tend to have low response rates, the researcher also used multiplicity (snowball) non-probability sampling to increase the sample size. Respondents who had completed the questionnaire were requested to identify other possible participants.

Within six months, 313 completed questionnaires were received. Of these, 21 respondents indicated that they had received the link through SAPICS, six through AISCAR, none through CIPS, 263 through LinkedIn, 15 through a referral, and eight through an unlisted option.

1.5.2.3 Data analysis and presentation

Before any data analyses were conducted, the researcher cleaned and validated the collected primary data. The dataset, consisting of 313 respondents, was cleaned in Excel, and the researcher set out to identify any discrepancies in the data. Discrepancies (related to the sector in which four respondents worked) were identified. When it was established that these respondents worked in the public sector, they were discarded. Consequently, the final sample size for statistical analyses was 309.

Both descriptive and inferential statistical analyses were performed on the data. Descriptive statistical analyses were performed to obtain a first impression of the gathered information, and the results are presented using frequency distributions in the first section of chapter six. Regarding inferential statistical analyses, exploratory factor analysis (EFA) and structural equation modelling (SEM) were conducted. The results of the EFA are presented in the second part of chapter six. EFA were conducted on the 64 competencies identified through a traditional literature review (22 technical, 12 internal and external enterprise, 20 interpersonal and 10 strategic) to reduce the number of independent variables for SEM. The 64 competencies were reduced to 13 sub-category competency factors.

Chapter seven is dedicated to presenting the results of the SEM. SEM provides the most efficient estimation technique for a series of multiple regression equations estimated simultaneously (Shah, Zala & Desai, 2023:179). From theory, the researcher distinguishes which independent variables can predict each dependent variable, whereafter the proposed relationships are translated into a series of structural equations for each dependent variable (Hair, Page & Brunsveld, 2020:458). For this study, the researcher identified the independent variables as the 13 sub-category competency factors identified by EFA, and the dependent

variables as the seven PS objectives, the two PS processes, and the six PS management activities identified through the literature; consequently, 14 independent and 15 dependent variables were used to conduct 60 SEMs. Chapter seven concludes by presenting the supported hypotheses and the type of relationship between the dependent and independent variables. The results of the SEMs were used to develop the proposed PS competency framework in chapter eight.

1.5.2.4 Ethical considerations

Research ethics refers to the standards of behaviour that guide a researcher's conduct towards the respondents in order to protect participants' physical, social and psychological welfare. All participants' dignity and privacy should be honoured (Saunders, Lewis & Thornhill, 2012:183). This research aligned with the quality criteria of the University of South Africa's (UNISA) latest research policy (2016). The researcher consistently referred to the four moral principles of ethics identified by UNISA's research policy throughout the research process. These moral principles are:

- Research should respect the autonomy, rights and dignity of research participants.
- Research should make a positive contribution toward the welfare of people.
- Research should not cause harm to the research participant(s) in particular or people in general.
- The benefits and risks of research should be fairly distributed among people (UNISA, 2016:11).

1.6 Contribution of the study

Developing a PS competency framework from a South African perspective will be significant since it will add value to the private and educational/academic sectors in terms of practical application and theoretical enhancement. The potential benefits of the study are:

- Offering PSPs the opportunity to provide input regarding which competencies support different PS objectives, processes and management activities.
- Providing PSPs with a guide to identify and improve underdeveloped competencies.
- Assisting businesses with a framework of competencies that support specific positions or seniority levels.
- Assisting educational institutions in training PS students in the appropriate competencies before entering the workplace.
- Contributing to the academic body of knowledge concerning PS competencies, specifically from a South African perspective.

1.7 Outline of chapters

Section 1.7 tabulates a brief outline of each chapter of the study.

Table 1.4: Outline of the remaining thesis chapters

Chapter 2 – Purchasing and supply management	
	The purpose of chapter two is to address SRO ₁ , SRO ₂ and SRO ₃ of this study, namely:
SRO ₁	Examine PS as an internal support function to understand the different PS objectives a PSP may be assigned.
SRO ₂	Analyse PS as an internal support function to understand the different PS processes that a PSP may be involved in.
SRO ₃	Examine PS as an internal support function to understand the different PS management activities that a PSP may predominantly be involved in.

Chapter two is structured first to present an overview of the PS function's main areas of responsibility to support the business's strategic vision (section 2.2). This is followed by an analysis of the strategic sourcing process and the tactical and operational purchasing process in section 2.3 to determine the different tasks and responsibilities encapsulated within these processes. Finally, in section 2.4, the PSM function is analysed from a management perspective (planning, organising, leadership and evaluation) to differentiate the tasks and responsibilities of a PSP based on the specific management function. Thereafter, chapter two summarises PSPs' various tasks and responsibilities based on the literature findings from sections 2.2 to 2.4.

Chapter 3 – Purchasing and supply competencies

The purpose of chapter three is to address SRO₄, SRO₅, SRO₆ and SRO₇ of the study, namely:

SRO₄ Develop definitions of PS competence and PS competency.

SRO₅ Select the most appropriate research approach to use as a foundation for the South African PS competency framework.

SRO₆ Determine the different PS competency categories that will be included in the South African PS competency framework for PSPs in the South African private sector.

SRO₇ Identify PS competencies from the literature that may form part of the competency set of a PSP in the private sector of the South African business environment.

Chapter three is divided into five main sections. Section 3.2 evaluates the different definitions of the concepts of competence and competencies in the literature to develop an all-encompassing definition of competence and competencies, from a PS perspective. Thereafter, in section 3.3, the three possible approaches to competence research, namely the behavioural approach, the functional approach, and the holistic approach are analysed to select the most appropriate research approach for this study. Section 3.4 focuses on previous research conducted on PS competencies in PS competency literature, spanning from 1987 to 2022. This was analysed to determine the different PS competency categories and the specific PS competencies within each category. Finally, in section 3.5, the chapter concludes by combining the selected research approach with the identified PS competency

categories used to form this study's theoretical underpinning. This is followed by the identification of the specific PS competencies included within each PS competency category.

Chapter 4 – Theoretical framework of the South African purchasing and supply competency framework

Chapter four presents the theoretical framework that will be used to develop a South African PS competency framework. The theoretical framework is based on the literature reviews conducted in chapters two and three on PSM and competencies, respectively.

Chapter 5 – Research methodology

The purpose of chapter five is to discuss and justify the research process deployed to address the research problem and ultimately answer the PRQ. The research process is based on the process recommended by Zikmund et al. (2017:17), Babbie (2016:114), and Tustin et al. (2005:76). The chapter is also structured based on this eight-step research process, namely:

- Identifying the research problem.
- Developing the primary and secondary research objectives.
- Determining the research design.
- Designing the research instrument.
- Developing the data-collection plan.
- Determining how the data will be collected, coded, and captured.
- Determining how the captured data will be analysed.
- Establishing how the findings will be presented.

Additionally, the chapter will focus on the ethical issues the researcher considered.

Chapter 6 – Descriptive analyses

Both chapters six and seven address SRO₈, SRO₉, SRO₁₀ and SRO₁₁ through different statistical methods.

SRO₈ Determine from empirical findings the PS sub-category competency factors that will be used as independent variables in the South African PS competency framework.

SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

Chapter six reports and interprets the results and analyses of the data collected. It is divided into two main sections. First, section 6.2 presents the descriptive statistics based on the collected data for each of the 11 sections of the questionnaire. Section 6.3 reports on the EFA performed on the four competency categories in order to create sub-category competency factors (Cooper & Schindler, 2014:657) used for the SEM in chapter seven. The validity and reliability of the sub-category competency factors (identified through EFA) are also discussed in this section.

Chapter 7 – Inferential analyses

Chapter seven will address SRO₉, SRO₁₀ and SRO₁₁, namely:

SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

Chapter seven provides the results of the 60 SEMs performed by the researcher. The chapter is divided into three sections. The first section reports the results of the 28 SEMs relating to the PS objectives. This is followed by the results of the 8 SEMs relating to the two PS processes, in section 7.3. Lastly, section 7.4 reports the results of the remaining 24 SEMs on the different PS management activities.

Chapter 8 – Presentation of the South African PS competency framework

The final chapter provides the competency framework that will support South African PSPs in the private sector to perform their tasks efficiently and effectively. This is based on the PS objectives they are tasked with achieving and/or the PS processes they are involved in, and/or the PS management activities they are predominantly involved in.

The conclusions and recommendations made in this chapter are based on the two literature chapters (chapters two and three), the theoretical PS competency framework presented in chapter 4 and the empirical research reported on in chapters six and seven.

This chapter is structured to first state the study's primary and secondary research objectives in section 8.2, whereafter the focus is shifted to the individual SRO in section 8.3. Each SRO is stated, and the chapter(s) or section(s) in which the SRO is addressed are highlighted. After that, the literature or empirical findings and conclusions relating to the specific SRO are presented. Finally, the PS competency framework is presented in section 8.4. The theoretical and practical contribution of the study is discussed in 8.5. The chapter concludes by listing the study's limitations (section 8.6) and identifying future research opportunities in section 8.7.

Source: Compiled by the researcher, 2024.

Chapter 2 – Purchasing and supply management (PSM)

2.1 Introduction

The purpose of chapter two is to address the following SROs:

SRO₁ Examine PS as an internal support function to understand the different PS objectives a PSP may be assigned.

SRO₂ Analyse PS as an internal support function to understand the different PS processes that a PSP may be involved in.

SRO₃ Examine PS as an internal support function to understand the different PS management activities that a PSP may predominantly be involved in.

Chapter two is structured to present an overview of the PS function's main areas of responsibility that support a business's strategic vision (see section 2.2). This is followed by an analysis of the *strategic sourcing* and *tactical and operational purchasing processes* in section 2.3 – to determine the different tasks and responsibilities included within these processes. Finally, in section 2.4, the PSM function is analysed from a management perspective (planning, organising, leadership and evaluation) to differentiate the tasks and responsibilities of a PSP – based on the specific management function. The chapter concludes by identifying PSPs' different tasks and responsibilities as distilled from the literature.

2.2 Purchasing and supply's main areas of responsibility

The mission of any business is to meet customers' needs most efficiently and effectively and ensure that the highest potential return on the capital invested is realised. To meet customers' needs, all functions within a business, including the PS function, should be managed strategically with the business's long-term objectives in mind (Venter, 2019:3; Badenhorst-Weiss et al., 2018:7; Bals & Turkulaine, 2017:256). Purchasing efficiency and effectiveness refer to different capabilities and competencies within the PS function. Both are utilised to achieve a business's long-term objectives. PS efficiency refers to the PS function's ability to assist the business in doing things right, whereas PS effectiveness refers to the PS function's ability to assist the business in doing the right things (Kakwezi & Nyeko, 2019:177).

The PS function is specifically responsible for cultivating value within the value chain to ultimately advance the business's competitive position (Nollet, Ponce & Campbell, 2005:138).

The actions taken by PSPs to achieve PS efficiency and effectiveness depend significantly on the business's competitive strategy. PS strategies are grounded within a business's competitive strategy and are generally focused on either differentiation or cost-efficiency (Stek & Schiele, 2021:6; Eicker, 2016:8). In other words, PSPs will manage the PS function to achieve the PS objectives. These objectives depend on the competitive strategy and can either advance differentiation or cost-effectiveness. Therefore, a PSP's competency set will differ depending on the objectives (differentiation or cost-effectiveness) of the professional's tasks and responsibilities (Stek & Schiele, 2021:6).

Sections 2.2.1 to 2.2.5 below discuss the PS function's main areas of responsibility that support the business's strategic vision. Thereafter (in section 2.2.6), seven specific PS objectives are identified.

2.2.1 Supply assurance

The traditional role of the PS function is to timeously satisfy the operational needs of internal customers by purchasing products and services that comply with the predetermined quality and technical specifications as set by the internal customer (Schiele, 2019:49; Monczka et al., 2021:43). Examples of the needs of internal customers include: acquiring a third-party logistics provider to assist with the distribution function, purchasing stationery used throughout the business, procuring raw materials and components for the operations function, or supporting engineering during new product design by advising on potential suppliers, or facilitating the outsourcing process.

As an internal support function, PS has been pressured to find additional methods to generate value through supply. One such method is increasing suppliers' involvement in business activities with a view to product- or process innovation. Collaboration and alliances with suppliers can also drive innovation and transformation (Bals & Turkulainen, 2017:256; Vitasek, 2016:128). The increased reliance on suppliers for inputs highlights the PS function's strategic importance and the PSP's responsibility to ensure a sustainable supply of products and services (Bals & Turkulainen, 2017:256; Giunipero, Handfield & Eltantawy, 2006:822).

2.2.2 Efficient and effective management of purchasing and supply resources

Since each business function only has access to a limited number of resources, PSPs are encouraged to improve the management of both the strategically orientated supply process and the tactical and operational purchasing process by utilising the available resources efficiently and effectively (Monczka et al., 2021:45). Therefore, different authors have identified different measures that businesses can apply to increase the efficient and effective management of the PS function, namely to:

- Appoint ample and qualified PSPs for the business's PS requirements (Prajogo & Sohal, 2013:1533; Giunipero & Percy, 2000:4).
- Provide PS employees with training and growth opportunities (Monczka et al. 2021:45; Foerstl, Hartmann, Wynstra & Moser, 2013:690).
- Adhere to PS budgets (Monczka et al. 2021:45).
- Keep up to date with the latest advances in the PS field (Prajogo & Sohal, 2013:1533).
- Acknowledge the strategic importance of the PS function (Foerstl et al., 2013:690; Tassabehji & Moorhouse, 2008:56).

2.2.3 Resourceful management of suppliers

The resourceful management of a business's suppliers refers to the purposeful effort from a PSP to manage a supplier relationship to draw the most value from the relationship (Croxtton, Lambert, García-Dastugue & Rogers, 2002:52). The management of suppliers entails that PSPs assist in developing quality supply sources for a business by locating suitable suppliers and establishing and maintaining close relationships with them (CIPS, 2021b). PSPs who are well-informed about supply market conditions can identify competitive suppliers or suppliers with the potential to excel. The supply base can include these suppliers (Schiele, 2019:50).

Benton, Prahinski and Fan (2020:1) stated that PSPs can also ensure that they obtain the most value from a supplier relationship by initiating a supplier development program. Supplier development programs refer to any effort the purchasing business makes to increase their performance through their suppliers (Saghiri & Wilding, 2021:1). Thus, PSPs will work with suppliers to improve the supplier's current capabilities that can be utilised to the advantage

of both the supplier and the purchasing business (Johnson, Leenders & Flynn, 2021:48, Giunipero, Handfield & Eltantawy, 2006:822).

2.2.4 Aligning the purchasing and supply function's goals with the goals of other business functions

Many authors have recognised that aligning goals between business functions leads to overall strategic consensus within a business and improves a business's overall competitive position (Franke & Foerstl, 2020:6; Monczka et al., 2021:45; Foerstl et al., 2013:690). Johnson, Leenders and Flynn (2021:49) highlighted the importance of aligning the goals between the PS and other business functions by explaining the different functions' mutual dependence and the ultimate impact on the business's success. For example, the authors emphasised this mutual dependence of the PS function and the design, operations, marketing and finance functions. The mutual dependence of these business functions is highlighted below:

- PSPs and design engineers should work closely to ensure that design engineers provide PSPs with the specific requirements of the product or service that must be procured. The PSP can assist design engineers in determining if such products are procurable.
- Operations and PSPs work together to ensure that all activities relating to the sourcing of products and services are coordinated to provide operational excellence by meeting end-customer demands on the one hand and managing a supply network on the other hand. For example, they must select the most appropriate supplier to provide the right product or service at the right time while adhering to the internal stakeholders' specified quality requirements.
- It is advisable that marketing and PSPs work together. PSPs can assist marketing with information on current and future supply market trends, and marketing can also assist PSPs by providing information on promotions, sales forecasts, and marketing campaigns.
- Alignment of goals between PSPs and accountants is vital. PSPs are the primary spenders in a business and are knowledgeable about supplier payments as they negotiate and enter into purchasing contracts with suppliers.

2.2.5 Development of integrated purchasing and supply strategies

Historically, PS was only seen as a tactical and operational support function, with little input when developing organisational strategies, goals and objectives. Ever since top management has recognised the strategic importance and influence of PS on the business's competitiveness (Foerstl, Schleper & Henke, 2017:2), PSPs have actively been participating in developing business strategies (strategic planning) (Giunipero, Handfield & Eltantawy, 2006:822; Karttunen, 2018:3906; Flöthmann, Hoberg & Wieland, 2018:480; Johnson, Leenders & Flynn, 2021:47).

The importance of integrating PS when developing business strategies is driven by the influence of PS on the business's long-term growth, operating outcomes, and revenue. Examples of how the PS function can contribute to achieving the goals of organisational strategies are, for instance: by providing management with updated information on supply market trends and conditions, by seeking revenue enhancement opportunities, by notifying management of emerging materials and technologies that will support the overall business strategies, and by ensuring access to suppliers who deliver high-quality products and services (Monczka et al., 2021:45; Johnson, Leenders & Flynn, 2021:47).

2.2.6 The importance of sustainability in purchasing

Sustainability in terms of purchasing is defined by Badenhorst-Weiss, Cilliers, Dlamini and Ambe (2023:109) as a business's ability to make purchasing decisions that will fulfil the current generation's needs without compromising future generations. In the literature, this purchasing decisions are referred to as sustainable purchasing. Sustainable purchasing entails that PSPs consider the impact of purchasing socially, economically and environmentally (referred to as the tripple bottom line).

From a social perspective, sustainable purchasing entails, for example, that PSPs ensure that products and services being purchased are produced in line with labour laws and contribute positively to society, whereas sustainable purchasing from an economic perspective requires PSPs to consider long-term financial implications when purchasing, such as the total cost of ownership. Lastly, when considering the environmental perspective regarding sustainable

purchasing, PSPs should consider purchasing products that harm the environment the least (Rashidi, Noorizadeh, Kannan & Cullinane, 2020:1).

According to GEP (2024), implementing sustainable purchasing practices could lead to the following benefits:

- A more significant social impact can be created as sustainable purchasing is an ongoing practice.
- Enhance corporate social responsibility.
- Protect the business against ethical and legal risks.
- Differentiate products and services from competitors.

2.2.7 Identification of purchasing and supply objectives for this study

The following seven objectives of the PS function were identified in sections 2.2.1 to 2.2.6:

1. Cost consciousness: PSPs focus on reducing costs or implementing cost-saving initiatives within a business.
2. Ensuring stable supply: PSPs ensure a sufficient and safe supply.
3. Adhering to quality requirements: PSPs ensure that purchased products and services comply with the necessary quality standards.
4. Promoting sustainability: PSPs promote social, economic and environmental sustainability when purchasing products and services.
5. Aligning with the competitive strategy: PSPs make all PS decisions aligned with the business's selected competitive strategy to ensure a competitive advantage is obtained.
6. Facilitating a relationship with suppliers: PSPs strive to build relationships with suppliers that ensure access to sources of supply.
7. Promoting and facilitating innovativeness with suppliers: PSPs aim to create a relationship with suppliers that promotes and advocates innovation.

These objectives are aligned with the work of Stek and Schiele (2021); Schiele (2019); Schulze, Bals and Johnsen (2019) and Nollet, Ponce and Campbell (2005). Therefore, the seven PS objectives will form part of the South African PS competency framework which will guide PSPs to determine the competency set they require.

After identifying the seven objectives of the PS function, it was evident that PSM has increasingly become a strategic tool that management can use to gain a competitive advantage (Foerstl, Schleper & Henke, 2017:2; Knight, Tu & Preston, 2014:271). The PS function consists of a vast array of interrelated strategic, tactical and operational tasks and responsibilities that PSPs must perform to successfully achieve each PS objective (Vitasek, 2016:127; Van Raaij, 2016:14). Consequently, PSPs' need for higher-level competencies has increased (Wisner, Tan & Leong, 2019:39).

From the definition of PSM provided in section 1.2.1, it is clear that two distinct processes are encapsulated within the PS function: the strategic-orientated sourcing process and the tactical- and operational-orientated purchasing process. Therefore, it is necessary to analyse PS from the perspective of these two processes to better understand the tasks, responsibilities and competencies PSPs need. Section 2.3 is therefore dedicated to understanding the strategic-orientated sourcing process and the tactical- and operational-orientated purchasing process.

2.3 The strategic-orientated sourcing process and the tactical- and operational-orientated purchasing process

Although the PS process has evolved from a paper-based system to a more automated system due to the introduction of information technology and the internet, the purpose of the PS process has stayed intact (Wisner, Tan & Leong, 2019:44). The PS process identifies the internal users' need for products or services, assists with setting specific product or service requirements, finds potential suppliers who will comply with the specific product or service requirements, selects suitable suppliers, negotiates agreements (contracts) with the suppliers, establishes an ordering mechanism, ensures that payments take place, evaluates suppliers' performance, while constantly building relationships with suppliers (CIPS, 2021b; Monczka et al., 2021:42; Van Raaij, 2016:15; Wisner, Tan & Leong, 2019:44). These tasks are contained within both the strategic-orientated sourcing process and the tactical- and operational-orientated purchasing process.

Strategic sourcing is the process whereby a business's buying needs are fulfilled through the strategic, transactional and operational management of the business's supply base. Sourcing

decisions directly impact a business's success, and the strategic sourcing process should be managed in alignment with the business's overall mission and vision (Giunipero, Bittner, Shanks & Cho, 2019:1). Strategic sourcing is viewed as a process whereby purchasing and supplier information is gathered and used to consolidate a business's purchasing power and to find an optimal number of suppliers in the marketplace (CSCMP, 2021). Strategic sourcing is implemented by skilled, competent and knowledgeable professionals (Frederico, Kumar & Garza-Reyes, 2021:4) who assist management in developing different supplier-based strategies (category strategies) by evaluating large sets of data (Fogarty, 2019; Formentini, Ellram, Boem & Da Re, 2019:183; Van Weele, 2018:9). Thus, in a broad sense of the term, strategic sourcing entails analysing a business's needs and the marketplace to gain a competitive advantage through developing different sourcing strategies, selecting the appropriate suppliers to include in the supply base, negotiating terms, and establishing a contract with the selected suppliers (Frederico, Kumar & Garza-Reyes, 2021:4; Johnson, Leenders & Flynn, 2021:5; Giunipero et al., 2019:6).

The tactical- and operational-orientated purchasing processes also involve buying the products and services a business needs (CSCMP, 2021). This purchasing process mainly focuses on identifying a product or service need, selecting an appropriate supplier from the supply base, ordering and expediting the order, receiving the order, organising payment and following up with suppliers to ensure adequate performance. Although there are some strategic aspects in the purchasing process, such as developing suppliers and measuring their performance, the purchasing process mainly manages the day-to-day tactical and operational activities of purchasing products and services (Karlsson, 2020:6; Fogarty, 2019; Monczka et al., 2021:51). Schiele (2019:59) added that these tactical and operational day-to-day activities are administrative-orientated.

In the literature on the strategic sourcing process and the tactical and operational purchasing process, authors either present both processes combined in a single PS process or present the processes separately. Table 2.1 summarises some of the authors' views of these two processes.

Table 2.1: Different authors' perspectives on the tactical and operational purchasing process and the strategic sourcing process

Author(s)	Steps in the PS process (Strategic, tactical and operational)	Strategic sourcing process	Tactical and operational purchasing process
Schiele (2019:56-58)	<ol style="list-style-type: none"> 1. Identifying demand and planning. 2. Developing category strategies. 3. Identifying and selecting suppliers. 4. Negotiating and contracting. 5. Purchasing process. 6. Evaluating suppliers. 		
Van Raaij (2016:14)	<ol style="list-style-type: none"> 1. Sourcing analysis. 2. Specifying requirements. 3. Developing sourcing strategies. 4. Selecting suppliers. 		

Author(s)	Steps in the PS process (Strategic, tactical and operational)	Strategic sourcing process	Tactical and operational purchasing process
	<ol style="list-style-type: none"> 5. Contracting suppliers. 6. Identifying buying needs. 7. Creating and managing purchase orders. 		
Van Weele (2018:33)	<ol style="list-style-type: none"> 1. Analysing spend and demand. 2. Analysing market supply. 3. Developing sourcing strategies. 4. Selecting tenders and suppliers. 5. Contracting and implementing contracts. 6. Searching for products or services. 	<ol style="list-style-type: none"> 1. Analysing spend and demand. 2. Analysing market supply. 3. Developing sourcing strategies. 4. Selecting tenders and suppliers. 5. Contracting and implementation of contracts. 	<ol style="list-style-type: none"> 1. Searching for products or services. 2. Requisitioning and approving of purchases. 3. Submitting purchase orders. 4. Fulfilling orders and arranging logistics. 5. Invoicing and payment.

Author(s)	Steps in the PS process (Strategic, tactical and operational)	Strategic sourcing process	Tactical and operational purchasing process
	<ol style="list-style-type: none"> 7. Requisitioning and approval of purchases. 8. Submitting purchase orders. 9. Fulfilling orders and logistics. 10. Invoicing and payment. 		
Badenhorst-Weiss et al. (2018:48;66)		<ol style="list-style-type: none"> 1. Strategic planning and assembling of a team. 2. Understanding the business spend. 3. Conducting supply market research. 4. Developing a commodity strategy. 5. Selecting suppliers and negotiating contracts. 	<ol style="list-style-type: none"> 1. Determining the origin of the need for the product required. 2. Obtaining a description or specifications of the product. 3. Identifying sources. 4. Selecting suppliers. 5. Bidding and negotiating. 6. Placing orders.

Author(s)	Steps in the PS process (Strategic, tactical and operational)	Strategic sourcing process	Tactical and operational purchasing process
		<p>6. Evaluating suppliers and managing supplier relationships.</p>	<p>7. Following up and expediting administration.</p> <p>8. Receiving, inspecting and distributing products.</p> <p>9. Inspecting incoming goods.</p> <p>10. Handling faulty consignments and rejections.</p> <p>11. Analysing supplier invoices.</p> <p>12. Closing orders and requesting payment.</p> <p>13. Maintaining files and records.</p> <p>14. Measuring supplier performance.</p>

Author(s)	Steps in the PS process (Strategic, tactical and operational)	Strategic sourcing process	Tactical and operational purchasing process
Mallroth and Rafiety (2016), as presented in Karlsson (2020:7)	<ol style="list-style-type: none"> 1. Analysing current spend. 2. Selecting procurement strategies. 3. Selecting potential suppliers. 4. Requesting quotations and negotiating purchases. 5. Finalising choice of suppliers. 6. Implementing contracts and routines. 7. Measuring and following up with suppliers. 		
Monczka et al. (2021:51)	<ol style="list-style-type: none"> 1. Analysing spending. 2. Managing demand and specifications. 3. Category managing and selecting suppliers. 		

Author(s)	Steps in the PS process (Strategic, tactical and operational)	Strategic sourcing process	Tactical and operational purchasing process
	<ul style="list-style-type: none"> 4. Managing contracts. 5. Managing costs. 6. Managing procure to pay process. 7. Managing supplier relations. 		

Source: Compiled by the researcher, 2022.

When considering table 2.1, it is apparent that the authors either present the strategic sourcing process and the tactical and operational purchasing process as one comprehensive process or as two separate but still interconnected processes. The different representations of the PS processes align with the findings of a 2019 study by Bäckstrand et al. on the evolution of the different PS-process models educators use. The authors defined a PS-process model as the visual representation of the order in which the activities involved in the PS function are performed. However, they stressed that these activities would most likely differ depending on what is purchased (Bäckstrand et al., 2019:1). The authors examined 73 PS models to determine whether a single holistic model could accurately structure PS activities. They concluded that a single PS-process model is not available in the current literature. They stated that this might also not be desirable because of (1) the diversity of the PS functions, and (2) because businesses have different PS practices (Juuti, 2020:30). Consequently, the following tasks and responsibilities within the strategic sourcing and the tactical and operational purchasing processes were distilled from table 2.1:

1. Analysing make-or-buy and insourcing or outsourcing
2. Understanding the business's spending
3. Developing category strategies
4. Selecting suppliers
5. Managing negotiations and contracts
6. Ordering, expediting, inspecting, receiving and record-keeping
7. Managing suppliers

Before an in-depth discussion of these primary PS activities is presented, section 2.3.1. below highlights the PS's role in different types of purchases and purchasing situations.

2.3.1 Purchasing and supply's role in different types of purchases and purchasing situations

An analysis of the literature on strategic-orientated sourcing and tactical- and operational-orientated purchasing processes needs to be conducted. Before doing so, however, it is essential to highlight the different types of products and services businesses purchase and the different types of purchasing situations they face. These aspects will influence the number of suppliers in the supply base and the time spent purchasing the products or services

(Badenhorst-Weiss et al., 2018:46; Van Weele, 2018:31). Eventually, this will influence the PSPs' required competencies.

2.3.1.1 Different types of purchases

PSPs are responsible for purchasing a vast array of products and services that can be classified into different groups (Monczka et al., 2021:72). This section classifies these products and services along with the purchasing issues PSPs must consider when making purchases.

Table 2.2: Different classifications of purchases

Classification of the items being purchased	Description of classification	Purchasing considerations
Raw materials	Raw materials are materials that have not been processed; for example, coal, cotton and lumber.	When purchasing raw materials, PSPs need to consider the raw materials needed by the production department as well as the different rates, services, and discounts offered by suppliers.
Semi-finished products or product components	Semi-finished products or product components are purchased to support the production of a business's final product; for example, when a motor vehicle manufacturer purchases engines, airbags, tyres or wheel bearings.	PSPs should ensure that semi-finished products are sourced from suppliers who produce high-quality items, as the quality of the semi-finished products directly influences the quality of the products the business sells.
Finished products	Finished products require no (or minimum) processing before being resold to	PSPs should ensure that the finished products comply with logistic requirements

Classification of the items being purchased	Description of classification	Purchasing considerations
	customers; for example, a retailer purchases finished, packaged items (consumer goods such as cans of soup or a range of cleaning materials), repackages them and markets them under their own brand.	and consumer expectations set out by market research, logistics and the marketing department.
Maintenance, repair and operating items	Maintenance, repair and operating items do not form part of the final products or services businesses sell, but they are critical in running a business. These products include office computers, stationery and cleaning supplies.	PSPs should ensure that the items purchased can perform the task they are purchased for; for example the correct oil should be purchased for maintaining equipment that is part of manufacturing.
Production-support items	Production-support materials include all materials purchased for packing and shipping final products to customers; for example, bottles, cans, crates and pallets.	PSPs need to consider the cost of these production-support materials, as they may be more costly than the products being shipped.
Services	Services are purchased when an external contractor is hired. These services include landscaping, catering, third-party	The importance of managing the purchasing of services has increased due to the high cost of procuring these services.

Classification of the items being purchased	Description of classification	Purchasing considerations
	logistics, marketing and IT system consulting.	
Capital equipment	<p>Capital equipment is defined as assets that a business purchases to use for longer than a year. These purchases are infrequent but involve high costs and generally need executive-level approval. Capital equipment includes; for example, furniture, computer equipment and production machinery.</p>	Supplier selection is critical as a business cannot easily switch between suppliers once the capital equipment has been purchased.

Source: Heckroodt, 2020:270; Cunha, Santos, Morabito & Barbosa-Póvoa, 2018:924; Monczka et al., 2021:77-79.

From table 2.2, it can be deduced that PSPs must consider certain aspects unique to the product and service being purchased. Therefore, PSPs should be competent in classifying the type of products or services and the purchasing issues that need to be considered when purchasing these items⁴.

2.3.1.2 Types of purchasing situations

The specific activities a PSP will perform will depend on the type of purchasing situation (see below), as the complexity and risk involved in the process will differ between the different situations (Osmonbekov & Johnston, 2018:784). Due to the complexity and risk of different

⁴ From this point in the thesis, the general term *product/s* will be used when referring to items purchased from a supplier. The term will include raw materials; semi-finished or product components; finished products; maintenance, repair and operating items; production-support items; services and capital equipment unless explicitly excluded by the researcher.

purchasing situations, the competency set for PSPs will also differ (Klézl et al., 2022:285). Businesses face three purchasing situations: new tasks, modified rebuys and straight rebuys.

a) New-task purchasing situation

A new-task buying situation occurs when a new product is purchased from a new supplier. In this case, a high degree of uncertainty exists as product specifications must be determined, and all possible suppliers must be identified (Badenhorst-Weiss et al., 2018:46; Van Weele, 2018:31). A new-task purchasing situation will also be more time-intensive than a modified or straight-rebuy purchasing situation, as more stakeholders (internal and/or suppliers) are involved during a new-task purchasing situation. In addition, all procedures and policies for the specific buy still need to be drawn up. The need for a new product is generally due to, but not limited to: the business venturing into a new market, a drive to reduce costs, efforts to increase efficiency, or to deliver better customer service (Osmonbekov & Johnston, 2018:784; Van Weele, 2018:31). Consequently, PSPs perform strategic, tactical and operational tasks during a new-task purchasing situation.

b) Modified-rebuy situation

A modified-rebuy situation occurs when a new product is purchased from a known supplier, or a known product, is purchased from a new supplier. Generally, this situation occurs when the business is either dissatisfied with the current supplier or when a new or updated product becomes available (Badenhorst-Weiss et al., 2018:46; Van Weele, 2018:31). It can be concluded that when, on the one hand, a new product is purchased from an existing supplier, PSPs will perform tactical and operational tasks rather than strategic tasks. On the other hand, PSPs will perform strategic, tactical and operational tasks when a known product is purchased from a new supplier. However, since the product specifications are known, and all possible suppliers have already been identified during the initial strategic sourcing process, selecting a new supplier for a known product is more straightforward than a new-task purchasing situation.

c) Straight-rebuy situation

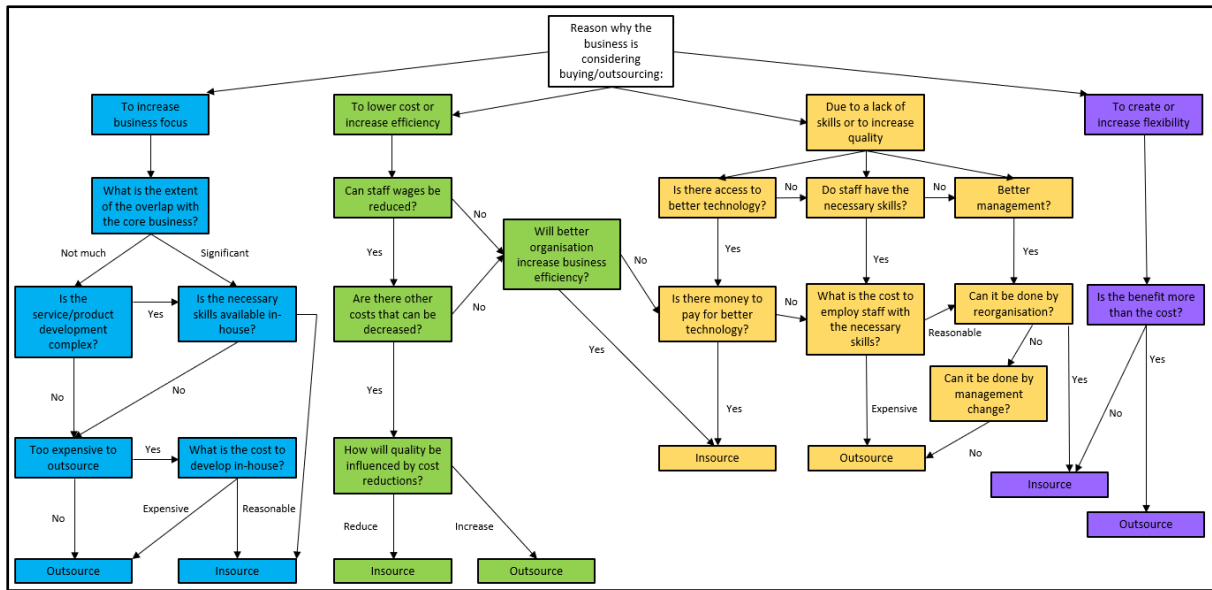
Straight rebuys are the most common form of purchasing; they entail that a business purchases known products (generally routine products – see section 2.3.4) from a known

supplier. The situation's level of risk and uncertainty is minimal since formalised PS procedures and policies are already in place and contracts are already established with suppliers (Osmonbekov & Johnston, 2018:784). Schiele (2019:53) added that PSPs perform more operational tasks with straight-rebuy situations than strategically orientated tasks since most PS procedures and policies are in place. In addition, PSPs will periodically renew the supplier contract to ensure any necessary updates are implemented (Badenhorst-Weiss et al., 2018:49; Van Weele, 2018:31).

Earlier, in table 2.1, the different views on the strategic PS process and the steps or activities involved were identified. Aligned to that table, sections 2.3.2 to 2.3.8 present in-depth discussions of the identified primary PS activities.

2.3.2 The role of purchasing and supply in the make-or-buy and insourcing-or-outsourcing analysis

The make-or-buy and insourcing-outsourcing decisions are critical high-level strategic decisions relating to which products the business will produce internally and which products will be purchased from suppliers (Johnson, Leenders & Flynn, 2021:121; Boateng, 2016:350). Businesses are confronted with make-or-buy and insourcing-outsourcing decisions throughout their lifespans, as they often venture into different markets or revisit previous make-or-buy and insourcing-outsourcing decisions (Johnson, Leenders & Flynn, 2021:121). PSPs are involved in the make-or-buy and insourcing-or-outsourcing decisions since they purchase raw materials necessary to manufacture the specific product in-house or acquire the finished product from a supplier (Johnson, Leenders & Flynn, 2021:121). Make-or-buy decisions are complex, and many scenarios and factors must be considered, weighed and assessed. Figure 2.1 illustrates the make-or-buy and insourcing-outsourcing decision tree – where the motive for the decision is used to determine whether to make, buy, insource or outsource a product.



Source: Adapted from Šeba, 2018.

Figure 2.1: Make-or-buy and insourcing-outsourcing decision tree

From figure 2.1, it is evident that several factors are considered before deciding whether to make, buy, insource or outsource products. Traditionally, businesses opted to produce products in-house, leading to businesses acquiring ownership of extensive manufacturing and sub-assembly facilities. However, new management trends favour business flexibility and instead focus on the core objectives and competencies of the business by purchasing products from suppliers who can produce the specific product more efficiently and effectively (Johnson, Leenders & Flynn, 2021:121; Foerstl, Franke & Cataldo, 2021:100715; Pawirosumarto, Nugraha & Rawalasi, 2020:954; Taherdoost & Brard, 2019:1024).

In the literature, the decision to buy a product from a supplier or contract a supplier to manage business processes are generally referred to as outsourcing. It is viewed as one of the managerial approaches whereby the PS function seeks to improve business efficiency and effectiveness (Bals & Turkulainen, 2017:256). The increased emphasis on outsourcing means businesses rely on and trust suppliers to supply products or manage the applicable critical business processes. Thus, PSPs are involved in the buying/outsourcing process to select suitable suppliers, ensure suppliers adhere to all the product requirements specified by internal customers and ensure uninterrupted high-quality products are delivered on time (Johnson, Leenders & Flynn, 2021:47, Schiele, 2019:49; Monczka et al., 2021:45).

Make-or-buy and insourcing-outsourcing decisions are highly complex strategic decisions that PSPs should not take lightly as they impact the profitability and competitiveness of the business (Bals & Turkulainen, 2017:256; Tayles & Drury, 2001:606). Incorrect make-or-buy and insourcing-outsourcing decisions may lead to inappropriate use of resources, high opportunity costs, lost customers, and lower market shares (Tayles & Drury, 2001:606). Therefore, PSPs should consider internal and external environmental factors when assisting stakeholders with these decisions (Tayles & Drury, 2001:606).

PSPs are heavily involved when a business decides to make, buy, insource or outsource products. PSPs assist in providing:

- quality information to all stakeholders relating to the products considered (for either making, buying, insourcing or outsourcing) as well as the suppliers of the products;
- information on the cost implications of either making, buying, insourcing or outsourcing a product;
- detailed information on the different sourcing strategies (see section 2.3.4) the business currently employs;
- information on the risks associated with making, buying, insourcing or outsourcing a product;
- information on possible opportunities where the business can insource or outsource; and
- assistance with the identification and selection of suitable suppliers (Johnson, Leenders & Flynn, 2021:122;129; Tayles & Drury, 2001:606; Schill, 1978:95; Robinson, Faris & Wind, 1967:12).

It is clear that PSPs are involved not only on the operational and strategic levels but also in strategic analysis and decision-making.

2.3.3 Purchasing and supply's role in analysing a business's spend

PSPs need to know how much a business spends on purchasing different products from different suppliers (direct and indirect spending⁵) (Badenhorst-Weiss et al., 2018:66). Insight into business spend can be obtained by:

- Establishing what product category (see section 2.3.4), such as hardware, stationery, telecommunications or advertising, represents the highest level of spending within the business (Craig, 2020; Rachman, 2019:226).
- Identifying suppliers (supply base), the number of suppliers per category and spend per supplier (Craig, 2020; CIPS, 2021b; Monczka et al., 2021:205-206).
- Assessing if the business received the correct product amount – based on the amount paid to the supplier (Monczka et al., 2021:205-206).
- Identifying opportunities to increase the business's competitive advantage, such as reducing the number of suppliers, seeking cost reduction strategies and standardising product requirements (Craig, 2020; Monczka et al., 2021:205; Giunipero & Handfield 2004:55).
- Verifying the spending of each unit or function and whether they budgeted for these products (Monczka et al., 2021:205-206).

Collecting spend data appears to be the most challenging step in developing PS strategies, as data obtained through the PS function are often not captured or captured incorrectly (Van Weele, 2018:15, Monczka et al., 2021:205-206). Therefore, several authors (Karlsson 2020:20; Monczka et al., 2021:205-206) have stressed that the PS function must be clearly defined and well-managed. This function uses strategic sourcing and tactical and operational purchasing processes to capture the transactional and operational level data – which is used to facilitate accurate spend analysis. Furthermore, the historical data used to understand the business's spend should be presented in such a way that it can assist in developing demand,

⁵ Direct spending includes spending on any product that forms part of the final product, whereas indirect spending refers to spending on products to run the business, such as stationary (Johnson, Leenders & Flynn, 2021:56).

commodity, and risk-management strategies and align the goals of these strategies with the business's long-term goals (CIPS, 2021b; Forarty, 2019).

Authors generally discuss two methods PSPs can use to understand the business's spending: first, they can perform a spend analysis and secondly, they can investigate the business's demand for products (Schiele 2019:57; Badenhorst-Weiss et al., 2018:66; Monczka et al., 2021:48).

Monczka et al. (2021:48) defined *spend analysis* as 'the process of collecting historical data by commodity, relative to demand from the lines of business, with the exception of personnel expenses, occupancy, and corporate spend.' Boateng (2016:514-515) agreed with Monczka et al.'s definition of a spend analysis but added that predominantly quantitative techniques are applied to purchasing data during the analysis of the historical data to understand the business's spending on direct and indirect products and identify areas for improvement, such as cost reduction initiatives. Generally, a spend analysis is performed annually (Rachman, 2019:226); however, Karlsson (2020:20) stressed that a spend analysis should be conducted more regularly as it highlights areas for strategic sourcing to focus on. For example, by conducting a spend analysis, it may be found that a purchasing business uses numerous suppliers when purchasing routine products; however, it might be beneficial for the business to reduce the number of suppliers and purchase higher quantities of the product per supplier to gain economies of scale.

Another method to understand a business's spending is to investigate its demand for products. As part of demand management, businesses determine annual product numbers they intend to purchase from suppliers based on forecasted sales – and plan, communicate, influence, and prioritise the demand for the different categories based on that forecast (Schiele, 2019:56). Demand management enables a business to tailor its capacity to ensure it can meet all variations in customer demand. In other words, demand management balances customer demand and business capabilities (Croxtton et al., 2002:51; Craig, 2020). When PSPs analyse the business's demand, they will seek opportunities to optimise sourcing strategies, establish and set policies that will control the total expenditure of a category, ensure that an appropriate number of suppliers are included in the supply base to minimise supply

disruptions and challenge product specifications to drive down costs (Monczka et al., 2021:205).

To determine the number of products a business purchases from suppliers and forecast future demand, Schiele (2019:57) advised that PSPs construct a spend cube using historical data relating to material management and financial data. The spend cube provides PSPs with information on the business's total spending. It also provides direct and indirect spending levels, spending per category, the supply base per category, and the monetary value spent at each supplier.

It can be concluded from the literature that PSPs must ensure that transactional and operational purchasing processes are clearly defined and well-managed to ensure accurate purchasing data. This will enable them to analyse and interpret annual purchasing data and report on predetermined measures, such as category spend, suppliers per category, and future business demand.

2.3.4 The role of purchasing and supply in category strategy development

In order to establish purchasing categories, similar products provided by the same group of suppliers are grouped into a single supply market (Schiele, 2019:56). Thus, a category strategy (also referred to as a sourcing strategy) focuses on managing a specific category (and sub-categories, if applicable) of products usually identified during the spend analysis; for example, advertising, stationery and information technology. More specifically, a category strategy helps identify suitable suppliers for a category of products. The category strategy also includes setting supplier-selection criteria (see section 2.3.5), guiding the type of contract to be negotiated (see section 2.3.6), advising on price, quality and delivery arrangements, establishing measures to evaluate supplier performances (see section 2.3.8), and developing appropriate communication methods to inform internal users of the category strategy (Craig, 2020; Monczka et al., 2021:1203; Bichon, Kamann & Merminod, 2009:116).

Once a business decides to buy or outsource a product, a cross-functional team should be assembled to develop and manage the category strategy. Cross-functional teams generally consist of experts in PS, quality control, product development, marketing, finance and engineering, to name a few. In some cases, suppliers may form part of the cross-functional

team, particularly during new product development (Johnson, Leenders & Flynn, 2021:64). The cross-functional team is responsible for analysing information on the following: the spending per category, the suppliers the business purchases from, the capabilities of these suppliers, the suppliers' ability to comply with the requirements placed on the products being purchased, as well as the leverage of the purchasing business in terms of the product category (Craig, 2020; Monczka et al., 2021:217).

In 1983, Kraljic developed a ground-breaking model (known as Kraljic's matrix) that can help develop specific category strategies. The matrix requires that different product categories be grouped into one of four quadrants based on their strategic importance and supply risk (Foerstl, Schleper & Henke, 2017:2). There have been numerous models developed to establish product categories and appropriate sourcing strategies. However, none differ significantly from Kraljic's original matrix (Knight, Tu & Preston, 2014:274). First, Kraljic stated that PSPs should analyse each product category's strategic situation based on the impact of the product category on the business's profit. This is done, for example, by considering the amount spent on the product category. Secondly, the supply risk faced by the product category is analysed by examining the product's availability on the market and determining the bargaining power of the supplier and the purchasing business. Finally, once these analyses have been performed, the product category can be classified into one of four categories: critical, routine, leverage, and bottleneck (see table 2.3 below), and the cross-functional team can develop an appropriate category strategy (Schiele, 2019:64-66; Rachman, 2019:226).

Table 2.3: Kraljic’s matrix for the classification of spend categories

		Strategic importance (Amount spent on product category)	
		Low	High
Supply risk	High	<p>Product category classification: Bottleneck items/products.</p> <p>Characteristics of bottleneck items:</p> <p>Moderate financial impact on the business.</p> <p>Usually, product substitution is difficult due to complex product specifications.</p> <p>Items can only be obtained from one or a limited number of suppliers (monopolistic market).</p> <p>Bargaining power lies primarily with the supplier.</p> <p>Medium-term contracts are established with suppliers.</p>	<p>Product category classification: Critical items/products.</p> <p>Characteristics of critical items:</p> <p>High value in total business spend.</p> <p>Products are strategically crucial to the business.</p> <p>There are limited suppliers in the supply market (high supply risk).</p> <p>Usually, product substitution is difficult due to complex product specifications.</p> <p>Bargaining power lies with the supplier.</p> <p>Generally, long-term strategic relationships are established with suppliers.</p> <p>Plausible sourcing strategy: accuracy in demand forecasting.</p>

Supply risk	Low	<p>Product category classification: Routine items/products.</p> <p>Characteristics of routine items:</p> <p>Low-value and easily substituted items.</p> <p>Standard product specifications.</p> <p>Ample suppliers are available (low supply risk).</p> <p>Bargaining power lies predominately with the purchasing business.</p> <p>Usually, no, or short-term contracts are contracted with suppliers.</p> <p>Plausible sourcing strategy: order optimisation.</p>	<p>Product category classification: Leverage items/products.</p> <p>Characteristics of leverage items:</p> <p>Contribute significantly to business profit.</p> <p>Ample suppliers are available (low supply risk).</p> <p>The quality of the product is standardised among the different suppliers (standard product specification).</p> <p>Bargaining power lies primarily with the purchasing business.</p> <p>Plausible sourcing strategy: exploitation of purchasing power.</p>
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Source: Schiele, 2019:65; Badenhorst-Weiss et al., 2018:67; Rachman, 2019:226; Monczka et al., 2021:2223.

Table 2.3 shows that PSPs need to develop different category strategies (sourcing strategies) for each quadrant, as these items cannot be managed similarly (Schiele, 2019:64; Knight, Tu & Preston, 2014:271). In order to manage a category strategy, PSPs must understand the needs of a business's stakeholders, compare those needs with those of the market where the business operates, and understand the capabilities of the supply base and operational risks that the business faces (Schiele, 2019:57; Monczka et al. 2021:49; Sollish & Semanik, 2011:13).

Table 2.4 shows the different tasks and responsibilities in terms of the strategic goal, tactical focus and operational activities based on the different classifications of products in Kraljic's matrix.

Table 2.4: Levels of operation to manage product categories - based on Kraljic's matrix

	Bottleneck items	Critical items	Routine items	Leverage items
Strategic goal	Ensuring supply by supporting and leveraging suppliers' competencies and contributing to developing best-in-class suppliers.	Forming partnerships with suppliers in order to gain a competitive advantage.	Streamlining the purchasing process.	Maximising the advantage gained due to favourable market conditions (readily available products and ample suppliers).
Tactical focus	Efficient management of the supply base.	Increase the role of suppliers.	Reduce organisational costs by introducing systems and procedures to limit the time spent on purchasing.	Increase the competitive position of the business.
Operational actions	Adapt or simplify product specifications to increase the supply base. Develop new suppliers.	Prepare contingency plans; for instances when the supplier cannot deliver.	Attempt to reduce administrative costs relating to purchasing. Rationalise the supplier base.	Promote competitive bidding with potential suppliers. Take advantage of market trends.

	Bottleneck items	Critical items	Routine items	Leverage items
	<p>Form medium-term contracts with suppliers.</p> <p>Attempt competitive bidding.</p>	<p>Negotiate with suppliers to form a strategic partnership.</p> <p>Analyse market conditions and competition to ensure the business remains competitive.</p>	<p>Investigate and implement e-procurement systems, if cost-effective.</p>	<p>Coordinate purchasing processes.</p> <p>Actively investigate all possible suppliers.</p>

Source: Developed from Monczka et al., 2021:223-225; Bichon, Kamann & Merminod, 2009:117-119.

To date, Kraljic's matrix is still the most widely used model employed by PSPs to determine appropriate category strategies for each quadrant. PSPs also use this matrix to determine the type of relationship to be formed with suppliers for each quadrant, as well as the criteria for selecting suitable suppliers for each quadrant (see sections 2.3.5 and 2.3.8) (Schiele, 2019:64; Formentini et al., 2019:183; Rachman, 2019:226; Thiruchelvam & Tookey, 2011:439).

2.3.5 The role of purchasing and supply professionals in supplier selection

Once the category strategy has been determined, PSPs can search for the most appropriate supplier(s) (Chai & Ngai, 2020:1; Taherdoost & Brard, 2019:1024; Van Weele, 2018:37-38). Suppliers are an essential component of the supply chain. Therefore, supplier selection is deemed one of the essential tasks of PSPs, particularly since supplier selection has become increasingly crucial from a strategic point of view (Juuti, 2020:18-19; Thiruchelvam & Tookey, 2011:437).

Supplier selection is used to reduce purchasing risks, develop long-term relationships with suppliers and increase the overall value of a business (Taherdoost & Brard, 2019:1024). Thiruchelvam and Tookey (2011:437) highlighted the importance of supplier selection by stating that businesses depend on suppliers, and that building long-term relationships with suppliers is strategically important to a business. Therefore, selecting suppliers must be considered strategically, as a supplier may be suitable in the short term but not always in the long term (Johnson, Leenders & Flynn, 2021:328). Selecting the most appropriate supplier is an arduous task as PSPs have to assess the strengths and weaknesses of potential suppliers before a contract is awarded. These suppliers will eventually influence the business's activities, both directly and indirectly (Patrucco, Moretto & Knight, 2021:2; Thiruchelvam & Tookey, 2011:438). Supplier selection entails: setting criteria (qualitative and quantitative) that potential suppliers must meet, identifying and conducting research on potential suppliers, rejecting unsuitable suppliers, assessing suitable suppliers in terms of the set criteria, and finally, determining the most appropriate supplier(s) (Chai & Ngai, 2020:1; Taherdoost & Brard, 2019:1024; Badenhorst-Weiss et al., 2018:90; Van Weele, 2018:37-38; Beil, 2011:1). In short, PSPs have the strategic responsibility to evaluate and select the most suitable suppliers (Monczka et al., 2021:49).

A well-structured and systematic decision-making process is critical when selecting suppliers as it facilitates business strategy alignment. In addition, using appropriate supplier selection methods is a driving factor in increasing business growth and competitiveness (Thiruchelvam & Tookey, 2011:437). Robinson, Faris and Wind (1967) made a novel contribution to supplier selection by suggesting that the process used to evaluate prospective suppliers should depend on the level of uncertainty the purchasing business faces within the three different purchasing situations (refer to section 2.3.2.1). Table 2.5 below summarises the nature of supplier selection in the three different purchasing situations.

Table 2.5: Supplier selection in the different purchasing situations

	Type of purchasing situation		
	New-task situation	Modified-rebuy situation	Straight-rebuy situation
Products being purchased	New products.	New or modified products.	Recurring purchases.
Supply base	Suppliers still need to be determined.	A known or new supplier is used.	The current supplier base is used to select an appropriate (pre-approved) supplier.
Nature of purchasing decision	No/limited experience in purchasing the product. Extensive information must be gathered to select the appropriate supplier.	Experience of current suppliers is considered. Information is gathered on possible new suppliers.	Experience of current suppliers is deemed sufficient to use as decision-making criteria.

Source: Adapted from Robinson, Faris & Wind, 1967; Rezaei, Nispeling, Sarkis & Tavasszy, 2016:578; Thiruchelvam & Tookey, 2011:437.

It can be deduced that PSPs are tasked with identifying possible new suppliers during a new-task or modified-rebuy purchasing situation. PSPs will also select the most appropriate supplier from the existing supply base in a straight or modified-rebuy purchasing situation (Rezaei et al., 2016:578). Evaluating a possible new supplier requires extensive time and resources; whereas, using an existing supplier is straightforward and less time-consuming (Johnson, Leenders & Flynn, 2021:328).

Early in the supplier-selection process, PSPs should outline comprehensive and configurable criteria to select the most suitable supplier (Rezaei et al., 2016:577; Thiruchelvam & Tookey, 2011:437-438). When using predefined criteria, prospective suppliers' capabilities and performance are measured to identify potential suppliers. The Kraljic matrix is one method PSPs can use to develop criteria to select the most appropriate supplier (Rezaei et al., 2016:577). For example, more stringent criteria will be set for suppliers of critical and bottleneck items than those supplying leverage and routine items. In addition, the more critical the supplier relationship, the more stringent the criteria (Monczka et al., 2021:258; Rezaei et al., 2016:579).

Examples of supplier-selection criteria:

- The quality of products being purchased
- The quality accreditations such as ISO 14001
- The price of the products being purchased
- The cost structure of the supplier
- On-time delivery by the supplier
- The location of the supplier
- The responsiveness of the supplier
- The customer service provided to the purchasing business
- The financial status of the supplier
- The operational capacity, planning and control systems of the supplier
- The technological capabilities of the supplier
- The supplier's position, role and appreciation in supply chain management
- The supplier's views on environmental issues and social responsibility (ethics)
- The supplier's reputation and position in the industry
- The after-sales services offered by the supplier

(Badenhorst-Weiss et al., 2018:84-89; Kannan, 2018:392; Monczka et al., 2021:105-106; Rezaei et al., 2016:579; Beil, 2011:3; Thiruchelvam & Tookey, 2011:443.)

Once the supplier-selection criteria have been set, PSPs will identify all possible suppliers by consulting different sources; such as the chambers of commerce, embassies, sales

representations, trade journals, professional contacts, national associations, the internet, catalogues and business directories. One of the basic tasks of a PSP is staying abreast of the latest information sources (Johnson, Leenders & Flynn, 2021:317; Badenhorst-Weiss et al., 2018:89). The list of possible suppliers identified at this stage is generally referred to as the bidders' longlist (Van Weele, 2018:38). These identified suppliers will be pre-screened based on predefined supplier-selection criteria. In addition, these suppliers may be contacted to provide specific information, such as references from previous projects, referred to as 'a request for information (RFI)' (Johnson, Leenders & Flynn, 2021:321; Van Weele, 2018:38).

After reviewing all information, PSPs will remove unsuitable suppliers from the bidder's longlist to create the bidder's shortlist (Van Weele, 2018:38-39; Beil, 2011:4). A supplier may be deemed unsuitable due to not complying with specific ISO standards or an undesirable financial position.

PSPs will research the shortlisted suppliers. The extent of the research will, however, be determined by the product being purchased. Therefore, in-depth research will be conducted on all possible suppliers when ordering a critical product; whereas less time will be spent on supplier research for routine items (Badenhorst-Weiss et al., 2018:83). In addition, the shortlisted suppliers will be requested to submit quotations in a specific format for assessment (Van Weele, 2018:39).

PSPs have various assessment methods available to evaluate shortlisted suppliers; such as mathematical programming, the weighted average method, data envelopment analysis, the cost-ratio method, vendor profile analysis, the analytical hierarchy process, dimensional analysis, artificial intelligence, and the analytic network process (Badenhorst-Weiss et al., 2018:91; Kannan, 2018:392; Thiruchelvam & Tookey, 2011:444). Generally, predefined supplier-selection criteria are used to assess shortlisted suppliers. PSPs can adapt these supplier assessment methods based on the specific supplier-selection criteria for evaluating possible suppliers (Thiruchelvam & Tookey, 2011:444). In addition, Van Weele (2018:39) added that when suppliers with whom strategic relationships are formed are evaluated, PSPs should also perform a risk analysis. At the end of the supplier-selection stage, one or more suppliers will be selected and classified as approved suppliers on the business's supply base for negotiation (if necessary) and contract formation (Johnson, Leenders & Flynn, 2021:357).

It can be concluded that PSPs' tasks and responsibilities in supplier selection entail the following: setting appropriate supplier-selection criteria for the type of product being purchased, staying abreast of information sources in order to identify possible suppliers through market research, being able to pinpoint suppliers who are not suitable based on the selection criteria, rejecting unsuitable suppliers, interacting with shortlisted suppliers to gain more information for assessing them, and finally, selecting the most appropriate supplier. PSPs should be able to determine the appropriate supplier relationship based on the type of product being purchased.

2.3.6 The role of purchasing and supply in negotiations and contract management

Negotiations will assist the purchasing business and the supplier in reaching a common understanding of the essentials of the purchasing contract (Johnson, Leenders & Flynn, 2021:303; Boateng, 2016:380). These essentials include delivery terms, credit terms, prices for volume purchases, product design and packaging, service levels, and performance guarantees (Badenhorst-Weiss & Cilliers, 2017:235; Weitz, Castelberry & Tanner, 2009:337). Negotiations are viewed as both parties' attempts to realise their business objectives and require all members to exercise judgement and tact (Johnson, Leenders & Flynn, 2021:302). Not all purchases require detailed and time-consuming negotiations; some commodity-like products are purchased through competitive bidding. Negotiations are only appropriate when factors besides the product's price must be considered (Monczka et al., 2021:504).

Negotiations with suppliers are among the most critical activities PSPs perform as they ensure the correct sourcing strategies (category strategies) are implemented (Monczka et al., 2021:500). PSPs' responsibilities in negotiations have widened from pure bargaining and administrative tasks to managing large contracts and product categories. This increase in responsibilities is due to supply chain management's influence on PS. It has necessitated that PSPs also consider aspects such as just-in-time (JIT) purchasing, forming strategic alliances with suppliers, working in cross-functional teams, and negotiating on multiple levels (suppliers and their suppliers) (Johnson, Leenders & Flynn, 2021:303). PSPs should also be equipped with negotiation skills to address long-term strategic supply agreements and day-to-day activities (tactical and operational tasks) (Badenhorst-Weiss & Cilliers, 2017:236; Monczka, Handfield, Giunipero & Walters, 2010:485). Baily, Farmer, Jessop and Jones

(2005:232) stated that a successful negotiator should fulfil three criteria: be recognised as an effective negotiator, have a successful track record, and have a low implementation failure rate.

As previously mentioned, negotiations are generally only conducted when expensive products are sourced or when strategic relationships must be formed since negotiations are expensive and time-consuming. Consequently, PSPs should identify when negotiations are required and when competitive bidding is appropriate (Johnson, Leenders & Flynn, 2021:302). Usually, the supplier who submits the lowest-priced bid is selected during competitive bidding (Takano, Ishii & Muraki, 2018:358). Monczka et al. (2021:504) stated that competitive bidding is generally used for commodity products, such as stationery with predefined specifications, which are low value and readily available.

Table 2.6 summarises the phases in the negotiation process regarding PSPs' responsibilities.

Table 2.6: The phases in the negotiation process and purchase and supply professionals' responsibilities

Phases in the negotiation process	Description of PS professionals' tasks and responsibilities
Identify sourcing requirements	PSPs will consult the purchase requisitions, inventory count records or notifications of reordering by inventory management systems to identify products that should be ordered or reordered.
Determine if competitive bidding or negotiations must take place	PSPs should determine whether they will use competitive bidding or negotiate with a supplier to purchase products. As stated above, competitive bidding is generally used when readily available products with predefined specifications and low value are purchased. In contrast to competitive bidding, strategic products will be negotiated; price is not the only consideration. Long-term relationships may be formed with a supplier.
Negotiation planning	Planning involves all preparations for a pending negotiation. Negotiation planning may involve either rudimentary preparations or require highly complex processes necessitating detailed data gathering. PSPs who invest in negotiation planning generally experience more favourable outcomes than those who do not.

Phases in the negotiation process	Description of PS professionals' tasks and responsibilities
	<p>Planning entails that PSPs:</p> <ul style="list-style-type: none"> • Set specific goals and objectives to be achieved during the negotiations. • Understand their counterparts, for example by conducting research to identify their negotiation styles and personalities. • Review previous negotiations conducted with a supplier. • Be aware of a supplier's objectives during negotiations. • Distinguish between facts and issues that must be resolved during negotiations. • Establish a position on each issue that must be resolved during negotiations. • Develop a strategy and tactics for the negotiations. • Identify the negotiation team.
Conduct negotiations	<p>The venue and formality of negotiations must be pre-arranged. PSPs should initiate, conduct, and conclude negotiations within a reasonable time and adhere to the strategy and tactics identified in the planning stage.</p>
Execute and follow up on the agreement	<p>After negotiations have concluded, a contract detailing the agreements will be</p>

Phases in the negotiation process	Description of PS professionals' tasks and responsibilities
	drawn up. PSPs must ensure the contract is visible to enable all stakeholders to evaluate and comment on it.

Source: Johnson, Leenders & Flynn, 2021:304-306; Badenhorst-Weiss et al., 2018:230-234; Badenhorst-Weiss & Cilliers, 2017:242-247; Monczka et al., 2021: 503-514.

The contract that concludes negotiations will contain the terms agreed upon by the purchasing business and the supplier and can be legally enforced (Beil, 2011:5; Baily et al., 2005:195). PSPs act as general agents for the purchasing business; they are authorised to act and form legally binding contracts on behalf of the purchasing business. The authority of a general agent is broad – meaning that the PSPs can change prices and terms and conditions during negotiations (Monczka et al., 2021:586). Although PSPs require some legal knowledge to understand and manage contracts on a day-to-day basis, a team approach (which includes technical, legal and financial experts) is generally used when negotiating a contract (Badenhorst-Weiss et al., 2018:53; Monczka et al., 2021:71). Table 2.7 highlights essential aspects PSPs should note when entering into a purchasing contract.

Table 2.7: Contractual aspects purchasing and supply professionals must consider when entering into a contract

Contractual aspect	Consideration of the contractual aspect
Elements of a contract	The offer, acceptance and consideration of the contract must be clear to ensure an enforceable purchasing contract.
Pricing	<p>Different types of pricing terms are available for a purchase contract, namely:</p> <ul style="list-style-type: none"> • A firm-fixed-price contract <p>The product's price is set and not subject to any changes.</p> <ul style="list-style-type: none"> • A cost-plus-fixed-fee contract: <p>Any future costs to the supplier cannot be determined or predicted. The purchasing business will be liable for all reasonable costs incurred by the supplier.</p> <ul style="list-style-type: none"> • A cost-no-fee contract: <p>If the supplier is guaranteed ample subsidiary benefits from the contract, they will not charge the purchasing business for certain costs; such as research and development, but only for the product itself.</p> <ul style="list-style-type: none"> • A cost-plus-incentive-fee contract: <p>A cost figure is agreed upon with the provision that additional costs will be shared.</p> <ul style="list-style-type: none"> • An open-price contract:

Contractual aspect	Consideration of the contractual aspect
	<p>No price is set, but the supplier may not impose an unreasonable price on the products. However, the quantity of products purchased should be set.</p> <ul style="list-style-type: none"> • Additional price considerations: <p>PSPs must consider the price of spare parts and services for the purchased product.</p> <p>If the product is purchased outside the country's borders, the PSP must consider currency fluctuations. The business should pay its suppliers in the same currency in which the supplier operates.</p> <p>When long-term contracts are formed, provisions should be made for price fluctuations.</p>
Boilerplate contract terms and conditions	<p><i>Boilerplate terms</i> refer to a purchasing contract's general terms and conditions. The PSP entering into the purchasing contract must ensure that the boilerplate terms and conditions are communicated to the supplier. This is to avoid disputes after the contract has been signed. Generally, these terms and conditions will vary depending on factors, such as the purchasing policy of the purchasing business.</p> <p>Additionally, PSPs must ensure that any conditions agreed upon during negotiations are included in the contract. These conditions may include; for example, that suppliers guarantee the product complies with all technical-, functional-, and quality specifications.</p>
Guarantees and warranties	<p>The supplier must guarantee the quality and performance of the product. This guarantee ensures that if the product does</p>

Contractual aspect	Consideration of the contractual aspect
	<p>not perform as specified, the supplier will bear all costs incurred by the purchasing business.</p> <p>The warranty's start and end dates should be included in the contract. Suppliers generally include a 12-month warranty on products.</p>
Other arrangements	<p>Other issues PSPs must consider when negotiating a contract with a supplier include (but are not limited to): insurance and safety regulations, contracting out to third parties, the transfer of rights and obligations (incoterms), cancellation or breach of contracts, formation of catalogue agreements, indemnification clauses, price provisions, and establishing the legal system in which the contract is founded.</p>

Source: Johnson, Leenders & Flynn, 2021:85-86; 304-306; Van Weele, 2018:39-41; Monczka et al., 2021:589-596; Beil, 2011:5-7.

Once a contract has been finalised with the selected supplier, the purchasing department can place orders with the supplier (Van Weele, 2018:44). Generally, the contract will suffice as the purchase order since the contract contains all vital information, such as pricing, quality requirements, delivery information, inspection, provision for cancellation, and any special interest provisions (Johnson, Leenders & Flynn, 2021:85-86; Van Weele, 2018:37).

Therefore, PSPs must be equipped with essential negotiation skills to guarantee the correct sourcing strategies are deployed. This is to address long-term strategic supply agreements and day-to-day purchasing activities. Having essential negotiation skills ensures that PSPs can recognise when negotiations with suppliers will be to the advantage of the business and when a purchasing contract should be concluded without entering into negotiations with suppliers (competitive bidding). PSPs should be comfortable with the negotiation process, from gathering information to planning and conducting negotiations. They need to be knowledgeable about agency and contract law to ensure valid contracts, which contain all agreed-upon aspects during negotiations.

2.3.7 The role of purchasing and supply professionals in ordering, expediting, receiving, inspection and record-keeping

Effective purchase order management can increase the competitive advantage of the purchasing business; this entails placing, monitoring, receiving, and accepting products ordered from suppliers (Sabri, Gupta & Beitler, 2006:3; CIPS, 2021a:137, Juuti, 2020:23). Once an internal stakeholder identifies a need for a product, they inform the purchasing department of the need through one of the following methods, documents or systems⁶:

- Internal customers complete requisitions to instruct the purchasing department to purchase a specific product. The internal stakeholder should provide the PSPs with a complete description of the product required, the quality of the product, the date of delivery, the date of requisition and the cost unit (business unit) to be debited. Generally, the supplier will have been identified earlier, and a contract will be in place (Johnson, Leenders & Flynn, 2021:83; Badenhorst-Weiss et al., 2018:49; Wisner, Tan & Leong, 2019:45; Jakobsson, 2010:29).
- Internal customers complete automated travel requisitions and send them to the purchasing department to purchase basic or recurring products. *Travel requisition forms* are barcoded forms that contain information about the supplier from whom standard products are purchased (Badenhorst-Weiss et al., 2018:49; Wisner, Tan & Leong, 2019:45). Automated travel requisition forms reduce operating expenses for the reordering of recurring requirements and standard products (Johnson, Leenders & Flynn, 2021:83).
- Stock checks are performed manually to ensure the quantity recorded on the internal information system is correct. In the event that errors are detected, the purchasing department will be informed to reorder the identified products from a supplier within the supply base (Badenhorst-Weiss et al., 2018:49).

⁶ When the internal stakeholder informs the purchasing department of their need via the different methods, documents or systems, a suitable supplier is already part of the purchasing business's supply base. However, if there is no suitable supplier in the business's current supply base or if it is a new-task purchasing situation, a suitable supplier should be sourced (as discussed in sections 2.3.2 to 2.3.6) before a purchase order can be created.

- *Routine reordering systems* are computerised systems that identify when a product's inventory level is below its reordering point. They notify the PSP to reorder the product from the approved supplier on the supply base (Badenhorst-Weiss et al., 2018:49).
- *Kanbans* are information cards that form part of a business's internal information system, and they provide suppliers with a clear description and specification of the business's needs. The purchasing department is informed of the reorder as these information cards are sent to suppliers to inform them that a product resupply is needed (CIPS, 2021b:110; Badenhorst-Weiss et al., 2018:49).

Once the purchasing department becomes aware of the need, they prepare a purchase order to send to the appropriate supplier (Monczka et al., 2021:66). If a sales agreement or blanket order is in place with the supplier, a purchase order will not be required. A sales agreement, or blanket order, is an agreement between the purchasing business and the supplier that spans a specific period in which the purchasing business can order products on a regular or ad hoc basis from the supplier – which is then deducted from the total amount of units contracted. Sales agreements and blanket orders are generally created to purchase routine products, such as stationery (Badenhorst-Weiss et al., 2018:54; Van Weele, 2018:44; Wisner, Tan & Leong, 2019:52).

Johnson, Leenders and Flynn (2021:85) stressed that internal customers must promptly communicate the need for a specific product to eliminate urgent orders. The authors also added that no order should be placed with a supplier without the necessary documentation. This may lead to incorrect purchases and legal complications. PSPs should ensure that all necessary information, such as prices, quantities, delivery dates, inspection procedures and terms and conditions, is stipulated on the purchase order since it is viewed as the supplier's purchasing contract (Van Weele, 2018:44; Wisner, Tan & Leong, 2019:47). Since the purchase order is a legally binding document, suppliers are expected to acknowledge receipt when they accept the order. Consequently, the supplier is legally bound by the purchase order's terms and conditions. However, if the supplier is the sole producer of the product, the supplier will send the purchasing business a sales order with the terms and conditions the purchasing business should accept (Monczka et al., 2021:66; Wisner, Tan & Leong, 2019:47; Jakobsson,

2010:29). In addition, the purchase order is the source document that is used to conduct various activities within the purchasing business, namely:

- The finance department uses a copy of the purchase order to verify the invoice before final payment.
- Staff receiving the products use the information on the purchase order to plan for expected delivery and ensure that the correct quantities are delivered.
- The purchase order provides detailed information relating to the product's specifications, allowing staff to inspect the delivered products.
- PSPs require a copy of the purchase order to expedite or follow up on the order. (Badenhorst-Weiss et al., 2018:54; Monczka et al., 2021:66).

E-procurement and other information technology applications have simplified the ordering process. *E-procurement* is defined as all web-enabled solutions that support the purchasing process (Badenhorst-Weiss et al., 2018:54; Van Weele, 2018:46). E-procurement has enhanced a PSP's ability to, for example, track the status of a purchase order, simplify communication with a supplier, and enable real-time electronic data exchange between the purchasing business and the supplier (Badenhorst-Weiss et al., 2018:54; Van Weele, 2018:46; Chiang, 2010:526).

The follow-up and expediting stages of the purchasing process take up considerable time for PSPs since they constantly need to follow up on orders placed with suppliers to ensure that the products arrive on time (Van Weele, 2018:44; Boateng, 2016:226). Therefore, only essential orders are followed up and expedited (Badenhorst-Weiss et al., 2018:54). PSPs can expedite orders using three methods: exception expediting, routine status checks, and advance status checks. When a PSP deploys *exception expediting*, they are informed by the product user, internal customer or the depot that the supplier did not meet the predetermined delivery date. As a result, the PSP will immediately follow up with the supplier to ensure delivery occurs as soon as possible. Since the PSP will work reactively, this expediting method is strongly discouraged (Van Weele, 2018:44; Wisner, Tan & Leong, 2019:47).

The second recommended expediting method is *routine status checks*. Routine status checks entail that the PSP confirms the delivery date with the supplier before the agreed delivery

date to ensure that the supplier is on track with the order placed, and so reduces the probability of late delivery (Van Weele, 2018:44).

The last expediting method a PSP can utilise is *advance status checks*. Advance status checks are time-consuming as the PSP has to verify the supplier's progress at different intervals. This expediting method is generally used when working with critical or high-risk suppliers or critical products with strict quality specifications. In extreme cases, PSPs may send an inspector to the supplier's facility to evaluate the supplier's performance (referred to as field expediting) to ensure that all contractual obligations will be met on time (Van Weele, 2018:44).

Once the products arrive at the purchasing business, the receiving depot inspects the delivered products and notifies the purchasing department of any shortages or faults (poor quality or incorrect specifications) as the purchasing function handles defective or faulty consignments (Badenhorst-Weiss et al., 2018:57; Boateng, 2016:466; Monczka et al., 2021:73). The purchasing department handles these consignments for three reasons: (1) PSPs placed the order with the supplier and should establish whether the rejected or faulty consignment was due to poor communication, (2) PSPs are tasked with building relationships with suppliers and are responsible for measuring the suppliers' performance through a supplier complaint reporting system that will evaluate the supplier and assist PSPs in making future purchasing decisions, (3) PSPs must ensure that suppliers comply with all quality standards stipulated in the contract or indicated on the purchase order. When dealing with rejected or faulty consignments, PSP should address the situation diplomatically; these matters often lead to friction and can damage supplier-buyer relationships (Badenhorst-Weiss et al., 2018:57; Van Weele, 2018:45). If the products purchased are acceptable, the finance department will process payment; however, some PSPs will be involved in this process since they initially negotiated prices and discounts with the supplier (Badenhorst-Weiss et al., 2018:57).

Finally, purchase records and any other critical documents, such as discrepancy reports, are recorded and stored on the business's supplier database (Monczka et al., 2021:73). Professionals in the field (Johnson, Leenders & Flynn, 2021:92; Monczka et al., 2021:73) view supplier record storage and recording as an essential after-sales task that PSPs should perform. PSPs should record issues relating to the quality of the products on their supplier

database; for instance, on-time delivery, competitiveness and innovativeness of the supplier. This information will influence the supplier's performance rating and ensure that the PSPs are aware of suppliers' capabilities. Johnson, Leenders and Flynn (2021:92) further stated that the law, accounting standards, business policy, and PSPs' judgement determine which records should be kept and for how long.

It can be concluded that in terms of ordering, expediting, receiving, inspection and payment, PSPs are tasked with the following:

- Transferring information obtained from internal customers regarding their need for a purchase order.
- Ensuring that all critical information is noted on the purchase order.
- Identifying whether an approved supplier is listed in the database and place the order with the approved supplier. If there is no approved supplier in the database, the PSP should initiate the process of sourcing the most suitable supplier for the product (see category management).
- Following up and expediting the order to ensure timely product delivery to internal customers.
- Diplomatically handling a rejected or faulty consignment to protect the supplier-buyer relationship.
- Assisting with supplier's payment (in some cases).
- Lessening the administrative burden of order management by being knowledgeable about different e-procurement systems.
- Ensuring that records of all purchases are correct and entered into the business's supplier database.

2.3.8 The role of purchasing and supply professionals in the management and evaluation of suppliers' performance

Evaluating a supplier's performance is a key aspect of supplier relationship management as it allows a business to determine how well the supplier is meeting predetermined criteria, such as cost, delivery and quality.

2.3.8.1 Supplier relationships management

The relationships between the purchasing business and their suppliers have become vital to achieving a sustained competitive advantage (Oduro, Nyarku & Gbadeyan, 2020:1; Foerstl, Schleper & Henke, 2017:2). According to Croxton, García-Dastugue, Lambert and Rogers (2001:13), supplier relationship management provides the structure to develop and maintain buyer-supplier relationships. It refers to the purposeful effort by a PSP to manage the relationship with a supplier to maximise the value of the supplier relationship. Furthermore, supplier relationship management is the strategic management philosophy the purchasing business uses when interacting with suppliers to ensure sustained superior performance from the supplier for the duration of the relationship. Therefore, supplier relationship management involves managing a supply base strategically rather than tactically or operationally for the benefit of the purchasing business (Badenhorst-Weiss, 2020:62).

Three main classes of supplier relationships exist: transactional, collaborative, and alliance – and they range from basic transaction-based trades to the formation of strategic partnerships (Burt, Petcavage & Pinkerton, 2012:74). Table 2.8 below summarises the three main types of supplier relationships and indicates when each relationship should be formed – based on the products being purchased.

Table 2.8: Classifications of buyer-supplier relationships

Classification of buyer-supplier relationship	Description of the buyer-supplier relationship	When to form the specific buyer-supplier relationship
<p>Transactional buyer-supplier relationship.</p>	<p>A basic transactional relationship exists between the purchasing business and the supplier.</p> <p>None of the parties (buying business or supplier) gets involved with the other's business operations.</p> <p>The transaction is purely an exchange of products for payment.</p> <p>The buyer-supplier relationship is short term (once-off), also called an arm's length relationship.</p> <p>Deciding factors in purchasing from a supplier are generally cost and product quality, as well as the estimated delivery time.</p> <p>No information is shared between the supplier and the purchasing business.</p>	<p>Transactional buyer-supplier relationships are most appropriate for once-off purchases or purchasing routine or standard products.</p> <p>Transactional buyer-supplier relationships are generally formed with suppliers of routine and leverage products (see section 2.3.4).</p>

Classification of buyer-supplier relationship	Description of the buyer-supplier relationship	When to form the specific buyer-supplier relationship
	<p>If the purchasing business is satisfied with the routine products purchased from the supplier, an informal buyer-supplier relationship may develop, and the supplier may be classified as a preferred supplier.</p>	
<p>Collaborative buyer-supplier relationship.</p>	<p>The purchasing business and the supplier acknowledge the need to collaborate to achieve cost-effectiveness, meet quality standards, and keep to delivery schedules.</p> <p>A collaborative relationship is maintained between the buying business and the supplier through mutual cooperation, the building of trust, constant communication, and promotion of interdependency.</p> <p>A long-term relationship is formed between the</p>	<p>Collaborative buyer-supplier relationships are generally formed with suppliers who supply bottleneck and strategic products to the purchasing business (see section 2.3.4).</p>

Classification of buyer-supplier relationship	Description of the buyer-supplier relationship	When to form the specific buyer-supplier relationship
	<p>purchasing business and the supplier.</p> <p>The purchasing business and the supplier reap benefits from the collaborative relationship, such as gaining a competitive advantage.</p>	
Alliance buyer-supplier relationship.	<p>Alliance buyer-supplier relationships are also referred to as partnership-based relationships.</p> <p>An alliance buyer-supplier relationship is founded on institutional trust. These relationships are designed, planned and agreed upon by the buying business and the supplier.</p> <p>The buyer-supplier relationship is goal-orientated and focused on identifying market opportunities and areas where improvements can be made.</p>	<p>Alliance buyer-supplier relationships should only be formed with suppliers of strategic products, as these relationships require a high degree of cooperation and information exchange.</p> <p>Alliance buyer-supplier relationships are generally formed with suppliers of critical products (see section 2.3.4).</p>

Classification of buyer-supplier relationship	Description of the buyer-supplier relationship	When to form the specific buyer-supplier relationship
	<p>All risks and rewards are shared between the purchasing business and the supplier.</p> <p>Alliance buyer-supplier relationships generally lead to long-term strategic benefits to both the purchasing business and the supplier.</p>	

Source: Johnson, Leenders & Flynn, 2021:98; Badenhorst-Weiss, 2020:63-64, Badenhorst-Weiss et al., 2018:95.

PSPs should have a comprehensive understanding of the different types of supplier relationships (as described in table 2.7) since transactional, collaborative and alliance buyer-supplier relationships cannot be managed in the same manner. Managing supplier relationships is a critical task for PSPs as their businesses' ability to achieve a sustainable competitive advantage is directly influenced by their suppliers (Patrucco, Moretto & Knight, 2021:1; Benton, Prahinski & Fan, 2020:1; Juuti, 2020:19; Badenhorst-Weiss et al., 2018:94, Johnson & Flynn, 2015:378). In order to ensure that suppliers deliver the desired performance, PSPs should continuously monitor and evaluate their suppliers (Patrucco, Moretto & Knight, 2021:1; Juuti, 2020:19).

2.3.8.2 Supplier performance evaluation

Supplier management and evaluation is vital to the purchasing and sourcing processes since businesses depend on suppliers for products (Monczka et al., 2021:73).

PSPs should collect and analyse supplier performance data to determine whether the suppliers' performance is adequate and if a specific supplier should be used in the future (Benton, Prahinski & Fan, 2020:1; Hawkins, Gravier & Muir, 2020:1). Because of the strategic

importance of PSM and the necessity to establish close supplier relationships, the process whereby supplier performance is evaluated has become increasingly sophisticated. However, the cost and time spent on the evaluation of a supplier's performance should be monitored by PSPs to discourage excessive resource expenditures on capturing and analysing supplier performance data, especially when the supplier relationship does not warrant the expenditure (Johnson, Leenders & Flynn, 2021:353).

Generally, PSPs will separate suppliers into two categories when evaluating their performance: new and current suppliers. New suppliers will be thoroughly assessed against predetermined criteria to establish whether they meet the performance standards set by the purchasing business. In contrast, evaluating current suppliers is a routine task for PSPs, ensuring that suppliers who have proven themselves still comply with the predetermined criteria (Johnson, Leenders & Flynn, 2021:353).

The supplier-evaluation process can be structured either formally or informally. Informal supplier-evaluation processes include conversations with internal users and gathering information at conferences and through the media. In addition, there are roundtable discussions between top executives of the purchasing business and the supplier. Formal supplier-evaluation processes entail a more structured approach where predetermined performance measures are rated to determine a score for each supplier. These measures can include a weighted point evaluation system where the quality of the product, quantity ordered vs quantity received, delivery performance, the product's price, and assistance with product redesign are evaluated (Johnson, Leenders & Flynn, 2021:354-357). Patrucco, Moretto and Knight (2021:1) and Hawkins, Gravier and Muir, (2020:2) stated that the more detailed the supplier-evaluation criteria, the better the purchasing business' ability to secure higher supplier performance. PSPs certify suppliers based on their performance evaluation, and they are divided into four categories, namely:

- Unacceptable suppliers: Suppliers who fail to meet the operational and strategic needs of the purchasing business and therefore will not be used again.
- Acceptable suppliers: Suppliers who meet the purchasing business's operational needs sufficiently; however, their performance is matched by competitors.

- Preferred suppliers: Preferred suppliers who have shown through past performance that they comply with and, in some cases, exceed the required minimum level/rating/score of the selection criteria. In addition, preferred suppliers work with the purchasing business to eliminate non-value-adding activities.
- Certified suppliers: Certified suppliers have received recognition (awards) from the purchasing business based on their excellent performance. Suppliers who are certified by a purchasing business are well positioned to anticipate being asked to assist in meeting the operational and strategic needs of the purchasing business (Johnson, Leenders & Flynn, 2021:357; Badenhorst-Weiss, 2020:62).

In summary, PSPs manage and evaluate supplier relationships by:

- Maximising value from the relationship.
- Determining the type of supplier relationship to be formed with a supplier.
- Determining the number of resources to allocate to manage each supplier relationship.
- Establishing the supplier-evaluation criteria to be used to evaluate suppliers' performance.
- Determining whether a formal or informal supplier-evaluation process should be used.
- Gathering and analysing supplier performance data.
- Evaluating suppliers' performance.
- Grouping suppliers into different supplier categories.

In section 2.3, the different activities included in the strategic sourcing and tactical and operational purchasing processes were analysed to identify PSPs' different tasks and responsibilities. The analysis determined that the tasks and responsibilities PSPs perform within the strategic sourcing process differ from the tasks and responsibilities within the tactical and operational purchasing processes; consequently, the competencies a PSP requires will differ depending on the process the professional is involved in. Therefore, the strategically orientated sourcing process and the tactical and operational purchasing processes will form part of the South African PS competency framework. This will serve as a guide for PSPs to identify the competency set they require based on the processes they are involved in.

Since the PS function is deemed a management function, it is advisable to consider the tasks and responsibilities of a PSP from a management perspective. Section 2.4 is dedicated to this task.

2.4 Purchasing and supply as a management function

Management is the systematic deployment of all available resources by managers to achieve a business's long-term objectives (Ehlers & Lazenby, 2019:170). Da Silva, Damian and Pádua (2012:763) added that management also entails the continuous development and improvement of business strategies to ensure that the focus of a business is kept on creating value for customers.

Globalisation, technological advances, an increased focus on the environment, and changes in employee and customer expectations have all contributed to changes in the business environment. The management approach also needs to change from traditional management competencies to those essential for the current ever-changing business environment (Daft, 2021:5; Da Silva, Damian & Pádua, 2012:762). Therefore, management had to shift from being a controller to an enabler, from supervising individuals to leading teams, from managing conflict and competition to increasing collaboration, from being autocratic to empowering employees and ensuring business stability to encourage change (Daft, 2021:5).

Managing the PS function forms an integral part of the broader management function and this is referred to as PSM (Badenhorst-Weiss et al., 2018:22). Section 2.4 analyses the PS function from the management activities of planning, organising, coordination, leadership, and evaluation. It should be noted that these management activities should be viewed as an integrated process that cannot be managed in silos. However, for the sake of clarity, section 2.4 will analyse each management activity separately.

2.4.1 Purchasing and supply planning

Planning entails formulating and setting the mission and both short- and long-term business objectives. During the planning stage, the future position of the business is determined. This will include how the business will reach the identified position in terms of the resources required and methods to be followed (Dermawan & Manalu, 2020:27; Rudansky-Kloppers, 2019:203). Planning is considered a continuous task as updated long- and short-term objectives are set regularly to adapt to the changing business environment and customer needs while supporting the business's competitive strategy (Monczka et al., 2021:197-198).

The literature indicates that PS planning has two distinct levels: strategic planning and tactical and operational planning. The former focuses on setting and formulating the business's long-term objectives by top management; the latter involves middle- and lower management achieving the organisation's short-term objectives (Schiele 2019:47; Lan, Park & Yao, 2020:280; Baily et al., 2005:392). Monczka et al. (2021:179-180) agreed with the distinction between the two PS planning levels and provided two reasons for this: (1) PSPs' activities to achieve long-term objectives differ from those performed to accomplish short-term objectives; and (2) the competencies required by PSPs differ between the two PS planning levels. Thus, strategic, operational and tactical PS planning's success dramatically depends on management and PSPs (Johnson, Leenders & Flynn, 2021:47; Tarigan & Siagian, 2021:364).

Cousins, Giunipero, Handfield and Eltantawy (2006:822) differentiated between PSPs titles based on whether they perform strategic or tactical and operational activities. According to these authors, PSPs performing strategic activities are generally referred to as *supply managers*, whereas professionals undertaking tactical and operational activities are referred to as *buyers*. Since the tasks assigned to a specific PS title vary among businesses, it was decided that in sections 2.4.1.1 and 2.4.1.2, reference will be made to top management conducting strategic PS activities and middle- and lower management conducting tactical and operational PS activities.

2.4.1.1 Strategic purchasing and supply planning

In a highly competitive business environment, the role of the PS function has become more strategically focused (Foerstl, Schleper & Henke, 2017:2; Cousins et al., 2006:822). Strategic

PS planning directly contributes to a business's success by formulating long-term strategies for purchasing products while maintaining its competitive advantage and the overall supply chain's success (Tarigan & Siagian, 2021:364; Badenhorst-Weiss et al., 2018:28).

Since strategic PS planning resides within the internal business function of PSM (which forms part of the broader process-orientated concept of supply chain management), both a business's competitive strategy and the overall supply chain strategy must be considered when strategic PS planning takes place (Perez-Franco, Phadnis, Caplice & Sheffi, 2016:384). Supply chain strategies are classified as an agile supply chain strategy or a lean supply chain strategy. Agile supply chain strategies aim to satisfy customers' needs as fast as possible, whereas lean supply chain strategies aim to satisfy customers' needs at the lowest possible cost (Simon et al., 2015:28; Alfalla-Luque, Mendina-Lopez & Dey, 2013:800; Hines, 2013:258; Qrunfleh & Tarafdar, 2013:571; Ambe, 2012:126; Chi, Kilduff & Gargeya, 2009:649). To achieve a strategic fit between a business's supply chain strategy and its competitive strategy, these strategies must be aligned (Soni & Kodali, 2011:71; Wagner, Grosse-Ruyken & Erhun, 2012:1). Generally, when an overall supply chain competes with an agile supply chain strategy, a business will select a competitive strategy that can adapt quickly to changing customer needs, such as a differentiated competitive strategy. In contrast, with a lean supply chain strategy, a business will focus on cost reduction; such as a cost leadership competitive strategy (Laari, Töyli & Ojala, 2017:1304).

The effective implementation of strategic PS planning enables a business to identify its strengths and weaknesses and determine its future objectives based on its available resources (Qi, Zhao & Sheu, 2011:385). In the past, top management was tasked with developing strategic PS strategies, such as cost reduction, supply chain support, environmental change, competitive edge, and risk management. However, due to the increased emphasis on strategic PS planning, it was necessary to widen strategic PS planning also to include activities such as supplier development and coordination, supplier market research, benchmarking, outsourcing, forming supplier alliances, enhancing supply chain integration and formulating policies (see section 3.2) (Badenhorst-Weiss et al., 2018:28, Cousins et al., 2006:822-823; Bailly et al., 2005:36).

The success of strategic PS planning rests on top management's ability to implement it appropriately, not only to enhance PS's internal organisational status but also to contribute to the business's competitive position (Tarigan & Siagian, 2021:363, Foerstl et al., 2013:691). Therefore, it is vital that businesses employ PSPs with the necessary strategic skills and abilities to perform strategic PS planning adequately (Cousins et al., 2006:823).

2.4.1.2 Tactical and operational purchasing and supply planning

Although the literature suggests that some tactical and operational activities of PSPs have become redundant due to technological advances (such as systems automatically reordering directly from suppliers when inventory levels reach a certain point), tactical and operational PS planning should not be discarded (Cousins et al., 2006:824).

Tactical and operational PS planning is performed by a business's middle- and lower-level management and generally covers 12 to 24 months (Boateng, 2016:541). During this type of planning, the overall purchasing effort is coordinated into an integrated whole within the business (Johnson, Leenders & Flynn, 2021:9). Middle management formulates tactical objectives from the long-term strategies formulated during the strategic PS planning stage, followed by lower management establishing concrete and quantitative short-term operational objectives from the tactical objectives formulated by middle management (Badenhorst-Weiss et al., 2018:28). Therefore, during tactical PS planning, the specific plans on how the internal support function of PS will contribute to the business's competitive strategy are defined. This is followed by operational planning, where it is determined how PS will allocate their internal resources to achieve the PS function's tactical plans (Johnson, Leenders & Flynn, 2021:27). As stated previously, the competencies of PSPs who establish tactical and operational objectives will differ from those performing strategic PS planning. This difference in competencies is mainly due to tactical and operational objectives being grounded in the day-to-day activities of PS. In contrast, strategic PS planning is focused on the business's long-term vision (Schiele, 2019:53).

It is essential to note the mutual dependence between tactical and operational planning as the business's strategic objectives cannot be achieved without operational and tactical PS planning (Badenhorst-Weiss et al., 2018:25). Table 2.9 provides examples of how tactical and operational PS objectives are mutually dependent.

Table 2.9: Mutual dependence between tactical and operational purchasing and supply objectives

Tactical PS objectives based on strategic PS strategies	Translation of the tactical PS objectives into operational PS objectives	Authors
Determine the medium-term needs of the business for commodities, parts and services to satisfy the business's demand requirements (material requirement planning).	Conduct market research using market and sales estimates, forecasts, and the master production schedule.	Badenhorst-Weiss et al., 2018:25-26; Monczka et al., 2021:19.
Develop plans and programmes that will efficiently provide for the business's needs; such as planning the supply system, implementing materials requirements, and preparing material budgets.	Select the best supplier from the supplier database. Determine the most economical quantity to order from suppliers. Reorder inventory.	Badenhorst-Weiss et al., 2018:25-26; Bals & Turkulainen, 2017: 260; Monczka et al., 2021:19; Baily et al., 2005:36.
Establish a PS system that includes: planning PS activities and procedures, developing training and development plans for personnel, and ensuring adequate inventory control and information-sharing systems are in place.	Allocate specific PS activities to sub-groups within the PS function. Write PS manuals detailing PS activities and procedures.	Badenhorst-Weiss et al., 2018:25-26; Monczka et al., 2021:19; Baily et al., 2005:36.

Tactical PS objectives based on strategic PS strategies	Translation of the tactical PS objectives into operational PS objectives	Authors
Set medium-term PS objectives for notable projects; such as purchasing capital equipment required for a project or planning large PS contracts that run between three and five years.	Set short-term PS objectives based on the medium-term objectives for the extraordinary project.	Badenhorst-Weiss et al., 2018:25-26; Monczka et al., 2021:19.

Source: Compiled by the researcher, 2022.

When PSPs have completed strategic, tactical and operational planning for the PS function, they undertake the second management activity, which is organising.

2.4.2 Purchasing and supply organising

Organising as a PSM activity includes developing a business model to integrate a business's organisational structures. Organising as a PSM activity entails indicating how people, equipment and materials should be utilised and organised to achieve the mission and long-term objectives of a business. It should indicate what actions should be taken if the business deviates from its mission and long-term objectives (Daft, 2021:9; Dermawan & Manalu, 2020:27; Rudansky-Kloppers, 2019:203). For example, during PS organising, a structure of authority and responsibility for the PS function is created along with organising the different PS activities that must be performed with other business functions, as well as the activities of suppliers, to ensure that all PS objectives are accomplished (Badenhorst-Weiss 2019:582; Du Toit, Erasmus & Strydom, 2012:500;505). Brevis-Landsberg (2019:291-292) stressed the importance of matching activities to professionals' competencies in order to achieve long-term objectives; this will lead to higher productivity levels.

Badenhorst-Weiss et al. (2018:26) stated that organising within the PS function is a three-step process. First, the PS function should be positioned within the business structure to determine where the PS authority lies; secondly, the internal business structure of the PS function should

be determined to show the scope of activities PSPs need to perform; and thirdly, to establish the extent of integration between the PS function, other business functions, and the supplier networks. This three-step process is discussed in sections 2.4.2.1 to 2.4.2.3.

2.4.2.1 Positioning the purchasing and supply function within the business structure

The structural options for the PS function can range from centralisation to decentralisation and influence the coordination between the different business functions (Bals & Turkulainen, 2017:257). Johnson, Leenders and Flynn (2021:51) emphasised that the PS structure refers to the purchasing authority and not the geographical location of PS staff. Therefore, within a centralised PS structure, spending decisions (authority and responsibility) will be managed and controlled by the head office. In contrast, in a decentralised PS structure, spending decisions (authority and responsibility) are dispersed to different business units or plants. When a hybrid PS structure is selected, spending decisions (authority and responsibility) are shared between the head office and different business units or plants (Johnson, Leenders & Flynn 2021:51; Bals & Turkulainen, 2017:257).

There are numerous factors a business needs to consider when determining the position of the PS function within the business structure, namely:

- The higher the PS function's contribution to the business's total expenditure, the more critical it is (Johnson, Leenders & Flynn, 2021:51; Du Toit, Erasmus & Strydom, 2012:504).
- The PS function's overall contribution to business profit (Badenhorst-Weiss et al., 2018:27).
- The nature and variety of products purchased and the degree of expertise required to make these purchases. Innovative or new products require negotiation and commercial skills different from routine products (Du Toit, Erasmus & Strydom, 2012:504).
- The classification, characteristics, degree of competition and stability of the supplier market. The level (top management versus middle management) at which negotiations take place increases, depending on the negotiation power of the supplier (Du Toit, Erasmus & Strydom, 2012:504).

- The size of the supply base and the uniqueness of the products being purchased (Johnson, Leenders & Flynn, 2021:50).
- The commitment of business management to supply chain integration, supplier partnering and outsourcing (Badenhorst-Weiss et al., 2018:27).
- The importance of the PS function to top management (Du Toit, Erasmus & Strydom, 2012:504).

After considering these factors, management can decide whether the PS function should be a centralised, a decentralised or a hybrid structure.

2.4.2.2 Determining the internal business structure of the purchasing and supply function

The internal structure of a business's PS function depends on the activities the PS function will perform, the different purchasing methods to be used, the supplier network, the interrelationship between different members within the PS function, as well as the interrelationship between the PS function and other business functions (Badenhorst-Weiss et al., 2018:27-28). Du Toit, Erasmus and Strydom (2012:504) explained that the PS function can be informally structured or divided into specialised groups. When the PS function is structured informally, a PSP is responsible for purchasing various products (usually standard products) and performing a variety of activities; such as obtaining quotations, expediting purchase orders and receiving products. In contrast, with a PS function divided into specialised groups, each PSP specialises and is responsible for purchasing one specific product, as in the case of purchasing commodities or handling only one activity (for instance high-level negotiation) in the sourcing process. Consequently, when the PS function is informally structured, PSPs require sufficient knowledge of a vast array of products and activities; where formal specialised groups are formed, they require detailed knowledge relating only to a specific product or activity (Brevis-Landsberg, 2019:249).

2.4.2.3 Integration of the purchasing and supply function with other business functions and supplier networks through cross-functional teams

From a PS perspective, cross-functional teams consist of specialists from at least three functional areas working together to assist the PS function in making numerous PSM-related

decisions (Du Toit, Erasmus & Strydom., 2012:505). Generally, cross-functional teams include experts in PS, quality control, product development, marketing and engineering, among others. In some cases, even suppliers form part of such a team, particularly during new product development. Cross-functional teams achieve results far superior to individual efforts due to team members' range of skills, capabilities, and knowledge (Johnson, Leenders & Flynn, 2021:64). Kaufmann and Wagner (2017:5) stated that a holistic problem-solving approach in the supply chain is attained by employing cross-functional teams. This is due to the members' diverse backgrounds and knowledge.

Cross-functional teams can be created for an indefinite period or for a specific project. Due to the significant investment in human capital when creating such teams, it is essential that they have the necessary support from top management. There should also be qualified personnel available with skilled and efficient leadership to achieve the objectives of the project. PSPs, who form part of a cross-functional team, should be efficient and display leadership abilities (Du Toit, Erasmus & Strydom, 2012:505).

Using cross-functional teams to assist the PS function has advantages but also presents challenges. Table 2.10 summarises these advantages and challenges.

Table 2.10: The advantages and challenges of cross-functional sourcing teams

Advantages of cross-functional sourcing teams	Challenges of cross-functional sourcing teams
<p>Access to team members' perspectives and expertise.</p> <p>Since the end-user participates, their specific needs can be met.</p> <p>Team members gain insight into trade-offs before final purchases.</p> <p>The time to solve problems and make decisions is reduced due to the synergy between team members.</p> <p>Team members own all decisions.</p> <p>Communication and cooperation among different business functions and top management are improved.</p> <p>Innovation and creativity are increased due to team members' input.</p>	<p>More business resources are used due to increased labour hours.</p> <p>Responsibilities of team members may increase.</p> <p>Changes in team members due to retirement and departures may influence the dynamic of the cross-functional team.</p> <p>Identifying and rewarding individual contributions become difficult.</p> <p>Team members' different backgrounds and perspectives may cause stress and low team cohesion.</p> <p>Silo thinking by team members may prevent collaboration.</p>

Source: Badenhorst-Weiss et al., 2018:28-29; Kaufmann & Wagner, 2017:5; Franke & Foerstl, 2020:6; Jeske & Calvard, 2020:403.

2.4.3 Purchasing and supply coordination

Modern business structures are characterised as more flexible, adaptive, and leaner than in the past, mainly because rigid functional structures have been replaced by cross-functional teams (Johnson, Leenders & Flynn, 2021:64). Although each business function has its objectives, coordinating business functions will ensure strategic consensus among them, resulting in achieving long-term objectives and ultimately enhancing the business's overall competitive position (Foerstl et al., 2013:690). The activities performed by the PS function originate from the needs of other business functions. Therefore, the PS function must strive to increase coordination by aligning its activities with the internal requirements of other business functions (Foerstl et al., 2013:690). These activities that the PS function performs to assist other business functions include purchasing materials needed and providing inputs regarding supplier markets, quality control factors, and details regarding the specifications of materials to be purchased (Du Toit, Erasmus & Strydom., 2012:505).

Coordinating the PS function with a business's supplier system is a highly complex task that should leave all parties economically better off (Preeker & De Giovanni, 2018:1161). The aim is to coordinate the PS function's objectives, activities and abilities with those of the supplier system. According to Badenhorst-Weiss et al. (2018:33), the complexity of coordinating the PS function with the supplier system is due to the influence of external environmental factors; such as technology, competition, governmental intervention, legal considerations, and socio-economic issues. Coordination between the PS function and suppliers influences buyer-supplier relationships positively since timely materials (or services) flow is created. This timely flow of materials can be achieved through open communication, integrated systems, motivation, specification standardisation, and purchasing documents and procedures (Badenhorst-Weiss et al., 2018:33).

2.4.4 Purchasing and supply leadership

PS leadership refers to PS managers leading by influencing, guiding and directing PSPs to achieve the PS function’s objectives (Vrba, 2019:265). Additionally, effective leadership from PS managers will also assist in identifying opportunities available in the business environment (Johnson & Leenders, 2009:51).

Table 2.11: Leadership components of a purchasing and supply manager

Components of leadership	Application of leadership components to PSPs in leadership roles
Authority	Authority empowers PS managers to instruct employees to do specific tasks.
Power	Power enables PS managers to influence other employees’ behaviour.
Responsibility	PS managers are responsible for achieving the PS function’s objectives.
Delegation	PS managers must be able to delegate tasks, responsibilities and authority to achieve the PS function’s objectives.
Accountability	PS managers are held accountable for all operations within their department.

Source: Vrba, 2019:270.

Tchokogué and Merminod (2021:2) stated that despite the importance of leadership as a management activity, limited research has been done on leadership in the PS field.

2.4.5 Purchasing and supply evaluation

Evaluation, as a management activity, enables management to detect when a business deviates from its mission and long-term objectives (Daft, 2021:10-11; Caniato, Luzzini & Ronchi, 2012:618; Lardenoije, Van Raaij & Van Weele, 2005:687). For example, during PS evaluation, the policies and objectives established during PS planning are used to evaluate the PS function’s actual performance (Van Weele, 2018:70; Monczka et al., 2021:760; Du Toit, Erasmus & Strydom, 2012:505). Kakwezi and Nyeko (2019:177) added that evaluating purchasing performance, first, provides the basis for a business to determine how the

purchasing function is progressing towards achieving its predetermined objectives; secondly, provides input on any future business initiatives focused on improving performance and, lastly, assists in identifying strengths and weaknesses within the business.

Authors (Monczka et al., 2021:761; Baily et al., 2005:395-396; Lardenoije, Van Raaij & Van Weele, 2005:687) identified some main aims for conducting a performance evaluation of the PS function: enhance strategic dialogue, increase the importance and performance of the PS function, support better communication, provide the necessary information to PSPs to make informed decisions, create an incentive for PSPs and cross-functional teams to increase performance, stimulate motivation and learning, and lastly, allow for benchmarking between different divisions within the business as well as between different businesses and supply chains.

Badenhorst-Weiss et al. (2018:35) defined the performance evaluation of the PS function as:

a control process, consisting of a systematic measurement on a quantitative basis and subjective judgement on a qualitative basis of critical dimensions of purchasing and supply management, aimed at a value assessment of the actual performance, and at providing management information to all functional groups linked to the supply chain.

From the above definition, three conclusions regarding the evaluation of the PS function can be drawn: (1) the PS control process entails that a systematic investigation should be conducted, (2) that both quantitative and qualitative dimensions should be evaluated, and (3) that management should use the results of the systematic investigation to improve the PS function. Therefore, before a PS performance evaluation can be conducted, the business should consider the principles in which the PS function's performance evaluation is grounded.

2.4.5.1 Principles of purchasing and supply performance evaluation

To fully understand the importance, viability, and essence of performance evaluations, PSPs should consider the six fundamental principles of a performance-evaluation process. These six principles are briefly highlighted in figure 2.3 below.

Benefit vs cost	<ul style="list-style-type: none"> • The benefit should outweigh the cost of conducting a performance evaluation (Monczka et al., 2021:766).
Tailored performance evaluation system	<ul style="list-style-type: none"> • There is no generic performance evaluation system as the role of the PS function differs in different businesses (Monczka et al., 2021:767).
Type of performance evaluation measurement	<ul style="list-style-type: none"> • Both quantitative and qualitative performance measures must be used when assessing the PS function's performance (Hugo & Badenhorst-Weiss, 2012:37).
Number of performance evaluation measures	<ul style="list-style-type: none"> • Several different performance measures should be used to assess the PS function's performance (Hugo & Badenhorst-Weiss, 2012:37).
Influence of internal and external factors	<ul style="list-style-type: none"> • Business and environmental changes should be considered when assessing the PS function's performance (Hugo & Badenhorst-Weiss, 2012:37).
Scope of purchasing and supply activities	<ul style="list-style-type: none"> • A data base with ample PS activities should be used when assessing the PS function's performance (Monczka et al., 2021:766).

Source: Compiled by the researcher, 2022.

Figure 2.2: Principles on which a purchasing and supply performance evaluation should be conducted

Before conducting a performance evaluation of the PS function, it is necessary to establish whether the benefits gained outweigh the costs. Then, a tailor-made approach to evaluating the PS function's performance can be created. The evaluation should include ample quantitative and qualitative performance measures and activities and should consider the impact of other internal and external factors. Below, the steps for evaluating the PS function's performance are discussed.

2.4.5.2 General steps in the purchasing and supply function's evaluation process

Since the PS function's performance directly impacts the business's overall performance, it is essential that appropriate PS performance-management processes be in place (Caniato, Luzzini & Ronchi, 2012:616). The PS function's evaluation consists of different steps and is authorised by either the top management of the business or the PS function itself. Each step of the evaluation is discussed below.

a) Determine the scope and objectives for evaluating the purchasing and supply function

The evaluation process starts by identifying the PS function's scope and objectives within the business (see section 2.2). Secondly, the PS function's objectives are used to determine measures to assess the function's actual performance.

The preparatory step of identifying the objectives to assess the actual performance entails input from top management and the PS function. Generally, the objectives are measured quantitatively, but critical qualitative aspects should also be considered, such as negotiation skills and supplier cooperation (Monczka et al., 2021:787; Baily et al., 2005:392). Van Weele (2018:70) stated that the PS function's efficiency should be measured in terms of organisational aspects and the effectiveness of cost, quality and logistics.

b) Establish purchasing and supply performance measures and indicators

Valid and measurable performance measures and indicators are necessary to successfully evaluate the PS function (Van Weele, 2018:70). Issues such as supplier partnerships, international sourcing and quality management have necessitated that PS performance measures and indicators are approached in a non-traditional manner. The emphasis is placed on matters such as professionalism, competencies, product knowledge, a team approach, the ability to negotiate, good human relations and the ability to cultivate qualified suppliers (Badenhorst-Weiss et al., 2018:38). In addition, due to the increasing importance of PS, performance measures such as flexibility, innovation and sustainability have become more relevant (Caniato, Luzzini & Ronchi, 2012:616).

Baily et al. (2005:392) highlighted a critical challenge in measuring PS performance. According to these authors, measuring the PS function's performance is difficult due to the vast array of activities involved in the PS process. For example, suppliers may negatively influence PS's overall performance by late deliveries. Therefore, performance measures should be established by grouping sets of activities and responsibilities to determine the criteria for a particular management task or aspect. Monczka et al. (2021:763-764) agreed with Baily et al. (2005:392) that grouping performance measures into categories is necessary since there are many possible performance measures. These authors identified the following 12 PS

performance measurement categories: price performance, cost-effectiveness, asset and integrated supply chain management, environmental sustainability, revenue, quality, technology and innovation, responsiveness, supplier risk and strategic performance, administration efficiency, internal customer satisfaction, and governmental and social aspects.

c) Measuring and interpreting purchasing and supply's actual performance

The PS performance measures and indicators established in the previous step of the PS evaluation process, measure actual performance. This entails data gathering from systems and documentation to assess against the performance measures and indicators set in the previous step (Badenhorst-Weiss et al., 2018:40-41). PS's performance data are analysed, and any deviations from the objectives are noted. When evaluating PS's actual performance, three approaches can be applied, namely:

- The historical approach: Compares current PS performance data to historical performance data to establish whether performance has improved or declined.
- Budget and quantitative objectives: Compares current PS performance data to budgetary and quantitative objectives set for the PS function.
- Benchmarking: Compares a division of the PS's performance against another PS division or compares the entire PS's performance against another business's PS performance (Monczka et al., 2021:782-783).

d) Reporting on purchasing and supply's performance

The final step in the PS evaluation process entails reporting the findings to the requestor of the evaluation, generally top management. The report should be based on quality data and presented for interpretation and necessary actions. Baily et al. (2005:402-403) identified five crucial aspects to be included in the PS performance-evaluation report. These aspects are: the organisational structure of the PS function; the accessibility of the PS function to information; the alignment of the PS function with the business's strategic goals, supplier policies and relationships; and lastly, the development of PSPs. Brevis-Landsberg (2019:291) stated that although the evaluation is the final management activity, it serves as the basis for the first planning-management activity.

2.4.5.3 Challenges faced when conducting a performance evaluation for purchasing and supply

Various challenges arise when a performance evaluation is conducted on the PS function. The main challenges are:

- The PS function consists of a vast array of diverse activities; therefore, it can be challenging to obtain an inclusive evaluation of its performance (Baily et al., 2005:392).
- Due to the nature of the PS function's activities, it is challenging to set performance measures and articulate quantitative performance evaluation findings (Hugo & Badenhorst-Weiss, 2012:37).
- External and internal factors outside PSP jurisdiction and control directly influence the PS function's performance. External factors include macroeconomic-, technological-, social-, and political factors, whereas internal factors include other business functions, policies, procurements, and strategies (Hugo & Badenhorst-Weiss, 2012:37).
- Having too much data and focusing on incorrect data may present a distorted image of the PS function's actual performance (Monczka et al., 2021:762).
- Relying too much on short-term-focused measures such as financial and operational data (Monczka et al., 2021:762).

It was previously noted that performance evaluation is an integrated process, and its different activities (planning, organising, coordination, leadership and evaluation) should not be performed in silos. However, to ease the discussion, these activities were analysed separately in section 2.4.

The analysis shows that PSPs' tasks and responsibilities differ depending on where they are employed. Therefore, the necessary competencies of PSPs will differ depending on the management activity in which they are predominantly involved. Management activities will form part of the South African PS competency framework, which will guide PSPs in identifying the competency set they require.

2.5 Summary of a purchasing and supply professional's overall tasks and responsibilities

Table 2.12 presents the findings of the literature review relating to the different tasks and responsibilities of a PSP. These were identified by examining the main areas of responsibility to identify PS objectives, the strategically orientated sourcing process, the tactical and operational purchasing processes, and the different management activities PS are involved in.

Table 2.12: Tasks and responsibilities of purchasing and supply professionals

Focus areas of chapter two	Tasks and responsibilities of PSPs
Objectives of the PS function	<p>PS consists of many interrelated strategic, tactical and operational tasks and responsibilities that PSPs must perform to successfully reach each PS objective. Consequently, the need for higher-level competencies has increased and includes:</p> <ul style="list-style-type: none"> • Cost consciousness: PSPs focus on reducing costs or implementing cost-saving initiatives within the business. • Stable supply assurance: PSPs must ensure a sufficient and safe supply. • Adherence to quality requirements: PSPs must ensure that purchased products and services comply with prescribed quality standards. • Promotion of sustainability: PSPs must promote social, economic and environmental sustainability when purchasing products and services. • Alignment with the competitive strategy: PSPs must ensure all decisions are aligned with the business’s competitive strategy in order to achieve a competitive advantage. • Facilitating a preferred relationship with suppliers: PSPs must strive to build a relationship with suppliers to ensure supply access.
Type of product or service purchased	PSPs must be able to classify/categorise the type of product or service being purchased (for instance, raw materials, semi-finished or product components, finished products,

Focus areas of chapter two	Tasks and responsibilities of PSPs
	<p>maintenance, repair and operating items, production-support items, services and capital equipment). For each type of product or service purchased, the PSP must consider the unique aspects thereof.</p>
Purchasing situation	<p>PSPs are tasked with:</p> <ul style="list-style-type: none"> • Distinguishing between the three different purchasing situations. • Identifying and performing the relevant strategic, tactical and operational tasks for each purchasing situation.
Make-or-buy and insourcing-or-outsourcing decisions	<p>PSPs' tasks and responsibilities regarding make-or-buy and insourcing-or-outsourcing decisions are:</p> <ul style="list-style-type: none"> • Determining if suppliers exist for the specific product being purchased or outsourced. • Considering both internal and external factors when advising whether to make-or-buy or insource or outsource. <p>Additionally, PSPs should assist in:</p>

Focus areas of chapter two	Tasks and responsibilities of PSPs
	<ul style="list-style-type: none"> • Providing quality information to all stakeholders regarding the products considered for making, buying, insourcing or outsourcing and the suppliers of those products. • Providing information on the cost implications of making, buying, insourcing or outsourcing a product. • Providing detailed information on the different sourcing strategies (see section 2.3.4) the business currently employs. • Providing information on the risks associated with making, buying, insourcing or outsourcing a product. • Providing information to stakeholders on possible opportunities to outsource products or services. • Identifying and selecting suitable suppliers.
Understand the business's spend	<p>PSPs must conduct spend analyses and investigate the business's demand for products.</p> <p>PSPs must ensure the transactional and operational purchasing process is well-defined and managed. This will provide accurate purchasing data to analyse and interpret annual purchases. It will also allow them to report on predetermined measures, such as category spend, suppliers per category, identifying business opportunities, and estimating future demand.</p>

Focus areas of chapter two	Tasks and responsibilities of PSPs
Category strategy development	<p>In order to develop category strategies, PSPs must:</p> <ul style="list-style-type: none"> • Work within a cross-functional team. • Analyse the business spend per category. • Categorise products into the correct categories (bottleneck, routine, critical and leverage) based on the impact of the product category on the business's profit and the risk faced by the specific category. • Understand the strategic goals of each category (see table 2.2). • Understand the tactical focus of each category (see table 2.2). • Understand the operational actions required for each category (see table 2.2). • Ensure that they have the necessary technical-, analytical-, strategic- and negotiating competencies to develop and manage the different category strategies.
Supplier selection	<p>PSPs' tasks and responsibilities when selecting suppliers include:</p> <ul style="list-style-type: none"> • Establishing a well-structured and systematic decision-making process to select suppliers. • Considering the influence of the type of purchasing situation when selecting suppliers.

Focus areas of chapter two	Tasks and responsibilities of PSPs
	<ul style="list-style-type: none"> • Setting appropriate supplier-selection criteria. • Staying up to date on all sources of supplier information. • Conducting market research on possible suppliers. • Assessing suppliers to determine if they meet supplier criteria. • Rejecting all unsuitable suppliers. • Adding all approved suppliers to the supply base. <p>In addition, PSPs must have the expertise to determine the time spent on selecting a supplier based on the type of product being purchased.</p>
Negotiations and contract management	<p>PSPs must have the essential negotiation skills to ensure the correct sourcing strategies (category strategies) are deployed to address long-term strategic supply agreements and day-to-day purchasing activities (tactical and operational tasks). The PSPs' tasks and responsibilities regarding negotiations include:</p> <ul style="list-style-type: none"> • Identifying the business's sourcing requirements. • Determining whether competitive bidding or negotiations should occur. • Planning for negotiations by: <ul style="list-style-type: none"> ○ developing specific goals and objectives that should be achieved during negotiations;

Focus areas of chapter two	Tasks and responsibilities of PSPs
	<ul style="list-style-type: none"> ○ understanding the supplier’s counterparts; for example, by conducting research to identify the supplier’s negotiator’s personality and negotiation skills; ○ reviewing previous negotiations with the supplier; ○ knowing the objectives the supplier wants to achieve; ○ distinguishing between facts and the issues that must be resolved during negotiations; ○ establishing a position on each issue to be resolved; ○ developing strategy and tactics for the negotiations; ○ identifying the negotiation team members. <ul style="list-style-type: none"> ● Conducting negotiations with the supplier. ● Drawing up a contract that details the agreements reached. <p>Therefore, PSPs must have knowledge about agency and contract law to ensure a valid contract.</p>
Ordering, expediting, receiving, inspection and record-keeping	<p>With regard to ordering, expediting, receiving, inspection and payment, PSPs are tasked with:</p> <ul style="list-style-type: none"> ● Transferring information obtained from internal customers to a purchase order.

Focus areas of chapter two	Tasks and responsibilities of PSPs
	<ul style="list-style-type: none"> • Ensuring critical information is noted on the purchase order. • Ascertaining if an approved supplier is listed on the supply base and place an order with them. If no approved supplier is found, the PSP must initiate the process of sourcing an appropriate supplier (see sections 2.3.4 and 2.3.4). • Following up and expediting the order to ensure timely product delivery to internal customers. • Diplomatically handling a rejected or faulty consignment to protect the supplier-buyer relationship. • Assisting with the supplier's payment (if necessary). • Being knowledgeable about different e-procurement systems to lessen the administrative burden of order management. • Ensuring that records of all purchases are correct and updated in the business's supplier database.
Management relationships and evaluation of suppliers	<p>In summary, PSPs manage relationships and evaluate supplier performance by:</p> <ul style="list-style-type: none"> • Managing supplier relationships to maximise value. • Determining the appropriate relationship to be formed with a supplier.

Focus areas of chapter two	Tasks and responsibilities of PSPs
	<ul style="list-style-type: none"> • Determining which resources to allocate to the management of each supplier relationship. • Establishing supplier-evaluation criteria to evaluate suppliers' performance. • Determining whether a formal or informal supplier-evaluation process should be used. • Gathering and analysing supplier performance data. • Evaluating suppliers' performance. • Categorising suppliers based on their performance.
Management activities of the PS function	<p>PSPs manage the PS function by:</p> <ul style="list-style-type: none"> • Strategically planning the long-term objectives of the PS function. • Deriving short-term (tactical and operational) objectives from the strategic long-term PS objectives. • Ensuring the PS function is organised to achieve the mission and long-term objectives of the business. • Deciding on the necessary actions if the business deviates from its mission and long-term objectives. • Establishing where the PS function is positioned within the business.

Focus areas of chapter two	Tasks and responsibilities of PSPs
	<ul style="list-style-type: none"> • Determining the internal business structure of the purchasing function. • Establishing the extent of integration between the PS function, other business functions and supplier networks. • Leading and guiding the cross-functional team in strategic sourcing and tactical and operational purchasing. • Coordinating PS activities with other business functions. • Coordinating the PS function with the supplier system. • Applying the different leadership components. • Considering if a PS performance evaluation benefits the purchasing business. • Conducting a performance evaluation of the PS function.

Source: Compiled by the researcher, 2023.

It is clear from table 2.11 that the tasks and responsibilities of PSPs differ significantly based on the objectives they are tasked with, the specific processes they are involved in, and the management activity they are engaged with.

Employing professionals whose competencies match the demands of their positions (tasks and responsibilities) is essential for business success; competent professionals are a strategic resource that advances the business's competitive advantage (Flöthmann, Hoberg & Wieland, 2018:480). Therefore, a specific competency set is required based on the tasks and responsibilities a PSP performs.

2.6 Conclusion

Chapter two addressed SRO₁, SRO₂ and SRO₃ of this study, namely:

SRO₁ Examine PS as an internal support function to understand the different PS objectives a PSP may be assigned.

SRO₂ Analyse PS as an internal support function to understand the different PS processes that a PSP may be involved in.

SRO₃ Examine PS as an internal support function to understand the different PS management activities that a PSP may predominantly be involved in.

In order to address SRO₁, the researcher set out to establish the different PS objectives that support the business's strategic vision in section 2.2. The importance of meeting customers' needs efficiently and effectively was highlighted by stressing the necessity of aligning business functions with the overall business's long-term objectives (Venter, 2019:3; Badenhorst-Weiss et al., 2018:7; Bals & Turkulaine, 2017:256). PSPs will, therefore, manage PS objectives per the business's competitive strategy – which is generally focused on either differentiation or cost-efficiency (Stek & Schiele, 2019:6; Eicker, 2016:8). After examining the PS function's main areas of responsibility that support the business's strategic vision in section 2.2.1 to 2.2.6, the following seven objectives of the PS function were identified: cost consciousness, ensuring stable supply, adherence to quality requirements, promoting sustainability, alignment of PS with the business's competitive strategy, facilitating a relationship with suppliers, and promoting and facilitating innovativeness with suppliers. Therefore, in section 2.2, the

researcher determined that, based on the different tasks and responsibilities encapsulated within each PS objective, a PSP will require a different competency set depending on their assigned PS objective(s).

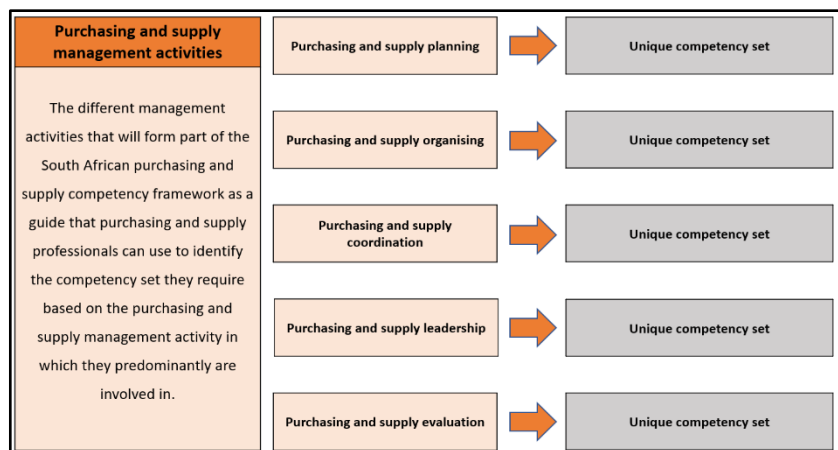
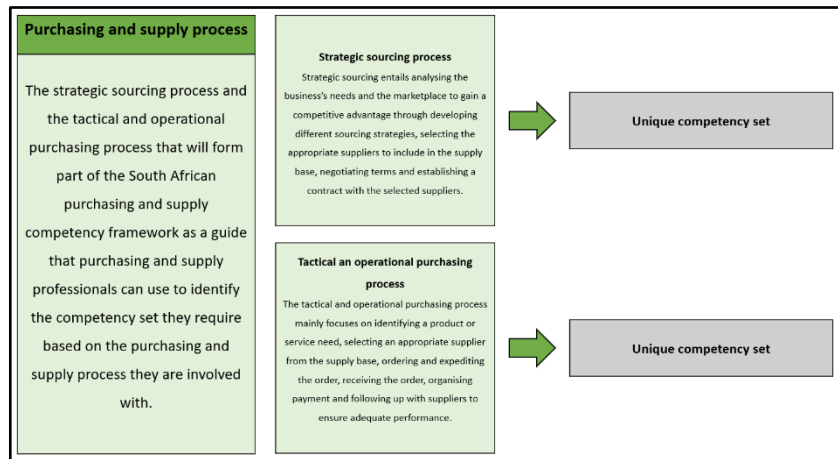
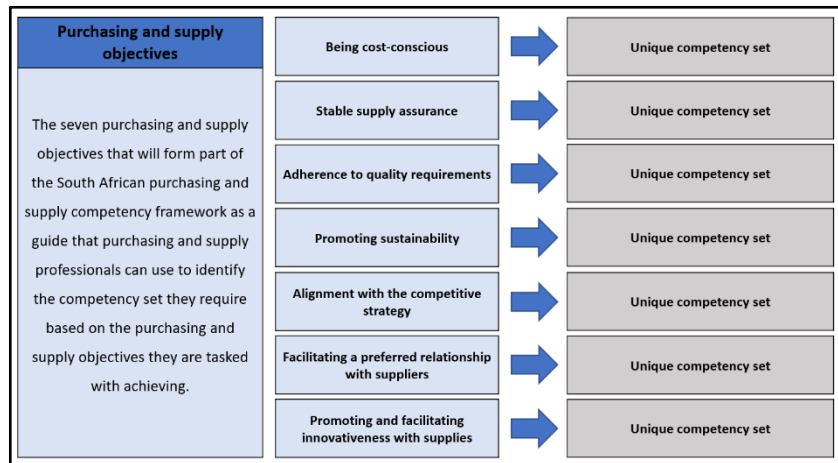
Section 2.3 focused on addressing SRO₂ by analysing the tactical and operational purchasing process and strategic sourcing to determine the tasks and responsibilities of a PSP. Although the PS process has evolved from a paper-based system to a more automated system due to the introduction of information technology and the internet, the purpose of the PS process has stayed intact (Wisner, Tan & Leong, 2019:44). The PS process identifies the internal users' needs for products or services, assists in formulating specific product or service requirements, finds potential suppliers who will comply with the specific product or service requirements, selects a suitable supplier(s), negotiates agreements (contracts) with the selected supplier(s), establishes an ordering mechanism, ensures that payment takes place, evaluates the supplier's performance while constantly building a relationship with the supplier. All these tasks are contained within the strategically orientated sourcing process and the tactical- and operational-orientated purchasing process (CIPS, 2021b; Monczka et al., 2021:42; Van Raaij, 2016:15; Wisner, Tan & Leong, 2019:44).

Considering the different tasks and responsibilities included within strategic sourcing and the tactical and operational purchasing process (as discussed in sections 2.3.1 to 2.3.8), it was established that the competency set required by a PSP would differ based on the processes they are involved in.

Lastly, in section 2.4, the different management activities PSPs are involved in were examined in order to address SRO₃. Managing the PS function forms an integral part of the broader management function, and this is referred to as PSM (Badenhorst-Weiss et al., 2018:22). Section 2.4 analysed the PS function in the context of the management activities of planning, organising, coordinating, leadership and evaluation. Although these management activities were considered individually, they should be viewed as an integrated process that cannot be managed separately. Once again, after examining each management activity from a PS perspective, it was determined that the required competency set of a PSP would differ based on the management activities the PSP is predominantly involved in.

As chapter two concludes, it should be noted that the South African competency framework will be presented from a holistic perspective. It will be based on the different PS objectives, the PS processes, and the PS function's management activities. Therefore, the PS objectives, PS processes, and management activities of the PS function will be used as dependent variables in the development of a South African competency framework.

South African purchasing and supply competency framework dependent variables



Source: Compiled by the researcher, 2022.

Figure 2.3: Dependent variables of the South African PS competency framework

In order to address SRO₄, SRO₅, SRO₆ and SRO₇, chapter three will focus on defining competency and competencies, examining the different approaches used to conduct competency research, and analysing previous research on PS competencies. Then, the different competency categories and PS competencies will be determined and will be included in the South African private sector's PS competency framework.

Chapter 3 – Purchasing and supply competencies

3.1 Introduction

The purpose of chapter three is to address SRO₄, SRO₅, SRO₆ and SRO₇ of this study, namely:

SRO₄ Establish a definition of PS competence and PS competency.

SRO₅ Select the most appropriate research approach to use as a foundation for the South African PS competency framework.

SRO₆ Determine the different PS competency categories that will be included in the South African PS competency framework for PSPs working within the South African private sector.

SRO₇ Identify PS competencies from the literature that may form part of the competency set of a PSP working in the private sector of the South African business environment.

Chapter three is divided into five main sections. First, section 3.2 evaluates the different definitions of competence and competencies in the literature to develop an all-encompassing definition of competence and competencies from a PS perspective. Then, section 3.3 analyses the three possible approaches to competence research (the behavioural approach, the functional approach, and the holistic approach) to select the most appropriate approach for this study.

Section 3.4 focuses on previous research conducted on PS competencies, analysing literature from 1987 to 2022. This will assist in determining the different competency categories and the specific competencies within each category. Finally, in section 3.5, the chapter concludes by combining the findings of the literature analysis with the identified PS competency categories that will be used as the theoretical underpinning for this study.

3.2 Differentiating between the concepts of competence and competency

The concepts of competence and competency have been researched in numerous disciplines; such as strategic management, education, medicine and health sciences, psychology, human resource management and organisational management (Taljaard, 2020: Prifti et al., 2017:47; Morris et al., 2013:353; Guerrero & De los Ríos 2012:1291). Despite the diversity among these

disciplines, all authors acknowledge the importance of these concepts within the various disciplines (Adefe, 2017:54; Winterton, 2009:681). For example, management theorists specifically mention the positive impact competent professionals have on organisational performance in increasing a business’s competitive advantage (Klézl et al., 2022:283; Adefe, 2017:54). This is also highlighted in, for example policy documents, such as the Organisation for Economic Cooperation and Development, of which South Africa is a member (OECD, 2020; Winterton, 2009:681).

However, to date, no consensus exists on the definitions of competence and competency since these concepts depend heavily on the perspective of the discipline (Taljaard, 2020:54; Derwik & Hellström, 2017:200; Knight, Tu & Preston, 2013:272; Delamare-Le Deist & Winterton, 2005:29). This lack of consensus has led to confusion regarding the concepts and no comprehensive definitions have been developed. Additionally, competence and competency have been used interchangeably and as synonyms for terms, such as skills, knowledge, resources, assets and capabilities (Taljaard, 2020:54; Adefe, 2017:54; Derwik & Hellström, 2017:200; Knight, Tu & Preston, 2013:272; Delamare-Le Deist & Winterton 2005:29; Hoffmann, 1999:275).

Therefore, it is necessary to analyse the differences between these concepts to formulate comprehensive definitions of competence and competency from a PS perspective. The interchangeable use of the terms to describe competence and competency throughout the literature is evident in table 3.1, which presents some of the various definitions of these concepts.

Table 3.1: Definitions of competence and competency in the literature

Concept	Definition	Author
Competence	‘[It] refers to outcomes or standards an individual should meet, tasks and personal traits or characteristics.’	Mansfield (2004:304).

Concept	Definition	Author
	'[It] is a fuzzy concept but important as it bridges the gap between job requirements and education.'	Boon & Van der Klink (2002:6).
	'[It] is often portrayed as a combination of components, such as knowledge, skills, abilities, capabilities and resources.'	Derwik & Hellström (2017:200).
	'[It] refers to the behaviourally-demonstrated use of technical skills and knowledge.'	Knight, Tu and Preston (2013:272).
Competency	'[It] is an underlying characteristic of a person, which results in effective and/or superior performance on the job.'	Klemp (1980) in Prifti, et al. (2017:48).
	'[It consists of] motives, traits, self-concepts, attitudes or values, content knowledge, or cognitive or behavioural skills – any individual characteristic that can be measured or counted reliably, and that can be shown to differentiate significantly between superior and	Spencer & Spencer (1993:4).

Concept	Definition	Author
	average performers, or between effective and ineffective performers.'	
	'[It is] sets of behaviours that are instrumental in the delivery of desired results or outcomes.'	Bartram, Robertson & Callinan (2002) in Prifti, et al. (2017:48).
	'[It is] a personal trait or set of habits that leads to more effective or superior job performance.'	McClelland (1973) in Prifti et al. (2017:47).
	'[It is] performance capabilities that an individual needs to demonstrate knowledge, abilities and skills.'	Dooley, Paproack, Sun & Gonzalez (2001:315).
	'[It] is a characteristic of an individual with superior job performance. The term includes visible competencies of knowledge and skills and underlying elements of competencies that include motives and traits.'	Hartle (1995:107).
	'[It] combines knowledge, skills, abilities, personal attributes, actions and task experience.'	Guerrero & De los Ríos (2012:9).

Concept	Definition	Author
	'[It is]a combination of tactic and explicit knowledge, behaviour and skills that gives someone the potential for effectiveness in task performance.'	Draganidis & Mentzas (2006:53).

Source: Compiled by the researcher, 2023.

From table 3.1, it can be concluded that although many similarities exist among the definitions of competence and competency, each author presents their opinion of what is included and excluded. This diversity in the definitions of competence and competency has also been acknowledged within the PS field (Bals et al., 2019:2; Derwik & Hellström, 2017:200; Knight, Tu & Preston, 2014:272), for example:

- Giunipero and Percy (2000:4) described PS *competence* as 'a professional's skills and abilities to maximise the PS contribution to achieving business goals.'
- Bichon, Kamann and Merminod (2009:110) defined purchasing *competence* as 'a clusters of knowledge, attitudes, skills and values needed to perform certain tasks, solve problems, and to generally allow one to function adequately and effectively in a certain discipline, trade, organisation, function or role.'
- Knight, Tu and Preston (2014:272) defined PS *competence* as 'the specific technical and industry knowledge and skills that PSPs require for efficacy in their tasks.'
- Derwik and Hellström (2017:200) described supply chain management *competence*, of which PS is a subset, as 'the combination of skills, capabilities, abilities and resources that enable a professional to contribute financially and operationally to the business.'
- Karttunen (2018:3903) used the term 'purchasing skills' when describing the competencies a purchasing manager requires, namely, 'P/SM skills' 'are understood to be acquired proficiencies within mental and/or physical activities that help employees carry out purchasing job activities ... In other words, they are the knowledge and abilities that enable one to do something well. Thus, skills are the

techniques, knowledge, and proficiencies that help employees meet their job requirements and can be acquired through practice.'

- Bals et al. (2019:2) defined purchasing and supply *competencies* as 'the knowledge and skills a professional requires to perform the broad range of PS tasks and responsibilities.'
- Schulze and Bals (2020:2) defined purchasing and supply *competence* as 'skills, abilities and any other characteristic and attribute that enables the professional to manage complex situations effectively and can be developed through experience or learning.'

In 1970, McClelland defined competency (plural competencies) as 'a personal trait or set of habits that leads to more efficient or superior job performance' (Lara, Mogorrón-Guerrero & Ribeiro-Navarrete, 2020:2060; Adefe, 2017:54; Prifti et al., 2017:47). However, the seminal work of Boyatzis (1982) on competencies (which aligns with the 1970 definition of McClelland), became the foundation of competency research in the management field (Lara, Mogorrón-Guerrero & Ribeiro-Navarrete, 2020:2061; Hoffmann, 1999:275). Boyatzis (1982:23) defined competencies as:

[T]he characteristics that are causally related to effective and/or superior performance in a job. This means that there is evidence that indicates that possession of the characteristic precedes and leads to effective and/or superior performance in that job.

According to Taljaard (2020:56), 'individual competencies refer to the combination of behaviours entailing attitudes, skills, knowledge, practical experience and natural talent an individual will rely on to complete a task or reach a predetermined goal.'

Another definition comes from Morris et al. (2013:353), who stated that the definition of competence depends on the context of the concept within the specific situation, for example whether the term 'competence' is used as an independent variable (describing the attributes a professional should demonstrate) or a dependent variable (describing the outputs that should be measured to deem a professional as competent) (Winterton, 2009:684). However, competence is generally regarded as the ability of an individual to perform a task to a predetermined standard (Taljaard, 2020:58; Do Vale, Nunes & De Carvalho, 2018:83). Sáez-López, Domínguez-Garrido, Medina-Domínguez, Monroy, and González-Fernández (2021:2)

agreed with Mulder, Gulikers, Biemans and Wesselink's (2009:757) definition of competence as the

series of integrated capabilities consisting of clusters of knowledge, skills and attitudes necessarily conditional for task performance and problem-solving and for being able to function effectively in a certain profession, organisation, job, role and situation.

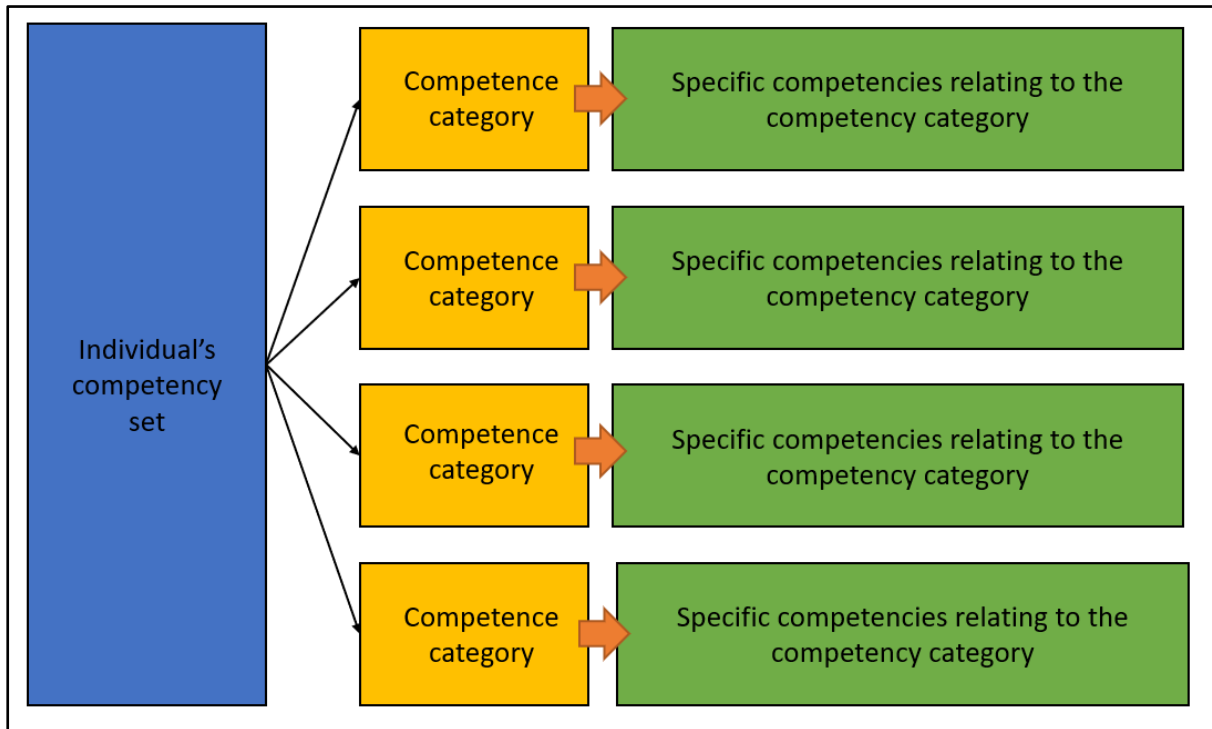
In other words, being competent means a professional has the ability to integrate knowledge, skills, attitudes, and values to develop mechanisms that will assist them in managing various situations and solving personal and professional problems that will arise throughout their lives (Do Vale, Nunes & De Carvalho, 2018:83).

After examining past literature on competence and competency, Hoffmann (1999:276) stated that three key perspectives should be considered when defining these concepts, namely:

- The observable performances of an individual. When defining competencies from this perspective, the focus is on whether an individual's performance is measured against predetermined standards and deemed acceptable or unacceptable. Therefore, competency determines if an individual's performance is adequate to obtain accreditation (Adefe, 2017:52-53; Hoffmann, 1999:276).
- The standard and quality of an individual's performance outcome. In this instance, competency refers to the standard or quality of an outcome in terms of individual performance in the workplace; for example, setting the minimum acceptable performance level an individual should achieve to increase business productivity. Competency is defined in the context of overall business performance objectives (Adefe, 2017:52-53; Hoffmann, 1999:276).
- The underlying knowledge, skills, abilities and attributes of a person. This definition of competency focuses on the knowledge, skills, abilities, and attributes that an individual requires to perform competently (Adefe, 2017:52-53; Hoffmann, 1999:276).

For the purpose of this study, *PS competency* (plural competencies) refers to an individual characteristic or attribute that an individual must possess to ensure superior job performance. These competencies are then divided into cognitive, functional and social *competences*. Within each PS category, a list of individual competencies is presented

(Winterton, 2009:684). Therefore, for a PSP to be able to do their work (be competent in their work), they need to possess a particular set of competencies that can be divided into cognitive, functional and social competences. Figure 3.1 below illustrates graphically where competence and competencies fit within an individual's competency set.



Source: Compiled by the researcher, 2023.

Figure 3.1: Positioning of competence and competencies within an individual's competency set

It is necessary to understand the different approaches to studying competence before an in-depth review of previous research on the different competence categories and competencies within the PS field can be undertaken. Therefore, in section 3.3, the three approaches used to study competence are discussed, and the appropriate approach for this study is identified.

3.3 Different approaches to competence research

There are various approaches to understanding and researching competence: behavioural, functional, and holistic (Abdul Muhi, 2022:13; Taljaard, 2020:53; Winterton, 2009:684). The classification of competencies depends on the approach selected. In the sections below, the three approaches are considered in order to select the most appropriate approach to use as a foundation when classifying PS competencies in this study.

3.3.1 The behavioural approach to competence research

The behavioural approach to understanding competence is also referred to as the ‘worker-orientated approach’ or the ‘United States research approach’. It describes an individual’s abilities (specifically knowledge, skills, and personal traits) that will lead to effective job performance (Abdul Muhi, 2022:14; Adefe, 2017:57). The behavioural approach focuses on the behavioural aspects of an individual in determining competence. This approach emphasises that competencies are fundamentally behavioural (unlike intelligence and personality) and can be taught through development and learning. Thus, competencies are viewed as attributes that extend beyond cognitive ability – attributes such as self-regulation, social skills, and self-awareness (Taljaard, 2020:55; Prifti et al., 2017:48; Delamare-Le Deist & Winterton, 2005:39; Boyatzis, 1982:26; McClelland, 1973:5).

However, some authors (Adefe, 2017:57; Garavan & McGuire, 2001:149-150) have criticised this approach by stating that it only presents a general and abstract list of competencies and does not provide a meaningful foundation for developing competencies. Guerrero and De los Ríos (2012:1291) added that it focuses on the professional’s conduct when performing a specific task without considering personal qualities.

Due to the lack of a meaningful foundation for developing competencies and the lack of consideration of the professional’s personal qualities, the behavioural approach was deemed inappropriate as the theoretical foundation to identifying possible South African PS competency categories.

3.3.2 The functional approach to competence research

The functional approach to understanding competence is work-orientated (Abdul Muhi, 2022:14; Adefe, 2017:57) and is referred to as the 'United Kingdom research approach' by some authors (Taljaard, 2020:55; Prifti et al., 2017:48). This approach views competencies as the necessary requirements regarding skills and know-how for a professional to successfully fulfil a task (Taljaard, 2020:55; Prifti et al., 2017:48; Garavan & McGuire, 2001:149-150). The functional approach identifies the necessary competencies for a profession and develops a series of standards for each competence. The professional's work is then evaluated against these standards to identify the competencies requiring development (Guerrero & De los Ríos, 2012:1291). In other words, the focus is on a professional achieving a predetermined level of performance expected within a specific occupation or business – the individual's ability to perform a task to a minimum standard.

However, the functional approach is also not immune from criticism. Adefe (2017:58) and Elkins, Bell, Hartgrove and Pardue (2016:20) stated that the functional approach does not consider knowledge and cognitive processes, which may lead to an inability to develop the competencies needed in an ever-changing business environment. Guerrero and De los Ríos (2012:1291) added that the functional approach analyses the business's functions and not the professional's competencies.

Due to its neglect of knowledge and cognitive processes, the functional approach was not considered suitable to serve as the theoretical foundation for the South African PS competency categories.

3.3.3 The holistic approach to competence research

In 1995, Hodkinson and Issitt (1995:95) argued that a holistic approach to competence research should integrate knowledge, understanding, values, and skills within the professional self; thus, it should combine the behavioural and functional competence research approaches to create a holistic research approach.

Guerrero and De los Ríos (2012:1293) stated that the holistic approach to competence research considers the different characteristics of competencies. This allows for cognitive, functional, behavioural and ethical competencies within a professional's competency set.

Delamare-Le-Deist and Winterton (2006:27) supported the holistic competence research approach by stating that it can identify general competencies for professionals within a specific occupation and different levels in a profession.

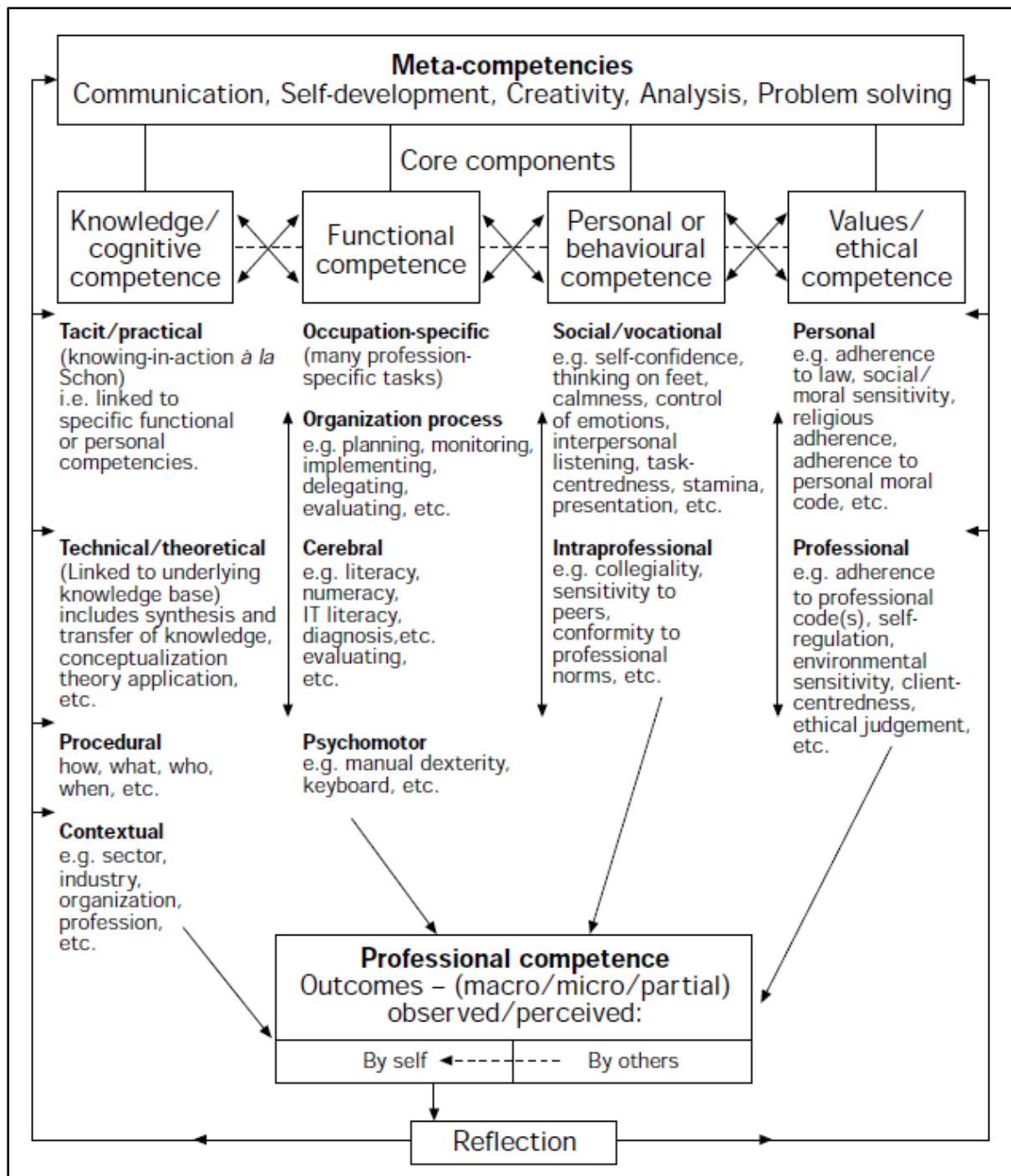
The holistic research approach to competence research was chosen as the theoretical foundation for classifying the PS competencies for PSPs in the private sector of the South African business environment for the following reasons:

- The holistic approach incorporates the advantages and addresses the disadvantages of both behavioural and functional research approaches (Adefe, 2017:58; Taljaard, 2020:62).
- The holistic approach aligns with Hoffmann's (1999) perspective on defining competence and competencies (discussed in section 3.2) by focusing on the professional's underlying knowledge, skills, abilities, values, attributes and understanding.
- The holistic approach incorporates cognitive, functional, behavioural, and ethical competencies into the professional's competency set (Guerrero & De los Ríos, 2012:1294).

As the chosen approach for this study, the seminal studies by Cheetham and Chivers in 1996 and Delamare-Le Deist and Winterton in 2005 on the holistic approach are analysed in sections 3.3.3.1 and 3.3.3.2.

3.3.3.1 Cheetham and Chivers' 1996 professional competence model

In 1996, Cheetham and Chivers set out to answer the questions of how professionals acquire and maintain their professionalism and to what extent education and development programmes assist in maintaining this professionalism. In their model, they integrated knowledge, understanding, values, and skills by developing a holistic professional competence model. This combined the strengths and addressed the criticisms of the behavioural and functional approaches to competence research (Adefe, 2017:58). Another strong point of the Cheetham and Chivers (1996:24) model is the addition of analytical tools (such as Bloom's Taxonomy) to create an elaborate holistic competence model. Figure 3.2 below depicts Cheetham and Chivers' (1996:27) provisional professional competence model.



Source: Cheetham & Chivers, 1996:27.

Figure 3.2: Cheetham and Chivers' provisional model of competence

Cheetham and Chivers (1996:24) identified four interconnected competency classifications of professional competence: knowledge/cognitive competence, functional competence, personal/behavioural competence, and values/ethical competence. These four competence

classifications are interlinked and, to some degree, interdependent. Additionally, each competency type consists of a sub-group of individual competencies (see figure 3.2).

Within this model, the four interconnected competency classifications of professional competence are described as follows:

- Knowledge/cognitive competence: This is evident when a professional exhibits appropriate work-related knowledge and can apply it effectively (Abdul Muhi, 2022:22, Cheetham & Chivers, 1996:24). Therefore, knowledge/cognitive competence refers to knowledge (know-that) underpinned by understanding (know-why) (Delamare-Le Deist & Winterton, 2005:35). Competencies classified as knowledge/cognitive competencies are tactical/practical, technical/theoretical, procedural, and contextual competencies (examples are provided in figure 3.2) (Cheetham & Chivers, 1996:24).
- Functional competence: This competence is apparent when a professional effectively completes work-related tasks to produce specific outcomes (Abdul Muhi, 2022:21; Cheetham & Chivers, 1996:24). Therefore, 'things that a person who works in a given occupational area should be able to do... [and] demonstrate.' (Delamare-Le Deist & Winterton, 2005:35). Competencies classified as functional are occupation-specific, organisational/process, cerebral and psychomotor competencies (examples are provided in figure 3.2) (Cheetham & Chivers, 1996:24-25).
- Personal/behavioural competence: These competencies refer to the ability of a professional to adopt appropriate and observable behaviours in work-related situations (Abdul Muhi, 2022:22; Cheetham & Chivers, 1996:24). In other words, professionals' ability to know how to behave (Delamare-Le Deist & Winterton, 2005:35). Personal/behavioural competencies include social/vocational and intraprofessional competencies (see figure 3.2) (Cheetham & Chivers, 1996:25).
- Values/Ethical competence: These competencies refer to the 'possession of appropriate personal and professional values and the ability to make sound judgements based upon these in work-related situations.' (Abdul Muhi, 2022:22; Delamare-Le Deist & Winterton, 2005:35; Cheetham & Chivers, 1996:24).

Competencies classified as value/ethical competencies include personal and professional competencies (see figure 3.2) (Cheetham & Chivers, 1996:25).

As shown in figure 3.2, there are several meta-competencies overarching the four interconnected competency classifications of professional competence (such as communication, self-development, creativity and problem-solving). Meta-competencies are defined as the competencies that assist a professional in developing new competencies and enhancing a competency within one of the four core competency classifications (Jarva, Oikarinen, Andersson, Tuomikoski, Kääriäinen, Meriläinen & Mikkonen, 2022:1379). Generally, a professional will utilise competencies from all four competency classifications, as well as the different meta-competencies, to produce a specific outcome (either a macro-, a micro- or a partial outcome) (Cheetham & Chivers, 1996:25). A macro-outcome refers to broad indicators of professional performance generally achieved over time. In contrast, micro-outcomes refer to minor activity-related outcomes that indicate proficiency in a single competence. Finally, partial outcomes refer to the result of a partially completed activity (Cheetham & Chivers, 1996:25).

Lastly, Cheetham and Chivers' professional model of competence (1996) allows the professional to reflect on the competencies they lack and identify those they need to improve. Consequently, referring back to figure 3.2, the reflection feeds back into the meta-competency and the specific competencies within each competency classification (Abdul Muhi, 2022:2; Hashim 2008:263; Cheetham & Chivers, 1996:26).

3.3.3.2 Delamare-Le Deist and Winterton's 2005 multi-dimensional holistic typology of competence

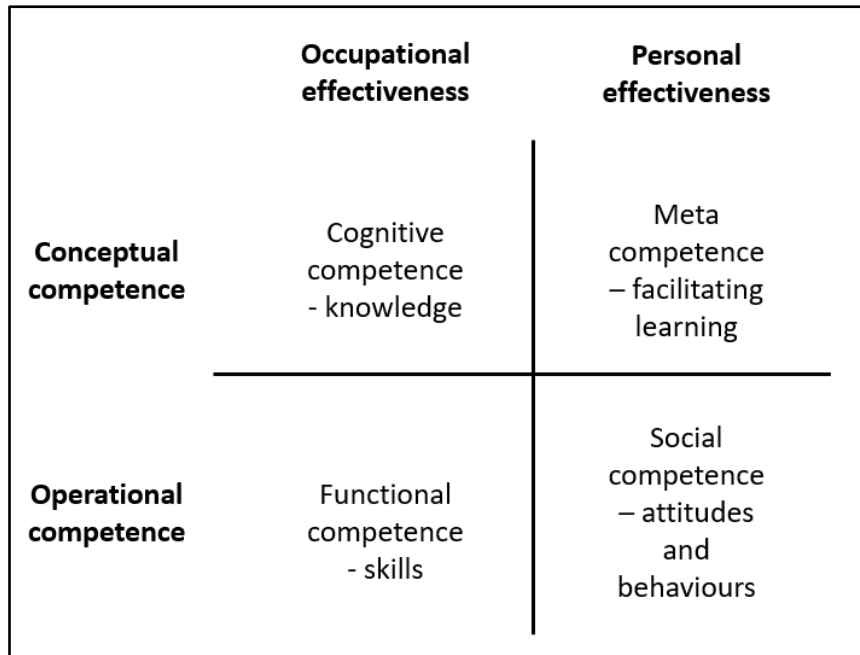
Delamare-Le Deist and Winterton (2005) based their holistic competence typology on the professional competence model developed by Cheetham and Chivers (1996; 1998) (see section 3.3.3.1) while also considering the behavioural and functional approaches to competence research. In 2005, Delamare-Le Deist and Winterton stated that:

a holistic typology is useful in understanding the combination of knowledge, skills and social competences that are necessary for particular occupations. The competences required of an occupation include both conceptual (cognitive, knowledge and

understanding) and operational (functional, psychomotor and applied skill) competences. The competences associated with individual effectiveness are also both conceptual (meta competence, including learning to learn) and operational (social competence, including behaviours and attitudes) (Delamare-Le Deist & Winterton, 2005:39).

These authors set out to create a holistic typology of competence that included different terms such as skills, knowledge and capabilities.

After considering Cheetham and Chivers' (1996; 1998) professional competence model and reviewing the different research approaches to competence, Delamare-Le Deist and Winterton (2005) developed their well-known multi-dimensional holistic typology of competence that consists of four competence classifications, namely cognitive competence, functional competence, social/personal competence and meta competence (Taljaard, 2020:17; Marx & De Swardt, 2019:99). The relationship between these four competence classifications is depicted in figure 3.3 below.



Source: Adapted from Delamare-Le Deist & Winterton, 2005:39.

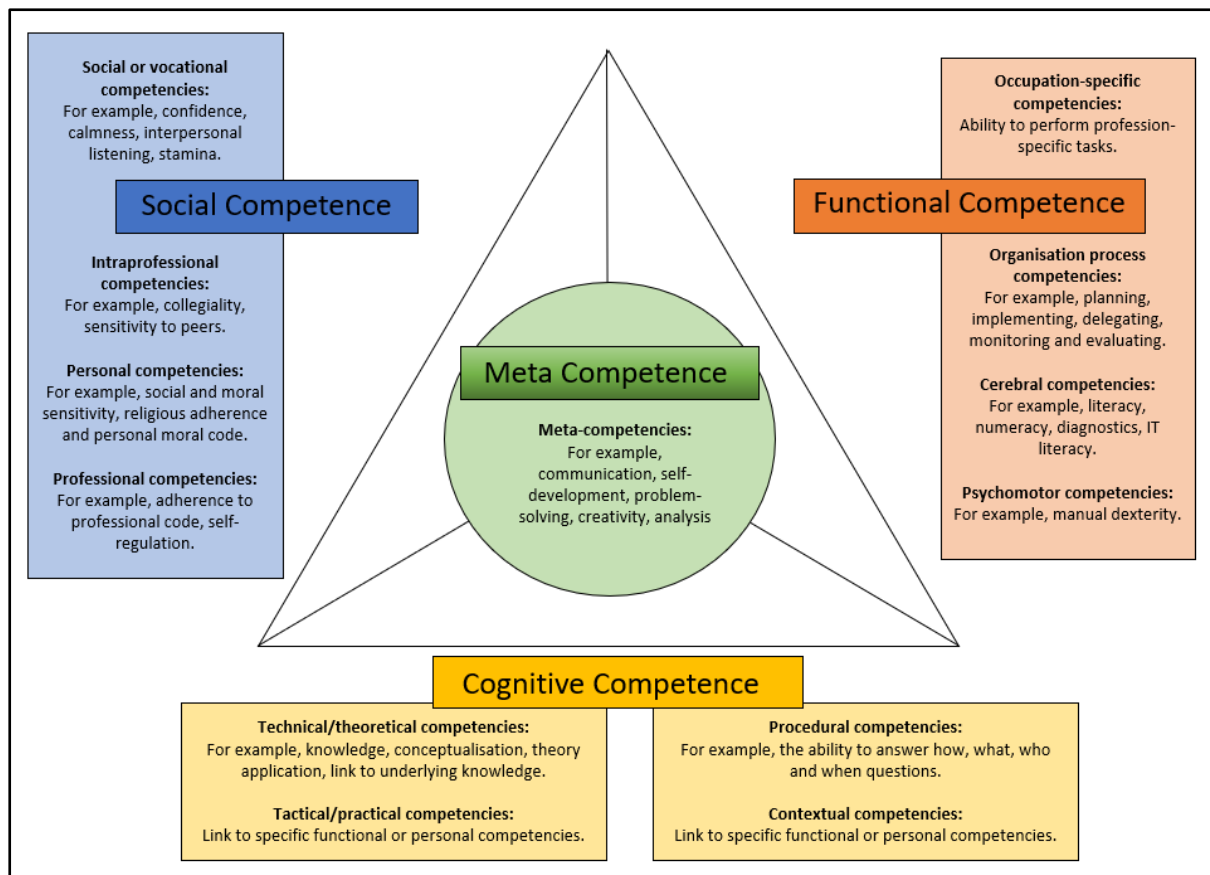
Figure 3.3: Relationship between the four competence classifications identified by Delamare-Le Deist and Winterton

From figure 3.3, it can be deduced that both conceptual (cognitive, knowledge and understanding) and operational (functional, psychomotor and applied skills) competences are required for occupational and personal effectiveness. The four competence classifications established by Delamare-Le Deist and Winterton (2005:39-40) can be described as follows:

- Cognitive competence refers to an individual’s knowledge and understanding of the underpinning theory used for a specific occupation. It also refers to the knowledge gained through mastering tasks. Cognitive competence can be gained through education or experience (Schulze & Bals, 2020:2; Marx & De Swardt, 2019:99; Adefe, 2017:53; Winterton, Delamare-Le Deist & Stringfellow, 2006:31; Cheetham & Chivers, 1998:268).
- Functional competence denotes the individual skills a professional needs to adequately perform a specific task. Specifically, the skills that a professional applies verbally, manually or mentally to perform their daily tasks and responsibilities (Schulze & Bals, 2020:2; Marx & De Swardt, 2019:99; Adefe, 2017:53; Winterton, Delamare-Le Deist & Stringfellow, 2006:31; Cheetham & Chivers, 1998:267).

- Social competence refers to behavioural competence, such as attitudes and actions. It relates to the ability of a professional to know how to behave and make sound judgements within work-related situations (Schulze & Bals, 2020:2; Taljaard, 2020:17; Marx & De Swardt, 2019:99; Winterton, Delamare-Le Deist & Stringfellow, 2006:26; Cheetham & Chivers, 1998:268).
- Meta competence is concerned with an individual gaining additional competencies, knowing the strengths and weaknesses of their intellect, and identifying and acquiring missing competencies within the different competence classifications discussed above (cognitive, functional or social) (Schulze & Bals, 2020:2; Marx & De Swardt, 2019:99; Winterton, Delamare-Le Deist & Stringfellow, 2006:16; Cheetham & Chivers, 1998:268).

Additionally, the authors stressed that although a distinction between the four competence classifications can be made from an analytical perspective, in practice, a professional should have the necessary knowledge (cognitive competence), functional skills (functional competence) and social behaviour (social competence) to perform their tasks and responsibilities efficiently and effectively. Therefore, the competence set required for a specific occupation is multi-dimensional and can be presented as a tetrahedron to highlight the unity of the competence classifications and their inseparability (Winterton, 2009:691; Delamare-Le Deist & Winterton, 2005:40).



Source: Adapted from Delamare-Le Deist and Winterton, 2005:40; Cheetham and Chivers, 1996:27.

Figure 3.4: Multi-dimensional holistic typology of competence

From figure 3.4, the competencies within each competency type can be identified:

- Social competence includes social/vocational, intraprofessional, personal and professional competencies.
- Functional competence consists of occupation-specific, organisational process, cerebral and psychomotor competencies.
- Cognitive competence comprises technical/theoretical, tactical/practical, procedural and contextual competencies.
- Meta competence consists of communication, self-development and problem-solving competencies.

These competence classifications are aligned with those identified by Cheetham and Chivers (1996, 1998); however, Delamare-Le Deist and Winterton (2005:35) subsumed the values/ethical competence classification of Cheetham and Chivers' professional competence

model under the social competency classification in their multi-dimensional holistic typology of competency. The differences between Cheetham and Chivers’ (1996) professional competence model and Delamare-Le Deist and Winterton’s (2005) multi-dimensional holistic typology of competency model are presented in figure 3.5 below.

	Authors	
	Cheetham and Chivers (1998)	Delamare-Le Deist and Winterton (2005)
Competence classifications	Knowledge/cognitive	Cognitive
	Functional	Functional
	Personal/behavioural	Social/behavioural
	Values and ethical	
	Meta-competencies	Meta-competencies

Source: Compiled by the researcher, 2022.

Figure 3.5: Comparison of Cheetham and Chivers’ (1996) professional competence model and Delamare-Le Deist and Winterton’s (2005) multi-dimensional holistic typology of competency model

In researching and building competence models, Delamare-Le Deist and Winterton’s (2005) multi-dimensional holistic typology of competency approach (with the four competence classifications) is the most widely used by researchers (Taljaard, 2020:65, Schulze & Bals, 2020:2; Marx & De Swart, 2019:99; Moolman, 2017:53), – also within the PS field (Bals et al., 2019:2). Thus, the Delamare-Le Deist and Winterton model with its four competence classifications was used as the **foundation to classify the different PS competencies** included for this study of PS competencies in South Africa.

A multi-dimensional holistic typology approach was used as a theoretical foundation to determine the combination of PS competencies (hereafter referred to as the **PS competency set**) that a person in the private sector of the South African business environment requires to be deemed competent within their field.

3.4 Research conducted on purchasing and supply competence

In order to fully understand the different competencies PSPs require to perform their tasks and responsibilities competently, this section will consider previous research conducted on PS competence (Briscoe, Dainty & Millett, 2001; Derwik & Hellström, 2017; Flöthmann, Hoberg & Wieland, 2018; Gammelgaard & Larson, 2001; Giunipero, Denslow & Eltantawy, 2005; Giunipero, Handfield & Eltantawy, 2006; Kotzab, Teller, Bourlakis & Wünsche, 2018; Mangan & Christopher, 2005; Prajogo & Sohal, 2013). Furthermore, to ensure that research conducted on PS competence over a sufficient period is analysed, the following four studies on PS competence were identified:

- Tassabehji and Moorhouse's 2008 PS competency effectiveness matrix.
- Karttunen's extensive systematic literature review (2000-2017) of PS competency research.
- Bals et al.'s 2019 qualitative study on establishing current and future PS competencies.
- Schulze, Bals and Warwick's 2022 systematic literature review and Delphi study on PS competencies.

Collectively, these studies cover PS competence research from 1987 to 2022. These studies are analysed in sections 3.4.1 to 3.4.4; whereafter, a consolidation is presented in section 3.5.

3.4.1 Tassabehji and Moorhouse's 2008 purchasing and supply competency effectiveness matrix

Due to the ever-changing business environment and PSPs operating at different levels within a business (tactical, operational and strategic), Tassabehji and Moorhouse (2008) sought to develop a PS competency effectiveness matrix to assist PSPs in identifying the competencies they need to perform their tasks and responsibilities effectively. However, not all PSPs require the same competency set. Tassabehji and Moorhouse's matrix is based on previous work in the field by Kolchin and Giunipero (1993); Giunipero and Percy (2000); Carr and Smeltzer (2000); Giunipero, Denslow and Eltantawy (2005); Giunipero, Handfield and Eltantawy (2006); Cousins, Lawson and Squire (2006) and Large and Giménez (2006). Tassabehji and Moorhouse added primary data, obtained through 18 in-depth interviews with senior PSPs, to their review of previous research.

In order to develop their PS competency effectiveness matrix, Tassabehji and Moorhouse first created a new taxonomy of PS competencies by consolidating the existing literature (1993-2006) on PS competencies into five competency categories. Table 3.2 provides an overview of the literature Tassabehji and Moorhouse (2008) analysed. It indicates the objectives of the studies and, in some cases, provides notes relating to research by the author(s), indicates the different competency categories formulated by the author(s), and lists individual PS competencies as determined by the author(s). Table 3.2 is followed by a discussion of the PS competency categories Tassabehji and Moorhouse (2008) derived from these authors' work.

Table 3.2: Summary of pre-2008 studies conducted on purchasing and supply competencies as analysed by Tassabehji and Moorhouse (2008)

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
Kolchin and Giunipero (1993).	The research aimed to measure PS education and training in American businesses.	Specific technical PS competencies.	<p>Being able to conduct cost analyses.</p> <p>Having sufficient product knowledge.</p> <p>Being able to drive a total quality management philosophy.</p> <p>Being computer literate.</p> <p>Knowing governmental legislation.</p> <p>Being able to develop global sourcing strategies.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
		Interpersonal, individual and general management competencies.	<p>Being able to conduct market analyses.</p> <p>Being able to negotiate with suppliers.</p> <p>Managing internal and external relationships.</p> <p>Being able to manage change.</p> <p>Being able to plan and organise.</p> <p>Being risk tolerant.</p> <p>Being competent in written and oral communication.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
			<p>Being able to resolve conflict.</p> <p>Being able to influence and persuade.</p> <p>Creating a positive and constructive atmosphere for a team.</p> <p>Having leadership abilities.</p> <p>Having problem-solving capabilities.</p> <p>Being cognisant of international relations.</p> <p>Being mindful of cultural dynamics.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
Giunipero and Percy (2000).	<p>The study aimed to determine the most critical competencies and skills set required by PSPs to perform their tasks at the highest level.</p> <p>The authors found that general management competencies are increasingly important in the PS field.</p>	Strategic competencies.	<p>Being able to think strategically.</p> <p>Being able to conduct supply base research.</p>
		Quantitative competencies.	<p>Being able to structure supplier relationships.</p> <p>Keeping up with the latest technology in the PS field.</p> <p>Conducting supplier cost targeting.</p> <p>Being risk tolerant.</p> <p>Being entrepreneurial.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
			<p>Having the skills to sell or promote products or services.</p> <p>Being computer literate.</p> <p>Having relevant technical knowledge.</p> <p>Being able to contribute to specification development.</p>
		Team and process management competencies.	<p>Being able to conduct market analyses.</p> <p>Being able to negotiate with partners.</p> <p>Managing internal and external relationships.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
			<p>Being able to manage change.</p> <p>Being able to plan and organise.</p>
		Decision-making, behavioural and negotiation competencies.	<p>Being risk tolerant.</p> <p>Being competent in written and oral communication.</p> <p>Being able to resolve conflict.</p> <p>Being able to influence and persuade.</p> <p>Creating a positive and constructive atmosphere for a team.</p> <p>Having leadership abilities.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
			<p>Having problem-solving capabilities.</p> <p>Being cognisant of international relations.</p> <p>Being mindful of cultural dynamics.</p>
Carr and Smeltzer (2000).	<p>This research focused on the relationship between PS competencies and business performance.</p> <p>Although the research was not based on previous studies, the authors' findings significantly overlapped with previous</p>	Technical competencies.	<p>Being computer literate.</p> <p>Being mathematically competent.</p> <p>Having the ability to do technical business writing.</p> <p>Being able to conduct forecasting.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
	research conducted on PS competencies.		Being able to understand tool capacity, manufacturing processes and material inventory systems.
		Skill techniques.	<p>Being analytical.</p> <p>Being competent in written and oral communication.</p> <p>Having presentation skills.</p> <p>Being able to coordinate various activities and plans.</p> <p>Having negotiations skills.</p> <p>Being able to conduct cost analyses.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
			<p>Having problem-solving capabilities.</p> <p>Being able to drive a total quality management philosophy.</p> <p>Being able to implement programme management.</p> <p>Having organisational time-management skills.</p>
		Behaviour competencies.	<p>Having people skills.</p> <p>Being able to manage internal customers and different business functions.</p> <p>Being detail orientated.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
			<p>Being proactive.</p> <p>Being able to follow up.</p> <p>Being flexible.</p> <p>Being able to manage stress.</p> <p>Being able to work in a team.</p> <p>Being patient.</p> <p>Being able to multi-task.</p>
Giunipero, Denslow and Eltantawy (2005).	The study aimed to develop an initial framework for the skills a PSP requires to ensure PSM flexibility within a changing business environment.	The authors provided no classifications.	<p>Being proficient in risk management.</p> <p>Having interpersonal communication skills.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
	The authors highlighted the need to include entrepreneurial competencies in the proposed competency set of PSPs to increase flexibility.		<p>Being able to influence and persuade.</p> <p>Being able to plan and make decisions.</p> <p>Being able to motivate others.</p> <p>Being creative.</p>
Giunipero, Handfield and Eltantawy (2006).	The research aimed to determine the critical skills and knowledge needed to improve the PS function's contribution to the business.	Strategic competencies.	<p>Having skills in leadership, decision-making, influencing and conciliation.</p> <p>Being able to do cross-functional strategic planning.</p> <p>Being competent in written and oral communication.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
	The authors stated that PS activities should be divided into tactical and strategic activities; therefore, the competencies required from a PSP should also be divided into these two categories.	Technical competencies.	<p>Having presentation skills.</p> <p>Being able to listen.</p> <p>Being able to conduct web-based research.</p> <p>Being able to perform sourcing analyses.</p> <p>Having cost accounting skills.</p>
Cousins et al. (2006).	<p>The research focused on the relationship between PS competencies and business performance.</p> <p>The authors found that to manage a business within a highly competitive environment,</p>	Purchasing and supply competencies.	<p>Being able to perform cost analysis to improve the total cost with suppliers.</p> <p>Being competent in behavioural skills, such as perseverance, imagination, decisiveness and interpersonal interaction.</p>

Author(s)	Objective of the study and, if applicable, notes relating to the authors' research	Categorisation of competencies provided by the authors	Examples of individual competencies as provided by the authors
	the focus should be on developing generic management competencies and improving PS-specific competencies.	General management competencies	Being able to monitor and interpret supplier and product markets. Exhibiting the necessary technical skills to improve products and processes.

Source: Compiled by the researcher from Tassabehji & Moorhouse, 2008:57-59; Schiele & Stek, 2021:3-5.

Using the authors' work cited in table 3.2 as a foundation, Tassabehji and Moorhouse (2008:59) created a new taxonomy of PS competencies that classified the competency set required by a PSP into five competency categories: technical, interpersonal, internal enterprise, external enterprise and strategic. Each of these PS competency categories is discussed below.

- Technical competency category

Tassabehji and Moorhouse (2008:59) found that technical competencies consist of three fundamental competency sub-groups: technical knowledge, basic administrative-, and advanced PS processes. Technical knowledge competencies include, for example, computing and mathematical skills, the ability to forecast and read blueprints, and working with e-procurement applications. Basic administration competencies refer to, for example, legislation and product knowledge, the ability to negotiate and work with different production systems and processes, and contract management. Advanced PS process competencies comprise the management of product categories, global sourcing development, cost driver analysis, strategic sourcing, e-procurement, project planning and management, technical writing or reporting, and performing cost driver analyses (Bals et al., 2019:11; Tassabehji & Moorhouse, 2008:64). These findings align with the findings of Cousins et al. (2006); Giunipero, Handfield and Eltantawy (2006); Large and Giménez (2006); Giunipero, Denslow and Eltantawy (2005); Carr and Smeltzer (2000); Giunipero and Percy (2000) and Kolchin and Giunipero (1993). Tassabehji and Moorhouse (2008:59) also believed that technical competencies are the foundation for developing more strategically orientated PS competencies.

- Interpersonal competency category

Tassabehji and Moorhouse (2008:59,64) described interpersonal competencies as entry-level competencies a PSP requires. These competencies entail communicating and interacting (both in writing and orally) with individuals and groups. Interpersonal competencies include skills in conflict resolution, leadership, problem-solving, interpersonal development, influencing and persuasion, stress management, creative thinking, analytical reasoning, group dynamics, creativity, decision-making, knowledge sharing, integrity, and cultural awareness (Bals et al., 2019:12; Tassabehji & Moorhouse, 2008:64). The findings are corroborated by the

work of Cousins et al. (2006); Large and Giménez (2006); Giunipero, Denslow and Eltantawy (2005); Carr and Smeltzer (2000); Giunipero and Percy (2000) and Kolchin and Giunipero (1993).

- Internal enterprise competency category

According to Tassabehji and Moorhouse (2008:59,64) internal enterprise competencies relate to a PSP's competencies to facilitate the interaction between different business functions and consist of high-level business decision-making, such as managing internal politics and barriers, resolving internal PS issues, conducting adequate market research, facilitating internal change management, and managing internal customers and internal relationships (Bals et al., 2019:12; Tassabehji & Moorhouse, 2008:59,64). These findings support those of Cousins et al. (2006); Giunipero, Handfield and Eltantawy (2006), and Giunipero and Percy (2000).

- External enterprise competency category

External enterprise competencies contribute to managing external relationships, such as working in cross-functional teams, managing supplier relationships, evaluating suppliers, international buying, and stakeholder-relationship management. These competencies are related to managing the supply network and assist in achieving a business's broader strategies (Bals et al., 2019:12; Tassabehji & Moorhouse, 2008:59,64). The findings are validated by Cousins et al. (2006), Large and Giménez (2006), and Giunipero and Percy (2000).

- Strategic business competency category

Strategic business competencies relate to broader strategic issues and the positive impact PSPs can have on a business's value. Strategic PS competencies include planning and managing strategic alliances, partnerships, strategic thinking, following PSM best practices, and risk management (Bals et al., 2019:12; Tassabehji and Moorhouse, 2008:64). The work of Giunipero, Handfield and Eltantawy (2006), Giunipero, Denslow and Eltantawy (2005), Giunipero and Percy (2000), and Kolchin and Giunipero (1993) confirm these findings.

Tassabehji and Moorhouse (2008:59) also found that within the PS competency literature, ranging from 1993 to 2006, gradually more emphasis had been placed on general management competencies (interpersonal, internal enterprise, external enterprise, and

strategic business competencies) than PS-specific competencies (technical competencies) when determining the competency set for a PSP (Tassabehji & Moorhouse, 2008:59). The changing business environment had led to a shift in the importance of PS-specific to general management competencies. However, this does not imply that PS-specific competencies are now less critical; they are still viewed as a core competency for modern PSPs (Knight, Tu & Preston, 2014:271). The increasing significance of general management competencies from a PS perspective has been acknowledged by numerous authors, such as Shou and Wang (2017), Tatham, Wu, Kovacs and Butcher (2017), Bals et al. (2019) and Newaz, Hemmati, Rahman and Zailani (2020).

Using this revised taxonomy of PS competencies, Tassabehji and Moorhouse (2008) conducted 18 in-depth interviews with senior PSPs to determine which competencies these professionals considered necessary to perform their tasks efficiently and effectively. Table 3.3 presents the competencies identified from these interviews and shows the impact of these competencies on the PSPs' ability to perform their work competently.

Table 3.3: Purchasing and supply competencies identified by Tassabehji and Moorhouse in 2008

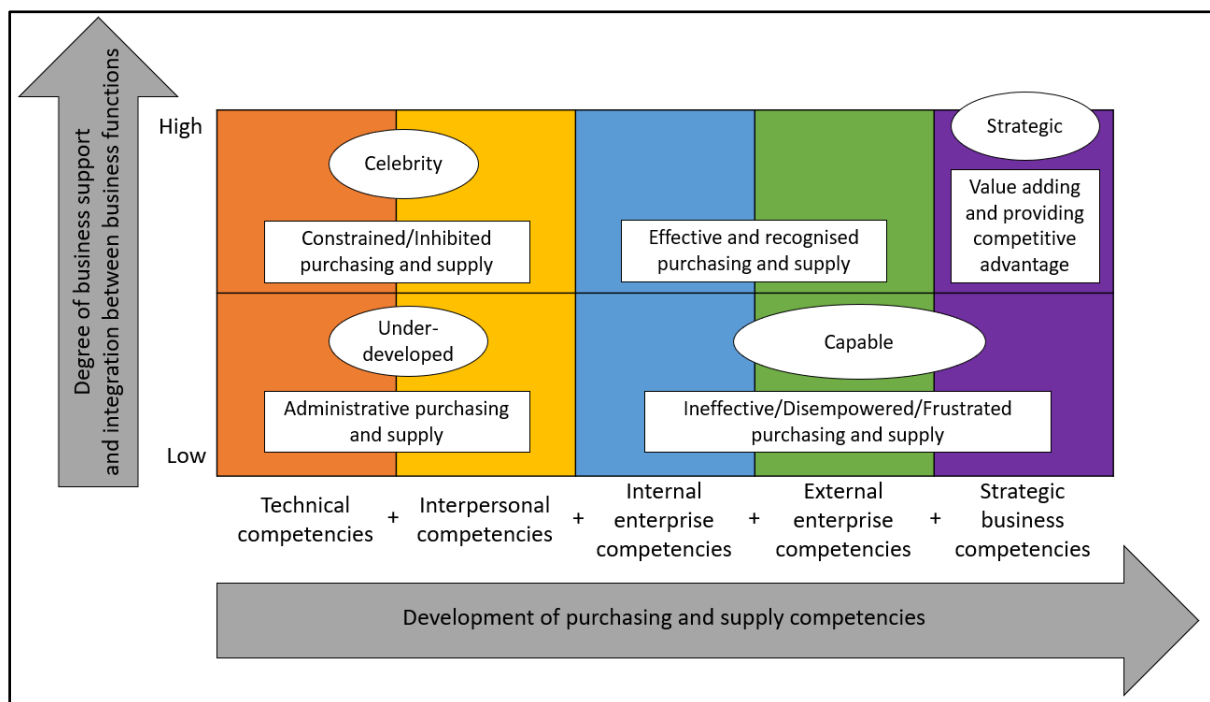
PS competency category: <i>Technical competencies</i>	
Required competency identified through the in-depth interviews	Impact on PSPs' ability to perform their work competently
Technical knowledge – including computing skills, tool capacity, mathematical skills, blueprint reading, forecasting, and e-procurement applications.	Increase or develop the ability to use new technology, contributing to effective PS decision-making.
Basic administrative competencies – including total quality management, legislation knowledge, cost analysis, product knowledge and negotiation, and production systems and processes.	Increase or develop the ability to negotiate and discuss issues.
Advanced procurement-process skills (APP), for example, category management, global sourcing development, cost driver analysis and strategic sourcing, project planning, project management, technical writing, e-procurement, and cost driver analysis.	Improve or develop the ability to create value for a business by shifting the PSP's thought processes to consider decisions in terms of their strategic impact.
PS competency category: <i>Interpersonal competencies</i>	
Required competency identified through the in-depth interviews	Impact on a PSPs' ability to perform their work competently
Oral communication, listening, understanding, passing on information, persuading and influencing.	Increase the effectiveness of a PSP's communication.
Recognise one's strengths through improving creative thinking, analytical skills, investigation, research, problem-solving, stress management and time management.	Advance a PSP's personal development and awareness.

Improve leadership by focusing on conflict management, decision-making, organisation, team building and cross-cultural awareness.	Improve or develop the ability to build and manage cross-functional relationships.
PS competency category: <i>Internal enterprise competencies</i>	
Required competency identified through the in-depth interviews	Impact on PS professional's ability to perform their work competently
Comprehensive financial skills.	Increase or develop a PSP's high-level decision-making ability.
Change-management skills.	Increase or develop a PSP's ability to manage internal politics and barriers.
Manage internal customers, the sales interface, and motivation within the business.	Develop a PSP's ability to resolve internal issues.
Communicate and sell a message or strategy internally.	Increase the ability to support and collaborate with different stakeholders within a business.
PS competency category: <i>External enterprise competencies</i>	
Required competency identified through the in-depth interviews	Impact on PSPs' ability to perform their work competently
Work in a cross-functional team.	Allows a PSP to engage early in purchasing decisions.
Supplier-relationship management skills and knowledge of supply chain management.	Develop the ability to collaborate with value-adding suppliers.
Stakeholder mapping proficiency, supplier evaluation and international buying.	Increase the ability to select suppliers and manage stakeholders effectively.
PS competency category: <i>Strategic business competencies</i>	
Required competency identified through the in-depth interviews	Impact on PSPs' ability to perform their work competently

Demonstrate ability to add value to a business.	The PSP recognises the significance and value of the PS function.
Manage strategic alliances/partnerships, business skills, and risk management.	PSPs recognise the strategic importance of the PS function.

Source: Adapted from Tassabehji & Moorhouse, 2008:64.

In addition to the competencies identified in table 3.3, the data collected through the 18 in-depth interviews with senior PSPs indicated that the success of PSPs depends on the degree of support the PS function receives from the business and the level of integration between different business functions (Tassabehji & Moorhouse, 2008:65). Consequently, based on the new taxonomy of PS competencies, the data gathered in the interviews and the appreciation of the significance of overall business support, Tassabehji and Moorhouse (2008:65) developed their well-known PS competency effectiveness matrix depicted in figure 3.6 below.



Source: Adapted from Tassabehji & Moorhouse 2008:65.

Figure 3.6 Tassabehji and Moorhouse’s purchasing and supply competency effectiveness matrix

Tassabehji and Moorhouse’s PS competency effectiveness matrix has four types of PSPs. These are based on the degree of business support and integration between business

functions and the PSP's competencies. The four types of PSPs are: *celebrity*, *strategic*, *underdeveloped* and *capable*.

The *strategic* PSP contributes the most to the business as their competency set contains technical, interpersonal, internal enterprise, external enterprise and strategic business competencies. They also have a high degree of business support and integration between the different business functions. A *capable* PSP has a competency set with the same competencies, but they will contribute less to a business as they have less support from the business and there is limited integration between the different business functions. Although a *celebrity* PSP has a high degree of business support and integration between different business functions, they offer the least to a business as their competency set is limited to technical and interpersonal competencies. Lastly, the *underdeveloped* PSP has limited competencies (technical and interpersonal), a lack of business support, and insufficient integration between the business functions, which leads to ineffectiveness. From Tassabehji and Moorhouse's PS competency effectiveness matrix, it can be construed that the development of PS competencies, combined with business support, can lead to a strategic advantage for a business (Dubey, Gunasekaran, Childe & Papadopoulos, 2018:145-146).

To date, Tassabehji and Moorhouse's (2008) PS competency effectiveness framework is regarded as the most elaborative, holistic and in-depth categorised framework for PSM competencies and forms the basis of numerous other PS competency frameworks (Bals et al., 2019: 2; Karttunen, 2018:3907).

3.4.2 Karttunen's extensive systematic review of purchasing and supply competency literature (2000 to 2017)

In 2018, Karttunen conducted an extensive systematic literature review of 57 articles to determine the essential PS competencies required by a modern PSP. Before conducting the literature review, Karttunen (2018:3906-3907) acknowledged three essential facts:

- The PS function has developed from a purely tactical and operational function to a strategic function. This aligns with the findings of Johnson, Leenders and Flynn (2021:47), Schiele (2020:64), Flöthmann, Hoberg and Wieland (2018:480), Knight, Tu and Preston (2014:271) and Giunipero, Handfield and Eltantawy (2006:822).

- The competencies required by PSPs evolve and change as a business environment changes – which is also acknowledged by Daft (2021:5), Adefe (2017:58), Elkins, Bell, Hartgrove & Pardue (2016:20), Knight, Tu and Preston (2013:271), and Da Silva, Damian and Pádua (2012:762).
- The competency set of a PSP will differ depending on their position in a business (junior, senior or expert). This is supported by Schiele (2019:47), Campion et al. (2011:226–228) and Tassabehji and Moorhouse (2008:59,64).

The 56 articles Karttunen reviewed included 17 years of PS competency research (2000-2002; 2004-2006; 2008-2013; 2015-2017) and focused on identifying the most relevant competencies required by PSPs and the categorisation of these competencies. From the literature, the author identified 19 competencies that were most frequently cited in 19 years of literature. These competencies were most frequently cited when the top ten PS competency lists were formulated. Table 3.4 reflects these 19 competencies.

Table 3.4: Top 19 purchasing and supply competencies as determined by Karttunen’s systematic literature review

Ranking	PS competency	Cited more than nine times in PS competency literature	Included more than four times in a top ten PS competency list
1	Communication	X	X
2	Cost management	X	X
3	Teamwork	X	X
4	Problem-solving	X	X
5	Negotiation	X	X
6	People management: influencing and persuasion	X	X

Ranking	PS competency	Cited more than nine times in PS competency literature	Included more than four times in a top ten PS competency list
7	IT skills: software and applications	X	X
8	Decision-making		X
9	Change management	X	X
10	Project management	X	
11	Financial management	X	
12	Inventory management	X	
13	Logistics and transport	X	
14	Purchase management	X	
15	Supplier relationship management	X	
16	Leadership	X	
17	Risk management	X	
18	Entrepreneurial skills, such as innovativeness, creativity and proactivity	X	
19	Planning	X	

Source: Karttunen, 2018:3926.

In order to understand the competencies required by PSPs, Karttunen divided the top 19 PS competencies into four categories. The four competency categories are: technical and business administration, social, internal and external enterprise, and strategic. These categories are based, to some extent, on previous categorisations of PS competencies, such as Tassabehji and Moorhouse's competency taxonomy (2008). However, it adds a further dimension by including entrepreneurial and political competencies in the strategic competency category (Karttunen, 2018:3910). A brief discussion of Karttunen's competency categories is provided below – including the most significant PS competencies within the specific competency category. Thereafter, the 19 competencies presented in table 3.4 are categorised into four categories.

- Technical and business administration competency category

Technical competencies are generally referred to as functional PS competencies since they relate to the competencies PSPs require to perform specific tasks. Technical competencies are most valuable when a PSP performs both administrative and coordinating activities (Tatham et al., 2017:273). The top five technical competencies, as distilled by Karttunen (2018:3906), are: information technology proficiency, inventory management capabilities, ability to manage logistics (which includes transportation), management of purchasing activities, and forecasting. These findings are corroborated by numerous authors.⁷

Business administration competencies include all management-related competencies connected to a specific system and output, such as cost analysis and project execution – and are required to control cost, time, and even business performance (Karttunen, 2018:3913). The top five business administration competencies stem from project management, financial management and regulatory knowledge. Business administration competencies include project management skills (such as goal setting and project execution skills), cost analysis, financial management, understanding general business conditions and time management.

⁷ See the work of Cacciolatti, Hee and Mar (2017), Shou and Wang (2017), Tatham et al. (2017), Essex, Subramanian and Gunasekaran (2016), Thai, Yeo and Pak (2016), Rahman and Qing (2014), Jordan and Bak (2016), Knight, Tu and Preston (2014), Brandon-Jones, Ronchi and Van Raaij (2013), Lorentz, Töyli, Solakivi and Ojala (2013), Prajogo and Sohal (2013), Yen-Chun, Huang, Goh and Hsieh (2013), Thai (2012), Allal-Chérif and Maira (2011), Larson (2008), Tassabehji and Moorhouse (2008), Mehra and Inman (2004), Parker and Anderson (2002), and Humphreys, Mclvor and McAleer (2000).

Karttunen's (2018:3913) findings align with the research of the authors mentioned in the footnote below.⁸

- Social competency category

Communication is the most crucial social competency for PSPs, according to Karttunen (2018:3914-3915). Effective communication positively influences relationships with internal customers and external suppliers, enabling PSPs to coordinate activities and identify trade-offs that benefit all parties involved (Jordan & Bak, 2016:612). Karttunen (2018:3914) further identified teamwork, negotiation, interpersonal communication and cross-cultural awareness as essential social competencies for PSPs. Karttunen's (2018:3914-3915) findings are supported by a myriad of other authors.⁹ Lau (2010:409) added that all social competencies should be developed as one cohesive unit as they directly influence each other; for example the ability of the PSP to negotiate with suppliers depends on the professional's negotiation abilities but also on the professional's interpersonal competencies and their ability to work in a team. Hence, PSPs require a certain level of emotional intelligence to effectively perform their tasks and responsibilities (Karttunen, 2018:3915).

- Internal and external enterprise competency categories

Internal enterprise competencies refer to the PSP's ability to manage relationships with internal stakeholders, such as relating information to internal customers (other business functions or departments) regarding supplier issues, goals, intentions, incentives and changes (Wu, Steward & Hartley, 2010:817). Karttunen (2018:3915) determined that change management, working in a cross-functional team, passing on information and managing internal customers are the top internal enterprise competencies PSPs require to perform their

⁸ Tatham et al. (2017), Shou and Wang (2017), Jordan and Bak (2016), Thai and Yeo (2015), Prajogo and Sohal (2013), Yen-Chun et al. (2013), Larson (2008), Thai (2012), and Tassabehji and Moorhouse (2008).

⁹ For example: Cacciolatti, Hee and Mar (2017), Shou and Wang (2017), Essex, Subramanian and Gunasekaran (2016), Tatham et al. (2017), Jordan and Bak (2016), Sinha, Millhiser and He, (2016), Thai, Yeo and Pak (2016), Sartor, Orzes, Nassimbeni, Jia and Lamming (2015), Thai and Yeo (2015), Knight, Tu and Preston (2014), Rahman and Qing (2014), Hung and Lin (2013), Prajogo and Sohal (2013), Yen-Chun et al. (2013), Thai (2012), Zhang, Viswanathan and Henke (2011), Lau (2010), Eltantawy, Fox and Giunipero (2009), Larson (2008), Tassabehji and Moorhouse (2008), Giunipero, Handfield and Eltantawy (2006), Large (2005), Handfield and Nichols (2004), Parker and Anderson (2002), and Harvey and Richey (2001).

tasks and responsibilities efficiently and effectively. Karttunen's findings align with the work of many other authors.¹⁰

External enterprise competencies refer to the ability of PSPs to manage relationships with stakeholders outside the business to understand suppliers better; for example understanding the supplier's culture and way of working to build strategic and closer relationships with them. The top five external enterprise competencies identified by Karttunen (2018:3916) are: the ability to manage supplier relationships, perform supplier evaluations, manage strategic alliances, perform supplier cost targeting and manage customer relationships. These five external enterprise competencies identified by Karttunen (2018:3916), are supported by extensive other research.¹¹ It should, however, be noted that Karttunen (2018:3915) found that more emphasis is currently placed on PSPs' external enterprise competencies, which suggests that supplier-related competencies have gained in importance in recent years.

- Strategic competency category

Strategic competencies refer to all competencies required by PSPs to develop and execute creative and collaborative solutions. Generally, higher-level PSPs (for example PS managers or executives) need strategic PS competencies and they directly influence business performance. Karttunen (2018:3917) found that problem-solving abilities, leadership, risk-management practices, entrepreneurial skills, and planning abilities are the top five strategic competencies required by PSPs. Research conducted by analysts confirm these findings.¹²

¹⁰ Shou and Wang (2017), Tatham et al. (2017), Jordan and Bak (2016), Thai and Yeo (2015), Knight, Tu and Preston (2014), Rahman and Qing (2014), Prajogo and Sohal (2013), Larson (2012), Allal-Chérif and Maira (2011), Lau (2010), Eltantawy, Fox and Giunipero (2009), Tassabehji and Moorhouse (2008), Large and Giménez (2006), Mehra and Inman (2004), and Humphreys, Mclvor and McAleer (2000).

¹¹ See the work of Shou and Wang (2017), Tatham et al. (2017), Jordan and Bak (2016), Knight, Tu and Preston (2014), Thai (2012), Allal-Chérif and Maira (2011), Zhang, Viswanathan and Henke (2011), Eltantawy, Fox and Giunipero (2009), Handfield, Petersen, Cousins and Lawson (2009), Larson (2008), Tassabehji and Moorhouse (2008), Cousins, Lawson and Squire (2006), Mehra and Inman (2004), and Humphreys, Mclvor and McAleer (2000).

¹² See the work of Cacciolatti, Hee and Mar (2017), Shou and Wang (2017), Tatham et al. (2017), Jordan and Bak (2016), Sinha, Millhiser and He (2016), Thai, Yeo and Pak (2016), Sartor et al. (2015), Thai and Yeo (2015), Wilson and Barbat (2015), Knight, Tu and Preston (2014), Prajogo and Sohal (2013), Yen-Chun et al. (2013), Sharif and Irani (2012), Thai (2012), Allal-Chérif and Maira (2011), Eltantawy, Fox and Giunipero (2009), Larson (2008), Tassabehji and Moorhouse (2008), Cousins, Lawson and Squire (2006), Giunipero, Handfield and Eltantawy (2006), Mehra and Inman (2004), Harvey and Richey (2001), Faes, Knight and Matthyssens (2001), Giunipero, Denslow and Eltantawy (2005), and Humphreys, Mclvor and McAleer (2000).

Additionally, the author (Karttunen, 2018:3906) highlighted two strategic competencies PSPs require, namely entrepreneurial competencies (listed as one of the top five strategic competencies above) and political competencies. Since PSPs are tasked with managing suppliers and ensuring that internal customers are satisfied while overseeing cost and quality pressures, it is necessary that PSPs follow an entrepreneurial approach (Giunipero, Denslow & Eltantawy, 2005:602). Consequently, PSPs require entrepreneurial competencies, such as innovativeness, creativity and proactivity, that allow them to scan the environment, consolidate information and make decisions regarding the feasibility of ideas (Tang, Kacmar & Busenitz, 2012:78). Political competencies are to provide PSPs with the ability to manage conflicting goals and sustain cooperation when other stakeholders' interests diverge. The ability to influence and persuade stakeholders is the main component of political competencies and is essential for every PSP (Karttunen, 2018:3918; Tassabehji & Moorhouse, 2008:62;63).

Table 3.5 summarises the categorisation of PS competencies Karttunen (2018) identified through the literature review.

Table 3.5: Categorisation of purchasing and supply competencies identified by Karttunen (2018)

Technical competencies	Social competencies	Internal/external enterprise competencies	Strategic business competencies
Information technology	Teamwork	Change management	Problem-solving
Inventory management	Negotiation	Cross-functional teamwork	Leadership
Logistics and transport	Interpersonal communication	Passing on information	Risk management
Purchasing management	Cross-cultural awareness	Managing internal customers	Entrepreneurial skills, including
Forecasting	Written communication	Sales interface management	innovativeness, creativity, and
Quality management	Conflict management	Supplier relationship	proactivity
Operations management	Listening	management	Planning
R&D and new product launches	Foreign language	Relationship management	Decision-making
Software and applications	Networking	Supplier evaluation	Influencing and persuasion
Supply chain management	Presentation		Analysing

Technical competencies	Social competencies	Internal/external enterprise competencies	Strategic business competencies
<p>Numerical techniques for decision- making</p> <p>Searching and information integration</p> <p>Computer skills</p> <p>E-commerce</p> <p>Technical writing and expertise</p> <p>Mathematical skills</p> <p>Global sourcing</p> <p>Import and export processes</p> <p>Integration of systems and processes</p>		<p>Manage strategic alliances or partnerships</p> <p>Supplier cost targeting</p> <p>Customer relations management</p> <p>Supplier analysis</p> <p>Supplier development</p> <p>Integration of information flows externally</p> <p>Stakeholder mapping proficiency</p> <p>Opening new communication channels with stakeholders</p> <p>Managing the supply base</p>	<p>Develop and implement business strategies, including strategic thinking</p> <p>Analyse statistical data</p> <p>Innovativeness</p> <p>Creativity</p> <p>Strategic thinking</p> <p>Political skills/people skills</p> <p>Proactivity</p> <p>Coordination skills</p> <p>Total systems understanding to achieve strategic goals</p>

Technical competencies	Social competencies	Internal/external enterprise competencies	Strategic business competencies
<p>Technical capabilities to help suppliers improve their processes and products</p> <p>Blueprint reading</p> <p>Resource integration</p> <p>Project management</p> <p>Cost analysis</p> <p>Financial management</p> <p>Understanding general business conditions</p> <p>Time management</p> <p>Human resource management</p>		<p>Negotiating with strategic suppliers</p> <p>Single vs multiple sourcing</p> <p>Supply-based research</p>	

Technical competencies	Social competencies	Internal/external enterprise competencies	Strategic business competencies
<p>Understanding the contractual and legal/regulatory aspects of the business</p> <p>Awareness of ethical issues</p> <p>Contract management</p> <p>Reverse logistics</p> <p>Environmental awareness</p> <p>Corporate social responsibility</p> <p>Understand ethical, legal, and social implications of doing business</p> <p>Project scoping</p>			

Technical competencies	Social competencies	Internal/external enterprise competencies	Strategic business competencies
Project execution Use of key performance indicators Salvage and scrap disposal Ability to see the big picture Budget management			

Source: Adapted from Karttunen, 2018:3912-3917.

In table 3.6 below, the 19 most important PS competencies identified through Karttunen’s (2018) literature review are presented and categorised – based on the four competency categories discussed above.

Table 3.6: Top ten purchasing and supply competencies categorised – based on Karttunen’s competency categories

Ranking	PS competency	PS competency category
1	Communication	Social competency
2	Cost management	Business administration competency
3	Teamwork	Social competency
4	Problem-solving	Strategic competency
5	Negotiation	Social competency
6	People management: influencing and persuasion	Strategic or social competency
7	IT skills: software and applications	Technical competency
8	Decision-making	Strategic competency
9	Change management	Internal enterprise competency
10	Project management	Business administration competency
11	Financial management	Business administration competency
12	Inventory management	Technical competency
13	Logistics and transport	Technical competency
14	Purchase management	Technical competency
15	Supplier relationship management	External enterprise competency
16	Leadership	Strategic competency
17	Risk management	Strategic competency

Ranking	PS competency	PS competency category
18	Entrepreneurial skills, such as innovativeness, creativity and proactivity	Strategic competency
19	Planning	Strategic competency

Source: Adapted from Karttunen, 2018:3911.

Table 3.6 shows that the top 19 competencies PSPs require are a combination of PS-specific competencies and general management competencies. This aligns with Tassabehji and Moorhouse’s findings, which are discussed in section 3.4.1.

3.4.3 Bals et al.’s 2019 qualitative study to establish current and future purchasing and supply competencies

In 2019, Bals et al. sought to determine which current and future competencies PSPs require to perform their tasks and responsibilities competently. They did this by conducting a systematic literature review of 30 articles on PS competencies from 1987 to 2017 and conducting 46 in-depth interviews with PSPs from different hierarchical levels within different industries.

From this literature review, Bals et al. (2019) came to the following conclusions:

- When referring to PS competencies, a distinction is generally made between PS-specific competencies, general management competencies, and inter- and intrapersonal competencies.
- Tassabehji and Moorhouse’s (2008) taxonomy was the most elaborate model on PS competencies and they would use it as the foundation for their own taxonomy¹³.
- They would accept the definitions of the different PS competency categories (as defined by Tassabehji and Moorhouse [2008]), namely the technical (which includes

¹³ Please note that the authors refer to Tassabehji and Moorhouse’s taxonomy of PS competencies and not to Tassabehji and Moorhouse’s competency effectiveness matrix.

advance procurement-process competencies), interpersonal, internal enterprise, external enterprise, and strategic business categories.

After concluding the literature review, Bals et al. (2019:3-4) collected primary data about current and future PS competencies through 46 in-depth interviews with PSPs operating at different hierarchical levels within different industries. Gathering data from PSPs at different levels and different industries ensured a holistic view of the research topic was obtained (as recommended by Delamare-Le Deist and Winterton, 2008) (Bals et al., 2019:4). From this primary data, Bals et al. (2019:6) identified additional competencies in each competency category as identified by Tassabehji and Moorhouse’s taxonomy and distilled the top 10 current and future competencies required by PSPs to perform competently.

Bals et al. (2019:7) added the following competencies to Tassabehji and Moorhouse’s taxonomy of PS competencies:

- Technical competencies: automation, big data analysis, innovation sourcing, and innovative sourcing approaches.
- Interpersonal competencies: curiosity, dealing with ambiguity, humility, mobility, openness/open-mindedness, passion, resilience, self-confidence, self-reflection and self-reliance.
- Strategic competencies: critical thinking, holistic supply thinking and sustainability.

These top 10 current and future competencies identified by Bals et al (2019:6) are presented in table 3.7 in alphabetical order.

Table 3.7: Top 10 current and future purchasing and supply competencies as identified by Bals et al. (2019) through 46 in-depth interviews

Top 10 current PS competencies	Top 10 future PS competencies
Analytical skills	Analytical skills
Basic knowledge of PSM role and processes	Automation
Communication skills	Big data analytics
Cross-functional abilities and knowledge	Computer literacy
Interpersonal communication	e-Procurement technology

Top 10 current PS competencies	Top 10 future PS competencies
Negotiation	Holistic supply chain thinking
Stakeholder-relationship management	Process optimisation
Strategic sourcing	Strategic sourcing
Strategic thinking	Strategic thinking
Sustainability	Sustainability

Source: Bals et al., 2019:6.

Table 3.7 shows that the PS competencies of analytical skills, strategic sourcing, strategic thinking, and sustainability (highlighted in blue in table 3.6) are deemed critical to PSPs' competence, both now and in the future. That being said, it does not imply that other competencies currently essential for PSPs will become less critical in future. Table 3.7 also shows that PSPs must improve and expand their technology competencies.

By consolidating and categorising the findings of the systematic literature review and the primary data collected into the different competence categories¹⁴, Bals et al. (2019) constructed an updated taxonomy of PS competencies based on Tassabehji and Moorhouse's (2008) taxonomy of competencies. This is summarised in table 3.8 below.

¹⁴ Bals et al. (2019:6-7) acknowledged the close relationship between internal and external enterprise competencies and therefore decided to consolidate these two competency categories into one category in their updated PS competencies taxonomy labelled internal/external competencies.

Table 3.8: Bals et al.'s 2019 taxonomy of purchasing and supply competencies

	Technical competencies	Interpersonal competencies	Internal/external enterprise competencies	Strategic business competencies
Competencies that are present in Tassabehji and Moorhouse's 2008 taxonomy and confirmed by the research conducted by Bals et al. in 2019	Basic knowledge of PSM's role and processes Computer literacy Contract management Cost savings e-Procurement technology Intellectual property KPI reporting Languages	Analytical skills Conflict resolution Creativity Decision-making Integrity Interpersonal communication Knowledge sharing Leadership Learning agility	Change management Communication skills Cross-functional abilities and knowledge Engineering Finance Logistics Manufacturing/Production Marketing Quality	Business acumen Financial acumen PSM best practice Risk management Strategic thinking

	Technical competencies	Interpersonal competencies	Internal/external enterprise competencies	Strategic business competencies
	Negotiation Process optimisation Product knowledge Project management Quality assurance Strategic sourcing Tools and systems implementation	Results focus/driving for results Structured way of working Teamwork - working in teams	Research and development Supply chain Sales Cultural awareness Customer focus Networking Stakeholder-relationship management Supplier management	

	Technical competencies	Interpersonal competencies	Internal/external enterprise competencies	Strategic business competencies
New competencies identified by the research conducted by Bals et al. in 2019	Automation Big data analytics Innovation sourcing Innovation sourcing approaches	Curiosity Dealing with ambiguity Humility Mobility Openness/Open-mindedness Passion Resilience Self-confidence Self-reflection Self-reliance		Critical thinking Holistic supply chain thinking Sustainability

Source: Bals et al., 2019:7.

From table 3.8, it is evident that the competencies identified by Tassabehji and Moorhouse in 2008 are still considered competencies that current and future PSPs require to perform their tasks and responsibilities well. However, table 3.8 also shows the 17 new competencies Bals et al. (2019) added to the original taxonomy. This means PSPs currently need an extensive range of competencies. These include strategy, analytics, negotiations, professional knowledge, as well as competencies related to communication and relationship management. It was also determined that future competencies would focus predominantly on digitisation (e-Procurement technology and automation), sustainability (holistic supply chain perspective/thinking, innovative sourcing), and interpersonal competencies (dealing with ambiguity, self-confidence and curiosity) (Bals et al., 2019:10).

3.4.4 Schulze, Bals and Warwick's 2022 systematic literature review and the Delphi study on purchasing and supply competencies

Previous research conducted on PS competencies focused primarily on identifying competencies PSPs require (or should develop) to deal with developments in sourcing innovation, supplier disruptions and changes in technology due to digitisation (Montabon, Pagell & Wu, 2016:12; Wieland, Handfield & Durach, 2016:205; Luzzini, Brandon-Jones, Brandon-Jones & Spina, 2015:51).

Schulze, Bals and Warwick (2022) acknowledged the impact of these developments on PS competency research and agreed that PSPs should be competent to perform their tasks and responsibilities despite these developments. However, because PS is one of the main contributors to the successful implementation of sustainable practices (Schulze, Bals & Johansen, 2019:288; Yawar & Seuring, 2018:227), Schulze, Bals and Warwick set out in 2022 to develop a competence model to assist PSPs in identifying specific competencies from a sustainability perspective.

Schulze, Bals and Warwick (2022) identified 26 competencies within their competency model with a sustainability foundation that was strongly underpinned by two previous studies.

The two previous studies were Schulze and Bals's 2020 study on competencies PSPs require to implement sustainable PSM and Schulze, Bals and Johansen's 2019 study on individual competencies required for sustainable PSM. Thus, Schulze, Bals and Warwick (2022)

developed their competency model by reviewing the literature and implementing the Delphi method with 16 experts in PS management and sustainability.

Schulze, Bals and Warwick (2022) concluded that:

- Competence refers to the underlying characteristics of an individual that leads to outstanding performance. These characteristics include the person's knowledge, traits, skills and abilities – all of which can be further developed through learning and experience.
- Delamare-Le Deist and Winterton's (2005) multi-dimensional holistic typology of competence is suitable for classifying PS competencies.
- The competences included in Delamare-Le Deist and Winterton's (2005) typology are cognitive, functional, social and meta-competencies. Cognitive competencies refer to general knowledge and understanding, social competencies refer to a person's behaviour, functional competencies include all knowledge relating to the specific occupation, and meta-competencies refer to the desire to acquire additional competencies.
- PS is one of the main contributors to implementing sustainable practices within a business; therefore, sustainability is embedded within a PSP's daily tasks and responsibilities.
- From the literature review, 29 PS competencies were identified, which were then refined to 27 competencies after applying the Delphi method.

Schulze, Bals and Warwick (2022:10) presented their competency model by categorising the competencies from Delamare-Le Deist and Winterton's multi-dimensional holistic typology of competence (see table 3.9).

Table 3.9: Purchasing and supply competencies that promote sustainability – based on Delamare-Le Deist and Winterton’s multi-dimensional holistic typology classification

Delamare-Le Deist and Winterton’s multi-dimensional holistic typology classification	PS competencies
Cognitive competencies	Conscientiousness Resourcefulness A holistic view of supplier relationship management Systems thinking Corporate social responsibilities
Functional competencies	Basic PSM knowledge Basic sustainability knowledge Demand management Contract management Measurement and reporting Resourcefulness Stakeholder management Supplier relationship management Sustainability compliance
Social competencies	Communication skills Ability to work in a cross-functional team

Delamare-Le Deist and Winterton's multi-dimensional holistic typology classification	PS competencies
	Interpersonal savvy Communication and supplier relationship management Communication and stakeholder management Thoughtfulness towards others
Meta-competencies	Commitment to change Confidence Organisational savvy Persistence Political savvy Self-awareness Cooperative attitude regarding supplier relationship management

Source: Schulze, Bals & Warwick, 2022:10.

It can be concluded that functional PS competencies are necessary to ensure sustainable practices are successfully implemented; followed by meta-competencies, social competencies and cognitive competencies. In addition, the authors determined that sustainability should not be seen as an add-on activity within PSM but should be embedded within all PS tasks and responsibilities (Schulze, Bals & Warwick, 2022:13).

3.5 Creation of purchasing and supply competency categories applicable to this study

As stated in section 3.3.3, the holistic research approach to competence research (as endorsed by Delamare-Le Deist and Winterton [2005]) was considered appropriate for the theoretical foundation for this study in order to identify different PS competence categories required by PSPs in the private sector of the South African business environment. This approach was regarded as appropriate for the following reasons:

- The holistic approach to competence research incorporates the advantages and addresses the disadvantages of the behavioural and functional research approaches (Adefe, 2017:58; Taljaard, 2020:62).
- The holistic approach aligns with Hoffmann's (1999) perspective on defining competence and competencies (as discussed in section 3.2) since it focuses on knowledge, skills, abilities, values, attributes and understanding.
- The holistic approach incorporates cognitive, functional, behavioural and ethical competencies into the professional's competency set (Guerrero & De los Ríos, 2012:1294).

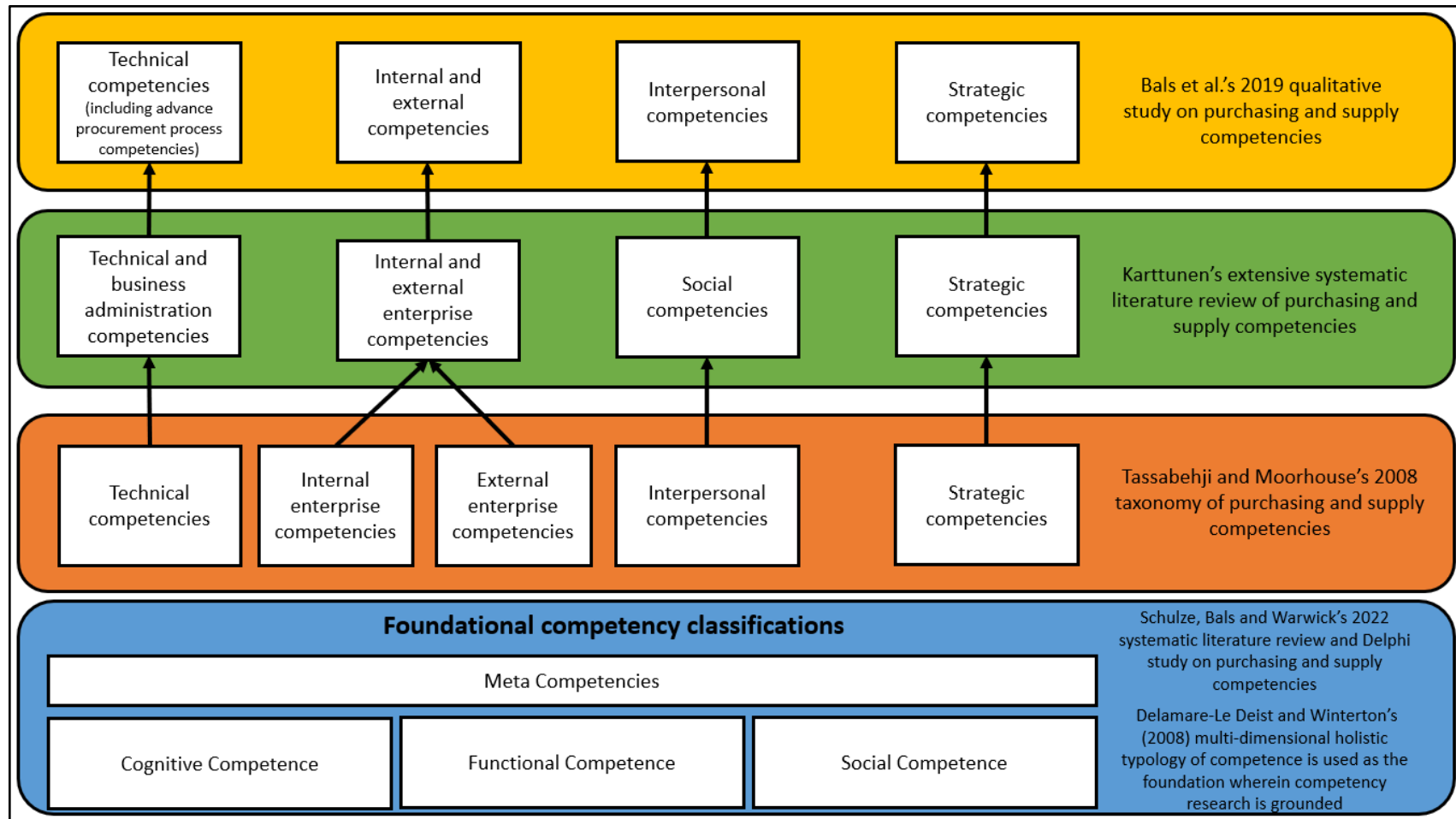
From the discussions in sections 3.4.1 to 3.4.4, the following literature findings regarding PS competency categories were distilled:

- Tassabehji and Moorhouse created a new taxonomy of PS competencies by consolidating the existing literature (1993-2006) into five PS categories. The five categories used by Tassabehji and Moorhouse's 2008 matrix are: technical, internal enterprise, external enterprise, interpersonal, and strategic competencies.
- Karttunen identified four categories of PS competencies. These are technical and business administration, social, internal and external enterprise, and strategic competencies. Karttunen based these categories on previous categorisations of PS competencies (such as those identified by Tassabehji and Moorhouse [2008]) but added another dimension by including entrepreneurial and political competencies in the strategic competency category.

- Bals et al., 2019 acknowledged that Tassabehji and Moorhouse's 2008 taxonomy of PS competencies is at present the most elaborative categorised model on PS competencies and, therefore, used it as the foundation for their own taxonomy, which includes technical (including advance procurement-process competencies), interpersonal, internal enterprise, external enterprise, and strategic business categories.
- Schulze, Bals and Warwick (2022) considered Delamare-Le Deist and Winterton's (2005) multi-dimensional holistic typology of competence appropriate for classifying PS competencies as either cognitive, functional, social, or meta-competencies.

Figure 3.7 provides a view of the process of determining competency categories to be used in classifying the requisite competency set for PSPs in the private sector of the South African business environment.

Figure 3.7: Summary of previous research from a multi-dimensional holistic perspective conducted on PS competencies from a multi-dimensional holistic typology



Source: Compiled by the researcher, 2022.

After considering the holistic perspective on competency classifications advocated by Delamare-Le Deist and Winterton (2005), Schulze, Bals and Warwick (2022), along with the competency categories developed by Tassabehji and Moorhouse (2008), Karttunen (2018) and Bals et al. (2019), the following four PS competency categories were identified for this study:

- **Technical PS competencies:** This refers to cognitive and functional competencies required to perform specific tasks. These competencies relate to PSPs' technical knowledge, ability to perform tasks, and advanced PS-process knowledge. They also include management-related competencies generally linked to a specific system and output. Technical PS competencies provide the foundation for developing strategic PS competencies.
- **Internal and external enterprise PS competencies:** These cognitive and functional competencies refer to a PSP's ability to manage internal and external relationships. Internal PS competencies relate to a PSP's ability to facilitate interaction with internal stakeholders and generally involve high-level business decisions. External PS competencies relate to a PSP's ability to manage relationships with stakeholders outside the business and to understand suppliers better.
- **Interpersonal PS competencies:** These generally refer to social competence and are entry-level competencies, though essential competencies for a PSP to perform well. They are sometimes described as the PSP's emotional intelligence. Interpersonal PS competencies relate to the PSP knowing how to behave and make sound judgements in work-orientated situations.
- **Strategic PS competencies:** These are generally meta-competencies and include the competencies PSPs need to develop in order to execute creative and collaborative solutions that positively impact business value.

It is evident from the definitions that the four PS competency categories are grounded in the holistic research approach as promoted by Delamare-Le-Deist and Winterton (2008) and Schulze, Bals and Warwick's (2022) systematic literature review and Delphi study on PS competencies. These competency categories incorporate cognitive, functional, social and meta-competencies. Hence, the competency set for a PSP in the private sector of the South

African business environment will consist of technical, internal and external enterprise, interpersonal, and strategic PS competencies.

Table 3.10 contains the list of competencies essential for PSPs to perform their tasks effectively, as identified in the literature (1987 to 2022). In order to provide a uniform list of PS competencies, the competencies identified by Schulze, Bals and Warwick (2022) were reclassified into the four categories for this study.

Table 3.10 shows the different categories of competencies identified by the different authors.

Table 3.10: Purchasing and supply competencies identified by various authors

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Competencies identified by Tassabehji and Moorhouse's 2008 taxonomy of PS competencies	Computing skills Mathematical skills Forecasting Reading of designs and blueprints Working with e-procurement applications Total quality management Legal knowledge Cost analysis	Managing internal politics and barriers Resolving internal PS issues Conducting adequate market research Facilitating internal change management Managing internal customers and relationships Working in cross-functional teams	Conflict resolution Leadership Problem-solving Interpersonal development Influencing and persuasion Stress management Creative thinking Analytical abilities	Planning and managing strategic alliances and partnerships Strategic thinking Following PSM best practices Risk management Ability to add value to a business

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	Product knowledge Negotiation Knowledge of production systems Contract management Category management Global sourcing development Performing cost driver analysis Strategic sourcing Project planning	Managing supplier relationships Evaluating suppliers International buying Stakeholder-relationship management Financial skills Motivational skills Relationship influencing skills Supply chain knowledge	Group dynamics Decision-making Knowledge sharing Results-focused Integrity Cultural awareness Communication Listening Understanding Investigation	

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	Technical writing and reporting		Research Problem-solving Stress management Time management Team building Cross-cultural awareness	
Competencies identified by Karttunen's 2018 extensive systematic literature review	Information technology Inventory management Logistics and transport Purchase management Forecasting	Change management Cross-functional teamwork Passing on information Managing internal customers Sales interface management	Teamwork Negotiation Interpersonal communication Cross-cultural awareness	Problem-solving Leadership Risk management Entrepreneurial skills, including innovativeness, creativity and proactivity

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	Quality management Operations management R&D and new product launches Software applications Supply chain management Ability to make use of numerical techniques for decision-making Information integration and search Computer skills	Supplier-relationship management Relationship management ability Supplier evaluation Manage strategic alliances or partnerships Supplier cost targeting Customer relations management Supplier analysis Supplier development	Written communication Conflict management Listening Foreign language Networking Presentation	Planning Decision-making skills Influencing and persuasion Analytical skills Ability to develop and implement business strategies, including strategic thinking Analysing statistical data Innovativeness Creativity Strategic thinking

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	<p>E-commerce</p> <p>Technical writing and expertise</p> <p>Mathematical skills</p> <p>Global sourcing</p> <p>Import and export processes</p> <p>Integration of systems and processes</p> <p>Technical capabilities to help suppliers improve their processes and products</p> <p>Blueprint reading</p>	<p>Integration of information flows externally</p> <p>Stakeholder mapping proficiency</p> <p>Capable of opening new communication channels with stakeholders</p> <p>Managing the supply base</p> <p>Negotiating with strategic suppliers</p> <p>Single vs multiple sourcing</p> <p>Supply base research</p>		<p>Political skills / people skills</p> <p>Proactivity</p> <p>Coordination skills</p> <p>Total systems understanding, to achieve strategic goals</p>

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	Resource integration			
Competencies identified by Bals et al.'s 2019 qualitative study	Basic knowledge of PSM and PSM processes Computer literacy Contract management Cost savings E-Procurement technology Intellectual property KPI reporting design Languages Negotiation	Change management Communication skills Cross-functional abilities and knowledge Engineering Finance Logistics Manufacturing/production Marketing Quality	Analytical skills Conflict resolution Creativity Decision-making Integrity Interpersonal communication Knowledge sharing Leadership Learning agility	Business acumen Financial acumen PSM best practice Risk management Strategic thinking Critical thinking Holistic supply thinking Sustainability

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	Process optimisation Product knowledge Project management Quality assurance Strategic sourcing Tools and system implementation Automatisation Big data analysis Innovation sourcing Innovative sourcing approaches	Research and development Supply chain Sales Cultural awareness Customer focus Networking Stakeholder-relationship management Supplier management	Results focus – driving for results Structured way of working Teamwork Curiosity Dealing with ambiguity Humility Mobility Openness/Open-mindedness Passion	

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
			Resilience Self-confidence Self-reflection Self-reliance	
Competencies identified by Schulze, Bals and Warwick's 2022 systematic literature review and Delphi study	Basic individual knowledge of PSM Basic sustainability knowledge Contract management Demand management Systems thinking	Stakeholder management Supplier-relationship management Measuring and reporting Change management	Ability to work in a cross-functional team Communication skills Interpersonal savvy Political savvy Organisational savvy Conscientiousness	Sustainability compliance Holistic view on supplier relationship management Corporate social responsibilities

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
			Resourcefulness Communication relating to supplier-relationship management Communication relating to stakeholder management Thoughtfulness towards others Self-awareness Cooperative attitude in supplier-relationship management Persistence	

Authors	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
			Confidence	

Source: Compiled by the researcher, 2023.

Table 3.10 shows that competencies are repeated within and among competency categories; for example, mathematical skills are listed by both Tassabehji and Moorhouse (2008) and Karttunen (2018) in the technical PS competency category, and networking is listed as a strategic competency by Bals et al. (2019), but also as an internal and external enterprise competency by Karttunen (2018). Consequently, the researcher consolidated¹⁵ the competencies to obtain a list of PS competencies that should be included in determining a competency set for a PSP in the private sector of the South African business environment.

Table 3.11 presents the consolidated list of competencies considered for inclusion in the competency set of a South African PSP in the private sector.

¹⁵ Similar competencies were grouped together and renamed within each competency category. Those competencies that appeared in more than one category were grouped together, renamed, and categorised into the category where they appeared most often. See appendix A for the categorisation of competencies.

Table 3.11: Competencies considered for inclusion into a competency set for a South African PSP in the private sector

	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Number of PS competencies identified in the literature review	64	55	70	33
Number of PS competencies after consolidation	22	12	20	10
Competencies identified for possible inclusion in the PSP competency set	Demand forecasting Product knowledge Innovative sourcing Strategic sourcing	Customer orientated Stakeholder-relationship management Supply market analysis Supply chain analysis	Leadership Work in cross-functional teams Communication Cross-cultural awareness	Add value to a business through purchasing Strategic management Corporate social responsibility

	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	Purchasing knowledge	Collaborate with marketing	Personal development	Sustainability
	Process management	Collaborate with research and development	Motivated to learn	Supply risk management
	Technical knowledge	Supplier-relationship management	Creativity	Manage strategic business partnerships
	Collaborate with production/operations	Supplier evaluation	Honesty	Holistic thinking
	Involvement in quality management	Supplier development	Social manners	Proactivity
	Collaborate with logistics	Change management	Self-assurance	Inventiveness
	Legal knowledge	Sales knowledge	Confidence	Critical thinking
	Obtain quotations, information or proposals	Networking	Results-driven	
	Global sourcing		Conflict resolution	
			Influence and persuade	

	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
	Cost analysis Negotiation Contract management Project management Establish and report on key performance indicators Numerical skills Big data analysis Work with E-procurement applications or systems Automation of purchasing processes		Empathise Conscientiousness Problem-solving Analytical abilities Decision-making Knowledge sharing	

Source: Compiled by the researcher, 2022.

3.6 Conclusion

Chapter three addressed SRO₄, SRO₅, SRO₆ and SRO₇ of the study:

SRO₄ Develop definitions of PS competence and PS competency.

SRO₅ Select the most appropriate research approach to use as a foundation for the South African PS competency framework.

SRO₆ Determine the different PS competency categories that will be included in the South African PS competency framework for PSPs in the South African private sector.

SRO₇ Identify PS competencies from the literature that may form part of the competency set of a PSP in the private sector of the South African business environment.

Section 3.2 focused on addressing SRO₄ by differentiating between the concepts of competence and competency. The researcher highlighted the importance of the concepts among different disciplines despite there being no consensus on the definitions of competence and competency within these disciplines. After considering various definitions of these concepts, particularly within the PS field, the researcher developed definitions of competence and competency for this study. Competence and competency are defined as personal aspects encompassing an individual's knowledge, skills, abilities, and attributes. Thus, it can be concluded that PS *competency* (plural competencies) refers to an individual characteristic or attribute that an individual must possess to ensure superior job performance. In contrast, PS *competence* (competences in the plural) is divided into cognitive, functional and social. Within each PS category, a list of individual competencies is presented (Winterton, 2009:684). Therefore, for a PSP to be able to do their work (be competent in their work), they need to possess a particular set of competencies.

Next, in section 3.3, the researcher set out to address SRO₅ by examining the different approaches to competency research to select the most appropriate approach for this study. The behavioural, functional, and holistic approaches were considered (Abdul Muhi, 2022:13; Taljaard, 2020:53; Winterton, 2009:684). It was decided that Delamare-Le Deist and Winterton's model, with its four-competence categorisation, would be used as the foundational competency categorisation for this study. A multi-dimensional holistic typology

approach was used as a theoretical foundation to determine the combination of PS competencies (the PS competency set) a person working in the South African private sector must have to be deemed competent within their field.

Sections 3.4 and 3.5 addressed SRO₆ and SRO₇. By examining PS competency literature from 1987 to 2022, the researcher determined the different PS competencies categories and identified the specific competencies within each category for this study. Going forward there will be four PS competency categories: technical, internal and external enterprise, interpersonal, and strategic. Within the technical competency category there are 22 competencies; 12 in the internal and external enterprise competency category, 20 in the interpersonal competency category, and 10 in the strategic competency category (see table 3.11 for the specific PS competencies included in each competency category).

Chapter three can therefore be concluded by stating that the South African competency framework is grounded in the holistic research approach and consists of four PS competency categories, each with several PS competencies. The 64 PS competencies identified will be used as the independent variables within the South African competency framework.

Chapter 4 – Theoretical framework for a South African purchasing and supply competency framework

4.1 Introduction

Chapter four presents the theoretical framework for developing a South African PS competency framework. This is derived from the traditional literature review reported on in chapters two and three regarding PSM and PS competencies, respectively.

4.2 Theoretical framework for a South African purchasing and supply competency framework

In chapter one, a lacuna was identified in the PS competency field pertaining to South Africa. In this country, the demand for PSPs outweighs the supply, and there is an enormous shortage of competent PSPs (CIPS, 2018, 2022), particularly at the executive level – to such an extent that some claim it contributes directly to the slow economic growth in the country (Boateng in Smart Procurement, 2014). This is not overstated when one considers that APICS (2014) stated that PSPs are crucial to the global economy. No business can flourish without highly skilled PSPs (Monczka et al., 2021:6-7), and the competencies of these professionals directly impact the survival of businesses and South Africa's economic well-being.

The shortage of competent PSPs in South Africa can be addressed by introducing initiatives such as competency development programmes and other educational opportunities (Ntshabele, 2018:3). Professional efficiency and effectiveness are prerequisites for success, and the South African Government has acknowledged this in the 2030 National Development Plan (NDP) (South Africa, National Planning Commission, 2012).

The study's contribution will lie in developing a South African competency framework that will guide the training and development of PSPs in South Africa. The study focuses on PSPs in the private sector, but the framework will also be of value to PSPs in the public sector.

From the literature review reported on in chapter two, it was established that the South African competency framework should be developed from a holistic perspective, and be

based on the seven PS objectives, the two PS processes, and the five management activities of the PS function.

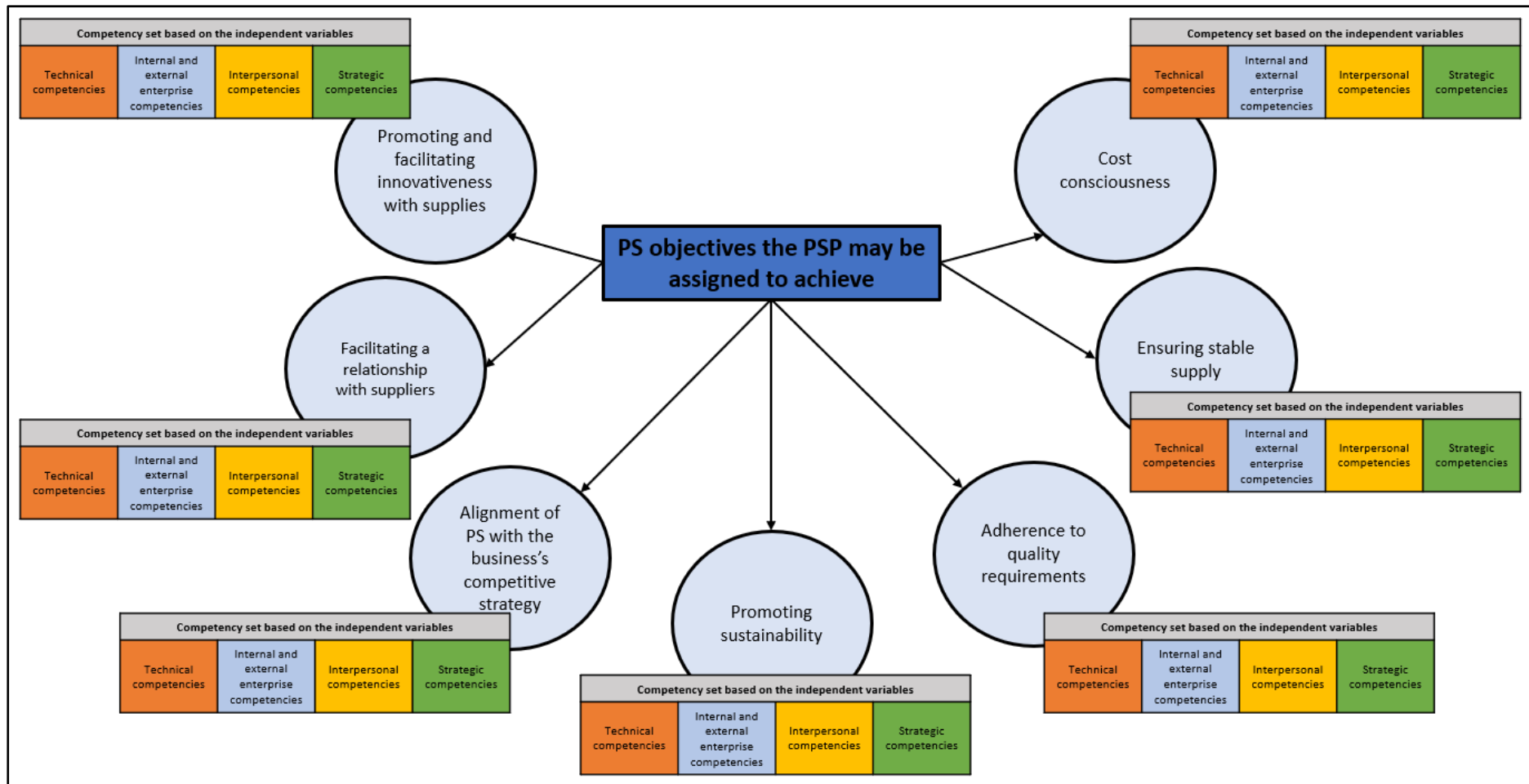
The researcher, therefore, aimed to develop a PS competency framework for the South African private sector based on the objectives PSPs may be assigned, the PS processes they are involved in or the PS management activity in which they are predominantly involved. Thus, the seven objectives, the two processes, and the five management activities are incorporated as dependent variables in the theoretical framework for this study.

It was also established (see chapter three) that the South African competency framework should be grounded within the holistic perspective of competency research and consist of four competency categories, each with several PS competencies. The four PS competency categories are: *technical competencies*, *internal and external enterprise competencies*, *intrapersonal competencies*, and *strategic competencies*. Each PS category contains competencies that should be considered in developing the South African PS competency framework.

In developing the competency framework, 22 competencies were distilled from the literature for the technical competency category, 12 for the internal and external enterprise category, 20 for the interpersonal category, and 10 for the strategic category (see chapter three).

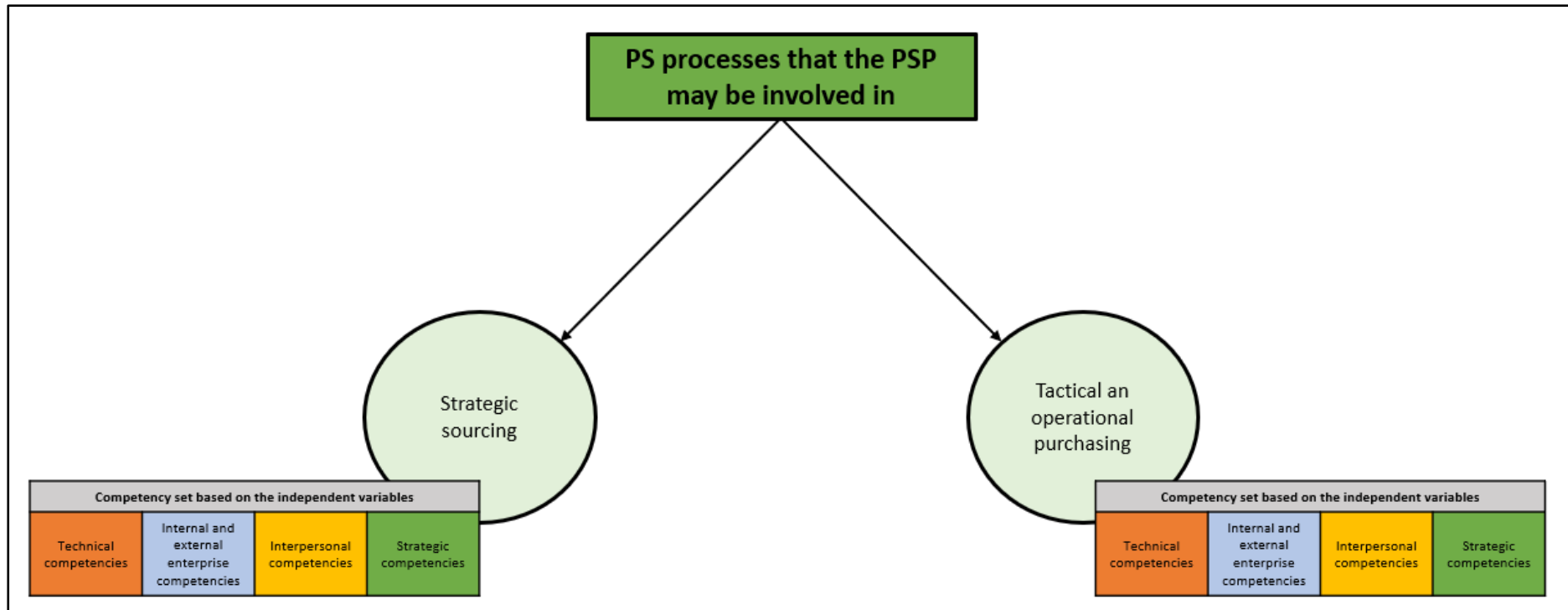
The 64 PS competencies identified across the four PS competency categories (see table 3.11) will be used as independent variables in developing the competency framework.

The rest of this brief chapter is dedicated to several figures (figures 4.1 to 4.3) to graphically illustrate the theoretical framework for developing the South African PS competency framework. The dependent and independent variables are indicated in the figures and listed in table 4.1.



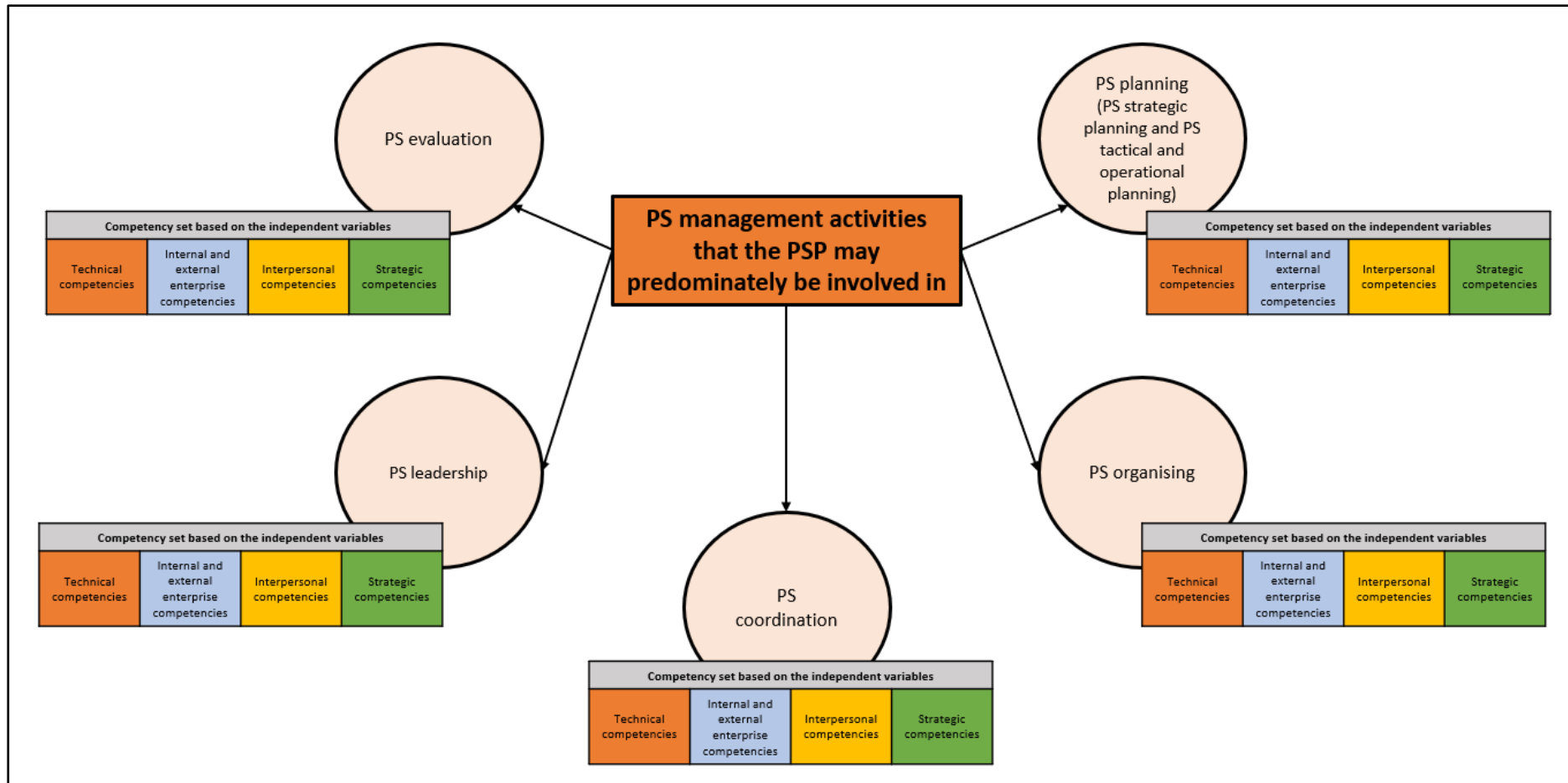
Source: Compiled by the researcher, 2023.

Figure 4.1: Theoretical framework for the South African purchasing and supply competency framework with the seven purchasing and supply objectives as dependent variables



Source: Compiled by the researcher, 2023.

Figure 4.2: Theoretical framework for the South African purchasing and supply competency framework with the two purchasing and supply processes as dependent variables



Source: Compiled by the researcher, 2023.

Figure 4.3: Theoretical framework for the South African purchasing and supply competency framework with the five purchasing and supply management activities as dependent variables

4.3 The dependent and independent variables of the South African purchasing and supply competency framework

For ease of reference, the dependent and independent variables (as distilled from chapters two and three) are presented below.

Table 4.1: The independent and dependent variables of the South African purchasing and supply competency framework

Dependent variables	Independent variables
Being cost conscious	Demand forecasting
Ensuring a stable supply	Product knowledge
Adherence to quality requirements	Innovative sourcing
Promoting sustainability	Strategic sourcing
Aligning the PS function with the competitive strategy	Purchasing knowledge
Facilitating a preferred relationship with suppliers	Process management
Promoting and facilitating innovativeness with suppliers	Technical knowledge
Taking part in the strategic sourcing process	Cooperation with production/operations
Taking part in the tactical and operational purchasing process	Involvement in quality management
Predominantly involved in PS planning	Collaboration with logistics
Predominantly involved in PS organising	Legal knowledge
	Request quotation, information or proposals
	Global sourcing

Dependent variables	Independent variables
Predominantly involved in PS coordination	Cost analysis
Predominantly involved in PS leadership	Negotiation
Predominantly involved in PS evaluation	Contract management Project management Establishing and reporting on key performance indicators Numerical skills Big data analysis Utilising E-procurement applications or systems Automating purchasing processes Customer orientated Stakeholder-relationship management Supply market analysis Supply chain analysis Collaborating in marketing Collaborating in research and development Supplier-relationship management Supplier evaluation

Dependent variables	Independent variables
	Supplier development Change management Sales knowledge Networking Leadership Working in cross-functional teams Communication Cross-cultural awareness Personal development Motivated to learn Creativity Honesty Social manners Self-assurance Confidence Results-driven Conflict resolution Influencing and persuasion

Dependent variables	Independent variables
	<p>Empathy</p> <p>Conscientiousness</p> <p>Problem-solving</p> <p>Analytical abilities</p> <p>Decision-making</p> <p>Knowledge sharing</p> <p>Adding value to a business through purchasing</p> <p>Strategic management</p> <p>Corporate social responsibility</p> <p>Sustainability</p> <p>Supply risk management</p> <p>Managing strategic business partnerships</p> <p>Holistic thinking</p> <p>Proactivity</p> <p>Inventiveness</p> <p>Critical thinking</p>

Source: Compiled by the researcher (2023).

4.4 Conclusion

This brief chapter presented the research problem and highlighted the significant gap in the South African PS competency field (see section 1.3.1). Thereafter, the main findings of the literature review were identified to form the theoretical framework of the proposed South African PS competency framework. The dependent and independent variables of the South African PS competency frameworks were identified and graphically presented. Table 4.1 summarised the dependent and independent variables.

The next chapter will discuss the research process used to gather primary data for the study.

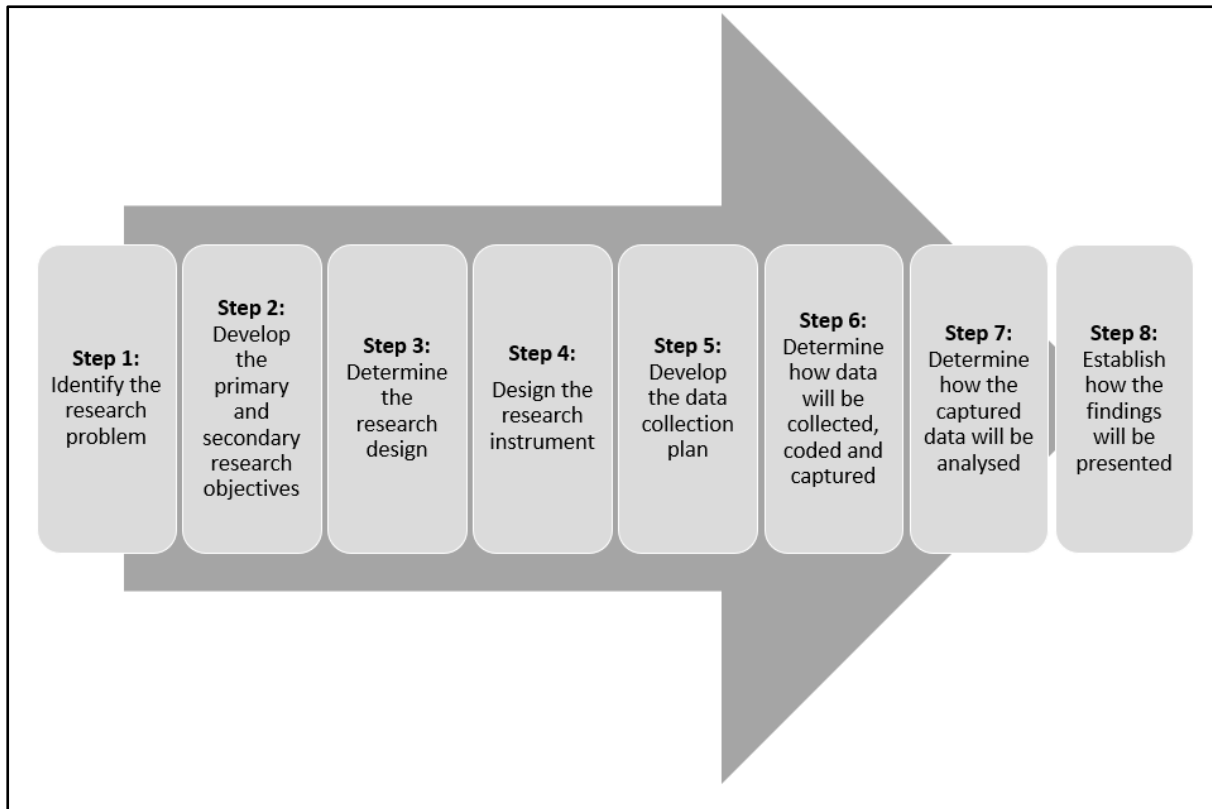
Chapter 5 – Research methodology

5.1 Introduction

Business research entails applying scientific methods to find the truth about business phenomena. The research process includes ideas and theory development, problem identification, the search and collection of information, the analysis of data, and lastly, communicating the findings and recommendations (Zikmund et al., 2013:5). Therefore, *business research* can be defined as any action taken to obtain data systematically to increase knowledge (Saunders, Lewis & Thornhill, 2012:5). During the research process, the ultimate goal is to collect and interpret data in order to answer a specific research question or address a specific research problem (Quinlan, Babin, Carr, Griffin & Zikmund, 2015:2).

The purpose of chapter five is to present the research process the researcher followed to answer the PRQ: What competency set will support PSPs in the South African business environment's private sector in performing their tasks efficiently and effectively?

As stated in section 1.4, the study was structured using the research process recommended by Zikmund et al. (2017:17), Babbie (2016:114), and Tustin et al. (2005:76). Figure 5.1 presents this study's research process.



Source: Compiled by the researcher, 2022.

Figure 5.1: Research process followed for this study

Before the individual steps of the research process are discussed in sections 5.3 to 5.11, the research approach is reviewed.

5.2 Research approach

Business research is generally classified according to the nature of the research problem or the purpose of the research. For example, the purpose of research may include identifying business opportunities, addressing business problems or understanding a business phenomenon. Among methodological research literature, three types of business research are predominant: causal, exploratory and descriptive (Saunders, Lewis & Thornhill, 2020:140; Cooper & Schindler, 2014:124), and each type influences the choice of research design (Zikmund et al., 2013:54). Each type of business research and its applicability for this study is discussed below.

5.2.1 Causal research

A causal research approach determines whether one variable causes, determines, or affects another variable – in short, causal research establishes cause-and-effect relationships (Cooper & Schindler, 2014:137; Zikmund et al., 2013:16; 57). The aim of conducting causal research is to answer *why* and *how* questions, generally through experiments to measure the connections between different variables (Babbie, 2016:29). Causal research aims to determine the reasons for specific phenomena and requires that the researcher fully understands the phenomena under investigation (Cooper & Schindler, 2014:22; Zikmund et al., 2013:57). According to Weber (2022:280), causal research goes beyond the boundaries of exploratory and descriptive research by answering research questions other types of business research can only observe. Conducting causal research involves intricate research designs, which are generally expensive to deploy (Zikmund et al., 2013:57). Causal research was not deemed appropriate for this study as the researcher still had to gain a more comprehensive understanding of PS as an internal management function and the concept of competencies in general, and specifically from a PS perspective. Therefore, determining cause-and-effect relationships was not appropriate.

5.2.2 Exploratory research

Exploratory research is conducted when the researcher aims to determine the general nature of a research problem or question and is not intended to provide evidence from which a particular course of action could be determined (Cooper & Schindler, 2014:127; Saunders, Lewis & Thornhill, 2012:171). Zikmund et al. (2013:16) described exploratory research as the domain of discovery in the philosophy of science and generally sets the groundwork for further investigation. In other words, a researcher asks open questions to gain insight into a topic of interest, clarifies a specific research problem or question, or evaluates a phenomenon (Cooper & Schindler, 2014:127; Saunders, Lewis & Thornhill, 2012:171). Cooper and Schindler (2014:94) stated that during the exploratory research phase, a researcher analyses the research problem to determine what questions to ask in order to solve the problem; this ultimately leads to grounded conclusions and recommendations. Therefore, exploratory research is essential during the preliminary stages of a research project to assist the researcher in understanding the research problem, determining research questions and

objectives, developing concepts and operational definitions, and improving the research design (Weber, 2022:278).

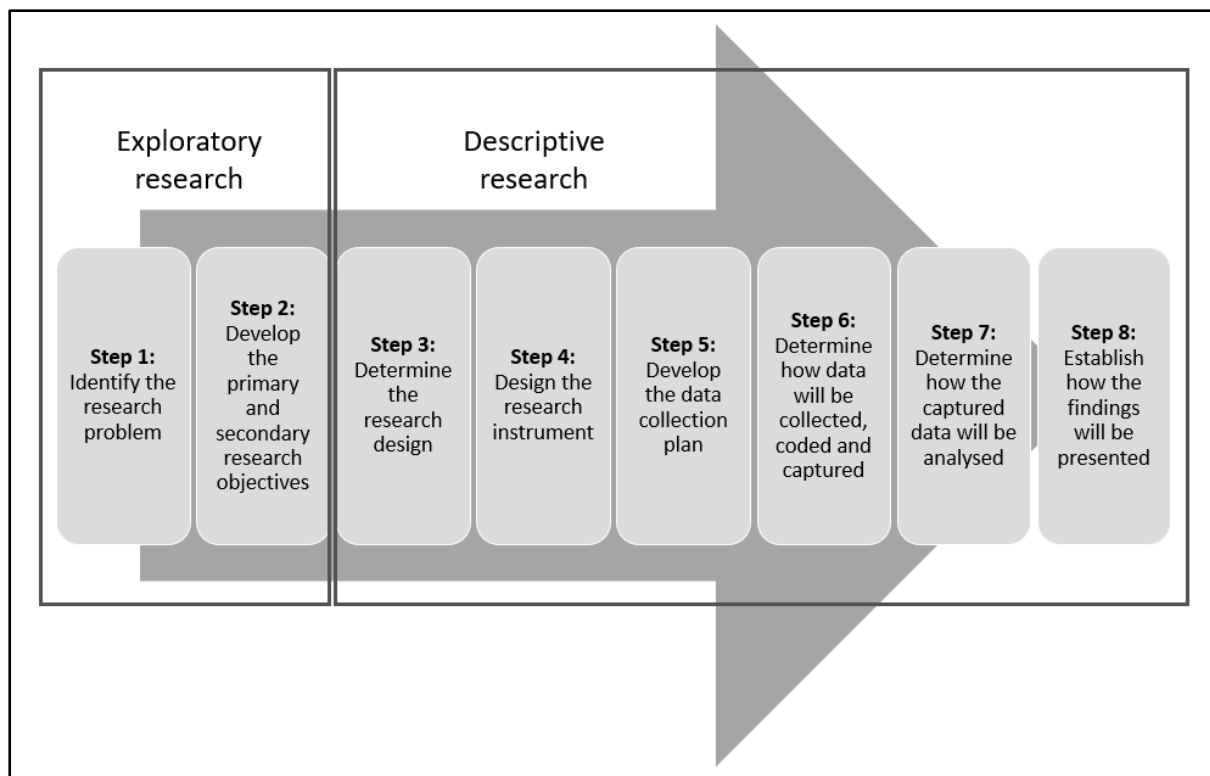
In this study, the researcher performed exploratory research by conducting a traditional literature review in order to gain an in-depth understanding of PS as an internal management function with a specific focus on PS's objectives, the different PS processes, and the different PS management activities (see chapter two). Additionally, the researcher examined the different PS competencies required by PSPs, as identified in previous research (see chapter three). Therefore, by conducting exploratory research, the researcher refined the research problem, defined the PRO, and set clear and attainable SROs – steps one and two of the research process (further discussed in sections 5.3 and 5.4). Furthermore, the researcher's deeper understanding of PS as an internal management function and previous research on PS competencies contributed to developing the anonymous online self-administered questionnaire (see section 5.6).

5.2.3 Descriptive research

As part of descriptive research, a researcher must understand the research area under investigation (usually as a result of exploratory research) and identify the characteristics of the objects, individuals, businesses or environments under investigation (Zikmund et al., 2013:16;55). The next step in descriptive research is to answer the *who, what, when, where* and *how* questions, enabling the researcher to answer the research question and achieve the primary and secondary goals. Saunders, Lewis and Thornhill (2020:140) stated that descriptive research validates and accurately represents research variables. Structured and quantitative research methods are used in descriptive research (Tustin et al., 2005:86-87), and univariate, bivariate and multivariate analyses are conducted on data to answer the research question and achieve the primary and secondary objectives (Cooper & Schindler, 2014:134).

In this study, exploratory research was followed by descriptive research. In the descriptive phase, primary data were gathered through an anonymous online self-administered questionnaire (a recommended data-collection method for a descriptive research approach) from a sample of PSPs in the private sector of the South African business environment. Thus, the researcher conducted descriptive research in steps three to eight of this study.

With the above information included, figure 5.1 can be adapted to the figure below.



Source: Compiled by the researcher, 2022.

Figure 5.2: Adapted research process followed for this study

The exploratory research conducted for this study is discussed in sections 5.3 and 5.4, followed by discussions on the descriptive research in sections 5.5 to 5.10.

5.3 Research problem

Generally, the reason for conducting research starts when problematic issues are identified in a specific field of interest. This study arose from the need to determine a competency set for PSPs within the private sector of South African businesses to ensure they perform efficiently and effectively. This need was reinforced by the research of CIPS (2018; 2022), Monczka et al. (2021), Boateng (in Smart Procurement, 2014), APICS (2014), The South Africa NPC (2012), and Tassabehji and Moorhouse (2008).

Section 5.4 discusses the PRO and eleven SROs derived from the PRQ.

5.4 Research objectives

According to Saunders, Lewis and Thornhill (2012:680), research objectives are based on a study's research problem and identify what needs to be researched. Primary and secondary research objectives are the goals to achieve in order to answer the research question (Zikmund et al., 2013:50). For this study, one PRO was identified with eleven SROs. These are presented in table 5.1.

Table 5.1: Primary and secondary research objectives

The PRO of this study:	
To develop a PS competency framework for PSPs working within the private sector in South Africa.	
In order to achieve the PRO, the following eleven SROs were formulated:	
SRO ₁	Examine PS as an internal support function to understand the different PS objectives a PSP may be assigned.
SRO ₂	Analyse PS as an internal support function to understand the different PS processes that a PSP may be involved in.
SRO ₃	Examine PS as an internal support function to understand the different PS management activities that a PSP may predominantly be involved in.
SRO ₄	Develop definitions of PS competence and PS competency.
SRO ₅	Select the most appropriate research approach to use as a foundation for the South African PS competency framework.
SRO ₆	Determine the different PS competency categories that will be included in the South African PS competency framework for PSPs in the South African private sector.
SRO ₇	Identify PS competencies from the literature that may form part of the competency set of a PSP in the private sector of the South African business environment.

SRO ₈	Determine from empirical findings the PS sub-category competency factors that will be used as independent variables in the South African PS competency framework.
SRO ₉	Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.
SRO ₁₀	Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.
SRO ₁₁	Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

Source: Compiled by the researcher, 2023.

After the research question and the primary and secondary objectives were formulated, the descriptive research was initiated.

5.5 Research design

This section is dedicated to discussing the study's descriptive research design. Zikmund et al. (2013:64) defined a *research design* as the master plan that describes the different procedures and methods to collect and analyse data to produce research conclusions and recommendations. Five critical aspects relating to the research design were considered for this study: the research philosophy, the approach to theory, the methodological choices, the research strategy, and the time horizon.

5.5.1 The research philosophy

Although philosophical ideas are not generally referred to when conducting research, it is necessary to acknowledge the philosophical views underpinning the research strategy and the methods used in the research process (Creswell & Creswell, 2017:5; Krauss, 2005:759). The research paradigm (Killam, 2013:5) underlying the work implies several philosophical assumptions (Lanka, Lanka, Rostron & Singh, 2021:3; Punch, 2014:17). These assumptions guide and direct the research process (Saunders, Lewis & Thornhill, 2020:108; Mertens, 2019). Within a research philosophy, there are philosophical assumptions regarding ontology, epistemology and axiology (Lanka et al., 2021:3; Saunders, Lewis & Thornhill, 2020:109;

Chilisa, 2019; Mir & Jain, 2018:22; Richards, 2015:26). A short description of these philosophical assumptions is presented below:

- Ontology is the philosophical assumption that relates to social reality – *what do we believe about the nature of reality* (Chilisa & Kawulich, 2012:51). Ontology relates to whether one believes there is one verifiable reality or multiple socially constructed realities. (Raghvan, 2021:14; Edelheim, 2015:30; Chilisa & Kawulich, 2012:51). Therefore, from an ontological philosophical view, the assumptions researchers have about the world and whether reality exists independently of human conception will influence how the researcher conducts research and interprets research results (Saunders, Lewis & Thornhill, 2020:100).
- Epistemology is the philosophical assumption that relates to the study of knowledge – *how do we know what we know* (Chilisa & Kawulich, 2012:51). Epistemology relates to what is viewed as acceptable knowledge within a specific field of study (Saunders, Lewis & Thornhill, 2020:100). Therefore, from an epistemological perspective, the assumption indicates how the researcher will identify new knowledge (Alharahsheh & Pius, 2020:40).
- Axiology is the philosophical assumption that relates to the study of ethics and values – *what we believe to be true* (Chilisa & Kawulich, 2012:51). Therefore, axiology focuses on the values that influence the researcher's process and actions (Saunders, Lewis & Thornhill, 2020:116).

These three philosophical assumptions are incorporated within every research philosophy. Saunders, Lewis and Thornhill (2020:144) identified five primary research philosophies generally used within business research: pragmatism, postmodernism, interpretivism (constructivism), realism, and positivism (post-positivism). Below are short descriptions of these research philosophies, followed by the reasons for selecting positivism (post-positivism) as the most appropriate for this study.

Pragmatism is based on understanding ideas in terms of their practical consequences. In other words, pragmatism is practical, applied, and value-driven. Pragmatism argues that both positivist and interpretive philosophies can be used in research. Thus, a practical approach where different perspectives are integrated to collect and interpret data. Depending on the

research question, pragmatism accepts observable phenomena and subjective meanings when presenting new knowledge. In pragmatism, multiple research methods (quantitative and qualitative) and different techniques and procedures can be used in conducting research (Gray, 2020:32; Saunders, Lewis & Thornhill, 2020:151;119; Klenke, 2016:26).

Postmodernism questions acceptable ways of thinking and considers alternative perspectives, mainly those that are silent due to dominant perspectives. Postmodernism believes that power relations and interactions are the foundations on which reality is constructed and that no single source of knowledge is superior to another. Postmodernist research methods are generally deconstructive and qualitative (Saunders, Lewis & Thornhill, 2020:160; Cassell, Cunliffe & Grandy, 2018:87).

The interpretivist (constructivist) view holds that individuals produce multiple realities within social interactions and that the researcher and reality are inseparable. Interpretivism aims to understand and gain knowledge by studying the differences between individuals as social actors. Interpretivism argues that research findings cannot be generalised since they are bound by the realities of the individuals holding them. Generally, qualitative research methods are used (interviews, participant observations, pictures, diaries and documents) when conducting research from an interpretivist philosophy (Creswell, 2014:8; Pasian, 2015:62; Roller & Lvrakas, 2015:3; Punch, 2014:17; Chilisa & Kawulich, 2012:57; Alharahsheh & Pius, 2020:42).

Realism as a philosophy relates to the notion that objects exist independently from the human mind; in other words, the objective under investigation operates independently from the observer and other social actors. Realism examines objectives based on whether they align with reality rather than whether they can be verified. Realists generally accept non-scientific data sources as adequate and acknowledge that inaccuracies and misrepresentations of knowledge exist. Although no specific research method is suggested for a realist philosophy, mixed research methods (quantitative and qualitative) are generally encouraged (Gray, 2020:29; Saunders, Lewis & Thornhill, 2020:119).

A *positivist* (post-positivist) philosophy aims to gain knowledge that can be used as a basis for universal propositions. A patterned, identifiable, measurable and objective reality is assumed in a positivist philosophy. The researcher does not affect, or is affected by, the research

(biased-free) and believes that truth should be discovered, not constructed. Knowledge is gained by gathering facts from which law-like generalisations are produced. Commonly, highly structured quantitative research methods are used (questionnaires, observations, tests and experiments) to gather data, from which findings and conclusions are derived (Saunders, Lewis & Thornhill, 2020:119; Leavy, 2017:12; Chilisa & Kawulich, 2012:57).

These five research philosophies were considered, and the positivist (post-positivist) approach was the most appropriate for this study (refer to section 5.5.3). The researcher approached the research from the viewpoint that:

- The world is real and measurable and exists independently.
- General patterns of cause are grounds for predictions.
- The researcher should not affect, nor be affected by, the research (ontology assumption).
- Truth is to be discovered and not constructed (ontology assumption).
- Findings are made deductively (ontology assumption).
- The researcher should be objective and independent throughout the research process (axiology assumption).
- Only observable phenomena provide credible data or facts (epistemology assumption).
- Research bias should be rejected and should not influence the study's outcome (epistemology assumption).

5.5.2 Approaches to theory development

A researcher's approach to developing theory is yet another aspect that should be considered before conducting research (Saunders, Lewis & Thornhill, 2020:130). Three approaches to theory development are identified in the literature: deduction, induction and abduction (Saunders, Lewis & Thornhill, 2020:130; Cassell, Cunliffe & Grady, 2018:59; Mir & Jain, 2018:115). Each of these is briefly discussed below, followed by a motivation for the choice of deduction as the method for theory development in this study.

- The process of deductive reasoning involves drawing conclusions from a known principal or existing theory. Generally, when following a deductive approach, the

researcher develops and tests hypotheses from existing theories to verify these theories. Consequently, the purpose of deduction as a method of theory development is to test existing theories and not to develop new theories (Babbie, 2016:51). When theories are tested deductively, a clear theoretical position is formed prior to data collection (as done in the exploratory stage of this study) (Saunders, Lewis & Thornhill, 2020:153, De Vos, Delpont, Fouché & Strydom, 2012:48). Thereafter, primary data are generally collected quantitatively to tests the existing theories (Bryman, 2016:21) and to arrive at law-like conclusions (Melnikovas, 2020:38).

- Induction is an approach to theory development which involves establishing a proposition based on observation (Zikmund et al., 2013:44). A study that develops inductively is based on the principle that theory is developed after data have been collected (Saunders, Lewis & Thornhill, 2020:153). Induction is generally associated with a qualitative research methodology and sets out to create or construct new theories (Bryman, 2016:24).
- Abduction entails that a researcher moves between deduction and induction to develop hypotheses and theories to provide a possible explanation for research findings (Melnikovas, 2020:34). With this approach, researchers gather data to identify and develop new conceptual frameworks or conclusions (Saunders, Lewis & Thornhill, 2020:153).

For this study, the researcher followed a deductive approach to theory development. The existing theories on PSM as an internal management function and PS competencies were presented and analysed in chapters two and three in order to develop the theoretical frameworks in chapter four. Thereafter, deductive conclusions were drawn (in chapters six and seven) from the statistical analyses of the data gathered through the questionnaire completed by PSPs in the private sector of the South African business environment.

5.5.3 Methodological choices

Saunders, Lewis and Thornhill (2020:144) stated that a researcher's methodological choices are related to the techniques and methods used to collect and analyse data. According to Tustin et al. (2005:89), primary data are gathered to address specific research problems or achieve specific research objectives when secondary data are deemed inadequate. Therefore,

the most appropriate methodological choice must be identified when conducting primary research (Tustin et al., 2005:89). Methodological choices are generally classified as qualitative or quantitative, where qualitative is described as providing meaning from data through interpretive techniques and quantitative is defined as delivering interpretations and conclusions based on numerical measurements (Cooper & Schindler, 2014:664; Zikmund et al., 2013:113).

A qualitative research methodology allows researchers to gain insight into specific areas that may be difficult to quantify. This enables a researcher to explore and understand a social or human problem (Creswell, 2014:4). A qualitative approach is less structured and more flexible and is based on personal value judgements and meanings (Babin & Zikmund, 2016:109; Cooper and Schindler, 2014:144); it is ideal for extracting feelings, emotions, motivations and perceptions (Cooper & Schindler, 2014:145).

In contrast, a quantitative research methodology generally involves collecting primary data from a sample of individuals to project the results to a broader population (Quinlan et al., 2015:399). Numbers, figures or statistical parameters present the results obtained from a quantitative research methodology. Results are statistically analysed with precise estimations; therefore, the results can be deemed valid and reliable (Saunders, Lewis & Thornhill, 2012:472-473). Primary quantitative data can be collected through numerous methods, such as observations, experiments and surveys (Quinlan et al., 2015:131-135; Sachdeva, 2009:111).

After identifying the most appropriate research methodology (qualitative or quantitative), the researcher must decide whether the primary data should be collected using a mono-, multi- or mixed-method approach (Saunders, Lewis & Thornhill, 2020:144). When gathering primary data using a mono-method, the researcher deploys a single quantitative or qualitative data-gathering technique to gather the data. With a multi-method, however, the researcher deploys either two or more quantitative or qualitative data-gathering techniques. Finally, when selecting a mixed-methods approach, the researcher deploys a qualitative and quantitative data-gathering technique to gather the necessary primary data (Melnikovas, 2020:39).

For this study, the researcher employed a quantitative mono-method research methodology where findings and conclusions are made deductively and precisely to address the identified knowledge gap. Moreover, a quantitative mono-method research methodology aligns with the researcher's positivist philosophical approach (section 5.5.1).

5.5.4 Research strategies

Various research strategies are identified throughout the literature. However, the eight most common research strategies in business research are: experiments, surveys, case studies, action research, grounded theory, ethnography, archival research, and narrative inquiry (Saunders, Lewis & Thornhill, 2020:144). Researchers are advised to select a research strategy based on its ability to answer the research question and address the research objectives since no research strategy is superior to another (Saunders, Lewis & Thornhill, 2012:141).

After considering the eight research strategies identified above, surveys were selected as the most suitable to achieve this study's objectives. Surveys are particularly suitable for descriptive research that uses quantitative research methods and approaches theory development deductively (Saunders, Lewis & Thornhill, 2012:141; Strydom, Jooste & Cant, 2002:156).

Surveys refer to the method in quantitative research whereby a researcher gathers primary data by administering a survey to a target sample – to, for instance, estimate population parameters and enable statistical analyses. Surveys collect quantitative, numerical primary data that are then statistically analysed to describe trends in responses to questions, to test hypotheses, or to answer research questions. Additionally, survey data can be compared to past studies (Quinlan et al., 2015:268; Creswell, 2012:376; Weathington, Cunningham & Pittenger, 2012:90). Surveys are the most common primary data-collection method used in business research and use a structured approach to obtain quantified responses (Weathington, Cunningham & Pittenger, 2012:90).

Thus, the researcher gathered primary data on PSPs' competencies in South Africa's private business sector to perform statistical analyses (descriptive analyses, EFA and SEM) and develop a competency framework.

5.5.5 Time horizon of survey research

There are two types of time horizons when conducting a survey: cross-sectional and longitudinal. Longitudinal designs study respondents over time, whereas cross-functional designs collect primary data on respondents' current opinions, beliefs or attitudes (Creswell, 2012:377).

In order to determine the most appropriate time horizon for a research project, it is advised that the researcher considers the research question (Saunders, Lewis & Thornhill, 2020:155). As indicated in sections 1.3.1 and 5.3, the research question for this study is: What competency set will support PSPs in the South African business environment's private sector in performing their tasks efficiently and effectively?

To answer this study's research question, the researcher used a survey research strategy with a cross-sectional time horizon. Primary data were collected using an anonymous online self-administered questionnaire to determine the current views of PSPs in the private business sector in South Africa on the competency set required to perform their tasks efficiently and effectively.

To conclude section 5.5, a summary of the study's research design is presented in table 5.2 below.

Table 5.2: Summary of the study's research design

Aspects relating to the research design	
Research philosophy	Positivist (post-positivist) philosophy
Approach to theory development	A deductive approach to theory development
Methodological choice	Quantitative mono-method research methodology
Research strategy	Survey research
Time horizon	Cross-sectional

Source: Compiled by the researcher, 2023.

5.6 Designing the research instrument

A research instrument aims at ensuring respondents are motivated to participate, relevant data are collected, and bias is minimised. When conducting survey research, a questionnaire is generally developed by formulating questions and response options based on the research objectives (Weathington, Cunningham & Pittenger, 2012:100; Tustin et al., 2005:98). Weathington, Cunningham and Pittenger (2012:184) stated that the purpose of a questionnaire is twofold. First, a questionnaire is a means to replace general concepts and the ambiguity of words with operationally defined constructs. Secondly, a questionnaire standardises measurements, which allows a comparison of responses through a standard set of scales and procedures.

5.6.1 Questionnaire type

The benefits and challenges of online self-administered questionnaires are discussed by numerous authors in the field (Cooper & Schindler, 2014:225; Mentz, 2014:144; Marx, 2013:93-94; Tustin et al. 2005:145, 184, 208). For this study, this type of questionnaire was selected due to the benefits of:

- Increasing the targeted geographical area without increasing costs.
- Eliminating the need for a fieldworker or interviewer.
- Preventing interviewer bias.
- Ensuring the anonymity of the respondents.
- Allowing respondents time to think about the questions and their answers.
- Increasing the accessibility of respondents.

The benefits of using an online questionnaire outweighed the following challenges of an online questionnaire:

- Respondents do not have an interviewer on hand to explain questions.
- The targeted population may not have access to the internet.
- Using the internet poses computer security issues.

The questionnaire was hosted on LimeSurvey, an online hosting platform that the respondents could access through a direct link.

5.6.2 Sections of the questionnaire

Before discussing the different sections of the questionnaire, it should be noted that the researcher used the questionnaire developed by Dr K.P.M Stek (2021) (with permission¹⁶) as a guide in developing the questionnaire for this study. Dr Stek's questionnaire was used in his research to identify the necessary and sufficient purchasing skills to increase business success.

Throughout the developmental stage of the questionnaire, Weathington, Cunningham & Pittenger's (2012:184) three fundamental aspects to questionnaire development were considered: the dependent and independent variables of the study, the most convenient method for producing the necessary data, and determining the most accurate measuring techniques. The following matters are pertinent:

- The independent and dependent variables were identified in chapter three. The 14 dependent variables consist of the seven PS objectives, the two PS processes and the six PS management activities; the 64 independent variables identified by the researcher consist of 22 technical, 12 internal and external enterprises, 20 interpersonal and 10 strategic PS competencies.
- It was decided that a questionnaire would be suitable for gathering the necessary data, as it is a valid and reliable research instrument for asking respondents for their personal insights on the importance of the 64 PS competencies.
- The 64 independent variables were subjected to EFA and reduced to 13 independent variables, referred to as sub-category competency factors (see section 5.9.3.1).
- To ensure the correct measuring techniques were used, the researcher focused on the design of the questionnaire by meticulously considering the wording of each question. It was essential to establish straightforward questions and eliminate confusion and uncertainty about precisely what was asked. The questionnaire was developed in collaboration with a statistician, and a pilot study was conducted (see section 5.6.3) to ensure pertinent data were collected.

The questionnaire consisted of 11 sections and 33 questions. Respondents had to complete all questions in each section in order to advance to the next section.

¹⁶ Please see appendix B for the permission letter from Dr K.P.M Stek.

5.6.2.1 Introductory page

After opening the link, respondents landed on an introductory page. The following information was provided on this page:

- The purpose of the study.
- Why the respondent was selected for participation.
- What the data would be used for.
- Responding was voluntary, and respondents could choose whether to respond or not.
- Respondents could withdraw from the study at any time.
- The questionnaire was anonymous; responses could not be connected to any individual.
- The questionnaire would take only 10 to 15 minutes to complete.
- Respondents would not benefit or experience any negative consequences from completing the questionnaire.
- All information would be treated confidentially and stored on a password-protected computer for five years.
- The study had been reviewed and approved by the Ethical Review Committee of the Department of Applied Management Research (UNISA).
- Respondents were requested not to complete the questionnaire more than once.

5.6.2.2 Qualifying questions

In order to ensure only respondents in the PS field in the private sector of South African business completed the questionnaire, three qualifying questions were asked:

- Do you work within the PSM field?
- Do you work within the South African business environment?
- Do you work or consult within the private sector of the South African business environment?

The respondent could answer yes or no (dichotomous question measured on a nominal scale) to these questions. If the respondent answered *no* to any one of these questions, they were thanked for their time but were not allowed to continue with the questionnaire. However, if a respondent answered *yes* to all three questions, they were permitted to continue.

5.6.2.3 Section A – Receiving of questionnaire link

Section A was aimed at establishing how each respondent had obtained the link to the questionnaire (a multichotomous question measured on a nominal scale). Respondents had to indicate whether they received the link through SAPICS, AISCR, CIPS, LinkedIn, a referral from another PSP, or by specifying how they did so in an open textbox.

5.6.2.4 Section B – Importance of and time spent on PS objectives as dependent variables

Section B was to determine the importance level and time the PSP spent on each of the seven PS objectives (rating questions measured on an ordinal scale). In order to determine the importance level, a five-point Likert-type response scale was used, ranging from *of no importance* to *of critical importance*. The time spent on the specific PS objective was also measured on a five-point Likert-type response scale, ranging from *never* to *always*.

5.6.2.5 Section C – Importance of and time spent on PS processes as dependent variables

Before respondents were asked to indicate the importance level and time spent on the two PS processes in section C, the definitions of these processes, as established in chapter two, were presented. The purpose of providing definitions of the *tactical and operational purchasing* and *strategic sourcing processes* was to ensure respondents could identify which processes (as defined in the study) they were involved in. Respondents were asked to rate the importance level and time spent on the two PS processes (using an ordinal measurement). A five-point Likert-type response scale was used, ranging from *of no importance* to *of critical importance* to determine the respondent's view on the importance of the PS processes and *never* and *always* regarding the time spent on these processes.

5.6.2.6 Section D – Importance of and time spent on PS management activities as dependent variables

As in section C, section D started by defining the five PS management activities developed in chapter two. Again, using rating questions (ordinal measurement) with a five-point Likert-type response scale, respondents were asked to indicate the level of importance, from *of no*

importance to *of critical importance* and time spent, ranging from *never* to *always* regarding the specific PS management activities.

5.6.2.7 Section E – Agreement on the application of technical PS competencies as independent variables

Section E required respondents to indicate their level of agreement on a five-point Likert-type response scale ranging from *fully disagree* to *fully agree* on applying technical PS competencies to perform PS tasks efficiently and effectively. The 22 technical PS competencies identified in chapter three were presented for rating on an ordinal scale. It should be noted that assessment on a Likert scale is a widely accepted method when examining PS competencies (Stek & Schiele, 2021:6).

5.6.2.8 Section F – Agreement on the application of internal and external enterprise PS competencies as independent variables

Respondents' level of agreement on applying *internal and external enterprise PS competencies* to perform PS tasks efficiently and effectively was measured ordinally through rating questions. A five-point Likert-type response scale ranging from *fully disagree* to *fully agree* was used to capture the respondents' views on 12 internal and external enterprise PS competencies identified in chapter three.

5.6.2.9 Section G – Agreement on the application of interpersonal enterprise PS competencies as independent variables

In section G, respondents were asked to rate their level of agreement on *applying interpersonal PS competencies* to perform their tasks and responsibilities efficiently and effectively by rating questions measured on an ordinal scale. The researcher again used a five-point Likert-type response scale ranging from *fully disagree* to *fully agree*. Twenty interpersonal competencies were listed based on the consolidated list developed in chapter three.

5.6.2.10 Section H – Agreement on the use of strategic PS competencies as independent variables

Section H of the questionnaire presented respondents with 10 strategic competencies. As with previous sections, this section focused on the independent variables. Respondents were required to rate their level of agreement (on an ordinal scale, ranging from *fully disagree* to *fully agree*, using a five-point Likert-type response scale) on the need to apply the 10 *strategic competencies* to ensure they perform their PS tasks and responsibilities effectively and efficiently. Ten strategic PS competencies were presented for rating.

5.6.2.11 Demographic information

In order to present a profile of the respondents who took part in the study, three demographic questions were asked:

- How many years have you worked in the PSM field? Respondents could select from four options ranging from *less than three years* to *eight years or more* (multichotomous question measured on an ordinal scale).
- Did you specifically study in the field of PSM? Respondents could select either *yes* or *no* (dichotomous question measured on a nominal scale). If *no*, they were asked to specify how they had prepared themselves to work within the PSM field in an open text box.
- What is your highest level of formal education? Nine options were presented, ranging from *none* to *a doctoral degree* (multichotomous question on an ordinal scale). In the case of a respondent with a formal qualification other than the nine options presented in the questionnaire, an open text box was provided to specify their highest level of formal education.

5.6.2.12 Organisational information

Three questions addressed the type of business the respondent worked for and the position of the respondent. First, a question (measured on a nominal scale) asked respondents to indicate the industry of the business for which they worked. Seven options were available. If the respondent did not work within one of the seven industries listed, they could select to specify the industry in an open text box. Secondly, they were asked about their current

business position. This was an open-ended question where they had to type in their response. Lastly, they were required to indicate the management level of their current position. Five options were presented, ranging from *non-management member of the PS team* to *senior-level management*. The option of *other* with an open text box was available.

5.6.3 Pre-testing and pilot testing of the questionnaire

Pre-testing of a research instrument refers to individuals (who do not form part of the targeted population) evaluating the research instrument – in terms of the wording, sequence of questions, time spent on answering the questions, use of language, type of primary data gathered, and identifying any possible limitations or challenges regarding the questionnaire (Hair, Page & Brunsveld, 2020:279). Several academics in the PSM field, as well as a statistician and an editor, assisted in the pre-testing process.

After studying the literature and consulting Dr K.P.M Stek, a well-known researcher in the field of PS competencies, a draft of the questionnaire was presented to the study supervisor and a statistician. The supervisor, Emeritus Professor JA Badenhorst-Weiss, is widely regarded as an expert in the field of PSM and, therefore, deemed as a theoretical expert to evaluate the questionnaire's content (content validity). The statistician was tasked with evaluating the questions to determine whether the data would suit the anticipated statistical analyses. Numerous drafts were developed until all concerned were satisfied. The questionnaire was then uploaded to LimeSurvey for pilot testing.

Pilot testing is the process of testing the research instrument among respondents who form part of the targeted population. A pilot study aims to determine the accuracy of the instructions and the appropriateness of the questions and to identify any weaknesses in the research instrument (Bryman & Bell, 2015:272).

Twenty PSPs in the South African business environment were invited to participate in the pilot test. Eighteen completed the questionnaire, and comments were received from 5 PSPs. The comments included recommendations that the introduction be shortened (3 PSPs) and that the descriptions of the different management levels be sharpened (2 PSPs). All comments and recommendations were considered, and several changes were made. The pilot test represented the final step in developing the questionnaire.

5.7 Developing the data-collection plan

When a researcher sets out to develop a data-collection plan, four aspects should be considered (Hair, Page & Brunsveld, 2020:179; Malhotra, 2015:272):

- Defining the targeted population.
- Determining the sample frame, if applicable.
- Selecting the data-collection method.
- Determining the sample size, if applicable.

As they apply to this study, these aspects are discussed in sections 5.7.1 to 5.7.4.

5.7.1 Define the targeted population

According to Kumar (2019:174) and Babbie (2016:193), a targeted population refers to the collection of elements with the necessary information to assist the researcher in answering the PRQ. In other words, the targeted population refers to the total number of elements of a specific population that is of importance to the researcher (Babin & Zikmund, 2016:69)

For this study, the target population was PSPs in the private sector of the South African business environment. Therefore, the elements within the population are the individual PSPs (Cooper & Schindler, 2014:338).

5.7.2 Specify sample frame

In order to provide clarity on the sample frames discussed below, it should be mentioned that three data-collection methods were used to gather primary data for this study: a census approach and two non-probability approaches (purposive [judgemental] and multiplicity [snowball] sampling). These data-collection methods are discussed in section 5.7.3. However, it should be noted that with non-probability sampling methods, no sampling frame exists (Saunders, Lewis & Thornhill, 2020:233). Hence, the discussion below on the sample frame only applies to the census approach.

A sampling frame refers to a list that assists in identifying possible elements within the targeted population; for example a comprehensive list of PSPs in the private sector in South Africa (Malhotra, 2015:272; Quinlan et al., 2015:268). For this study, multiple-frame sampling

was used. Three sample frames were identified: the membership lists of SAPICS, AISCR and the South African region of CIPS.

SAPICS, a professional membership association, is the South African professional body for supply chain management, of which PS is a subset (see section 1.2.1). SAPICS aims to advance professionals operating in the supply chain management profession (SAPICS, 2022). SAPICS was deemed suitable for collecting primary data as it is the leading professional body for supply chain management in South Africa. Its members are considered to be up to date on all PS activities in South Africa and beyond.

AISCR is a non-profit research institute focused on conducting innovative research on supply chain management to support continent-wide sustainable development and growth (AISCR, 2022). It is focused on skills development in supply chain management, of which PS is a subset (see section 1.2.1). AISCR was a fount of suitable information from which to gather primary data.

CIPS is a global organisation that strives to further the careers of PSPs by providing education, training, insights, information and tools to develop their own best practices and build a community that will drive positive change across the PS profession (CIPS, 2023). Therefore, CIPS (South Africa) was included in the sample frame to collect primary data.

Since a PSP can belong to all three organisations, the researcher stipulated on the introductory page that if the PSP received the link multiple times, they should only complete the questionnaire once.

5.7.3 Select data-collection method

When gathering data from the target population, a researcher can gather data either from every element within the target population (census) or from a number of elements within the target population (probability or non-probability approaches) (Hair, Page & Brunsveld, 2020:179; Saunders, Lewis & Thornhill, 2020:292).

As stated in section 5.7.2, three data-collection methods were used to reach the targeted population: the census approach and the non-probability methods of purposive (judgemental) and multiplicity (snowball) sampling. In order to increase the response rate,

the researcher deployed all three methods simultaneously. Data collection took place from November 2022 to April 2023. These data-collection methods are discussed below.

5.7.3.1 Census approach

A census approach involves contacting all elements of a target population. For this study, the questionnaire was sent to all potential respondents within the sample frames (SAPICS, AISCR and CIPS membership lists). The process used by the researcher to contact, gain permission and distribute the questionnaire to members of SAPICS, AISCR and CIPS is further discussed in section 5.8.

5.7.3.2 Non-probability sampling approaches

When gathering primary data using a non-probability sampling approach, the researcher decides whether to include or exclude elements in the sample using subjective methods, such as judgement or personal experience. Consequently, not every element in the targeted population has an equal probability of being selected as part of the sample (Hair, Page & Brunsveld, 2020:192;184). In addition to the census approach in this study, two non-probability methods were used to gather primary data: purposive (judgemental) and multiplicity (snowball) sampling.

a) Purposive (judgemental) non-probability approach

In purposive non-probability sampling, sample elements are chosen with a specific purpose; the researcher arbitrarily and subjectively selects the sample (Gournelos, Hammonds & Wilson, 2019:122). Purposive non-probability sampling can therefore be classified as a form of convenience sampling (Hair, Page & Brunsveld, 2020:193). By using purposive non-probability sampling, research samples are formed that are highly relevant to the context (Vijayamohan, 2022). A highly suitable sample is one that represents all characteristics of the targeted population (Cooper & Schindler, 2014:338).

The researcher used LinkedIn¹⁷ to connect with possible respondents if they listed that they worked within the private South African PS field. They were provided a link to the anonymous online self-administered questionnaire and invited to participate in the research. Section 5.8

¹⁷ LinkedIn is a network for professionals to connect (LinkedIn, 2022).

elaborates on how the primary data were collected from the professionals identified through LinkedIn.

b) Multiplicity (snowball) non-probability approach

Due to the low response rate of surveys (Taljaard, 2020;243), the researcher also used multiplicity (snowball) non-probability sampling to ensure an adequate sample size was achieved (see section 5.7.4). The researcher requested respondents who had completed the questionnaire to assist in identifying other possible respondents who met the target population criteria (Hair, Page & Brunsveld, 2020:193; Gournelos, Hammonds & Wilson, 2019:122). A closing statement was added to the questionnaire in which qualifying PSPs were asked to share the link with PSPs within their network.

5.7.4 Determine sample size

A *sample* is defined as a subset or representative group of a population (Tustin et al., 2005:336). For a researcher to determine an appropriate sample size, a combination of practical and statistical factors must be considered. For example, resource availability in terms of time, money and personnel, the nature of the research and the advancement of the statistical techniques used (Malhotra, 2015:274; Cooper and Schindler, 2014:662; Tustin et al., 2005:359). Schreiber, Nora, Stage, Barlow and King (2006:326) stated that the ideal sample size is 10 participants for every free parameter estimate, but that the normality of the data and the method of estimation used by the researcher should also be considered. Determining an appropriate sample size is vital to achieving the desired statistical power level (McQuitty, 2004:167). Since the research design called for EFA and SEM to be performed on the primary data, the appropriate sample size for the study was directly influenced by the sample size specifications for these statistical tests.

Numerous authors (Pallant, 2011:18; Tabachnick, Fidell & Ullman, 2007:613) indicated that a sample size of at least 300 is necessary to conduct factor analyses, whereas other authors (Kline, 2015:16; Garver & Mentzer, 1999; Hoelter, 1983) stated that a sample size of at least 200 is necessary to perform SEM. Hair, Anderson, Babin and Black (2010: 661-664) further suggested that additional circumstances (presented in table 5.3) may require an increase in sample size when performing SEM.

Table 5.3: SEM sample size specifications

Description of SEM	Suggested sample size
SEM with five or fewer constructs, where each construct has more than three items and is characterised by high item commonalities.	100
SEM with seven or fewer constructs, where each construct is characterised by modest item commonalities and no under-identified constructs are present.	150
SEM with seven or fewer constructs, where each construct is characterised by lower item commonalities and/or multiple under-identified constructs are present.	300
SEM with a large number of constructs, where each construct has fewer than three measured items as indicators and multiple low-item commonalities.	500

Source: Hair et al., 2010: 661-664.

Considering the minimum sample number needed to conduct factor analysis and the sample adequacy of each SEM, the sample size of 309 was deemed adequate for this study.

5.8 Collecting of data

As mentioned in section 5.7.3, three data-collection methods were deployed to gather primary data: a census approach and the two non-probability sampling approaches – purposive and multiplicity. The steps are discussed below.

5.8.1 Census approach

The marketing manager of SAPICS was approached for assistance in obtaining permission to distribute the questionnaire to their members. As a SAPICS member, the researcher had access to the marketing manager’s email address. After obtaining the necessary permission, the questionnaire link was sent to members via an official SAPICS email. Members were informed that the questionnaire was to assist a fellow SAPICS member in gathering primary data towards a PhD study on PSP competencies and that it would not take more than 10 minutes to complete. SAPICS members were invited to share the questionnaire link with other

PSPs within their network. SAPICS also posted an invitation to participate in the study on their social media platforms, including their LinkedIn and Facebook pages.

The researcher approached the president of AISCR for permission to distribute the questionnaire to their members. As a member of AISCR, the researcher had access to the president's email address. Once permission was granted, the association's secretary was tasked with emailing members inviting them to assist a fellow AISCR member in gathering data by completing the questionnaire and sharing the questionnaire link with PSPs within their network.

Lastly, the researcher contacted the Head of CIPS South Africa by obtaining their details from the CIPS Southern Africa webpage. The purpose of the study and the data-gathering technique was explained, and permission was granted to contact their members. The membership development manager assisted in distributing the questionnaire among members. The questionnaire link and information on the research were also disseminated via their social media platforms. As with SAPICS and AISCR members, CIPS members were invited to share the questionnaire link with PSPs within their network.

5.8.2 Purposive (judgemental) non-probability approach

LinkedIn was used to connect with possible respondents in the South African PS field. The key terms *sourcing*, *strategic sourcing*, *purchasing*, *buyer*, and *procurement* were used. LinkedIn offered a list of professionals who had listed any one of the key terms on their profile. After viewing the profiles of the professionals, the researcher invited only those in the private sector of the South African PS field to complete the questionnaire. Those who accepted the invitation were provided additional information on the project and the link to the questionnaire.

Again, it should be noted that as with SAPICS, AISCR and CIPS members, PSPs contacted via LinkedIn were requested to share the questionnaire link with others in their network – but reminded to respond only once.

5.8.3 Multiplicity (snowball) approach

As mentioned previously, all PSPs who received the link to the questionnaire via SAPICS, AISCR, CIPS and LinkedIn were asked to share the link with PSPs within their network.

Through the three data-collection approaches discussed above, the researcher gathered 313 completed questionnaires from PSPs within six months (November 2022 – April 2023). Of the 313 completed questionnaires, 21 respondents indicated that they received the link through SAPICS, six through AISCR, none through CIPS, 263 through LinkedIn, 15 through a referral and eight through an unlisted option.

5.9 Analysis of data

In order to test relations and draw conclusions from data, a researcher needs to categorise, order and summarise the data into an interpretable form. This process is called data analysis (De Vos et al., 2012:249). For this study, the process of data analysis is discussed under the following four headings: cleaning and validation of the data collected, presenting the data profile through descriptive statistics, discussing the validity and reliability of the data and, lastly, the different statistical tests that were conducted on the data.

5.9.1 Cleaning and validation of the collected data

When collecting data, errors such as missing values, typos, and mixed formats are standard and regarded as a barrier to producing accurate findings. Ilyas and Chu (2019:1) stated that data preparation and cleaning are vital enablers to unlock the actual value of data. Cleaning the data of this study involved working through the raw data extracted from LimeSurvey. The dataset, consisting of 313 respondents, was cleaned in Excel.

The researcher identified four discrepancies relating to the sector in which respondents worked. Since this study focuses exclusively on PSPs in the private sector, a qualifying question was asked to determine the sector (public or private) in which they operated. If a respondent indicated that they worked in the private sector, they were allowed to continue with the questionnaire; however, if a respondent worked in the public sector, they were thanked for participating but could not continue with the questionnaire. Later in the questionnaire, when respondents were asked, *'In what industry does the business you work for operate?'*, four respondents indicated that they worked for the government, in other words, the public sector (response 1: government, response 2: public sector supply chain management (SCM), response 3: public revenue collector and response 4: state-owned entity). It can only be suggested that the respondents did not fully understand the qualifying

question (*Do you work or consult within the private sector of the South African business environment?*) and indicated that they worked within the private sector of South Africa. Consequently, these four respondents' responses were discarded from the dataset – leaving 309 respondents.

5.9.2 Descriptive statistical analyses

Descriptive statistical analyses are generally performed to obtain a first impression of the data gathered through the research instrument (Van Zyl, 2014:162). Descriptive analyses are considered the fundamental transformation of research data that describes the essential characteristics (Zikmund et al., 2013:484); this includes calculating and comparing the distribution of scores and measuring the central tendency (Van Zyl, 2014:162-164). These characteristics can be reported using tabular and graphical illustrations for nominal and ordinal data and numerical descriptive statistics, including means and averages for continuous data (Williams, Sweeney & Anderson, 2006:12-13). In this study, the data was descriptively analysed in the first section of chapter six using frequency distributions.

5.9.3 Inferential statistical analyses

Hair, Black, Babin and Anderson (2014:4) stated that multivariate statistical analyses (a commonly used inferential statistical technique) entail using statistical techniques that simultaneously analyse multiple measurements on objects or individuals under investigation. Hence, the analysis of any two or more variables is classified as multivariate statistical analysis. This study deployed two multivariate statistical techniques: EFA and SEM.

5.9.3.1 Exploratory factor analysis

Mukherjee (2020:200-201) stated that 'factor analysis tries to explain joint variations, represented by inter-correlations among observed and moderately correlated variables in terms of a potentially fewer number of unobserved, uncorrelated variables, called factors.' In other words, factor analysis aims to establish a reduced number of factors from a more extensive set of measured variables by identifying the underlying constructs or factors that are generally used in other statistical analyses (Shrestha, 2021:1; Watkins, 2018:219-220; Aaker, Kumar, Day & Leone, 2011:489).

When conducting factor analysis, a researcher can conduct confirmatory factor analysis (CFA) or EFA depending on the goal of the analysis. CFA is conducted to confirm theories about the factors; thus, CFA indicates the extent to which the factors match reality. CFA is generally used on instruments already available in the literature and largely not adapted or added to (Hair et al., 2014:603). When conducting CFA, sophisticated and complex statistical techniques are deployed to test theories or hypotheses relating to a structure's underlying set of variables (Shrestha; 2021:1). In contrast, EFA establishes fewer factors by examining the interrelationship among the variables (determining dimensionality derived from statistical results) that may indicate a theoretical construct (Hair et al., 2014:92;603). 'Exploratory factor analysis clusters similar variables into the same factor to identify underlying variables and it only uses the data correlation matrix.' (Shrestha, 2021:6). Determining the number of factors to retain from a dataset is probably the most critical phase of EFA, as the factors are generally used for additional statistical analysis (Garrido, Abad & Ponsoda, 2011:551-552).

This study does not aim to confirm or reject preconceived theories or hypotheses relating to the competency set PSPs require to perform their tasks efficiently and effectively. It aims to establish sub-categories within each competency category to use in SEM. Thus, EFA with principal axis factoring (PAF) was conducted in SPSS version 28 on the data relating to the different competency categories in order to determine whether the statements on the different PS competency categories (sections E, F, G and H of the questionnaire) represent identifiable factors (sub-categories).

The 64 competencies identified through the traditional literature review (22 technical, 12 internal and external enterprise, 20 interpersonal and 10 strategic) were reduced to 13 sub-category competency factors. The 13 sub-category competency factors consist of *five technical competencies* (operational PS competencies, internal technical-related cooperation, innovative supply competencies, integrative supply competencies, and analytical competencies), *three internal and external enterprise competencies* (supply-side transformational-relationship competencies, internal product-related cooperation, and supply chain wide relations and analysis), *three interpersonal competencies* (internal values and social competencies, personal-dynamics management competencies, and leadership competencies) and *two strategic competencies* (visionary competencies and personal

strategic competencies). It should be noted that since these sub-category competency factors are derived from statistical results, the number of sub-category competency factors and the different variables included in each sub-category competency factor were unknown to the researcher beforehand. The researcher could only name the different sub-category competency factors after considering the different variables within each factor (see chapter six) (Hair et al., 2014:603).

Sections a to c discuss the researcher's steps to perform EFA on the four competency categories. Section d discusses parallel- and Velicer's minimum average partial (MAP) analysis, as alternative methods to create sub-categories. Then, section e is dedicated to discussing the reliability and validity measures considered for the EFA.

a) Evaluating the sample size and the data's suitability

In order to determine whether a dataset is suitable for factor analysis, the sample size and the strength of the variables should be considered. According to Pallant (2011:18), Tabachnick, Fidell and Ullman (2007:613) and Hair et al. (2014:101), a sample size of at least 300 is necessary to conduct factor analysis. This study's sample size was 309 ($n = 309$), and therefore suitable for factor analysis.

To determine the factorability of the data (correlation matrix), the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were considered. The KMO measure of sampling adequacy measures the suitability of the data for factor analysis, in other words, the adequacy of the sample size for each variable within the model and the complete model (Watkins, 2018:226). Meanwhile, Bartlett's test of sphericity indicates whether sufficient correlations exist among different variables and whether one can continue to perform factor analysis.

A KMO value ranges between 0 and 1, and a value of 0.6 and above indicates sampling adequacy for factor analysis. Bartlett's test of sphericity should be significant ($p < 0.05$); thus, the factorability of the correlation matrix is supported, and the researcher may proceed with factor analysis (Taljaard, 2020:323, Kline 2014, Tabachnick, Fidell & Ullman, 2007:613). This study used these indicators to determine whether the data fit the criteria for factor analysis.

b) Extraction of factors

Factor extraction entails identifying the least number of factors that best represent the interrelationships among the set of variables (Shrestha, 2021:7). First, the researcher determines the method of factor extraction, whereafter the number of factors representing the underlying structure of the data should be identified (Hair, Page and Brunsveld, 2020:103).

When extracting factors, either common factor analysis or component analysis can be used. As this study attempted to reveal underlying dimensions surrounding the original variables (uniqueness of each measured variable), common factor analysis, specifically PAF, was used as an extraction method (Watkins, 2018:227). The use of PAF was strengthened as an extraction method, first, due to some items displaying a nonnormal distribution as their skewness and/or kurtosis values were outside the range of between -2 and +2 (Watkins, 2018:228, Costello and Osborn, 2005:2) and, secondly, due to common factor analysis partitioning the shared variance from the unique variance and error variance (Pallant, 2011:182).

Kaiser's eigenvalue criterion was used to determine the number of extracted factors. Kaiser's eigenvalue criterion represents the total variance explained by a specific factor – only factors with an eigenvalue of one or higher were retained for this study. An eigenvalue of one or higher is deemed significant as the factor indicates a predominantly common variance rather than a unique one (Verma, 2013:363). Additionally, the total number of factors should at least explain 50% of the variance of the original variables (Farhat, Al Disi, Ashfaq & Zouari, 2023:9; Streiner, 1994:137). After the number of factors that would be retained was determined, factor rotation and interpretation received attention.

c) Factor rotation and interpretation

Factor rotation is the process whereby the factor axes are manipulated or adjusted to achieve a pragmatically meaningful factor solution (Watkins, 2018:231; Hair et al., 2014:90). In other words, factor rotation presents the pattern of factor loadings in a format that is easier to interpret (Watkins, 2018:228; Pallant, 2011:184). Two approaches to factor rotation exist, producing either oblique (correlated) or orthogonal (uncorrelated) factor solutions (Shrestha, 2021:7). An oblique structure refers to a situation where a correlation between some factors

exists, whereas within an orthogonal structure, no correlation exists between factors (Caron, 2019:2111). For this study, the researcher deployed oblique factor rotation, specifically promax with Kaiser normalisation rotation (Shrestha, 2021:7). The decision to use oblique factor rotation was due to the method being able to process large sets of data, being flexible and identifying the extent to which each factor is correlated (Field, 2013,644; Malhotra, 2015:619).

Before interpreting the factor, it is imperative to understand what the factor loading represents. A factor loading represents the correlation between the factor and the original variable – indicating which competency (original variable) correlates with each factor and the extent of the correlation (Aaker et al., 2011:497).

As indicated above, oblique factor rotation (promax Kaiser normalisation rotation) was used for this study; therefore, the pattern matrix containing the factor loadings (representing the contribution of each variable to the factor) was reported. Factors with loadings above 0.3 were considered significant for inclusion and interpretation (Pang, Kamu, Hambali, Mun, Kassim, Mohamed, Ayu, Rahim, Omar, A. & Jeffree, 2020:267; Izquierdo, Olea & Abad, 2014:367).

Each variable's commonality was considered to establish whether the variable is adequately accounted for by the factor solution (Hair et al., 2014:117). Commonality indicates the proportion of variance that is explained by the factors – a high commonality indicates that the specific variable has much in common with the other variables as a group (Zikmund et al., 2010:627). Knowing how much of the variance present in the dataset is common variance is significant because factor analysis aims to find common underlining dimensions within the dataset (Field, 2013:637). For the purpose of this study, including a variable in a factor solution was determined by whether the variable shared at least 10% of their variance with the other variables taken into consideration; in short, a commonality of 0.31.

Since it is advisable to employ multiple methods to identify and justify the most appropriate factor solution (Watkins, 2018:230; Garrido, Abad & Ponsoda, 2011:552; Fabrigar & Wegner, 2012:245), the researcher additionally conducted parallel analysis (PA) and Velicer's MAP analysis to identify the best method of extracting factors for this study.

d) Parallel analysis and Velicer's minimum average partial analysis

According to Çokluk and Koçak (2016:540) parallel analysis 'is a sample matrix based on adaptation of the K1 method, in which factors with eigenvalues greater than 1 are considered. In the K1 method, the sum of squared values of (factor loadings) correlation coefficients between a factor and a number of variables is called eigenvalues and factors with eigenvalues greater than 1 are considered significant.' In PA, a random dataset with the same number of participants and variables as the real dataset is statistically simulated and submitted to principal component analysis (PCA) and the eigenvalues generated from the random dataset are saved. This process is repeated at least 100 times. The average eigenvalues generated from the random dataset are then compared with the eigenvalues of the real dataset, and the eigenvalues extracted from the real dataset that exceed the eigenvalues of the random dataset indicate the number of factors that the researcher should retain (Caron, 2019:2111; Watson, 2018:230).

The main criticisms regarding the use of PA are (1) the overestimation of the number of factors to retain, specifically when the first eigenvalue is large and oblique factors rotation is used, (2) that PA is designed for PCA, and (3) the over-extraction of the number of factors to retain when the empirical eigenvalues are compared with the mean eigenvalues of the simulated dataset (Garrido, Abad & Ponsoda, 2011:552; Beauducél, 2001:141; O'Connor 2000:397). Due to the overestimation of competency factors and PAF being the extraction method used for this study, the PA results for all four competency categories were discarded (see section 6.3).

The third method the researcher considered to determine the number of factors for each competency category was Velicer's MAP analysis. When conducting the MAP analysis to extract factors, 'a matrix of partial correlations is calculated after each principal component is extracted, and the average of the squared partial off-diagonal correlations is calculated for each of these matrices' (Watkins, 2018:230). The number of factors retained is determined by the point where the minimum average of the squared partial correlations is obtained. In other words, the MAP analysis provides an unequivocal stopping point for the number of factors determined by separating the unique and common variance and retaining only the factors that primarily consist of common variance (Garrido, Abad & Ponsoda, 2011:552). The main criticism against Velicer's MAP analysis is that it is known to err in the direction of under-

extraction, which leads to the loss of plausible factors (Hayton, Allen & Scarpello, 2004:192; O'Connor 2000:98,396).

Garrido, Abad and Ponsoda (2011:552) warned that extracting too few factors, as with MAP, may result in substantial error as multiple factors may be combined and variables may load on incorrect factors; whereas extracting too many factors, as with PA, may result in factor splitting or factors that are noninterpretable or unreliable. Consequently, the competency factors obtained from EFA for the four competency categories were retained, and the variables within each factor were considered before naming each factor. The next step that the researcher took was to consider these factors' reliability and validity measures.

e) Reliability and validity measures considered for the exploratory factor analysis

According to Izquierdo, Olea and Abad (2014:396), obtaining different reliability and validity measures for each factor is necessary. Voorhees, Brady, Calantone and Ramirez (2016:119) added that establishing the reliability and validity of constructs within a research model is a requirement of theory building. Reliability assesses the degree of consistency between multiple variable measurements; validity measures the correlation between the recorded and the predicted data (Hammond & Wellington,2020:190). In terms of reliability and validity measures, this study considered each factor's Cronbach's alpha (CA) coefficient, a measure of internal consistency as well as convergent and discriminant validity measures.

- Cronbach's alpha (CA) coefficient

The CA coefficient measures internal consistency and is viewed as a measure of scale reliability. The CA coefficient ranges between 0 and 1, with a value of 0.7 or more regarded as acceptable for an exploratory study, such as this one. The higher the CA coefficient, the higher the correlation of the variables within the factor – the higher the internal consistency of the extracted factor (Shrestha, 2021:5).

- Convergent validity measures – Composite reliability coefficient (CR) and average variance extracted (AVE)

CR and AVE are values related to the quality of a measure and, together with the factor loadings of the items, are used to assess *convergent validity*. Convergent validity measures

the level of correlation of multiple indicators within the same construct. The higher the CR values, the higher the reliability level (Shrestha, 2021:5).

CR also measures the internal consistency of the factor loading on the latent variable. CR is a less biased convergent validity measure than the CA. A CR value of 0.6 and above indicates that variable loading in the latent variable has shared variance between them (Fornell & Larcker, 1981:49).

Relatedly, AVE refers to the average percentage of variation explained between the items of a construct – it is a summary measure of convergence among the set of items representing a reflectively measured latent construct. An AVE value of 0.5 and above indicates that, on average, the item holds more common variance with the latent factor they loaded on than error variance (Taljaard, 2020:271-271). Consequently, an AVE value of 0.5 and above is acceptable.

It should be noted that if the AVE value is less than 0.5, but the CR value is above 0.6, the convergent validity of the construct is still adequate, as AVE is considered a conservative measure of convergent validity (Shrestha, 2021:5-6; Wong, 2013:21; Malhotra & Dash, 2011:702; Fornell & Larcker, 1981).

- Discriminant validity - Fornell and Larcker criteria and Heterotrait-monotrait ratio of correlations (HTMT)

Discriminant validity tests identify the content and substance of constructs (Voorhees et al., 2016:119). Hair et al. (2019:676) stated that discriminant validity refers to the extent to which a variable is genuinely distinct from other variables. Based on the Fornell-Larcker testing system (Fornell and Larcker criteria), a researcher can assess discriminant validity by comparing the amount of variance captured by a construct with the shared variance of other constructs (Alarcón & Sánchez, 2015:8). Therefore, for any latent construct, the AVE value should be higher than the squared correlation with any other construct (Garson, 2016:67). Discriminant validity proves a construct is unique and captures elements that other measures do not (Nikolopoulou, 2022).

If the Fornell and Larcker criteria did not indicate discriminant validity, the researcher considered the HTMT criterion (Voorhees et al., 2016:119). HTMT is the average of the

heterotrait-heteromethod correlations relative to the average of the monotrait-heteromethod correlations' (Alarcón & Sánchez, 2015:10). Henseler, Ringle and Sarstedt (2015) stated that an HTMT value of 0.9 and above suggests a lack of discriminant validity, but if the constructs in the path model are conceptually different, a threshold value of 0.85 is suggested. Hair et al. (2014:788-789) agreed with Henseler, Ringle and Sarstedt (2015) that a more lenient threshold of 0.90 is acceptable and an HTMT value below 0.9 indicates discriminant validity.

5.9.3.2 Structural equation modelling

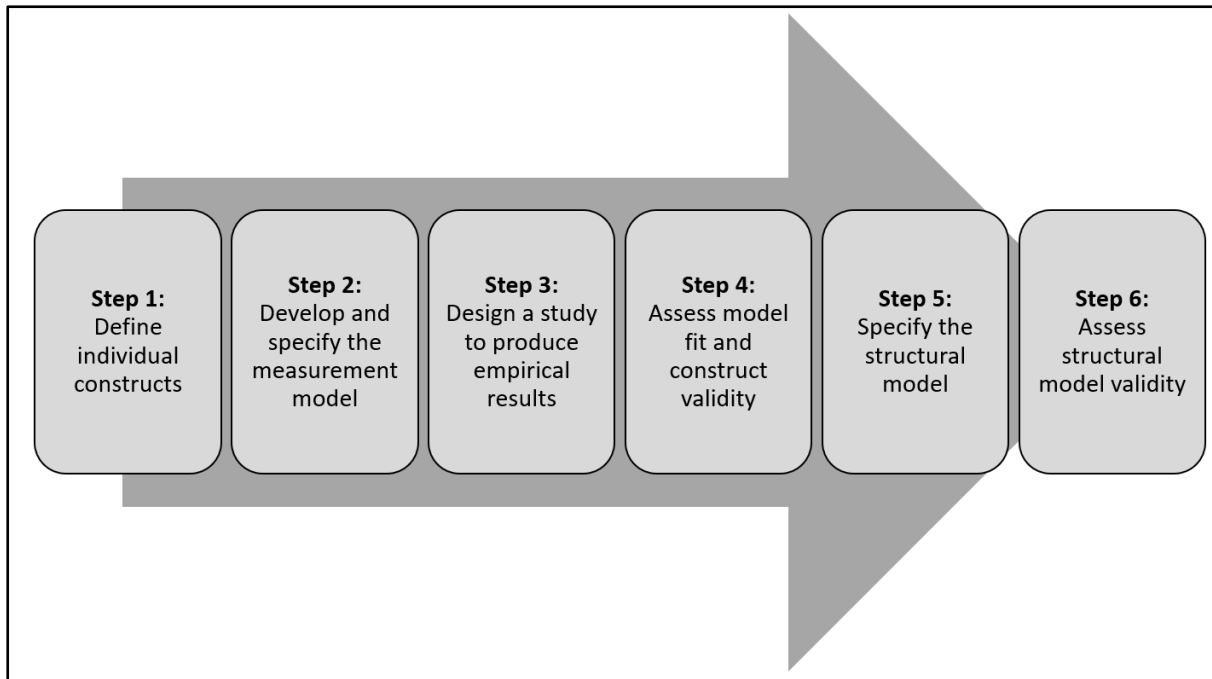
SEM is a multivariate statistical modelling approach used by researchers to test hypotheses and statistical models. It consists of equations that show causal connections by explaining relationships between constructs, as well as between constructs and observed variables (Schubert, Hubona, Roemer, Zaza, Schamberger, Chuah, Cepeda-Carrión & Henseler, 2023:2). SEM, therefore, estimates multiple, interrelated relationships between a set of constructs represented by multiple measured variables incorporated into an integrated model. SEM is suitable for theory development, testing, and validation as it accommodates exploratory and confirmatory analysis (Mukherjee, 2020:138; Sahoo, 2020:269-270). As identified by Conradie (2017:230) and Taljaard (2020:274), three critical characteristics of SEM should be considered:

- SEM provides the most efficient estimation technique for a series of multiple regression equations estimated simultaneously (Shah, Zala & Desai, 2023:179). From theory, the researcher will distinguish which independent variables can predict each dependent variable; whereafter the proposed relationships are translated into a series of structural equations for each dependent variable (Hair, Page & Brunsveld, 2020:458). For this study, the researcher identified the independent variables as the *technical, internal and external enterprise, interpersonal, and strategic competency factors* (identified by EFA); the dependent variables are the *PS objectives, processes and management activities* identified through the literature. Therefore, 14 independent and 15 dependent variables were used.
- SEM incorporates unobserved or latent constructs that are not measured directly in the relationships and accounts for measurement error in the estimation process (Sahoo, 2020:270). The unobserved or latent constructs are incorporated by being measured

indirectly when examining consistency among multiple measured variables gathered through data collection (Hair et al., 2014:547). Two types of unobserved or latent constructs exist: exogenous and endogenous. Exogenous latent constructs refer to the multi-item variables that act as independent variables in the SEM; endogenous latent constructs refer to the multi-item variables that are theoretically determined by factors within the model and act as dependent variables (Walters, 2022; Kenny, 2011). Hair et al. (2014:547) stated that incorporating unobserved or latent constructs, first, improves the statistical estimation of the relationships between the concepts due to accounting measurement errors, and secondly, theoretical concepts are represented more accurately since multiple measures of a concept are used to reduce measurement error.

- SEM is classified as a model that is portrayed in a visual form and is representative of theory. In other words, a SEM is a path diagram dictated by a solid theoretical base. Hair et al. (2014:550) stated that a SEM indicates the relationships that employ specific conventions for the constructs and the measured variables – and the relationship between them. The relationship between the constructs and variables is indicated by either one-way or two-way arrows depending on whether the relationship between the constructs and variables is dependent or correlational (Walters, 2022). Considering the path diagram of SEM: latent constructs are generally portrayed by circles or ovals, variables by squares or rectangles and, as already mentioned, relationships by arrows (Hair et al., 2014:550). The path diagrams of all 60 SEMs conducted for this study are presented in chapter seven.

Therefore, it can be concluded that ‘if a researcher can express a theory in terms of relationships among measured variables and latent constructs, as well as between latent constructs, SEM will assess how well the theory fits reality as represented by the data of the study’ (Conradie, 2017:232). Hair et al. (2019:626) proposed that when conducting SEM, six steps, divided into two phases (measurement model and structural model), should be followed.



Source: Adapted from Hair et al., 2019:626.

Figure 5.3: Steps to conduct the SEM process

Phase one, the measurement model of the SEM process, specifies the indicators for each construct and enables the assessment of construct validity. Steps one to four of the SEM process outline the measurement model procedure and are discussed below.

a) Step one: Define individual constructs

The constructs associated with the 60 structural models were identified and theoretically defined in chapter three. Four PS competency categories were identified in chapter three, each with numerous individual competencies. The four competency groups are *technical, internal and external enterprise, interpersonal, and strategic*. Once identified and theoretically defined, the constructs were operationalised by selecting their measurement items and scale types (Hair et al., 2014:567). Each competency category was subjected to EFA (as discussed in section 5.9.3.1) to identify underlying constructs in the data – referred to as sub-category competency factors – as the variables may be indicators of the same theoretical construct (Aaker et al., 2011:490). After the reliability and validity of each sub-category competency factors were confirmed, *five technical, three internal and external enterprise, three interpersonal and two strategic* PS sub-category competency factors were used as constructs in SEM.

b) Step two: Develop and specify the measurement model

Developing and specifying the measurement model entails that each latent construct included in the model be identified and measured, and then indicator variables are assigned to the construct (Hair et al., 2019:627). The majority of latent constructs in this study were identified by at least three indicators and (based on Hair et al., 2014:608), deemed as overidentified. Having at least three to five indicators per factor is advisable as technical problems are eliminated (Kline, 2015:201). McCoach (2003:41) supports considering a unidimensional two-item factor acceptable as the factors are integrated with other constructs. Additionally, each measured variable in this study was hypothesised to relate to only a single construct. The path diagrams of the 60 SEMs are presented in chapter seven.

c) Step three: Design the study to produce empirical results

Step three is designed to consider the sample size, the approach to missing data, and model estimation. Thus, the third step aims to design a study that produces confirmatory results (Hair et al., 2019:632). The sample size of this study was discussed in section 5.7.4. Moreover, it was deemed that a sample size of 309 was adequate to conduct SEM. This study had no missing values; only completed responses were included in the statistical analyses. Therefore, the researcher moved on to consider the model estimation technique. The model estimation technique used for this study was asymptotically distribution free as the dependent variables were ordinal (Schermelleh-Engel, Moosbrugger & Müller, 2003:27). Asymptotic distribution-free estimation is the most commonly used approach for model parameter estimation as it minimises discrepancies between sample variance-covariance matrix and the model-implied counterpart when obtaining parameter estimates (Schuberth, Hubona, Roemer, Zaza, Schamberger, Chuah, Cepeda-Carrión & Henseler, 2023:2). After the estimation procedure converges a reasonable solution, the researcher should consider the fit of the SEM (Schermelleh-Engel, Moosbrugger & Müller, 2003:23). The current study applied the statistical program AMOS version 28. Thus, the researcher could move on to step four of the SEM process. Step four answered the question of whether the measurement model was valid.

d) Step four: Assess model fit and construct validity

Construct validity refers to the process of determining the degree to which the SEM fits the sample data (Schermelele-Engel, Moosbrugger & Müller, 2003:23). When determining construct validity, the goodness-of-fit indices are considered. Goodness-of-fit indices reflect the extent to which a model is considered an appropriate means of data representation (Schermelele-Engel, Moosbrugger & Müller, 2003:23).

For this study, four goodness-of-fit indices were considered: incremental fit index, comparative fit index, root mean square error of approximation, and the chi-square divided by the degrees of freedom (χ^2/df). Each goodness-of-fit index is briefly described below.

- Incremental fit index (IFI): IFI measures the proportionate improvement in the model fit when the specified model is compared with a baseline model. That is, IFI compares the chi-square value against an independence model that assumes all covariances are zero. An IFI value should be greater than 0.9 to be deemed an acceptable fit (Hair et al., 2019:638; McCoach, 2003:46; DiLalla, 2000:452).
- Comparative fit index (CFI): CFI is an adjusted version of the relative noncentrality index. CFI compares the proposed model with the null model, assuming no relationship exists between measures; in other words, variables are uncorrelated. The CFI value is least affected by sample size as it is deemed accurate even with small sample sizes. It is recommended that a CFI value should be greater than 0.09 to indicate a good model fit (Schermelele-Engel, Moosbrugger & Müller, 2003:41; McCoach, 2003:46, DiLalla, 2000:452).
- Root mean square error of approximation (RMSEA): RMSEA measures absolute fit but adds a penalty for the lack of parsimony. RMSEA evaluates the extent to which the model fails to fit the data. An RMSEA below 0.05 indicates a good fit; between 0.05 and 0.08, it indicates an acceptable fit; values above 0.08 and 0.1 indicate a marginal fit; and values above 0.1 indicate a poor fit (DiLalla, 2000:452).
- Chi-square divided by the degrees of freedom (χ^2/df): Due to the chi-square fit statistic being affected by large samples, it is advisable to consider the ratio of chi-square to the respective degrees of freedom, to determine whether the model fits the analysed covariance matrix perfectly (population covariance matrix = model-implied covariance

matrix) when considering the complexity of the model. By dividing the chi-square statistic by the degrees of freedom, the fit index is normalised, decreasing the index's sensitivity to the sample size. The lower the ratio, the better the model fit. For this study, a ratio of three and below was considered acceptable (Alavi, Visentin, Thapa, Hunt, Watson & Cleary, 2020:3; Kenny, 2011; Schermelleh-Engel, Moosbrugger & Müller, 2003:23; McCoach, 2003:46).

Conradie (2017:236), referring to Hair et al. (2014:617), writes:

In SEM, the theory is represented by the measurement model, while the sample data are represented by a covariance matrix of measured items. In the SEM results, the equations enable the researcher to compare the theory against reality as represented by the sample data, thereby indicating how well the theory fits the data.

Consequently, the factor analysis results confirm whether the theoretical measurement model is valid. Since the current study is exploratory, EFA was conducted on the different competency categories to identify factors among multiple variables (the different competencies within each competency category). According to Hair et al. (2014:617), the results of the EFA contribute to developing the theory that will lead to a proposed measurement model. After applying EFA, an excellent conceptual understanding of the constructs and their items should exist, and relatively high loadings are expected. Generally, standardised indicator loadings should be at least 0.5, but ideally 0.7 or higher – a higher loading indicates a more substantial relation to the associated construct, which is also an indicator of construct validity. The researcher also considered the significance levels of items ($p < 0.01$; $p < 0.05$ and $p < 0.1$), and if the item's estimate was low, the item did not qualify as a good item (Hair et al., 2019:675).

Additional diagnostic information that suggests modifying the measurement model in order to improve the model fit is provided by EFA. Model indices can, therefore, be used to improve model fit. Adding relationships to increase model fit should only be done if the researcher can justify adding the relationship theoretically. Adding relationships to increase model fit is dangerous and should be done cautiously (Davvetas, Diamantopoulos, Zaefarian & Sichtmann, 2020:260; Hair et al., 2019:678). Where additional covariances between

measurement errors were included, the modification indices were studied and theoretically justified by the researcher.

In phase two of the SEM process (structural model), measurement scales are integrated into the estimation of the relationships between the structural model's independent and dependent variables (Anderson, Babin, Black & Hair, 2010:19). Steps five and six explain how the structural model for this study was operationalised.

e) Step five: Specify the structural model

The structural model component represents the proposed theory within a set of structural equations specifying relationships. Relationships are assigned from one construct to another using single-headed directional arrows indicating dependent relationships represented by structural hypotheses (Hair et al., 2019:700). Step five entails visually presenting the proposed theory and the structural path diagram displaying the relationships (see chapter seven). The statistical hypotheses for the study are based on the theoretical frameworks presented in chapter four. The research hypotheses are presented in tables 5.4 to 5.6 below.

Table 5.4: PS objectives statistical hypotheses

PS objectives hypotheses	
Hypotheses regarding the relationships between <i>cost consciousness</i> and the five technical sub-category competency factors	
H1 ₁ :	Operational PS competencies have a relationship with cost consciousness.
H2 ₁ :	Internal technical-related cooperation competencies have a relationship with cost consciousness.
H3 ₁ :	Innovative supply competencies have a relationship with cost consciousness.
H4 ₁ :	Integrative supply competencies have a relationship with cost consciousness.
H5 ₁ :	Analytical competencies have a relationship with cost consciousness.
Hypotheses regarding the relationships between <i>ensuring a stable supply</i> and the five technical sub-category competency factors	

H6₁: Operational PS competencies have a relationship with ensuring stable supply.

H7₁: Internal technical-related cooperation competencies have a relationship with ensuring stable supply.

H8₁: Innovative supply competencies have a relationship with ensuring stable supply.

H9₁: Integrative supply competencies have a relationship with ensuring stable supply.

H10₁: Analytical competencies have a relationship with ensuring stable supply.

Hypotheses regarding the relationships between the *adherence to quality requirements* and the five technical sub-category competency factors

H11₁: Operational PS competencies have a relationship with adherence to quality requirements.

H12₁: Internal technical-related cooperation competencies have a relationship with adherence to quality requirements.

H13₁: Innovative supply competencies have a relationship with adherence to quality requirements.

H14₁: Integrative supply competencies have a relationship with adherence to quality requirements.

H15₁: Analytical competencies have a relationship with adherence to quality requirements.

Hypotheses regarding the relationships between *promoting sustainability* and the five technical sub-category competency factors

H16₁: Operational PS competencies have a relationship with promoting sustainability.

H17₁: Internal technical-related cooperation competencies have a relationship with promoting sustainability.

H18₁: Innovative supply competencies have a relationship with promoting sustainability.

H19₁: Integrative supply competencies have a relationship with promoting sustainability.

H20₁: Analytical competencies have a relationship with promoting sustainability.

Hypotheses regarding the relationships between the *alignment of PS with the business's competitive strategy* and the five technical sub-category competency factors

H21₁: Operational PS competencies have a relationship with the alignment of PS with the business's competitive strategy.

H22₁: Internal technical-related cooperation competencies have a relationship with the alignment of PS with the business's competitive strategy.

H23₁: Innovative supply competencies have a relationship with the alignment of PS with the business's competitive strategy.

H24₁: Integrative supply competencies have a relationship with the alignment of PS with the business's competitive strategy.

H25₁: Analytical competencies have a relationship with the alignment of PS with the business's competitive strategy.

Hypotheses regarding the relationships between *facilitating a relationship with suppliers* and the five technical sub-category competency factors

H26₁: Operational PS competencies have a relationship with facilitating a relationship with suppliers.

H27₁: Internal technical-related cooperation competencies have a relationship with facilitating a relationship with suppliers.

H28₁: Innovative supply competencies have a relationship with facilitating a relationship with suppliers.

H29₁: Integrative supply competencies have a relationship with facilitating a relationship with suppliers.

H30₁: Analytical competencies have a relationship with facilitating a relationship with suppliers.

Hypotheses regarding the relationships between *promoting and facilitating innovativeness with suppliers* and the five technical sub-category competency factors

H31₁: Operational PS competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H32₁: Internal technical-related cooperation competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H33₁: Innovative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H34₁: Integrative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H35₁: Analytical competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Hypotheses regarding the relationships between *cost consciousness* and the three internal and external enterprise sub-category competency factors

H36₁: Supply-side transformational-relationship competencies have a relationship with cost consciousness.

H37₁: Internal product-related cooperation competencies have a relationship with cost consciousness.

H38₁: Supply chain wide relations and analysis competencies have a relationship with cost consciousness.

Hypotheses regarding the relationships between *ensuring stable supply* and the three internal and external enterprise sub-category competency factors

H39₁: Supply-side transformational-relationship competencies have a relationship with ensuring stable supply.

H40₁: Internal product-related cooperation competencies have a relationship with ensuring stable supply.

H41₁: Supply chain wide relations and analysis competencies have a relationship with ensuring stable supply.

Hypotheses regarding the relationships between the *adherence to quality requirements* and the three internal and external enterprise sub-category competency factors

H42₁: Supply-side transformational-relationship competencies have a relationship with adherence to quality requirements.

H43₁: Internal product-related cooperation competencies have a relationship with adherence to quality requirements.

H44₁: Supply chain wide relations and analysis competencies have a relationship with adherence to quality requirements.

Hypotheses regarding the relationships between *promoting sustainability* and the three internal and external enterprise sub-category competency factors

H45₁: Supply-side transformational-relationship competencies have a relationship with promoting sustainability.

H46₁: Internal product-related cooperation competencies have a relationship with promoting sustainability.

H47₁: Supply chain wide relations and analysis competencies have a relationship with promoting sustainability.

Hypotheses regarding the relationships between the *alignment of PS with the business's competitive strategy* and the three internal and external enterprise sub-category competency factors

H48₁: Supply-side transformational-relationship competencies have a relationship with the alignment of PS with the business's competitive strategy.

H49₁: Internal product-related cooperation competencies have a relationship with the alignment of PS with the business's competitive strategy.

H50₁: Supply chain wide relations and analysis competencies have a relationship with the alignment of PS with the business's competitive strategy.

Hypotheses regarding the relationships between *facilitating a relationship with suppliers* and the three internal and external enterprise sub-category competency factors

H51₁: Supply-side transformational-relationship competencies have a relationship with facilitating a relationship with suppliers.

H52₁: Internal product-related cooperation competencies have a relationship with facilitating a relationship with suppliers.

H53₁: Supply chain wide relations and analysis competencies have a relationship with facilitating a relationship with suppliers.

Hypotheses regarding the relationships between *promoting and facilitating innovativeness with suppliers* and the three internal and external enterprise sub-category competency factors

H54₁: Supply-side transformational-relationship competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H55₁: Internal product-related cooperation competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H56₁: Supply chain wide relations and analysis competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Hypotheses regarding the relationships between *cost consciousness* and the three interpersonal sub-category competency factors

H57₁: Internal values and social competencies have a relationship with cost consciousness.

H58₁: Personal-dynamics management competencies have a relationship with cost consciousness.

H59₁: Leadership competencies have a relationship with cost consciousness.

Hypotheses regarding the relationships between *ensuring stable supply* and the three interpersonal sub-category competency factors

H60₁: Internal values and social competencies have a relationship with ensuring stable supply.

H61₁: Personal-dynamics management competencies have a relationship with ensuring stable supply.

H62₁: Leadership competencies have a relationship with ensuring stable supply.

Hypotheses regarding the relationships between *adherence to quality requirements* and the three interpersonal sub-category competency factors

H63₁: Internal values and social competencies have a relationship with adherence to quality requirements.

H64₁: Personal-dynamics management competencies have a relationship with adherence to quality requirements.

H65₁: Leadership competencies have a relationship with adherence to quality requirements.

Hypotheses regarding the relationships between *promoting sustainability* and the three interpersonal sub-category competency factors

H66₁: Internal values and social competencies have a relationship with promoting sustainability.

H67₁: Personal-dynamics management competencies have a relationship with promoting sustainability.

H68₁: Leadership competencies have a relationship with promoting sustainability.

Hypotheses regarding the relationships between the *alignment of PS with the business's competitive strategy* and the three interpersonal sub-category competency factors

H69₁: Internal values and social competencies have a relationship with the alignment of PS with the business's competitive strategy.

H70₁: Personal-dynamics management competencies have a relationship with the alignment of PS with the business's competitive strategy.

H71₁: Leadership competencies have a relationship with the alignment of PS with the business's competitive strategy.

Hypotheses regarding the relationships between *facilitating a relationship with suppliers* and the three interpersonal sub-category competency factors

H72₁: Internal values and social competencies have a relationship with facilitating a relationship with suppliers.

H73₁: Personal-dynamics management competencies have a relationship with facilitating a relationship with suppliers.

H74₁: Leadership competencies have a relationship with facilitating a relationship with suppliers.

Hypotheses regarding the relationships between *promoting and facilitating innovativeness with suppliers* and the three interpersonal sub-category competency factors

H75₁: Internal values and social competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H76₁: Personal-dynamics management competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H77₁: Leadership competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Hypotheses regarding the relationships between *cost consciousness* and the two strategic sub-category competency factors

H77₁: Visionary competencies have a relationship with cost consciousness.

H78₁: Personal strategic competencies have a relationship with cost consciousness.

Hypotheses regarding the relationships between *ensuring stable supply* and the two strategic sub-category competency factors

H79₁: Visionary competencies have a relationship with ensuring stable supply.

H80₁: Personal strategic competencies have a relationship with ensuring stable supply.

Hypotheses regarding the relationships between the *adherence to quality requirements* and the two strategic sub-category competency factors

H81₁: Visionary competencies have a relationship with adherence to quality requirements.

H82₁: Personal strategic competencies have a relationship with adherence to quality requirements.

Hypotheses regarding the relationships between *promoting sustainability* and the two strategic sub-category competency factors

H83₁: Visionary competencies have a relationship with promoting sustainability.

H84₁: Personal strategic competencies have a relationship with promoting sustainability.

Hypotheses regarding the relationships between the *alignment of PS with the business's competitive strategy* and the two strategic sub-category competency factors

H85₁: Visionary competencies have a relationship with the alignment of PS with the business's competitive strategy.

H86₁: Personal strategic competencies have a relationship with the alignment of PS with the business's competitive strategy.

Hypotheses regarding the relationships between *facilitating a relationship with suppliers* and the two strategic sub-category competency factors

H87₁: Visionary competencies have a relationship with facilitating a relationship with suppliers.

H88₁: Personal strategic competencies have a relationship with facilitating a relationship with suppliers.

Hypotheses regarding the relationships between *promoting and facilitating innovativeness with suppliers* and the two strategic sub-category competency factors

H89₁: Visionary competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H90₁: Personal strategic competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Source: Compiled by the researcher, 2024.

Table 5.5: PS processes statistical hypotheses

PS processes hypotheses
Hypotheses regarding the relationships between the <i>tactical and operational PS process</i> and the five technical sub-category competency factors
H91 ₁ : Operational PS competencies have a relationship with the tactical and operational PS process.
H92 ₁ : Internal technical-related cooperation competencies have a relationship with the tactical and operational PS process.
H93 ₁ : Innovative supply competencies have a relationship with the tactical and operational PS process.
H94 ₁ : Integrative supply competencies have a relationship with the tactical and operational PS process.
H95 ₁ : Analytical competencies have a relationship with the tactical and operational PS process.
Hypotheses regarding the relationships between <i>strategic sourcing</i> and the five technical sub-category competency factors
H96 ₁ : Operational PS competencies have a relationship with strategic sourcing.
H97 ₁ : Internal technical-related cooperation competencies have a relationship with strategic sourcing.
H98 ₁ : Innovative supply competencies have a relationship with strategic sourcing.

H99₁: Integrative supply competencies have a relationship with strategic sourcing.

H100₁: Analytical competencies have a relationship with ensuring strategic sourcing.

Hypotheses regarding the relationships between the *tactical and operational PS process* and the three internal and external enterprise sub-category competency factors

H101₁: Supply-side transformational-relationship competencies have a relationship with the tactical and operational PS process.

H102₁: Internal product-related cooperation competencies have a relationship with the tactical and operational PS process.

H103₁: Supply chain wide relations and analysis competencies have a relationship with the tactical and operational PS process.

Hypotheses regarding the relationships between *strategic sourcing* and the three internal and external enterprise sub-category competency factors

H104₁: Supply-side transformational-relationship competencies have a relationship with strategic sourcing.

H105₁: Internal product-related cooperation competencies have a relationship with strategic sourcing.

H106₁: Supply chain wide relations and analysis competencies have a relationship with strategic sourcing.

Hypotheses regarding the relationships between the *tactical and operational PS process* and the three interpersonal sub-category competency factors

H107₁: Internal values and social competencies have a relationship with the tactical and operational PS process.

H108₁: Personal-dynamics management competencies have a relationship with the tactical and operational PS process.

H109₁: Leadership competencies have a relationship with the tactical and operational PS process.

Hypotheses regarding the relationships between <i>strategic sourcing</i> and the three interpersonal sub-category competency factors
<p>H110₁: Internal values and social competencies have a relationship with strategic sourcing.</p> <p>H111₁: Personal-dynamics management competencies have a relationship with strategic sourcing.</p> <p>H112₁: Leadership competencies have a relationship with strategic sourcing.</p>
Hypotheses regarding the relationships between the <i>tactical and operational PS process</i> and the two strategic sub-category competency factors
<p>H113₁: Visionary competencies have a relationship with the tactical and operational PS process.</p> <p>H114₁: Personal strategic competencies have a relationship with the tactical and operational PS process.</p>
Hypotheses regarding the relationships between <i>strategic sourcing</i> and the two strategic sub-category competency factors
<p>H115₁: Visionary competencies have a relationship with strategic sourcing.</p> <p>H116₁: Personal strategic competencies have a relationship with strategic sourcing.</p>

Source: Compiled by the researcher, 2024.

Table 5.6: PS management activities statistical hypotheses

PS management activities hypotheses
Hypotheses regarding the relationships between <i>PS strategic planning</i> and the five technical sub-category competency factors
<p>H117₁: Operational PS competencies have a relationship with PS strategic planning.</p> <p>H118₁: Internal technical-related cooperation competencies have a relationship with PS strategic planning.</p> <p>H119₁: Innovative supply competencies have a relationship with PS strategic planning.</p>

H120₁: Integrative supply competencies have a relationship with PS strategic planning.

H121₁: Analytical competencies have a relationship with PS strategic planning.

Hypotheses regarding the relationships between *tactical and operational planning* and the five technical sub-category competency factors

H122₁: Operational PS competencies have a relationship with tactical and operational planning.

H123₁: Internal technical-related cooperation competencies have a relationship with tactical and operational planning.

H124₁: Innovative supply competencies have a relationship with tactical and operational planning.

H125₁: Integrative supply competencies have a relationship with tactical and operational planning.

H126₁: Analytical competencies have a relationship with tactical and operational planning.

Hypotheses regarding the relationships between *PS organising* and the five technical sub-category competency factors

H127₁: Operational PS competencies have a relationship with PS organising.

H128₁: Internal technical-related cooperation competencies have a relationship with PS organising.

H129₁: Innovative supply competencies have a relationship with PS organising.

H130₁: Integrative supply competencies have a relationship with PS organising.

H131₁: Analytical competencies have a relationship with PS organising.

Hypotheses regarding the relationships between *PS coordination* and the five technical sub-category competency factors

H132₁: Operational PS competencies have a relationship with PS coordination.

H133₁: Internal technical-related cooperation competencies have a relationship with PS coordination.

H134₁: Innovative supply competencies have a relationship with PS coordination.

H135₁: Integrative supply competencies have a relationship with PS coordination.

H136₁: Analytical competencies have a relationship with PS coordination.

Hypotheses regarding the relationships between *PS leadership* and the five technical sub-category competency factors

H137₁: Operational PS competencies have a relationship with PS leadership.

H138₁: Internal technical-related cooperation competencies have a relationship with PS leadership.

H139₁: Innovative supply competencies have a relationship with PS leadership.

H140₁: Integrative supply competencies have a relationship with PS leadership.

H141₁: Analytical competencies have a relationship with PS leadership.

Hypotheses regarding the relationships between *PS evaluation* and the five technical sub-category competency factors

H142₁: Operational PS competencies have a relationship with PS evaluation.

H143₁: Internal technical-related cooperation competencies have a relationship with PS evaluation.

H144₁: Innovative supply competencies have a relationship with PS evaluation.

H145₁: Integrative supply competencies have a relationship with PS evaluation.

H146₁: Analytical competencies have a relationship with PS evaluation.

Hypotheses regarding the relationships between *PS strategic planning* and the three internal and external enterprise sub-category competency factors

H147₁: Supply-side transformational-relationship competencies have a relationship with PS strategic planning.

H148₁: Internal product-related cooperation competencies have a relationship with PS strategic planning.

H149₁: Supply chain wide relations and analysis competencies have a relationship with PS strategic planning.

Hypotheses regarding the relationships between *tactical and operational planning* and the three internal and external enterprise sub-category competency factors

H150₁: Supply-side transformational-relationship competencies have a relationship with tactical and operational planning.

H151₁: Internal product-related cooperation competencies have a relationship with tactical and operational planning.

H152₁: Supply chain wide relations and analysis competencies have a relationship with tactical and operational planning.

Hypotheses regarding the relationships between the *PS organising* and the three internal and external enterprise sub-category competency factors

H153₁: Supply-side transformational-relationship competencies have a relationship with PS organising.

H154₁: Internal product-related cooperation competencies have a relationship with PS organising.

H155₁: Supply chain wide relations and analysis competencies have a relationship with PS organising.

Hypotheses regarding the relationships between the *PS coordination* and the three internal and external enterprise sub-category competency factors

H156₁: Supply-side transformational-relationship competencies have a relationship with PS coordination.

H157₁: Internal product-related cooperation competencies have a relationship with PS coordination.

H158₁: Supply chain wide relations and analysis competencies have a relationship with PS coordination.

Hypotheses regarding the relationships between the *PS leadership* and the three internal and external enterprise sub-category competency factors

H159₁: Supply-side transformational-relationship competencies have a relationship with PS leadership.

H160₁: Internal product-related cooperation competencies have a relationship with PS leadership.

H161₁: Supply chain wide relations and analysis competencies have PS leadership.

Hypotheses regarding the relationships between the *PS evaluation* and the three internal and external enterprise sub-category competency factors

H162₁: Supply-side transformational-relationship competencies have a relationship with PS evaluation.

H163₁: Internal product-related cooperation competencies have a relationship with PS evaluation.

H164₁: Supply chain wide relations and analysis competencies have a relationship with PS evaluation.

Hypotheses regarding the relationships between *PS strategic planning* and the three interpersonal sub-category competency factors

H165₁: Internal values and social competencies have a relationship with PS strategic planning.

H166₁: Personal-dynamics management competencies have a relationship with PS strategic planning.

H167₁: Leadership competencies have a relationship with PS strategic planning.

Hypotheses regarding the relationships between *tactical and operational planning* and the three interpersonal sub-category competency factors

H168₁: Internal values and social competencies have a relationship with tactical and operational planning.

H169₁: Personal-dynamics management competencies have a relationship with tactical and operational planning.

H170₁: Leadership competencies have a relationship with tactical and operational planning.

Hypotheses regarding the relationships between *PS organising* and the three interpersonal sub-category competency factors

H171₁: Internal values and social competencies have a relationship with PS organising.

H172₁: Personal-dynamics management competencies have a relationship with PS organising.

H173₁: Leadership competencies have a relationship with PS organising.

Hypotheses regarding the relationships between *PS coordination* and the three interpersonal sub-category competency factors

H174₁: Internal values and social competencies have a relationship with PS coordination.

H175₁: Personal-dynamics management competencies have a relationship with PS coordination.

H176₁: Leadership competencies have a relationship with PS coordination.

Hypotheses regarding the relationships between *PS leadership* and the three interpersonal sub-category competency factors

H177₁: Internal values and social competencies have a relationship with PS leadership.

H178₁: Personal-dynamics management competencies have a relationship with PS leadership.

H179₁: Leadership competencies have a relationship with PS leadership.

Hypotheses regarding the relationships between *PS evaluation* and the three interpersonal sub-category competency factors

H180₁: Internal values and social competencies have a relationship with PS evaluation.

H181₁: Personal-dynamics management competencies have a relationship with PS evaluation.

H182₁: Leadership competencies have a relationship with PS evaluation.

Hypotheses regarding the relationships between *PS strategic planning* and the two strategic sub-category competency factors

H183₁: Visionary competencies have a relationship with PS strategic planning.

H184₁: Personal strategic competencies have a relationship with PS strategic planning.

Hypotheses regarding the relationships between *tactical and operational planning* and the two strategic sub-category competency factors

H185₁: Visionary competencies have a relationship with tactical and operational planning.

H186₁: Personal strategic competencies have a relationship with tactical and operational planning.

Hypotheses regarding the relationships between *PS organising* and the two strategic sub-category competency factors

H187₁: Visionary competencies have a relationship with adherence to PS organising.

H188₁: Personal strategic competencies have a relationship with PS organising.

Hypotheses regarding the relationships between *PS coordination* and the two strategic sub-category competency factors

H189₁: Visionary competencies have a relationship with PS coordination.

H190₁: Personal strategic competencies have a relationship with PS coordination.

Hypotheses regarding the relationships between *PS leadership* and the two strategic sub-category competency factors

H191₁: Visionary competencies have a relationship with PS leadership.

H192₁: Personal strategic competencies have a relationship with PS leadership.

Hypotheses regarding the relationships between *PS evaluation* and the two strategic sub-category competency factors

H193₁: Visionary competencies have a relationship with PS evaluation.

H194₁: Personal strategic competencies have a relationship with PS evaluation.

Source: Compiled by the researcher, 2024.

A summary of the statistical hypotheses and whether each hypothesis is accepted or rejected is presented in chapter seven. The chosen level of significance (0.01, 0.05 and 0.1) determines whether the null hypotheses are rejected or not. If a statistical hypothesis was accepted, Cohen's conventions to interpret effect size was used. Cohen (1988) suggested that correlation coefficient of 0.10 represents a weak or small association; 0.30 is considered a moderate correlation; and 0.50 or larger is considered a strong or large correlation. Smaller than 0.1 is generally considered negligible

f) Step six: Assess structural model validity

The final step of the SEM process is to test the validity of the proposed theoretical structural model. Hair et al. (2019:644) recommended that, first, the focus be on SEM model fit and, thereafter, whether the structural relationships were consistent with the theoretical expectations. For the current study, the goodness-of-fit indices, as explained in section 5.9.3.2.4, were used to determine model fit. Based on the SEM results, the hypotheses were set and presented in chapter seven.

5.10 Presentation of research findings and future research

Chapter eight presents the reader with the literature or empirical findings and conclusions relating to each SRO. It is followed by the newly developed South African PS competency framework, along with the study's theoretical and practical contribution.

5.11 Ethical considerations

Research ethics refers to the standards of behaviour that guide a researcher's conduct toward the participants in order to protect their physical, social and psychological welfare. All participants' dignity and privacy should be honoured (Saunders, Lewis & Thornhill, 2012:183). This research aligned with the quality criteria of UNISA's latest research policy (2016). The

researcher consistently referred to the four moral principles of ethics identified by UNISA’s research policy throughout the research process. These moral principles are:

- Research should respect the autonomy, rights and dignity of research participants.
- Research should make a positive contribution toward the welfare of people.
- Research should not cause harm to the research participant(s) in particular or people in general.
- The benefits and risks of research should be fairly distributed among people (UNISA, 2016:11).

Additionally, Salkind’s (2012:259) six ethical principles, namely protecting participants from harm, not coercing participants to take part in the study, ensuring the privacy of participants, obtaining informed consent from participants, maintaining the confidentiality of participants and sharing the findings of the research with all participants, were adhered to. How these ethical principles were adhered to is summarised in table 5.7 below.

Table 5.7: Adherence to Salkind’s six ethical principles

General ethics principle	Adherence to the ethical principle during this study
Protecting against harm	Respondents were invited to complete an anonymous online self-administered questionnaire. To protect against harm, special attention was paid to the formulation of questions to ensure no one would be offended or suffer any psychological harm by responding to the questionnaire.
Coercing	Participation was voluntary. No one was forced or pressured to participate in the study. In the introduction, respondents were informed they could withdraw from the study at any stage. However, due to the anonymity of the questionnaire, once the respondent submitted the questionnaire, withdrawal

General ethics principle	Adherence to the ethical principle during this study
	was no longer possible. This was also communicated in the introduction.
Ensuring privacy	The questionnaire was designed to be anonymous and did not ask respondents for their personal information.
Obtaining informed consent	<p>As mentioned in section 5.6.2.1, the introductory page of the questionnaire contained information regarding the nature of the research and what was required from respondents. Respondents could therefore choose to participate or not. The following statement regarding informed consent was included in the introduction:</p> <p>‘By continuing with the online questionnaire, you are making an informed decision (you are providing informed consent) to participate in the research. You are free to withdraw from the online questionnaire at any time prior to clicking the submit button.’</p>
Maintaining confidentiality	Again, in the introduction, respondents were informed that all data would be treated confidentially and stored on a password-protected computer for five years. All parties with data access would be required to sign confidentiality agreements. Also, due to the anonymity of the questionnaire, no identifiable information would be gathered via the questionnaire.
Sharing research findings	Upon completion of the study, the findings will be made available to all respondents upon request.

Source: Compiled by the researcher, 2024.

5.12 Conclusion

The purpose of chapter five was to discuss and justify the research process deployed to address the research problem and ultimately answer the PRQ. The research process consisted of two phases: exploratory and descriptive. The researcher performed exploratory research by conducting a traditional literature review to gain an in-depth understanding of PS as an internal management function with a specific focus on PS's objectives, the different PS processes, and the different management activities from a PS perspective (presented in chapter two). After that, the researcher examined the different PS competencies required by PSPs as identified in previous research (presented in chapter three). Thus, through exploratory research, the researcher refined the research problem, defined one PRO and set clear and attainable SROs – steps one and two of the research process (refer to figure 5.2). Exploratory research was followed by descriptive research. In the descriptive phase, primary data were gathered through an anonymous online self-administered questionnaire (a recommended data-collection method for a descriptive research approach) from a sample of PSPs in the private sector of the South African business environment. Thus, the researcher conducted descriptive research in steps three to eight of the research process (refer to figure 5.2).

Table 5.8 below provides a snapshot of the research process.

Table 5.8: Summary of the study's research process

Type	Research process	Description of research process step
Exploratory research	Step 1: Identify the research problem	Determine a competency set for PSPs within the private sector of South African businesses to ensure they perform efficiently and effectively (refer to section 5.3).
	Step 2: Develop the primary and secondary	One PRO and eleven SROs were formulated (refer to table 5.1).

Type	Research process	Description of research process step
	research objectives	
Descriptive research	Step 3: Determine the research design	Five research philosophies were considered by the researcher, and the positivist (post-positivist) approach was selected as the most appropriate for this study (refer to section 5.5.1). The researcher used a quantitative mono-method research methodology where findings and conclusions are made deductively and precisely to address the identified knowledge gap (refer to sections 5.5.2 and 5.5.3). Additionally, the researcher deployed a survey research strategy with a cross-sectional time horizon to answer the study's research question. Primary data were collected using an anonymous online self-administered questionnaire to determine the current views of PSPs in the private business sector in South Africa on the competency set required to perform their tasks efficiently and effectively (refer to sections 5.5.4 and 5.5.5).
	Step 4: Design the research instrument	An online self-administered questionnaire was designed and hosted on an online hosting platform, LimeSurvey, which the respondents could access through a direct link. The questionnaire was developed in collaboration with a statistician. The questionnaire consisted of 11 sections and 33 questions. Each section of the questionnaire was discussed in section 5.6.2, including the types of questions (dichotomous, multichotomous and rating questions) and the measurements scales (nominal and ordinal) used in each section. A pilot study was conducted to ensure pertinent data were collected – twenty PSPs in the South African business environment were invited to participate in a pilot test. All

Type	Research process	Description of research process step
		<p>comments and recommendations from the PSPs were considered, and several changes were made (refer to section 5.6.1).</p>
	<p>Step 5: Develop the data-collection plan</p>	<p>The target population was PSPs in the private sector of the South African business environment. Three data-collection methods were used to collect primary data from the targeted population: the census approach and the non-probability methods of purposive (judgemental) and multiplicity (snowball) sampling.</p> <p>In terms of the census approach, multiple-frame sampling was used, and three sample frames were identified: the membership lists of SAPICS, AISCR and the South African region of the CIPS. The questionnaire was sent to all potential respondents within the sample frames.</p> <p>Additionally, the researcher used a purposive (judgemental) non-probability research approach. The researcher searched LinkedIn for individuals who listed that they worked in the PS field in the private sector. Possible respondents were identified and invited to respond to the questionnaire.</p> <p>Lastly, a multiplicity (snowball) non-probability research approach was used by requesting respondents who had completed the questionnaire to assist in identifying other possible respondents who met the target population criteria.</p>
	<p>Step 6: Determine how data will be</p>	<p>As previously mentioned, three data-collection approaches were used to collect primary data from the targeted population: the census approach and the two non-probability</p>

Type	Research process	Description of research process step
	collected, coded and structured	<p>methods of purposive (judgemental) and multiplicity (snowball) sampling.</p> <p>Through the three data-collection approaches, the researcher gathered 313 completed questionnaires from PSPs within a six-month period (November 2022 – April 2023). Of the 313 completed questionnaires, 21 respondents indicated that they received the link through SAPICS, six through AISCR, none through CIPS, 263 through LinkedIn, 15 through a referral, and eight through an unlisted option.</p>
	Step 7: Determine how the captured data will be analysed	<p>Cleaning the data involved the researcher working through the raw data extracted from LimeSurvey. The dataset, consisting of 313 respondents, was cleaned in Excel. The researcher identified four discrepancies relating to the sector in which respondents worked, and consequently, the respondents' data were removed. Therefore, the final sample consisted of 309 PSPs in the private sector of the South African business environment.</p> <p>Both descriptive (frequency distributions) and inferential (EFA and SEM) statistical analyses were performed on the data.</p>
	Step 8: Establish how the findings will be presented	<p>Chapter eight presents the reader with the literature or empirical findings and conclusions relating to each SRO; followed by the new South African PS competency framework, along with the theoretical and practical contribution of the study.</p>

Source: Compiled by the researcher, 2024.

Chapter 6 – Descriptive statistics and exploratory factor analyses

6.1 Introduction

By reporting and interpreting the results and analyses of the data collected for this study, chapter six will assist in addressing SRO₈, SRO₉, SRO₁₀ and SRO₁₁:

SRO₈ Determine from empirical findings the PS sub-category competency factors that will be used as independent variables in the South African PS competency framework.

SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

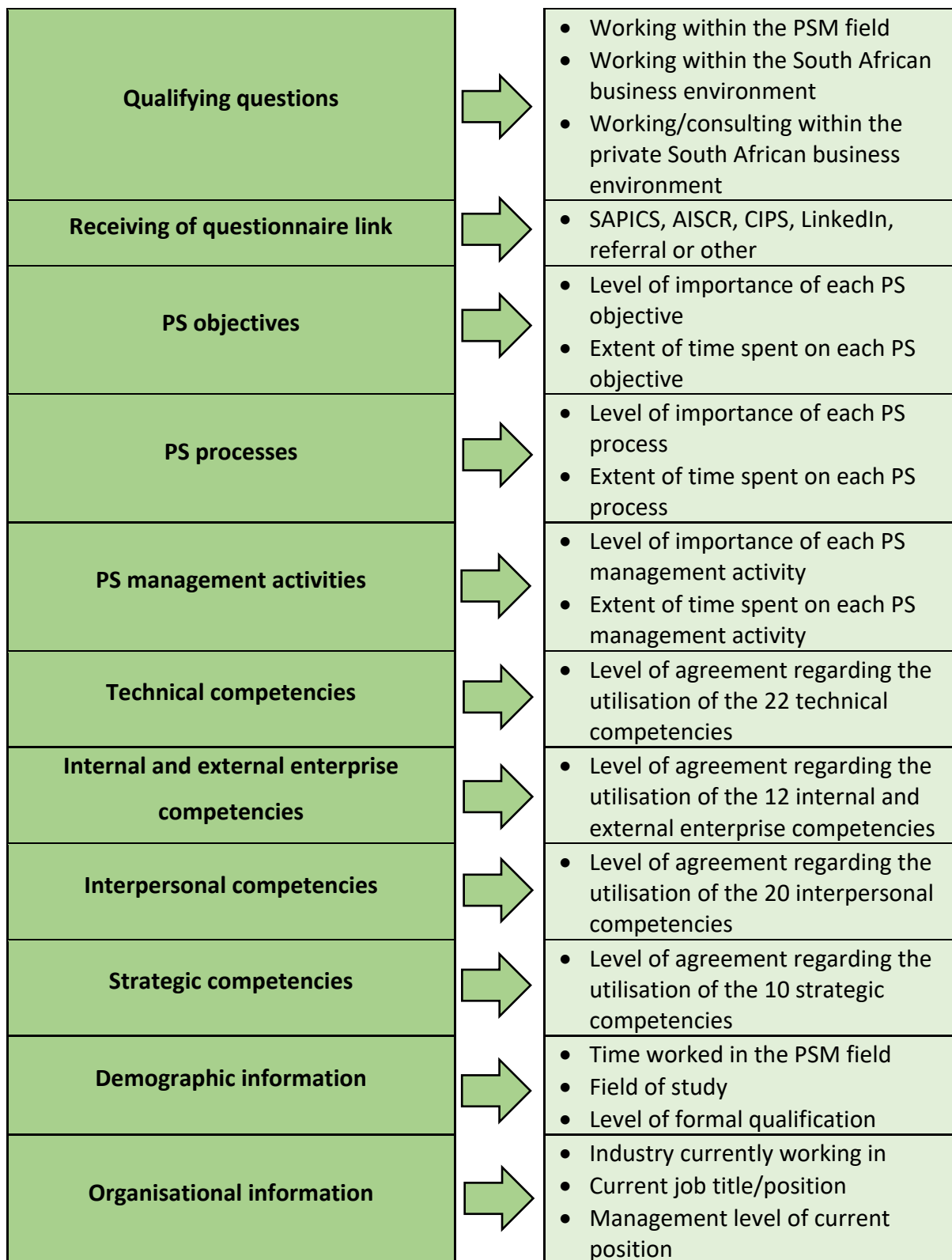
SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

Chapter six is divided into two main sections. First, section 6.2 presents the descriptive statistics based on the collected data for each of the 11 sections of the questionnaire. Then, section 6.3 reports on the EFA performed on the four competency categories in order to reduce the number of competencies used for the SEM in chapter seven. The validity and reliability of the factors identified through EFA are also discussed in section 6.3.

6.2 Descriptive analyses

The descriptive analyses of data are structured and presented under the 11 headings used in the questionnaire and are illustrated in figure 6.1.



Source: Compiled by the researcher, 2023.

Figure 6.1: Presentation of descriptive statistics

It should be noted that the researcher rounded the individual frequencies to one decimal, which resulted in the total of the frequencies of a specific question not adding up to 100% but up to 99.9% or 100.1%.

6.2.1 Qualifying questions

The first section of the questionnaire determined whether the respondent was eligible to participate in the study. Respondents were asked three qualifying questions:

- Do you work within the PSM field?
- Do you work within the South African business environment?
- Do you work or consult within the private sector of the South African business environment?

All 309 respondents replied in the affirmative to these questions (100%) and were allowed to continue to the remaining 10 sections of the questionnaire. The following section related to the manner in which the respondent received the questionnaire link.

6.2.2 Receiving the questionnaire link

In section A of the questionnaire, respondents had to indicate how they had received the link to the questionnaire.

Table 6.1: How respondents received the link to the questionnaire

Options provided	Percentages
Via SAPICS	6.8
Via AISCR	1.9
Via CIPS	0
Via LinkedIn	83.8
Via a referral by another PSP	4.9
Other	2.6

Source: Compiled by the researcher from survey results, 2023.

According to table 6.1, most respondents received the questionnaire link through LinkedIn (83.8%). Other sources included SAPICS (6.8%), a referral by another PSP (4.9%), AISCR (1.9%) and an unlisted option (2.6%). The respondents who received the link via an unlisted option indicated that they received the questionnaire link through a colleague (4 respondents, 1.3%),

by invitation (1 respondent, 0.3%) and through university networking (3 respondents, 1%). No respondents received the link through CIPS.

6.2.3 Importance of and time spent on PS objectives

Section B of the questionnaire gathered data on the importance of and time spent on the seven PS objectives. Tables 6.2 and 6.3 present the frequency distributions of the importance of and time spent on the PS objectives. For descriptive purposes only, the lowest two categories and the highest two categories were grouped together for both the importance rating and time spent.

Table 6.2: Respondents’ rating of the importance of the seven PS objectives

PS objectives	The level of importance of the PS objective as indicated by respondents – presented in percentages		
	Of no to little importance	Of moderate importance	Of high to critical importance
Being cost conscious	0.0	4.5	95.5
Ensuring stable supply	0.3	3.6	96.1
Adherence to quality requirements	0.6	3.9	95.5
Promoting sustainability (social/economic/environmental)	4.5	22.7	71.9
Alignment of PS with the business’s competitive strategy	1.0	7.1	91.9
Facilitating a relationship with suppliers	0.6	6.8	92.6
Promoting and facilitating innovativeness with suppliers	1.3	23.0	75.7

Source: Compiled by the researcher from survey results, 2023.

When respondents rated the importance of the seven PS objectives, a high majority indicated (in descending order) that ensuring stable supply (96.1%), being cost conscious (95.5%), adhering to quality requirements (95.5%), facilitating a relationship with suppliers (92.6%), aligning PS with the business’s competitive strategy (91.9%), promoting and facilitating innovativeness with suppliers (75.7%) and promoting sustainability (social/economic/environmental) (71.9%) were of *high to critical* importance.

Table 6.3: Respondents' rating of time spent on the seven PS objectives

PS objectives	The extent of time respondents spent on the PS objective – presented in percentages		
	Never to rarely	Sometimes	Often to always
Being cost conscious	0.3	4.5	95.2
Ensuring stable supply	1.3	5.8	92.9
Adherence to quality requirements	3.6	7.1	89.3
Promoting sustainability (social/economic/environmental)	13.0	28.2	58.9
Alignment of PS with the business's competitive strategy	3.8	15.9	80.3
Facilitating a relationship with suppliers	2.6	9.4	88
Promoting and facilitating innovativeness with suppliers	8.4	30.7	60.8

Source: Compiled by the researcher from survey results, 2023.

When respondents considered the time spent on each of the PS objectives (from *never* to *always*), the majority indicated (in descending order) that they *often* to *always* spent time on being cost conscious (95.2%), ensuring stable supply (92.9%), adhering to quality requirements (89.3%), facilitating a relationship with suppliers (88%), aligning PS with the business's competitive strategy (80.3%) promoting and facilitating innovativeness with suppliers (60.8%) and promoting sustainability (social/economic/environmental) (58.9%).

Ensuring stable supply was rated the most important PS objective, with 96.1% indicating the PS objective was *highly* or *critically important*, which is aligned with the time spent on the PS objective (92% indicated *often* to *always*). The high importance placed on *ensuring stable supply* aligns with the work of Stek and Schiele (2021); Schiele (2019); Schulze, Bals and Johnsen (2019); Nollet, Ponce and Campbell (2005); Bals and Turkulainen (2017) and Giunipero, Handfield and Eltantawy (2006).

Additionally, only 58.9% of respondents indicated that they *always* to *often* spent time on *promoting sustainability (social/economic/environmental)*. This finding is aligned with the lower importance rating of the PS objective compared to the remaining six PS objectives –

only 71.9% of respondents indicated that *promoting sustainability (social/economic/environmental)* was of *high or critical importance*.

6.2.4 Importance of and time spent on PS processes

Section C of the questionnaire focused on the importance of and time spent by PSPs on the two PS processes: *tactical and operational purchasing* and *strategic sourcing*. The frequency distributions of the importance rating and time spent on these processes are presented in tables 6.4 and 6.5, respectively. Again, for descriptive purposes only, the lowest two categories and the highest two categories were grouped together for both the importance rating and time spent.

Table 6.4: Respondents’ rating of the importance of the two PS processes

PS process	The level of importance of the PS processes as indicated by respondents – presented in percentages		
	Of no to little importance	Of moderate importance	Of high to critical importance
Tactical and operational purchasing process	2.2	12.6	85.1
Strategic sourcing	0.3	6.5	93.2

Source: Compiled by the researcher from survey results, 2023.

From table 6.4, it can be deduced that respondents regarded strategic sourcing as more important than the tactical and operational purchasing process. This is evident from the 93.2% who indicated that *strategic sourcing* was of *high to critical importance* compared to the 85.1% rating for the *tactical and operational purchasing process*. A possible reason for the *high to critical importance* of strategic sourcing is that supply chains are recovering or adapting to an unstable business environment – repercussions of the COVID-19 pandemic and disruptions due to the current Russia-Ukraine war (Frederico, 2023:2, Shook, Adams, Ketchen, Craighead, 2009:3).

Table 6.5: Respondents' rating of time spent on the two PS processes

PS processes	The extent of time respondents spent on the PS processes – presented in percentages		
	Never to rarely	Sometimes	Often to always
Tactical and operational purchasing process	5.5	16.2	78.3
Strategic sourcing	1.6	12.6	85.8

Source: Compiled by the researcher from survey results, 2023.

The majority of respondents (85.8%) *often to always* spend time on *strategic sourcing*, compared to the 78.3% who *often to always* spend time on *tactical and operational purchasing*. The reason respondents spend more time on *strategic sourcing* may be justified by the higher importance of this PS process, as reported in table 6.4.

Based on the importance level of the two PS processes and the amount of time spent on each PS process, it seems that the more important a PS process is to a PSP, the more time they will dedicate to it.

6.2.5 Importance of and time spent on PS management activities

Section D of the questionnaire focused on the importance of and time spent on the different PS management activities. In section 2.4, it was stated that PS forms part of the broader management function and includes the five management activities of planning, organising, coordination, leadership and evaluation. However, in the literature, researchers divide the management activity of *planning* into PS strategic planning and PS tactical and operational planning to align with the two PS processes (Badenhorst-Weiss et al., 2018:22). Therefore, in section D of the questionnaire, six management activities were presented to the respondents. Again, for descriptive purposes only, the lowest two categories and the highest two categories were grouped together for both the importance rating and time spent.

Table 6.6: Respondents' rating of the importance of the different PS management activities

PS management activities	The level of importance of the PS management activity as indicated by respondents – presented in percentages		
	Of no to little importance	Of moderate importance	Of high to critical importance
PS strategic planning	1.9	6.8	91.2
PS tactical and operational planning	1.9	12.9	85.1
PS organising	2.3	17.8	79.9
PS coordination	3.2	14.2	82.5
PS leadership	3.2	7.8	88.9
PS evaluation	2.6	14.2	83.2

Source: Compiled by the researcher from survey results, 2023.

The importance of PS strategic planning can be seen in table 6.6, as 91.2% of respondents rated *PS strategic planning* as being of *high to critical importance*. This higher rating of PS planning compared to the remaining PS management activities may be due to PS planning laying the groundwork for all the remaining PS management activities. Alternatively, it may also be due to the *high to critical importance* of *strategic sourcing*, as suggested by the respondents (see table 6.4), which is also a result of effective and efficient strategic planning (Badenhorst et al., 2018:28). The remaining PS management activities were rated as *high to critical important*, with a frequency distribution of 88.9% for PS leadership, 85.1% for PS tactical and operational planning, 83.2% for PS evaluation, 82.5% for PS coordination and 79.9% for PS organising.

Table 6.7: Respondents' rating of time spent on the different PS management activities

PS management activities	The extent of time respondents spent on the PS management activities – presented in percentages		
	Never to rarely	Sometimes	Often to always
PS strategic planning	4.8	17.8	77.4
PS tactical and operational planning	4.9	18.4	76.7
PS organising	9.3	23.3	67.3
PS coordination	6.1	19.4	74.5
PS leadership	5.2	14.6	80.2
PS evaluation	9.4	24.6	66.1

Source: Compiled by the researcher from survey results, 2023.

The majority of respondents indicated (in descending order) that they *often* to *always* spent time on PS leadership (80.2%), PS strategic planning (77.4%), PS tactical and operational planning (76.7%), PS coordination (74.5%), PS evaluation (66.1%) and PS organising (67.3%).

6.2.6 Agreement on the utilisation of technical competencies

Section E of the questionnaire asked respondents to rate their level of agreement on utilising the 22 technical competencies to perform their work as a PSP. Each technical competency was formulated into a statement with which the respondent could indicate their level of agreement, ranging from *fully disagree* to *fully agree*. Table 6.8 presents the frequency distributions for each technical competency statement. Again, for descriptive purposes, the two lowest categories (*fully disagree* and *disagree*) and the two highest categories (*agree* and *fully agree*) were grouped together.

Table 6.8: Respondents' level of agreement on the utilisation of the 22 technical competency statements

Statements in the questionnaire relating to technical competencies	The respondents' level of agreement on the utilisation of the specific technical competencies to perform their tasks and responsibilities as a PSP efficiently and effectively – presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
Be able to forecast demand (e.g. planning of annual demand based on sales forecasts).	3.5	5.8	90.6
Be knowledgeable regarding the product I need to purchase (e.g. technical specifications, the industry).	1.6	4.2	94.1
Be able to source innovatively (e.g. identifying different supply possibilities available on the supply market).	0.9	0.6	98.4
Be able to perform the tasks relating to strategic sourcing (e.g. spend and demand analyses, category management, category strategy management, source-to-contract process).	1.6	3.2	95.2
Have sufficient knowledge of the P&S function in general (e.g. P&S systems and best practices).	1.6	3.9	94.5
Understand optimisation of systems and processes within the business.	1.0	2.9	96.1
Understand the technical aspects of the supplier's products and production processes (e.g. reading of designs, technical writing and reporting).	9.4	15.5	75.1

Statements in the questionnaire relating to technical competencies	The respondents' level of agreement on the utilisation of the specific technical competencies to perform their tasks and responsibilities as a PSP efficiently and effectively – presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
Cooperate with production/operations (e.g. knowing the basics about production/operations, building a relationship with the production/operations department).	1.6	5.2	93.2
Be involved with quality management/assurance of purchases made.	4.2	6.8	89
Cooperate with logistics (e.g. knowing the basics about logistics, building a relationship with the department responsible for the business's logistics).	1.9	6.5	91.6
Have some legislative knowledge pertaining to purchasing and supply.	0.6	5.8	93.6
Be able to request quotations, information or proposals from suppliers (e.g. inviting suppliers to submit a bid).	1.0	2.6	96.4
Be able to source globally (materials, processes, designs or technology).	1.3	6.1	92.5
Perform and interpret cost analysis (e.g. calculating total cost of ownership, performing cost driver analysis).	0.6	2.9	96.5
Be able to negotiate with suppliers (e.g. determine specific	0.6	1.3	98.1

Statements in the questionnaire relating to technical competencies	The respondents' level of agreement on the utilisation of the specific technical competencies to perform their tasks and responsibilities as a PSP efficiently and effectively – presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
details that should be included in the contract).			
Manage supplier contracts that have been signed.	2.6	4.5	92.9
Be able to manage projects (e.g. initiating, planning, executing, controlling and closing of work).	2.9	6.5	90.6
Be able to report on suppliers' key performance indicators set by the purchasing organisation (your employer).	1.2	3.6	95.2
Have the ability to make use of numerical (mathematical/statistical) techniques for decision-making.	1.9	6.1	91.9
Be able to analyse large amounts of data (Big data analyses).	2.9	10.4	86.7
Be able to work with E-procurement applications or systems.	2.2	5.5	92.3
Be able to assist with the automation of the purchasing process.	1.9	5.8	92.2

Source: Compiled by the researcher from survey results, 2023.

Table 6.8 shows that the majority of respondents *agreed to fully agreed* on the utilisation of the 22 technical competencies in order to perform their tasks and responsibilities as a PSP efficiently and effectively. This level of agreement ranged from 98.4% *agreeing to fully agreeing* that they should be able to *source innovatively* (indicating how important all technical competencies are) to 75.1% of respondents *agreeing to fully agreeing* that they should understand the technical aspects of the supplier's products and production processes to perform their tasks and responsibilities efficiently and effectively.

Overall, low percentages (0.6% to 9.4%) were recorded in terms of *fully disagreeing* with or *disagreeing* with utilising technical competencies to perform their tasks and responsibilities efficiently and effectively.

6.2.7 Agreement on the utilisation of internal and external enterprise competencies

Section F of the questionnaire focused on the respondent's level of agreement regarding their use of the 12 internal and external enterprise competencies identified through the literature in chapter three. Once again, hypothetical statements regarding 12 internal and external enterprise competencies were presented to the respondents. The respondents were asked to rate the statements from *fully disagree* to *fully agree* with regard to their work as a PSP. Table 6.9 shows the frequency distributions of the 309 respondents' level of agreement with these statements. For descriptive purposes, the two lowest categories (*fully disagree* and *disagree*) and the highest two categories (*agree* and *fully agree*) were grouped together.

Table 6.9: Respondents' level of agreement on statements regarding the utilisation of 12 internal and external enterprise competencies

Statements in the questionnaire relating to internal and external enterprise competencies	The respondents' level of agreement on the utilisation of the specific internal and external enterprise competencies to perform their tasks and responsibilities as a PSP efficiently and effectively - presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
Be focused on the internal customer or internal user group.	4.9	7.4	87.7
Be focused on all stakeholders.	2.9	6.1	90.9
Be able to perform supply market analysis (e.g. investigate opportunities within the supply market).	0.6	4.5	94.8
Be able to consider the impact of P&S decisions on the entire supply chain.	0.3	3.9	95.8
Cooperate with marketing (e.g. knowing the basics about	4.2	16.2	79.6

Statements in the questionnaire relating to internal and external enterprise competencies	The respondents' level of agreement on the utilisation of the specific internal and external enterprise competencies to perform their tasks and responsibilities as a PSP efficiently and effectively - presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
marketing, building a relationship with the marketing department).			
Cooperate with research and development (e.g. knowing the basics about research and development, building a relationship with stakeholders involved with research and development).	5.5	12.3	82.2
Be able to manage supplier relationships.	0.9	1.0	98.0
Be able to perform supplier evaluations.	0.6	3.6	95.8
Be able to assist with developing suppliers.	1.6	6.8	91.6
Be able to facilitate change (e.g. the ability to lead a team through a change process).	0.6	5.5	93.9
Have salesmanship skills.	10.0	24.9	65
Be able to network and build relationships.	0.6	1.9	97.4

Source: Compiled by the researcher from survey results, 2023.

Table 6.9 shows that most respondents *agreed to fully agreed* with utilising all 12 internal and external enterprise competencies to perform efficiently as a PSP. The statement that received the highest percentage (98%) of agreement (*agree to fully agree*) was on being able to *manage supplier relationships*. This was followed by the ability to network and build relationships (97.4%), the ability to perform supplier evaluations (95.8%), and being able to consider the impact of PS decisions on the entire supply chain (95.8%).

Generally, low percentages (0.3% - 10.0%) were recorded regarding respondents' disagreement (*fully disagree* and *disagree*) about utilising internal and external enterprise competencies to perform their tasks and responsibilities as a PSP efficiently and effectively.

6.2.8 Agreement on the utilisation of interpersonal enterprise competencies

Table 6.10 provides the frequency distributions of the statements in section G of the questionnaire. In this section, respondents were asked to rate their level of agreement on utilising 20 interpersonal competencies to perform their tasks and responsibilities efficiently and effectively. Again, the scale on which their level of agreement was measured ranged from *fully disagree* to *fully agree* and for descriptive purposes, the two lowest categories (*fully disagree* and *disagree*) and the highest two categories (*agree* and *fully agree*) were grouped together.

Table 6.10: Respondents' level of agreement on the utilisation of the 20 interpersonal competency statements

Statements in the questionnaire relating to interpersonal competencies	The level of agreement on the utilisation of the specific interpersonal competencies by the respondents to perform their tasks and responsibilities as a PSP efficiently and effectively – presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
Be a leader (e.g. being motivational, managing different relationships within a team).	0.9	3.6	95.4
Be able to work in cross-functional teams.	0.3	0.3	99.4
Be able to communicate (oral and written) with all stakeholders (internal and external).	0.3	1.0	87.7
Be aware of cultural values, beliefs and perceptions.	1.2	5.8	92.2
Be motivated to develop myself as a P&S professional (e.g. self-	0.3	0.3	99.3

Statements in the questionnaire relating to interpersonal competencies	The level of agreement on the utilisation of the specific interpersonal competencies by the respondents to perform their tasks and responsibilities as a PSP efficiently and effectively – presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
reflection, identifying lacking skills).			
Be professionally curious and motivated to learn continuously.	0.3	1.6	98.1
Be creative.	1.6	7.8	90.7
Be honest and trustworthy.	0.3	0.3	99.4
Have social manners (tactful, diplomatic, sensitivity).	0.9	3.6	95.4
Be assertive and have self-assurance.	1.6	2.6	95.8
Be confident.	0.9	1.9	97.1
Be results-driven.	0.6	0.6	98.7
Be able to resolve conflicts.	0.3	1.9	97.7
Be able to influence and persuade people.	0.9	2.6	96.4
Be empathetic (e.g. Listening, understanding).	1.3	4.2	94.5
Be conscientious.	0.3	4.2	95.5
Be able to solve problems.	0.3	0.0	99.7
Have analytical abilities.	0.6	0.0	99.4
Be able to make decisions.	0.6	0.3	99
Share knowledge with stakeholders.	0.3	2.6	97.1

Source: Compiled by the researcher from survey results, 2023.

The majority of the 309 respondents *agreed to fully agreed* on utilising the 20 interpersonal competencies to perform their tasks and responsibilities efficiently and effectively. Of the 20 interpersonal competencies, being able to *solve problems* had the highest percentage of respondents *agreeing to fully agreeing* (99.7%), followed by having analytical abilities (99.4%) and being honest and trustworthy (99.4%). Although the respondents *agreed to fully agreed* on the need to be able to communicate with stakeholders, this competency had the lowest

percentage of agreement (87.7%). Overall, respondents hardly disagreed (*fully disagree* to *disagree*) on the importance of utilising interpersonal competencies to perform their tasks efficiently and effectively, with none above 1.6% – indicating how important all the indicated personal competencies are.

6.2.9 Agreement on the utilisation of strategic competencies

In section F, the respondents were asked to assess their level of agreement on using the 10 strategic competencies as PSPs to accomplish their tasks and responsibilities efficiently and effectively. Table 6.11 shows the frequency distribution of the respondents' answers regarding the utilisation of these competencies on the scale of *fully disagree* to *fully agree*. As in sections 6.2.6 to 6.2.8, for descriptive purposes, the two lowest categories (*fully disagree* and *disagree*) and the highest two categories (*agree* and *fully agree*) were grouped together.

Table 6.11: Respondents' level of agreement on the utilisation of the 10 strategic competency statements

Statements in the questionnaire relating to strategic competencies	The level of agreement on the utilisation of the specific strategic competencies by the respondents to perform their tasks and responsibilities as a PSP efficiently and effectively – presented in percentages		
	Fully disagree to disagree	Neither agree nor disagree	Agree to fully agree
Be focused on adding value to the business through the purchasing function.	0.3	0.6	99.0
Think strategically (e.g. develop and implement business strategies).	0.3	1.9	97.8
Be focused on corporate social responsibility.	2.9	19.4	77.6
Be focused on sustainable purchasing.	1.2	8.4	90.3
Be able to manage supply risk strategies.	0.9	2.9	96.1
Manage strategic business partnerships with suppliers.	0.3	1.3	98.3
Think holistically (e.g. understanding large-scale patterns and reacting to them).	0.6	3.2	96.2
Be proactive (e.g. self-initiated behaviour in situations).	0.6	1.0	98.4
Be inventive.	2.2	7.1	90.6
Be able to think critically.	0.3	1.6	98.1

Source: Compiled by the researcher from survey results, 2023.

Respondents *agreed to fully agreed* on utilising 10 strategic competencies to perform their tasks and responsibilities efficiently and effectively, with the highest frequency of 99% recorded for being focused on *adding value* to the business through the purchasing function, followed by being proactive with 98.4%, and managing strategic business partnerships with suppliers with 98.3%. Again, low percentages were recorded on the scales of *fully disagree* to

disagree (0.3% - 2.9%) on utilising the 10 strategic competencies to perform PS tasks and responsibilities efficiently and effectively – indicating the importance of these strategic competencies.

6.2.10 Demographic information

To build a demographic profile of the 309 respondents that took part in the study, they were required to indicate the number of years they had worked in the PSM field, whether they trained specifically in the PSM field, and what their highest level of formal qualification was. Tables 6.12 to 6.14 present the frequency distribution of the demographic information of the respondents.

Table 6.12: Number of years respondents have worked within the PSM field

Number of years working within the PSM field	Percentages
Less than 3 years	6.1
3 years but less than 5 years	10.7
5 years but less than 8 years	16.5
8 years or more	66.7

Source: Compiled by the researcher, 2023.

Table 6.13: Respondents' field of study

Did participants study specifically in the PSM field	Percentages
Yes	65
No	35

Source: Compiled by the researcher, 2023.

Table 6.14: Highest level of formal qualification

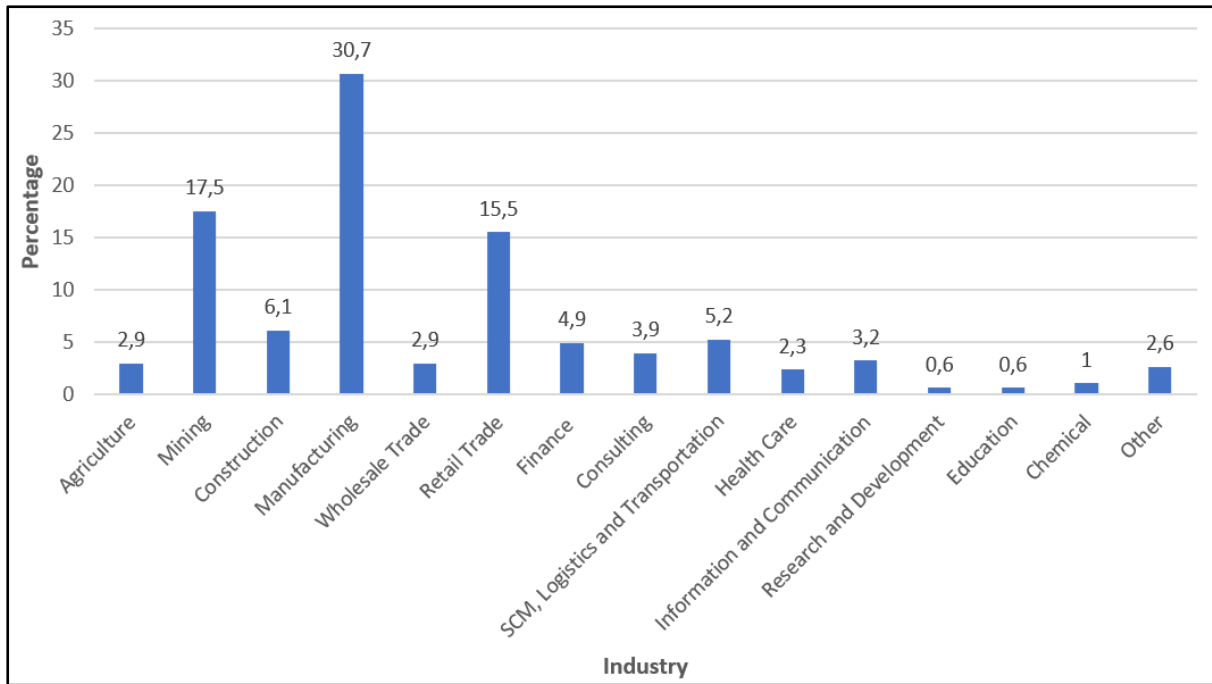
Level of formal qualification	Percentages
Matric certificate	5.2
Post matric certificate	2.3
Diploma	21.7
Training certificate	1.6
Undergraduate degree	22.7
Honours degree	25.2
Master's degree	18.4
Doctoral degree	1.3
Other	1.6

Source: Compiled by the researcher, 2023.

Table 6.12 shows that two-thirds of the respondents (66.7%) have worked within the PSM field for eight years or more, followed by 16.5% and 10.7% in the five years but less than eight years, and three years but less than five years brackets, respectively. Only 6.1% of the 309 respondents have worked in the PSM field for less than three years. Since most respondents have worked in the PSM field for eight or more years, they were deemed to be knowledgeable in the field. The more time a professional spends within a specific field, the more knowledge and skills they will gain (How to learn... work experience, n.d.) It was also determined that the majority (65%) of respondents studied specifically within the PSM field. Regarding the highest level of education, almost half of the respondents, 46.9%, have postgraduate qualifications.

6.2.11 Organisational information

The final section of the questionnaire focused on obtaining organisational information from respondents: the industry in which the business they currently work for operates, their current job title, and the level at which they are currently employed. Figure 6.2 presents a graphic illustration of the industries listed by respondents.



Source: Compiled by the researcher, 2023.

Figure 6.2: Main industries listed by the respondents

Figure 6.2 indicates that the study's respondents worked across 14 industries. Most worked within the manufacturing industry (30.7%), followed by 17.5% in mining and 15.5% in retail trade. The eight respondents who selected the option *other* (2.6%) explained that they worked across several industries.

The respondents were then asked about their current job title and position within the business. Owing to the wide variety of responses, the job titles and positions were categorised into seven main categories based on the respondents' terms to describe their titles or positions. The seven categories and corresponding percentages are:

- Category manager/coordinator – 2%
- Consulting – 4 %
- Contract management – 1%
- Logistics – 5%
- Purchasing/procurement/buying – 52%
- Strategic sourcing – 14%
- Supply chain/supply chain management – 22%

It is clear that the majority of respondents' job titles/positions included the words *purchasing*, *procurement* or *buying*, followed by *supply chain management* at 22%.

Lastly, respondents were asked to indicate the level of their current position. Five options, ranging from *non-management member of the PS team* to *senior-level management* were available. The option of *other* with an open text box was also offered.

Table 6.15: Management level of respondents

Management level	Percentage
Non-management member of the PS team	11.7
Lower-level management	13.3
Middle-level management	36.6
Senior-level management	35.6
Other	2.9

Source: Compiled by the researcher, 2023.

From table 6.15 it can be deduced that almost an equal percentage of respondents were part of their business's *middle- or senior-level management*, with 36.6% and 35.6%, respectively. Nine respondents selected the option *other*: four indicated that they were consultants; one, the director of the business; two, that they were appointed at the executive level; another, that they were part of a graduate program; and one, the business owner.

This concludes the discussion on the descriptive analyses of the gathered data. The next part of the chapter focuses on preparing the data to conduct SEM by performing EFA on the four competency categories to create sub-category competency factors.

6.3 Exploratory factor analyses

EFA were conducted on the four competency categories (technical, internal and external enterprise, interpersonal, and strategic). As explained in section 5.9.3.1, EFA is a technique used to examine the interrelationship among variables that may indicate a theoretical construct. This study examined the patterns of relationships between the individual competencies within each competency category to establish if there is an underlying latent factor structure (sub-category competency factor) (Hair et al., 2014:603). Thus, EFA was performed to reduce the extensive set of competencies (variables) for each competency

group into meaningful sub-groups (sub-category competency factors) (Cooper & Schindler, 2014:657). The EFA for each competency group is discussed below.

6.3.1 Exploratory factor analysis results – Technical competencies

The EFA process for the 22 technical competencies started by considering the appropriateness of the factor analyses utilising the KMO measure of sampling adequacy and Bartlett’s test of sphericity. The KMO value for technical competencies was 0.887, which was well above the acceptable threshold of 0.6, and Bartlett’s test of sphericity was significant at $p < 0.001$, which supported the factorability of the correlation matrix (Taljaard, 2020:323, Kline 2014, Tabachnick, Fidell & Ullman, 2007). Subsequently, the PAF method was used as an extraction method because some items displayed a nonnormal distribution as their skewness and/or kurtosis values were outside the range of -2 to +2 (Watkins, 2018:228, Costello & Osborn, 2005:2). The eigenvalue criterion of eigenvalues above one (Kaiser criterion) was used and five factors (sub-category competency factors) were identified, which explained 58.45% of the total variance.

Promax rotation with Kaiser normalisation (oblique factor rotation) was performed to assist with the interpretation and scientific utility of the five technical sub-category competency factors. Factor loadings of 0.3 and larger were considered for inclusion (Hair et al., 2014:115). The final factor loadings of the 22 technical competencies, as presented in the pattern matrix, are provided in table 6.16 below.

Table 6.16: Factor loadings for the factors representing *technical competencies*

Questions in the questionnaire	Technical competencies	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Be able to forecast demand (e.g. planning of annual demand based on sales forecasts).	Demand forecasting ¹⁸	-	-	-	-	-
Be knowledgeable regarding the product I need to purchase (e.g.	Product knowledge	-	-	0,330	-	-

¹⁸ The technical competency *demand forecasting* was not considered as it did not load onto any factor.

Questions in the questionnaire	Technical competencies	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
technical specifications, the industry).						
Be able to source innovatively (e.g. identifying different supply possibilities available on the supply market).	Innovation sourcing	-	-	0,571	-	-
Be able to perform the tasks relating to strategic sourcing (e.g. spend and demand analyses, category management, category strategy management, source-to-contract process).	Strategic sourcing	-	-	0,591	-	-
Have sufficient knowledge of the P&S function in general (e.g. P&S systems and best practices).	Purchasing knowledge	-	-	0,875	-	-
Understand optimisation of systems and processes within the business.	Process management	-	-	0,675	-	-
Understand the technical aspects of the supplier's products and production processes (e.g. reading of designs, technical writing and reporting).	Technical knowledge	-	0,434	-	-	-
Cooperate with production/operations (e.g. knowing the basics about production/operations, building a relationship	Cooperation with production/operations	-	0,667	-	-	-

Questions in the questionnaire	Technical competencies	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
with the production/operations department).						
Be involved with quality management/assurance of purchases made.	Involvement in quality management	-	0,807	-	-	-
Cooperate with logistics (e.g. knowing the basics about logistics, building a relationship with the department responsible for the business's logistics).	Cooperation with logistics	-	0,705	-	-	-
Have some legislative knowledge pertaining to purchasing and supply.	Legislation knowledge ¹⁹	-	-	-	-	-
Be able to request quotations, information or proposals from suppliers (e.g. inviting suppliers to submit a bid).	Request for quotation, information or proposals	0,743	-	-	-	-
Be able to source globally (materials, processes, designs or technology).	Global sourcing	0,469	-	-	-	-
Perform and interpret cost analysis (e.g. calculating total cost of ownership, performing cost driver analysis).	Cost analysis	0,352	-	-	-	-
Be able to negotiate with suppliers (e.g. determine specific details that should be included in the contract).	Negotiation	0,936	-	-	-	-

¹⁹ The technical competency *legislation knowledge* was not considered as it did not load onto any factor.

Questions in the questionnaire	Technical competencies	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Manage supplier contracts that have been signed.	Contract management ²⁰	-	-	-	-	-
Be able to manage projects (e.g. initiating, planning, executing, controlling, and closing of work).	Project management	-	-	-	0,333	-
Be able to report on suppliers' key performance indicators set by the purchasing organisation (your employer).	Establishing and reporting on key performance indicators	-	-	-	0,504	-
Have the ability to make use of numerical (mathematical/statistical) techniques for decision-making.	Numerical skills	-	-	-	-	0,844
Be able to analyse large amounts of data (Big data analyses).	Big data analysis	-	-	-	-	0,756
Be able to work with E-procurement applications or systems.	Working with E-procurement applications or systems	-	-	-	0,495	-
Be able to assist with the automation of the purchasing process.	Automation of purchasing processes	-	-	-	0,861	-

Source: SPSS output.

Thus, through EFA, five technical sub-category competency factors were identified. However, researchers are encouraged to consider multiple statistical methods to determine and

²⁰The technical competency *contract management* was not considered as it did not load onto any factor.

confirm factors (O'Connor, 2000:396). Therefore, PA and Velicer's MAP analysis were also utilised to determine the final number of factors (see section 5.9.3.1.4).

Numerous authors have stated that PA is the preferred method for determining factors within a dataset (Beauducel, 2001:141; O'Connor, 2000:396; Hayton, Allen & Scarpello, 2004:192). In this study, however, PA did not present a conclusive answer as it determined 12 sub-category competency factors from the 22 technical competencies (O'Connor, 2000:397). According to the literature (Garrido, Abad & Ponsoda, 2011:552; Beauducel, 2001:141; O'Connor 2000:397; Buja & Eyuboglu 1992:2), PA tends to yield more factors than necessary, which may be due to the extraction method (PCA) used by PA.

Finally, Velicer's MAP analysis was utilised to identify factors for the 22 technical competencies. Velicer's MAP analysis identified two sub-category competency factors through PCA, which aligned with the first breaking point of the scree plot analysis. However, the literature warns that one should be cautious when determining factors through Velicer's MAP analysis as it is better to overestimate rather than underestimate the number of factors; Velicer's MAP analysis is known to err on the side of under-extraction – which leads to a loss of plausible factors (Hayton, Allen & Scarpello, 2004:192; O'Connor 2000:98,396).

Since PA and Velicer's MAP analysis were designed mainly for PCA (O'Connor 2000:397), which do not have a common basis for interpretation if PAF is used, it was considered not suitable for this study (Timmerman & Lorenzo-Seva 2011:211; Patil, Singh, Mishra & Donavan 2008:165; Buja & Eyuboglu 1992:6). Hence, the five technical sub-category competency factors identified through EFA were retained, and the theoretical significance of each sub-category competency factor was considered before naming. The five technical sub-category competency factors were labelled as follows:

- Factor 1: Operational PS competencies
- Factor 2: Internal technical-related cooperation competencies
- Factor 3: Innovative supply competencies
- Factor 4: Integrative supply competencies
- Factor 5: Analytical competencies

To determine the reliability, convergent- and discriminant validity of each sub-category competency factor, the CA coefficient and the convergent (AVE and CR) and discriminant

(Fornell and Larcker’s criteria, and HTMT) validity measures were considered (see section 5.9.3.1.5). Table 6.17 presents the CA coefficients for the five technical sub-category competency factors.

Table 6.17: Cronbach’s alpha values for the five technical sub-category competency factors

Factor	Factor label	Number of variables/items in the factor	CA coefficient
1	Operational PS competencies	4	0.746
2	Internal technical-related cooperation competencies	4	0.749
3	Innovative supply competencies	5	0.806
4	Integrative supply competencies	4	0.717
5	Analytical competencies	2	0.806

Source: SPSS output.

Table 6.17 indicates that all five technical sub-category competency factors’ CA coefficients met the reliability threshold of 0.7, which indicates internal consistency (Hair et al., 2014:123). Next, the researcher considered convergent validity, where the CR and AVE values of the five technical sub-category competencies were determined (see table 6.18 below).

Table 6.18: Composite reliability and average variance extracted values for the five technical sub-category competency factors

Factor	Factor label	CR	AVE
1	Operational PS competencies	0.640	0.479
2	Internal technical-related cooperation competencies	0.766	0.453
3	Innovative supply competencies	0.810	0.465
4	Integrative supply competencies	0.725	0.401
5	Analytical competencies	0.809	0.680

Source: SPSS output.

Only the AVE value of *analytical competencies* was above the threshold of 0.5 with a value of 0.680. However, as AVE is considered a conservative and too strict criterion for convergent validity, one can conclude convergent validity based on CR alone (Malhotra & Dash, 2011:702; Fornell & Larcker, 1981:49). Taking into account that the CA and the five technical sub-

category competency factors' CR were above the threshold of 0.6, it can be stated that all the technical sub-category competency factors were reliable and demonstrated convergent validity.

In order to determine discriminant validity, the researcher considered the Fornell and Larcker criteria for each sub-category competency factor, as well as the HTMT (Voorhees et al., 2016:119). By using the Fornell and Larcker criteria, a researcher can assess discriminant validity by comparing the amount of variance captured by a construct with the shared variance of other constructs – the squared value of the AVE value should be higher than the correlation with any other construct. The squared AVE value is presented in bold on the diagonal in table 6.19 (Garson, 2016:67, Alarcón & Sánchez, 2015:8). Table 6.19 shows that Fornell and Larcker's criterion indicated a lack of discriminant validity between *integrative supply competencies* and *analytical competencies*, and between *integrative supply competencies* and *innovative supply competencies*.

However, calculating the HTMT value for these two cases resulted in HTMT values of 0,64 and 0,62, respectively. These values were well below the threshold of 0.85, suggesting evidence of discriminant validity (Hamid, Sami & Sidek, 2017:3); therefore, all five technical sub-category competency factors indicated discriminant validity.

Table 6.19: Fornell and Larcker's criteria matrix for the five technical sub-category competency factors

	Integrative supply competencies	Operational PS competencies	Analytical competencies	Innovative supply competencies	Internal technical-related cooperation
Integrative supply competencies	0,633				
Operational PS competencies	0,629	0,692			
Analytical competencies	0,648	0,645	0,825		

	Integrative supply competencies	Operational PS competencies	Analytical competencies	Innovative supply competencies	Internal technical-related cooperation
Innovative supply competencies	0,643	0,681	0,594	0,682	
Internal technical-related cooperation	0,567	0,582	0,403	0,624	0,673

Source: SPSS output.

It can be concluded that the five technical sub-category competency factors, as identified through EFA, were valid and reliable and could be used to conduct further statistical analyses.

6.3.2 Exploratory factor analyses results – Internal and external enterprise competencies

Again, the KMO measure of sampling adequacy and Bartlett's test of sphericity were utilised to determine the appropriateness of the factor analyses conducted on the 12 internal and external enterprise competencies. The KMO value for the internal and external enterprise competencies was 0.857, which was above the acceptable threshold of 0.6. Bartlett's test of sphericity was significant at $p < 0.001$, which supported the factorability of the correlation matrix (Taljaard, 2020:323; Kline, 2014:10; Tabachnick, Fidell & Ullman, 2007). Consequently, as with the technical competencies, PAF was used as an extraction method because some items displayed a nonnormal distribution as their skewness and/or kurtosis values were outside the range of -2 and +2 (Watkins, 2018:228, Costello & Osborn, 2005:2). The eigenvalue criterion of eigenvalues above one (Kaiser criterion) was used and this identified three factors, which explained 57.01% of the total variance.

To assist with the interpretation and scientific utility of the factors, promax rotation with Kaiser normalisation (oblique factor rotation) was performed. Items with factor loadings of 0.3 and larger were considered for inclusion. Where a competency loaded onto more than one factor, the researcher considered the strength of the factor loading of the competency and the theoretical meaning of the competency to ensure the competency was either excluded or included in the most appropriate factor (Hair, Anderson, Babin & Black,

2010:117). Table 6.20 below presents the 12 internal and external enterprise competencies' factor loadings as presented in the pattern matrix (Hair et al., 2010:117).

Table 6.20: Factor loadings for the factors representing internal and external enterprise competencies

Questions in the questionnaire	Internal and external enterprise competencies	Factor 1	Factor 2	Factor 3
Be focused on the internal customer or internal user group.	Customer orientated ²¹	-	-	-
Be focused on all stakeholders.	Stakeholder-relationship management	-	-	0.957
Be able to perform supply market analyses (e.g. investigate opportunities within the supply market).	Supply market analysis	0.326*	-	0.365
Be able to consider the impact of P&S decisions on the entire supply chain.	Supply chain analysis	-	-	0.336
Cooperate with marketing (e.g. knowing the basics about marketing, building a relationship with the marketing department).	Cooperation with marketing	-	0.874	-
Cooperate with research and development (e.g. knowing the basics about research and development, building a relationship with stakeholders involved with research and development).	Cooperation with research and development	-	0.690	-
Be able to manage supplier relationships.	Supplier-relationship management	0.945	-	-

²¹ The internal and external enterprise competency *customer orientated* was not considered as it did not load onto any factor.

Questions in the questionnaire	Internal and external enterprise competencies	Factor 1	Factor 2	Factor 3
Be able to perform supplier evaluations.	Supplier evaluation	0.746	-	-
Be able to assist with developing suppliers.	Supplier development	0.718	-	-
Be able to facilitate change (e.g. the ability to lead a team through a change process).	Change management	0.406	-	0.303**
Have salesmanship skills.	Sales knowledge ²²	-	-	-
Be able to network and build relationships.	Networking	0.586	-	-

**Competency* was not included in the specific factor as a higher loading was present in a different factor

**The internal and external enterprise competency *change management* loaded onto both factors one and three, with the higher loading on factor one. After considering the theoretical significance and the other internal and external enterprise competencies in factor one and three, it was decided that *change management* would be most suited in factor three.

Source: SPSS output.

Thus, three internal and external sub-category competency factors were identified through EFA. As previously with the technical sub-category competency factors, PA was conducted, followed by Velicer's MAP analysis. PA did not present a conclusive answer in terms of internal and external enterprise competencies as the analyses indicated 10 sub-category competency factors – clearly an over-extraction of factors (Beauducel, 2001:141; O'Connor, 2000:396-397; Hayton, Allen & Scarpello, 2004:192). The high number of sub-category competency factors extracted can be attributed to PA utilising PCA as the factor extraction method, which tends to indicate more factors than justified (Buja & Eyuboglu 1992:2).

Finally, Velicer's MAP analysis was employed to identify factors for the 12 internal and external enterprise competencies. Only one sub-category competency factor was identified through Velicer's MAP analysis, which aligned with the first breaking point of the scree plot analysis. Since Velicer's MAP analysis is known to err on the side of under-extraction, which leads to the loss of plausible factors (Hayton, Allen & Scarpello, 2004:192; O'Connor

²² The internal and external enterprise competency *sales knowledge* was not considered as it did not load onto any factor.

2000:98,396), the method was deemed not suitable to extract factors from the 12 internal and external enterprise competencies.

Therefore, as with the factor analyses of technical competencies, it was decided not to use the results of the PA and Velicer's MAP analyses. The three internal and external enterprise sub-category competency factors identified through EFA were retained, and the theoretical significance of each sub-category competency factor was considered before naming. The three internal and external enterprise sub-category competency factors were labelled as follow:

- Factor 1: Supply-side transformational-relationship competencies
- Factor 2: Internal product-related cooperation competencies
- Factor 3: Supply chain wide relations and analysis competencies

Since it was decided to retain the three internal and external enterprise sub-category competency factors identified through EFA, their reliability and validity were considered. As with the technical sub-category competency factors, the researcher utilised the CA coefficient and convergent- (AVE and CR) and discriminant (Fornell and Larcker's criteria and HTMT) validity measures (see section 5.9.3.1.5).

Table 6.21 presents the CA coefficients for the three internal and external enterprise sub-category competency factors, indicating internal consistency by meeting the reliability threshold of 0.7 (Hair et al., 2014:123). This is followed by table 6.22, which shows the values of CR and AVE for the three internal and external enterprise sub-category competency factors.

Table 6.21: Cronbach’s alpha values for the three internal and external enterprise sub-category competency factors

Factor	Factor label	Number of items/variables in the factor	CA coefficients
1	Supply-side transformational-relationship competencies	5	0.818
2	Internal product-related cooperation competencies	2	0.725
3	Supply chain wide relations and analysis competencies	3	0.704

Source: SPSS output.

Table 6.22: Composite reliability and average variance extracted values for the three internal and external enterprise sub-category competency factors

Factor	Factor label	CR	AVE
1	Supply-side transformational-relationship competencies	0.828	0.494
2	Internal product-related cooperation competencies	0.728	0.573
3	Supply chain wide relations and analysis competencies	0.717	0.461

Source: SPSS output.

The results showed that only the AVE value of *internal product-related cooperation* was above the threshold of 0.5 with a value of 0.573. *Supply-side transformational-relationship competencies* and *supply chain wide relations and analysis* did not have an AVE value above or equal to 0.5. Again, as AVE is considered in the literature to be too strict and conservative as a measure of convergent validity, CR alone could be used to determine convergent validity (Malhotra & Dash, 2011:702; Fornell & Larcker, 1981:49). All three internal and external enterprise sub-category competency factors’ CR values were above the threshold of 0.6 – indicating reliability and convergent validity.

Discriminant validity was determined by considering the Fornell and Lacker criteria for the three internal and external enterprise sub-category competency factors. By using the Fornell

and Larcker criteria, a researcher can assess discriminant validity by comparing the amount of variance captured by a construct with the shared variance of other constructs – the squared value of the AVE value should be higher than the correlation with any other construct. The squared AVE value is presented in bold on the diagonal in table 6.23 (Garson, 2016:67, Alarcón & Sánchez, 2015:8). Based on Fornell and Larcker’s criterion, there was a lack of discriminant validity between *supply-side transformational-relationship competencies* and *supply chain wide relations and analysis competencies* – see table 6.23. However, when calculating HTMT, a value of 0.75, well below the threshold of 0.85, was obtained – suggesting discriminant validity. Thus, all three internal and external enterprise sub-category competency factors indicated discriminant validity.

Table 6.23: Fornell and Larcker’s criteria matrix for the three internal and external sub-category competency factors

	Supply-side transformational-relationship competencies	Internal product-related cooperation competencies	Supply chain wide relations and analysis competencies
Supply-side transformational-relationship competencies	0.703		
Internal product-related cooperation competencies	0.503	0.757	
Supply chain wide relations and analysis competencies	0.736	0.629	0.679

Source: SPSS output.

All three internal and external enterprise sub-category competency factors identified through EFA were deemed valid and reliable and used to conduct further statistical analysis.

6.3.3 Exploratory factor analysis results – Interpersonal competencies

The EFA on the 20 interpersonal competencies followed the same pattern as the analyses on the *technical* and *internal and external enterprise competencies*. The KMO measure of

sampling adequacy and Bartlett’s test of sphericity were first performed to determine the appropriateness of factor analyses. The KMO value for interpersonal competencies was 0.946, which was above the acceptable threshold of 0.6, and Bartlett’s test of sphericity was significant at $p < 0.001$, supporting the factorability of the correlation matrix (Taljaard, 2020:323, Kline 2014, Tabachnick, Fidell & Ullman, 2007). Again, the researcher used PAF as the extraction method because some items displayed a nonnormal distribution as their skewness and/or kurtosis values were outside the range of -2 and +2 (Watkins, 2018:228, Costello & Osborn, 2005:2). The eigenvalue criterion of eigenvalues above one (Kaiser criterion) was used and three sub-category competency factors were identified, which explained 62.48% of the total variance.

Promax rotation with Kaiser normalisation (oblique factor rotation) was performed to assist with the interpretation and scientific utility of the three interpersonal sub-category competency factors. Factor loadings of 0.3 and larger were considered for inclusion. The final factor loadings of the 20 interpersonal competencies, as presented in the pattern matrix, are provided in table 6.24 below.

Table 6.24: Factor loadings for the factors representing interpersonal competencies

Questions in the questionnaire	Interpersonal competencies	Factor 1	Factor 2	Factor 3
Be a leader (e.g. being motivational, managing different relationships within a team).	Leadership	-	-	0,365
Be able to work in cross-functional teams.	Working in cross-functional teams	-	0,504*	0,552
Be able to communicate (oral and written) with all stakeholders (internal and external).	Communication	-	0,513	0,492*
Be aware of cultural values, beliefs and perceptions.	Cross-cultural awareness	-	-	0,704
Be motivated to develop myself as a P&S professional (e.g. self-	Personal development	-	-	0,696

Questions in the questionnaire	Interpersonal competencies	Factor 1	Factor 2	Factor 3
reflection, identifying lacking skills).				
Be professionally curious and motivated to learn continuously.	Motivated to learn	-	-	0,674
Be creative.	Creativity	0,321*	-	0,531
Be honest and trustworthy.	Honesty	-	0,435	-
Have social manners (tactful, diplomatic, sensitivity).	Social manners	0,535	-	-
Be assertive and have self-assurance.	Self-assurance	0,894	-	-
Be confident.	Confidence	0,821	-	-
Be results-driven.	Result-driven		0,419	-
Be able to resolve conflicts.	Conflict resolution	0,385*	0,387	-
Be able to influence and persuade people.	Influencing and persuasion	0,342*	0,429	-
Be empathetic (e.g. Listening, understanding).	Empathy	0,492	-	0,333*
Be conscientious.	Conscientiousness	0,549	-	-
Be able to solve problems.	Problem-solving	-	0,801	-
Have analytical abilities.	Analytical abilities	-	0,614	-
Be able to make decisions.	Decision-making	-	0,789	-
Share knowledge with stakeholders.	Knowledge sharing	-	0,519	-

*Competency was not included in the specific factor as a higher loading was present in a different factor.

Source: SPSS output.

Thus, through EFA, three interpersonal sub-category competency factors were identified. Once again, the researcher utilised PA and Velicer's MAP analysis to determine and confirm the final number of sub-category competency factors to consider (O'Connor, 2000:396). PA did not provide a conclusive answer for this study as the analyses produced 20 sub-category competency factors – again yielding more factors than justified (Buja & Eyuboglu 1992:2).

Velicer’s MAP analysis identified two sub-category competency factors through PCA, which aligned with the first breaking point of the scree plot analysis. Caution was exercised to not underestimate the determining sub-category competency factors (Hayton, Allen & Scarpello, 2004:192; O’Connor 2000:98,396).

Therefore, the results of the PA and Velicer’s MAP analyses were discarded based on the same reasoning as for the *technical* and *internal and external enterprise* sub-category competency factors. Hence, it was decided that all three interpersonal sub-category competency factors, as identified through EFA, should be retained. The theoretical significance of each sub-category competency factor was considered before naming. The three interpersonal sub-category competency factors were labelled as follows:

- Factor 1: Internal values and social competencies
- Factor 2: Personal-dynamics management competencies
- Factor 3: Leadership competencies

Consequently, the same set of reliability and validity measures as used for the *technical* and *internal and external enterprise* sub-category competency factors were applied. Table 6.25 presents the CA coefficients for the three interpersonal sub-category competency factors.

Table 6.25: Cronbach’s alpha values for the three interpersonal sub-category competency factors

Factor	Factor label	Number of items/variables in the factor	CA coefficients
1	Internal values and social competencies	5	0.883
2	Personal-dynamics management competencies	9	0.864
3	Leadership competencies	6	0.866

Source: SPSS output.

Table 6.25 indicates that all three interpersonal sub-category competency factors’ CA coefficients met the reliability threshold of 0.7, thus indicating internal consistency (Hair et al., 2014:123). Table 6.26 below presents the CR and AVE values.

Table 6.26: Composite reliability and average variance extracted values for the three interpersonal sub-category competency factors

Factor	Factor label	CR	AVE
1	Internal values and social competencies	0.887	0.531
2	Personal-dynamics management competencies	0.869	0.527
3	Leadership competencies	0.878	0.547

Source: SPSS output.

The results showed that the AVE and CR values for the three interpersonal sub-category competency factors were above the thresholds of 0.5 and 0.6, respectively. Thus, the interpersonal sub-category competency factors were reliable and demonstrated convergent validity.

Discriminant validity was established by considering the Fornell and Lacker criterion and the HTMT values (discriminant validity is assessed by comparing the amount of variance captured by a construct with the shared variance of other constructs – the squared value of the AVE value should be higher than the correlation with any other construct). The squared AVE value is presented in bold on the diagonal in table 6.27. Referring to table 6.27, Fornell and Larcker’s criteria indicated a lack of discriminant validity between *internal values and social competencies* and *leadership competencies*; *internal values and social competencies* and *personal-dynamics management competencies*; and *personal-dynamics management competencies* and *leadership competencies*. Calculating the HTMT criteria in these three cases resulted in HTMT values of 0,84, 0.87 and 0,87, respectively. The HTMT value for *internal values and social competencies* and *leadership competencies* were well below the threshold of 0.85, indicating discriminant validity. In the case of *internal values and social competencies* and *personal-dynamics management competencies*; and *personal-dynamics management competencies* and *leadership competencies*, the HTMT values were above the conservative threshold of 0.85. Therefore, the researcher considered the work of Clark and Watson (2017:187), Hamid, Sami and Sidek (2017:3), as well as Gold, Malhotra, and Segars (2001:187), who supported a liberal HTMT threshold of 0.9 as acceptable to suggest discriminant validity if the constructs are related.

Table 6.27: Fornell and Larcker' criteria matrix for the three interpersonal sub-category competency factors

	Internal values and social competencies	Personal-dynamics management competencies	Leadership competencies
Internal values and social competencies	0.729		
Personal-dynamics management competencies	0.861	0.726	
Leadership competencies	0.810	0.867	0.740

Source: SPSS output.

All three interpersonal sub-category competency factors, as identified through EFA, were valid and reliable and used to conduct further statistical analysis.

6.3.4 Exploratory factor analysis results – Strategic competencies

In this last category, the appropriateness of conducting factor analyses on the 10 strategic competencies was confirmed; the KMO value was 0.9 (above the threshold of 0.6), and Bartlett's test of sphericity was significant at $p < 0.000$. Therefore, the factorability of the correlation matrix was supported (Taljaard, 2020:323; Kline, 2014; Tabachnick, Fidell & Ullman, 2007). The researcher used PAF as an extraction method because some items displayed a nonnormal distribution as their skewness and/or kurtosis values were outside the range of -2 and +2 (Watkins, 2018:228; Costello & Osborn, 2005:2). The eigenvalue criterion of eigenvalues above one (Kaiser criterion) was used and identified two factors, which explained 53.77% of the total variance.

Promax rotation with Kaiser normalisation (oblique factor rotation) was performed. Factor loadings of 0.3 and larger were considered for inclusion. Where a competency loaded onto more than one factor, the researcher considered the strength of the factor and the theoretical significance of the competency to ensure that the competency was included in the most appropriate factor (Hair et al., 2010:117). The final factor loadings of the 10 strategic competencies, as presented in the pattern matrix, are provided in table 6.28 below.

Table 6.28: Factor loadings for the factors representing strategic competencies

Questions in the questionnaire	Competencies	Factor 1	Factor 2
Be focused on adding value to the business through the purchasing function.	Adding value to the business with purchasing	0.638	
Think strategically (e.g. develop and implement business strategies).	Strategic management	0.785	
Be focused on corporate social responsibility.	Corporate social responsibility	0.457	
Be focused on sustainable purchasing.	Sustainability	0.684	
Be able to manage supply risk strategies.	Supply risk management	0.803	
Manage strategic business partnerships with suppliers.	Managing strategic business partnerships	0.623	
Think holistically (e.g. understanding large-scale patterns and reacting to them).	Holistic thinking		0.797
Be proactive (e.g. self-initiated behaviour in situations).	Proactivity		0.905
Be inventive.	Inventiveness		0.581
Be able to think critically.	Critical thinking	0.454*	0.352

* The strategic competency *critical thinking* loaded onto both factors one and two, with the higher loading on factor one. After considering the theoretical significance and the other strategic competencies in factor one and two, it was decided that *critical thinking* would be most suited in factor two.

Source: SPSS output.

Thus, through EFA, two strategic sub-category competency factors were identified. Again, PA as the preferred method for determining factors within a dataset (Beauducel, 2001:141; O'Connor, 2000:396; Hayton, Allen & Scarpello, 2004:192) did not present a conclusive answer as the analysis indicated seven strategic sub-category competency factors (overestimation of factors) for the strategic competencies. Velicer's MAP analysis was done

to identify factors for the 10 strategic competencies. Only one strategic sub-category competency factor was identified by this method, and this confirmed the method's propensity for under-extraction (Hayton Allen & Scarpello, 2004:192; O'Connor 2000:98,396).

Therefore, as with the factor analyses of the other competency categories, it was decided not to use the results of the parallel and Velicer's MAP analyses. Hence, the two strategic sub-category competency factors identified through EFA were retained, and the theoretical significance of each sub-category competency factor was considered before naming. The two strategic sub-category competency factors were labelled as follows:

- Factor 1: Visionary competencies
- Factor 2: Personal strategic competencies

The CA coefficient, convergent- (AVE and CR) and discriminant (Fornell and Larcker's criteria and HTMT) validity of each strategic sub-category competency factor (see section 5.9.3.1.5) was considered. Table 6.29 shows the CA coefficients for the two strategic sub-category competency factors – which met the reliability threshold of 0.7, indicating internal consistency (Hair et al., 2014:123). Table 6.30 presents the CR and AVE values of the two strategic sub-category competency factors.

Table 6.29: Cronbach's alpha values for the two strategic sub-category competency factors

Factor	Factor label	Number of items in the factor	CA coefficient
1	Visionary competencies	6	0.844
2	Personal strategic competencies	4	0.835

Source: SPSS output.

Table 6.30: Composite reliability and average variance extracted values for the two strategic sub-category competency factors

Factor	Factor label	CR	AVE
1	Visionary competencies	0.858	0.504
2	Personal strategic competencies	0.845	0.577

Source: SPSS output.

The results showed that the AVE and CR values for both strategic sub-category competency factors were above the threshold of 0.5 and 0.6, respectively. Therefore, the two strategic sub-category competency factors were reliable and demonstrated convergent validity.

Discriminant validity was determined by considering the Fornell and Lacker criteria of the two strategic sub-category competency factors. Based on Fornell and Larcker’s criterion, there was a lack of discriminant validity between *visionary competencies* and *personal strategic competencies* – see table 6.31. However, when calculating HTMT, a value of 0.847 (below the threshold of 0.85) was obtained – suggesting discriminant validity. Thus, both strategic sub-category competency factors indicated discriminant validity.

Table 6.31: Fornell and Larcker’s criteria matrix for the two strategic sub-category competency factors

	Visionary competencies	Personal strategic competencies
Visionary competencies	0.710	
Personal strategic competencies	0.834	0.760

Source: SPSS output.

Thus, both strategic sub-category competency factors, as identified through EFA, were valid and used to conduct additional statistical analysis.

6.4 Conclusion

Chapter six assisted in addressing SRO₈, SRO₉, SRO₁₀ and SRO₁₁ in this study.








SRO₈ Determine from empirical findings the PS sub-category competency factors that will be used as independent variables in the South African PS competency framework.

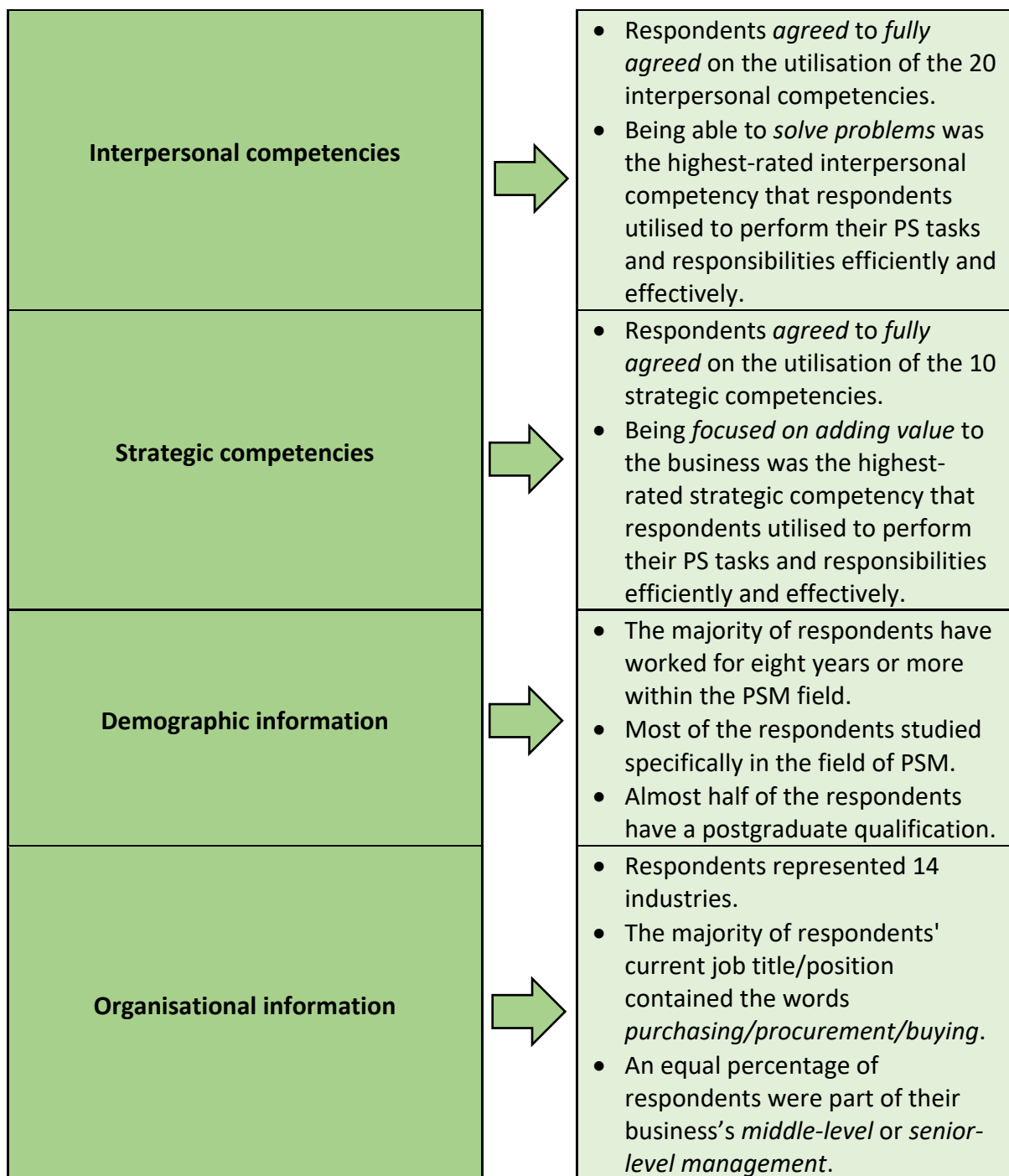
SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

The chapter was structured, first, to present the results of the descriptive statistics conducted on the data gathered through the questionnaire, followed by the results of the EFA conducted on the data relating to the four competency categories. The main findings of the descriptive statistics are presented in figure 6.3 – an adaptation of figure 6.1.

Qualifying questions		<ul style="list-style-type: none"> • 100 % of the respondents worked within the private sector of the South African PSM field.
Receiving of questionnaire link		<ul style="list-style-type: none"> • The majority of the respondents received the link to the questionnaire through LinkedIn.
PS objectives		<ul style="list-style-type: none"> • In terms of importance <i>ensuring stable supply</i> was the highest-rated PS objective. • Being <i>cost conscious</i> received the highest rating regarding the amount of time spent on the specific PS objective.
PS processes		<ul style="list-style-type: none"> • <i>Strategic sourcing</i> was rated the most important PS process. • <i>Strategic sourcing</i> received the highest rating regarding the amount of time spent on the specific PS process.
PS management activities		<ul style="list-style-type: none"> • In terms of importance, <i>strategic planning</i> was the highest-rated PS management activity. • <i>PS leadership</i> received the highest rating regarding the amount of time spent on the specific PS management activity.
Technical competencies		<ul style="list-style-type: none"> • Respondents <i>agreed to fully agreed</i> on the utilisation of 20 technical competencies. • Being able to <i>source innovatively</i> was the highest-rated technical competency that respondents utilised to perform their PS tasks and responsibilities efficiently and effectively.
Internal and external enterprise competencies		<ul style="list-style-type: none"> • Respondents <i>agreed to fully agreed</i> on the utilisation of the 12 internal and external enterprise competencies. • Being able to <i>manage supplier relationships</i> was the highest-rated internal and external enterprise competency that respondents utilised to perform their PS tasks and responsibilities efficiently and effectively.



Source: Compiled by the researcher, 2023.

Figure 6.3: Synthesis of descriptive findings

Section 6.3 presents the results of the EFA conducted on the four competency categories. In chapter three, 64 competencies were identified based on the traditional literature review (22 technical, 12 internal and external enterprise, 20 interpersonal and 10 strategic). In order to reduce the number of competencies, EFA was conducted. This reduced the total number of

sub-category competency factors to 13. These 13 sub-category competency factors consisted of:

- **Five *technical* sub-category competency factors:**
 - operational PS competencies,
 - internal technical-related cooperation competencies,
 - innovative supply competencies,
 - integrative supply competencies,
 - analytical competencies;
- **Three *internal and external enterprise* sub-category competency factors:**
 - supply-side transformational-relationship competencies,
 - internal product-related cooperation competencies,
 - supply chain wide relations and analysis;
- **Three *interpersonal* sub-category competency factors:**
 - internal values and social competencies,
 - personal-dynamics management competencies,
 - leadership competencies;
- **Two *strategic* sub-category competency factors:**
 - visionary competencies,
 - personal strategic competencies.

Chapter 7 – Structural equation modelling

7.1 Introduction

By reporting and interpreting the results and analyses of the data collected for this study, chapter seven will assist in addressing SRO₉, SRO₁₀ and SRO₁₁ of this study:

SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

Chapter seven provides the results of the 60 SEMs performed by the researcher. The chapter is divided into three sections. The first section, section 7.2, reports the results of the 28 SEMs relating to the seven *PS objectives*. This is followed by the results of the 8 SEMs relating to the two *PS processes* in section 7.3. Lastly, section 7.4 reports on the results of the remaining 24 SEMs regarding the six *PS management activities*.

Each SEM is presented similarly; the hypotheses representing the relationship between the dependent and independent variables are stated, the SEM path diagram is presented, and the goodness-of-fit indices (IFI, CFI, RMSEA and CMIM/DF) are discussed. If the set of goodness-of-fit indices indicated inadequate model fit, the researcher considered improving the model by studying modification indices for adding potential additional error covariances. Improvements were only made if the added terms could be theoretically justified. Therefore, if applicable, a SEM path diagram with covariances and the goodness-of-fit indices with covariances are also presented. Next, an interpretation of the structural path estimates (with covariance where applicable) is presented. Lastly, the supported hypotheses of each SEM are listed. The chapter concludes by presenting all the supported hypotheses in one table.

7.2 PS objectives as dependent variables

7.2.1 SEM: Relationship between PS objectives and the five technical sub-category competency factors

Section 7.2.1 presents the results of SEM models one to seven with the PS objectives as dependent variables and the five technical sub-category competency factors as independent variables.

7.2.1.1 SEM Model 1: *Cost consciousness* and the five technical sub-category competency factors

The purpose of SEM is to specify structural relationships between latent constructs (Hair et al., 2014:662). The first SEM in this study included the dependent variable, *cost consciousness*, and the five technical sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H1₁: Operational PS competencies have a relationship with cost consciousness.

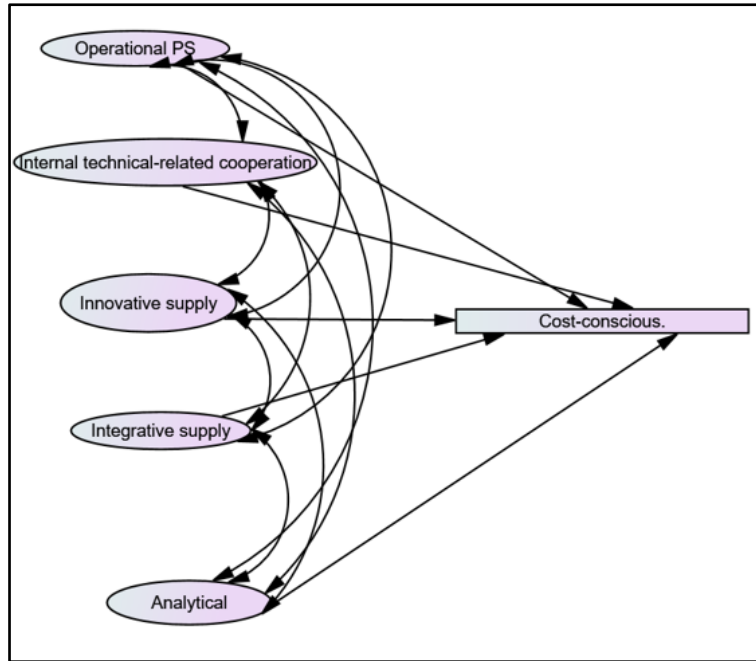
H2₁: Internal technical-related cooperation competencies have a relationship with cost consciousness.

H3₁: Innovative supply competencies have a relationship with cost consciousness.

H4₁: Integrative supply competencies have a relationship with cost consciousness.

H5₁: Analytical competencies have a relationship with cost consciousness.

Figure 7.1 below depicts the relationships between each technical sub-category competency factor and the PS objective *cost consciousness*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.1: SEM 1: PS objective *cost consciousness* and the five technical sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model's goodness-of-fit indices. These indices for this model are presented in table 7.1 below.

Table 7.1: Goodness-of-fit indices: PS objective *cost consciousness* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Cost consciousness Independent variables: Technical sub-category competency factors	0.905	0.903	0.069	2.450
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.905) and CFI (0.903) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.069 was well below 0.08, which indicated that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.450, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher could interpret the structural path estimates presented in table 7.2.

Table 7.2: Structural path estimates: PS objective *cost consciousness* and the five technical sub-category competency factors

PS objective	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Cost consciousness	Operational PS competencies	0.545	0.054	Yes (10%)
Cost consciousness	Internal technical-related cooperation competencies	- 0.296	0.031	Yes (5%)
Cost consciousness	Innovative supply competencies	0.325	0.001	Yes (1%)
Cost consciousness	Integrative supply competencies	- 0.164	0.692	No
Cost consciousness	Analytical competencies	- 0.020	0.907	No

Source: AMOS output.

In considering the relationships between the PS objective, *cost consciousness*, and the five technical sub-category competency factors, the associated structural paths of three were statistically significant: *operational PS competencies*, *internal technical-related cooperation competencies* and *innovative supply competencies*, at 10%, 5% and 1%, respectively. Therefore, the standardised weights for these three were considered. Both *operational PS competencies* and *innovative supply competencies* indicated a positive relationship with *cost consciousness*. However, *operational PS competencies* indicated a strong positive relationship (0.545), whereas *innovative supply competencies* only indicated a moderately positive relationship (0.325). Although *internal technical-related cooperation competencies* was statistically significant, a weak negative relationship was present with a standardised weight of -0.296, indicating a tendency for an increase in the importance of the PS objective to be associated with a decrease in the importance of this technical sub-category competency

factor. It was, therefore, concluded that H4₁ and H5₁ were not supported, but that the following hypotheses were supported:

H1₁: Operational PS competencies have a relationship with cost consciousness.

H2₁: Internal technical-related cooperation competencies have a relationship with cost consciousness.

H3₁: Innovative supply competencies have a relationship with cost consciousness.

7.2.1.2 SEM Model 2: *Ensuring stable supply* and the five technical sub-category competency factors

The second SEM of this study included the dependent variable, *ensuring stable supply*, and the five technical sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H6₁: Operational PS competencies have a relationship with ensuring stable supply.

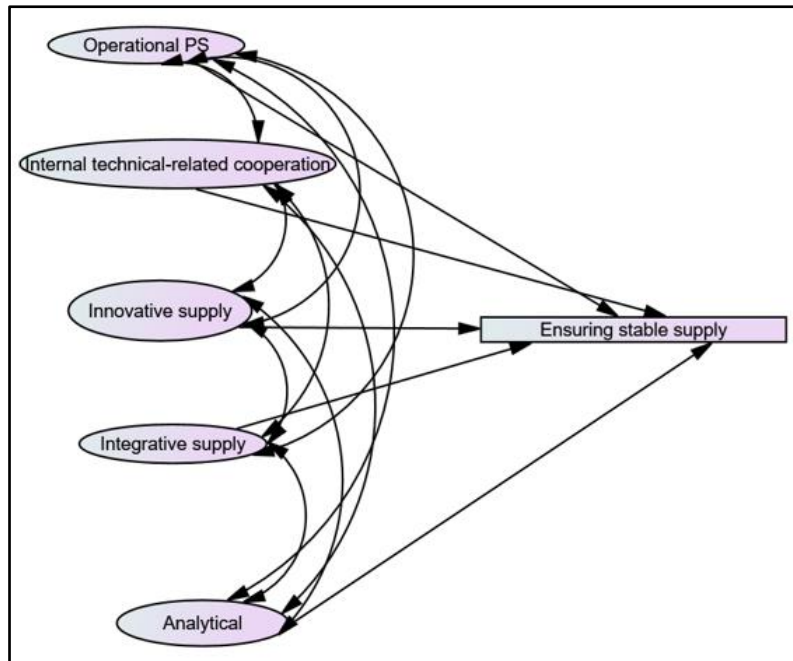
H7₁: Internal technical-related cooperation competencies have a relationship with ensuring stable supply.

H8₁: Innovative supply competencies have a relationship with ensuring stable supply.

H9₁: Integrative supply competencies have a relationship with ensuring stable supply.

H10₁: Analytical competencies have a relationship with ensuring stable supply.

Figure 7.2 below depicts the relationships between each technical sub-category competency factor and the PS objective *ensuring stable supply*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.2: SEM 2: PS objective *ensuring stable supply* and the five technical sub-category competency factors

As discussed in section 5.9.3.2, the estimation method used was asymptotic distribution free, as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. These indices for this model are presented in table 7.3 below.

Table 7.3: Goodness-of-fit indices: PS objective *ensuring stable supply* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Ensuring stable supply Independent variables: Technical sub-category competency factors	0.912	0.911	0.067	2.399
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.912) and CFI (0.911) were above 0.90, indicating an acceptable model fit. The RMSEA value of 0.067 was well below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.399, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher could consider the structural path estimates presented in table 7.4.

Table 7.4: Structural path estimates: PS objective *ensuring stable supply* and the five technical sub-category competency factors

PS objective	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Ensuring stable supply	Operational PS competencies	- 0.479	0.355	No
Ensuring stable supply	Internal technical-related cooperation competencies	- 0.599	0.149	No
Ensuring stable supply	Innovative supply competencies	0.474	0.041	Yes (5%)
Ensuring stable supply	Integrative supply competencies	1.494	0.068	Yes (10%)
Ensuring stable supply	Analytical competencies	- 0.616	0.021	Yes (5%)

Source: AMOS output.

Considering the relationships between the PS objective, *ensuring stable supply*, and the five technical sub-category competency factors, the associated structural paths of *innovative supply competencies* and *analytical competencies* were statistically significant at the 5% level; whereas the associated structural path of *integrative supply competencies* was statistically significant at the 10% level. Consequently, the standardised weights for the three statistically significant technical sub-category competency factors were considered. *Innovative supply competencies* and *integrative supply competencies* indicated a positive relationship with *ensuring stable supply*. *Integrative supply competencies* indicated a moderately positive relationship with a standardised weight of 0.474; whereas *integrative supply competencies* indicated a strong positive relationship with a standardised weight of 1.494. Although *analytical competencies*' path was statistically significant, a strong negative relationship was present with a standardised weight of -0.616 – indicating a tendency for an increase in the

importance of the PS objective to be associated with a decrease in the importance of this competency factor. It was, therefore, concluded that H6₁ and H7₁ were not supported, but that the following hypotheses were supported:

H8₁: Innovative supply competencies have a relationship with ensuring stable supply.

H9₁: Integrative supply competencies have a relationship with ensuring stable supply.

H10₁: Analytical competencies have a relationship with ensuring stable supply.

7.2.1.3 SEM Model 3: *Adherence to quality requirements* and the five sub-category technical competency factors

The third SEM included the dependent variable, *adherence to quality requirements*, and the five technical sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H11₁: Operational PS competencies have a relationship with adherence to quality requirements.

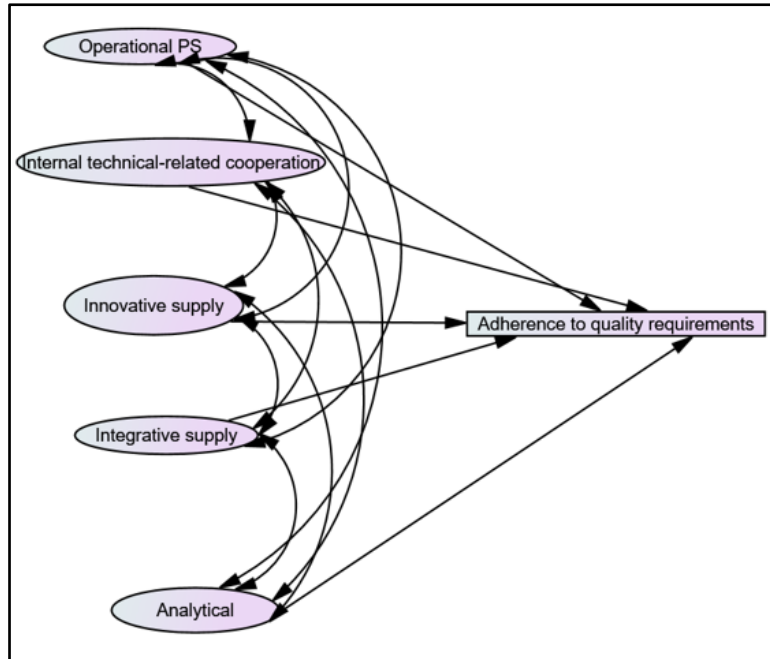
H12₁: Internal technical-related cooperation competencies have a relationship with adherence to quality requirements.

H13₁: Innovative supply competencies have a relationship with adherence to quality requirements.

H14₁: Integrative supply competencies have a relationship with adherence to quality requirements.

H15₁: Analytical competencies have a relationship with adherence to quality requirements.

Figure 7.3 below depicts the relationships between each technical sub-category competency factor and the PS objective, *adherence to quality requirements*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output,

Figure 7.3: SEM 3: PS objective *adherence to quality requirements* and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the estimation method used was asymptotic distribution free as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.5 below.

Table 7.5: Goodness-of-fit indices: PS objective *adherence to quality requirements* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Adherence to quality requirements Independent variables: Technical sub-category competency factors	0.920	0.919	0.064	2.252
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.920) and CFI (0.919) were above 0.90, indicating an acceptable model fit. Additionally, the RMSEA value of 0.064 was well below 0.08, indicating that the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 2.252, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher could consider the structural path estimates presented in table 7.6.

Table 7.6: Structural path estimates: PS objective *adherence to quality requirements* and the five technical sub-category competency factors

PS objective	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Adherence to quality requirements	Operational PS competencies	0.194	0.401	No
Adherence to quality requirements	Internal technical-related cooperation competencies	- 0.065	0.591	No
Adherence to quality requirements	Innovative supply competencies	0.282	0.042	Yes (5%)
Adherence to quality requirements	Integrative supply competencies	- 0.069	0.805	No
Adherence to quality requirements	Analytical competencies	0.125	0.496	No

Source: AMOS output.

Considering the relationships between the PS objective, *adherence to quality requirements*, and the five technical sub-category competency factors, only *innovative supply competencies*' associated structural path was statistically significant at the 5% level. Thus, only the standardised weight of *innovative supply competencies* was considered – which indicated a moderately positive relationship with a standardised weight of 0.282. It was, therefore, concluded that H11₁, H12₁, H14₁, and H15₁ were not supported: only H13₁ was supported:

H13₁: Innovative supply competencies have a relationship with adherence to quality requirements.

7.2.1.4 SEM Model 4: *Promoting sustainability* and the five technical sub-category competency factors

SEM model four included the dependent variable, *promoting sustainability*, and the five technical sub-category competency factors as independent variables. These relationships were represented the following hypotheses:

H16₁: Operational PS competencies have a relationship with promoting sustainability.

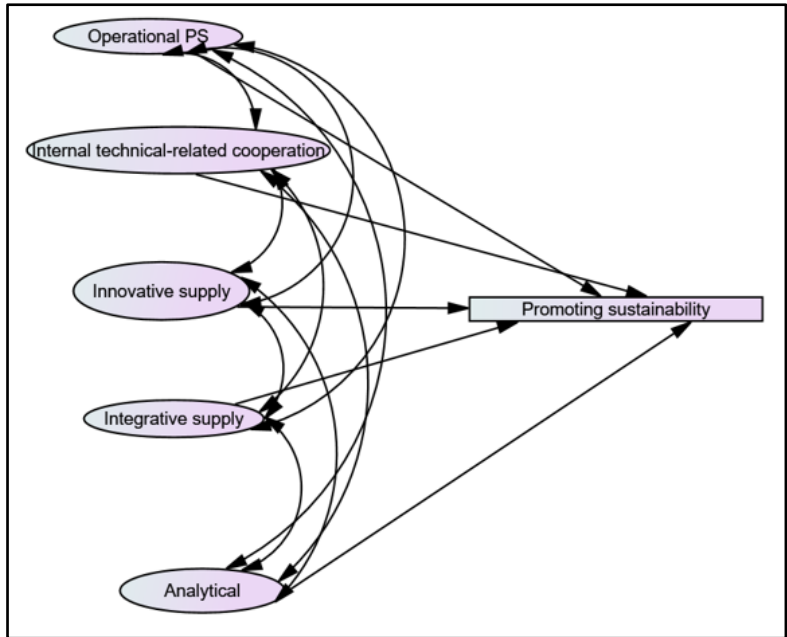
H17₁: Internal technical-related cooperation competencies have a relationship with promoting sustainability.

H18₁: Innovative supply competencies have a relationship with promoting sustainability.

H19₁: Integrative supply competencies have a relationship with promoting sustainability.

H20₁: Analytical competencies have a relationship with promoting sustainability.

Figure 7.4 below depicts the relationships between each technical sub-category competency factor and the PS objective, *promoting sustainability*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.4: SEM 4: PS objective *promoting sustainability* and the five technical sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.7 below.

Table 7.7: Goodness-of-fit indices: PS objective *promoting sustainability* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting sustainability Independent variables: Technical sub-category competency factors	0.906	0.904	0.068	2.443
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.906) and CFI (0.904) were above 0.90, indicating an acceptable model fit. Additionally, the RMSEA value of 0.068 was well below 0.08, also indicating the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.443, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher could consider the structural path estimates presented in table 7.8.

Table 7.8: Structural path estimates: PS objective *promoting sustainability* and the five technical sub-category competency factors

PS objective	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting sustainability	Operational PS competencies	0.147	0.465	No
Promoting sustainability	Internal technical-related cooperation competencies	-0.103	0.419	No
Promoting sustainability	Innovative supply competencies	0.347	0.063	Yes (10%)
Promoting sustainability	Integrative supply competencies	0.196	0.291	No
Promoting sustainability	Analytical competencies	-0.280	0.034	Yes (5%)

Source: AMOS output.

In considering the relationships between the PS objective, *promoting sustainability*, and the five technical sub-category competency factors, the associated structural path of *innovative supply competencies* was statistically significant at the 10% level and that of *analytical competencies* at the 5% level. Consequently, the standardised weights of these two technical sub-category competency factors were considered. A standardised weight of 0.347 indicated a moderately positive relationship between the PS objective *promoting sustainability* and *innovative supply competencies*. In contrast, a weak negative relationship was recorded regarding the PS objective *promoting sustainability* and *analytical competencies* with a value of -0.280, indicating a tendency for an increase in the importance of the PS objective to be associated with a decrease in the importance of this competency factor. It was, therefore, concluded that H16₁, H17₁ and H19₁ were not supported, but H18₁ and H20₁ were supported: H18₁: Innovative supply competencies have a relationship with promoting sustainability.

H20₁: Analytical competencies have a relationship with promoting sustainability.

7.2.1.5 SEM Model 5: Alignment of PS with the business's competitive strategy and the five technical sub-category competency factors

The fifth SEM model conducted by the researcher included the dependent variable, *aligning PS with the business's competitive strategy*, and the five technical sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H21₁: Operational PS competencies have a relationship with the alignment of PS with the business's competitive strategy.

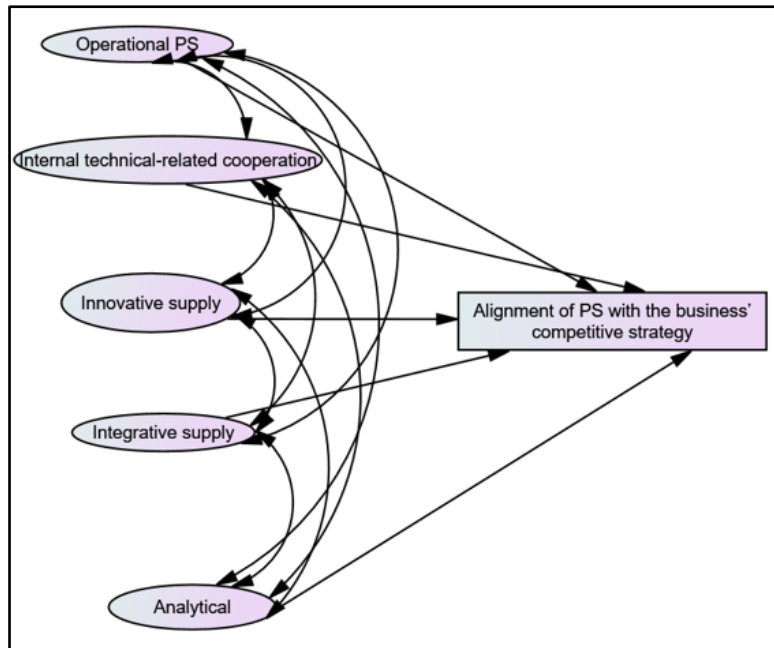
H22₁: Internal technical-related cooperation competencies have a relationship with the alignment of PS with the business's competitive strategy.

H23₁: Innovative supply competencies have a relationship with the alignment of PS with the business's competitive strategy.

H24₁: Integrative supply competencies have a relationship with the alignment of PS with the business's competitive strategy.

H25₁: Analytical competencies have a relationship with the alignment of PS with the business's competitive strategy.

Figure 7.5 below depicts the relationships between each technical sub-category competency factor and the PS objective, *aligning PS with the business's competitive strategy*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.5: SEM 5: PS objective *alignment of PS with the business's competitive strategy* and the five technical sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.9 below.

Table 7.9: Goodness-of-fit indices: PS objective *alignment of PS with the business's competitive strategy* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Alignment of PS with the business's competitive strategy Independent variables: Technical sub-category competency factors	0.914	0.913	0.065	2.318
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

Upon interpreting the fit indices values, it was noted that the IFI (0.914) and CFI (0.913) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.065 was well below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.318, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher could consider the structural path estimates presented in table 7.10.

Table 7.10: Structural path estimates: PS objective *alignment of PS with the business's competitive strategy* and the five technical sub-category competency factors

PS objective	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Alignment of PS with the business's competitive strategy	Operational PS competencies	0.484	0.002	Yes (1%)
Alignment of PS with the business's competitive strategy	Internal technical-related cooperation competencies	0.505	0.008	Yes (1%)
Alignment of PS with the business's competitive strategy	Innovative supply competencies	0.046	0.619	No
Alignment of PS with the business's competitive strategy	Integrative supply competencies	- 0.704	0.004	Yes (1%)
Alignment of PS with the business's competitive strategy	Analytical competencies	0.199	0.061	Yes (10%)

Source: AMOS output.

Considering the relationships between the PS objective, *alignment of PS with the business's competitive strategy*, and the five technical sub-category competency factors, the associated structural paths of *operational PS competencies*, *internal technical-related cooperation competencies* and *integrative supply competencies* were statistically significant at the 1% level. The standardise weights of the technical sub-category competency factors were considered and it was found that *operational PS competencies* indicated a moderately positive relationship (0.484) and *internal technical-related cooperation competencies* a strong positive relationship (0.505) regarding the PS objective, *alignment of PS with the business's*

competitive strategy. *Integrative supply competencies*, however, indicated a strong negative relationship (-0.704) regarding the PS objective, *alignment of PS with the business's competitive strategy*, indicating a tendency for an increase in the importance of this PS objective to be associated with a decrease in the importance of this competency factor. Lastly, the associated structural path of the technical sub-category competency factor of *analytical competencies* was statistically significant at the 10% level. Consequently, the standardised weight of the technical sub-category competency factor was considered and a value of 0.199 showed a weak positive relationship between *analytical competencies* and the PS objective, *aligning PS with the business's competitive strategy*.

It was, therefore, concluded that H23₁ was not supported, but H21₁, H22₁, H24₁ and H25₁ were supported:

H21₁: Operational PS competencies have a relationship with the alignment of PS with the business's competitive strategy.

H22₁: Internal technical-related cooperation competencies have a relationship with the alignment of PS with the business's competitive strategy.

H24₁: Integrative supply competencies have a relationship with the alignment of PS with the business's competitive strategy.

H25₁: Analytical competencies have a relationship with the alignment of PS with the business's competitive strategy.

7.2.1.6 SEM Model 6: *Facilitating a relationship with suppliers* and the five technical sub-category competency factors

SEM model six included the dependent variable, *facilitating a relationship with suppliers*, and the five technical sub-category competency factors as independent variables. These relationships were formulated into the following hypotheses:

H26₁: Operational PS competencies have a relationship with facilitating a relationship with suppliers.

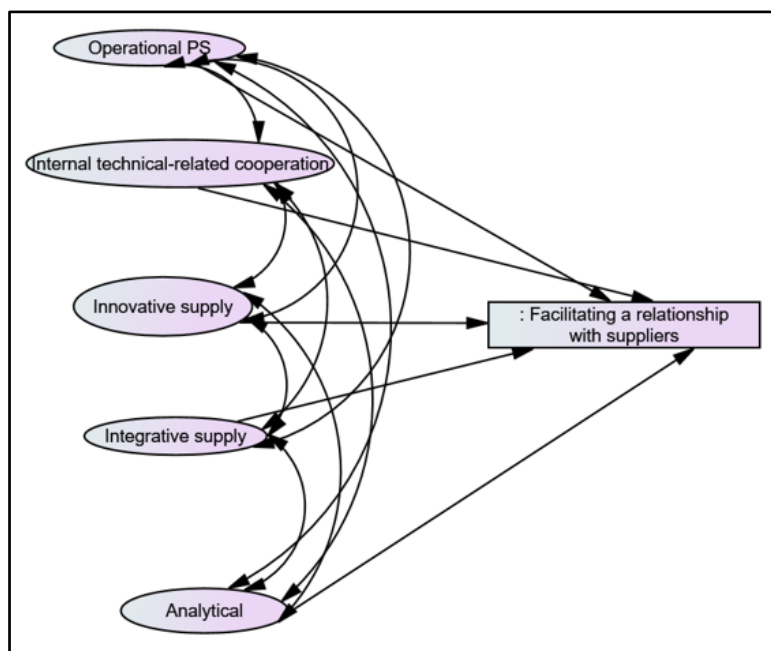
H27₁: Internal technical-related cooperation competencies have a relationship with facilitating a relationship with suppliers.

H28₁: Innovative supply competencies have a relationship with facilitating a relationship with suppliers.

H29₁: Integrative supply competencies have a relationship with facilitating a relationship with suppliers.

H30₁: Analytical competencies have a relationship with facilitating a relationship with suppliers.

Figure 7.6 below depicts the relationships between each technical sub-category competency factor and *facilitating a relationship with suppliers*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.6: SEM 6: PS objective *facilitating a relationship with suppliers* and the five technical sub-category competency factors

The asymptotic distribution-free estimation method (see section 5.9.3.2) was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.11 below.

Table 7.11: Goodness-of-fit indices: PS objective *facilitating a relationship with suppliers* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Facilitating a relationship with suppliers Independent variables: Technical sub-category competency factors	0.904	0.903	0.071	2.566
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, it was noted that the IFI (0.904) and CFI (0.903) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.071 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.566, which was well below 3. Hence, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.12.

Table 7.12: Structural path estimates: PS objective *facilitating a relationship with suppliers* and the five technical sub-category competency factors

PS objective	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Facilitating a relationship with suppliers	Operational PS competencies	- 0.158	0.383	No
Facilitating a relationship with suppliers	Internal technical-related cooperation competencies	0.010	0.951	No
Facilitating a relationship with suppliers	Innovative supply competencies	0.256	0.179	No
Facilitating a relationship with suppliers	Integrative supply competencies	0.533	0.005	Yes (1%)
Facilitating a relationship with suppliers	Analytical competencies	- 0.177	0.218	No

Source: AMOS output.

Considering the relationships between the PS objective, *facilitating a relationship with suppliers*, and the five technical sub-category competency factors, only the technical sub-category competency factor of *integrative supply competencies*' associated structural path was statistically significant at the 1% level. When considering the standardised weight of the technical sub-category competency factor, a strong positive relationship was noted with a value of 0.533.

It was, therefore, concluded that H26₁, H27₁, H28₁ and H30₁ were not supported, and only H29₁ was supported:

H29₁: Integrative supply competencies have a relationship with facilitating a relationship with suppliers.

7.2.1.7 SEM Model 7: Promoting and facilitating innovativeness with suppliers and the five technical sub-category competency factors

SEM model seven included the dependent variable, *promoting and facilitating innovativeness with suppliers*, and the five technical sub-category competency factors as independent variables. These relationships were represented in the following hypotheses:

H31₁: Operational PS competencies have a relationship with promoting and facilitating innovativeness with suppliers.

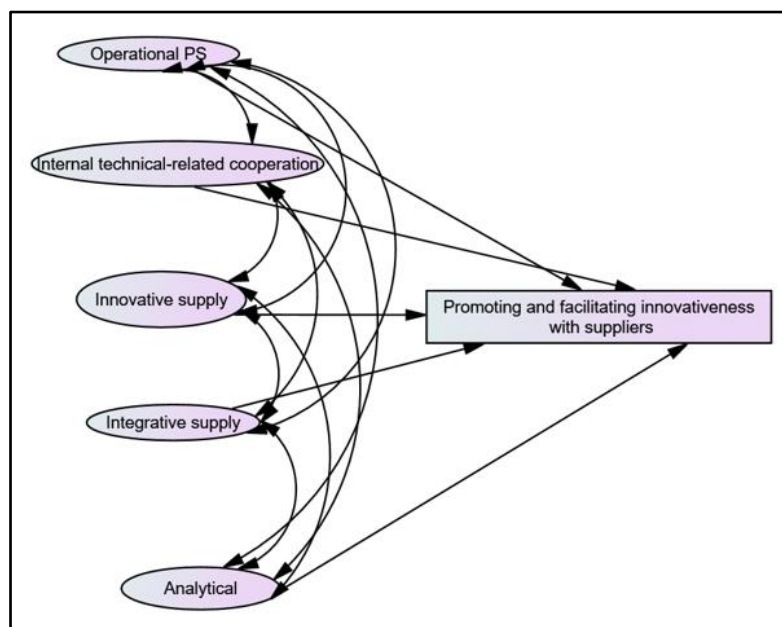
H32₁: Internal technical-related cooperation competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H33₁: Innovative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H34₁: Integrative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H35₁: Analytical competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Figure 7.7 below depicts the relationships between each technical sub-category competency factor and the PS objective of *promoting and facilitating innovativeness with suppliers*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.7: SEM 7: PS objective *promoting and facilitating innovativeness with suppliers* and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.13 below.

Table 7.13: Fit indices: PS objective *promoting and facilitating innovativeness with suppliers* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting and facilitating innovativeness with suppliers Independent variables: Technical sub-category competency factors	0.904	0.903	0.066	2.342
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

Interpreting the fit indices values revealed the following: IFI (0.904) and CFI (0.903) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.066 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.342, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.14.

Table 7.14: Structural path estimates: PS objective *promoting and facilitating innovativeness with suppliers* and the five technical sub-category competency factors

PS objective	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting and facilitating innovativeness with suppliers	Operational PS competencies	0.381	0.075	Yes (10%)
Promoting and facilitating innovativeness with suppliers	Internal technical-related cooperation competencies	- 0.133	0.429	No
Promoting and facilitating innovativeness with suppliers	Innovative supply competencies	0.503	0.014	Yes (5%)
Promoting and facilitating innovativeness with suppliers	Integrative supply competencies	- 0.495	0.006	Yes (1%)
Promoting and facilitating innovativeness with suppliers	Analytical competencies	0.306	0.023	Yes (5%)

Source: AMOS output.

Considering the relationships between the PS objective, *promoting and facilitating innovativeness with suppliers*, and the five technical sub-category competency factors, the associated structural paths of four technical sub-category competency factors were statistically significant; namely *operational PS competencies* (10% level), *innovative supply competencies* (5% level), *integrative supply competencies* (1% level), and *analytical competencies* (5% level). *Operational PS competencies* and *analytical competencies* indicated a moderately positive relationship with values of 0.381 and 0.306, respectively. *Innovative supply competencies* indicated a strong positive relationship with promoting and facilitating innovativeness with suppliers, with a value of 0.503. However, *integrative supply competencies* indicated a moderately negative relationship with a value of -0.495 – indicating a tendency for an increase in the importance of the objective to be associated with a decrease in the importance of this competency factor.

It was, therefore, concluded that H31₁, H33₁, H34₁ and H35₁ were supported:

H31₁: Operational PS competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H33₁: Innovative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H34₁: Integrative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H35₁: Analytical competencies have a relationship with promoting and facilitating innovativeness with suppliers.

7.2.2 SEM: Relationship between PS objectives and the three internal and external enterprise sub-category competency factors

Section 7.2.2 presents the results of SEM models 8 to 14 with the PS objectives as dependent variables and the three internal and external enterprise competency factors as independent variables.

7.2.2.1 SEM Model 8: *Cost consciousness* and the three internal and external enterprise sub-category competency factors

The eighth SEMs included the dependent variable, *cost consciousness*, and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

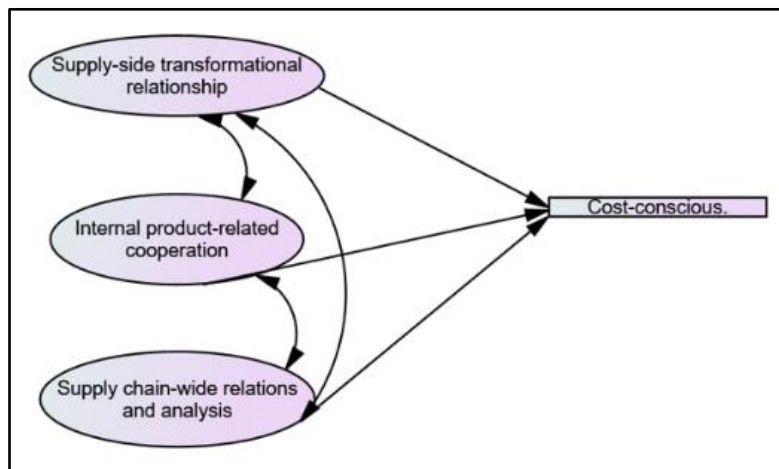
H36₁: Supply-side transformational-relationship competencies have a relationship with cost consciousness.

H37₁: Internal product-related cooperation competencies have a relationship with cost consciousness.

H38₁: Supply chain wide relations and analysis competencies have a relationship with cost consciousness.

Figure 7.8 below depicts the relationships between each internal and external enterprise sub-category competency factor and the PS objective, *cost consciousness*, as well as the covariance between: supply-side transformational-relationship competencies, internal

product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.8: SEM 8: PS objective *cost consciousness* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model’s goodness-of-fit indices. The fit indices for this model are presented in table 7.15 below.

Table 7.15: Goodness-of-fit indices: PS objective *cost consciousness* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Cost consciousness Independent variables: Internal and external enterprise sub-category competency factors	0.923	0.920	0.052	1.826
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.923) and CFI (0.920) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.052 was well below 0.08, which indicated that the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 1.826, which was well below 3. Hence, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.16.

Table 7.16: Structural path estimates: PS objective *cost consciousness* and the three internal and external enterprise sub-category competency factors

PS objective	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Cost consciousness	Supply-side transformational-relationship competencies	0.060	0.643	No
Cost consciousness	Internal product-related cooperation competencies	0.017	0.849	No
Cost consciousness	Supply chain wide relations and analysis competencies	0.276	0.056	Yes (10%)

Source: AMOS output.

Considering the relationships between the PS objective, *cost consciousness*, and the three internal and external enterprise sub-category competency factors, only *supply chain wide relations and analysis competencies*' associated structural path was statistically significant at the 10% level. Therefore, the standardised weight of the internal and external enterprise sub-category competency factors was considered. A standardised weight value of 0.276 indicated a positive but weak relationship between *supply chain wide relations and analysis competencies* and cost consciousness.

It was, therefore, concluded that only H38₁ was supported:

H38₁: Supply chain wide relations and analysis competencies have a relationship with cost consciousness.

7.2.2.2 SEM Model 9: *Ensuring stable supply* and the three internal and external enterprise sub-category competency factors

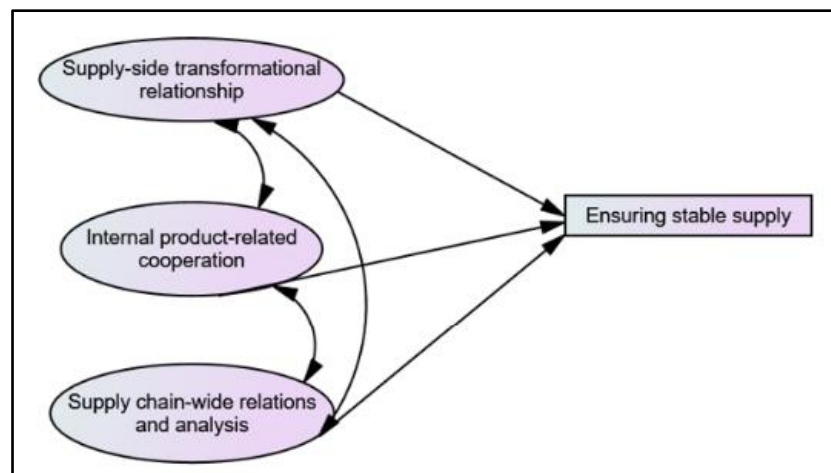
SEM nine included the dependent variable, *ensuring stable supply*, and the three internal and external enterprise sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H39₁: Supply-side transformational-relationship competencies have a relationship with ensuring stable supply.

H40₁: Internal product-related cooperation competencies have a relationship with ensuring stable supply.

H41₁: Supply chain wide relations and analysis competencies have a relationship with ensuring stable supply.

Figure 7.9 depicts the relationships between each internal and external enterprise sub-category competency factor and the PS objective, *ensuring stable supply*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.9: SEM 9: PS objective *ensuring stable supply* and the three internal and external enterprise sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). As with all the SEM models discussed thus far, the first step

when evaluating a SEM, is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.17 below.

Table 7.17: Goodness-of-fit indices: PS objective *ensuring stable supply* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Ensuring stable supply Independent variables: Internal and external enterprise sub-category competency factors	0.909	0.906	0.056	1.958
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.909) and CFI (0.906) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.056 was well below 0.08, also indicating that the model fit was adequate. Moreover, the CMIN/DF value indicated an acceptable model fit with a value of 1.958, well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.18.

Table 7.18: Structural path estimates: PS objective *ensuring stable supply* and the three internal and external enterprise sub-category competency factors

PS objective	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Ensuring stable supply	Supply-side transformational-relationship competencies	0.161	0.186	No
Ensuring stable supply	Internal product-related cooperation competencies	0.304	0.020	Yes (5%)
Ensuring stable supply	Supply chain wide relations and analysis competencies	- 0.160	0.270	No

Source: AMOS output.

Considering the relationships between the PS objective, *ensuring stable supply*, and the three internal and external enterprise sub-category competency factors, only one factor's associated structural path was statistically significant at the 5% level, namely, *internal product-related cooperation competencies*. Consequently, the standardised weight of the internal and external enterprise sub-category competency was considered – a standardised weight value of 0.304 indicated a moderately positive relationship between *internal product-related cooperation competencies* and ensuring stable supply.

It was, therefore, concluded that H39₁ and H41₁ were not supported and H40₁ was supported:

H40₁: Internal product-related cooperation competencies have a relationship with ensuring stable supply.

7.2.2.3 SEM Model 10: *Adherence to quality requirements* and the three internal and external enterprise sub-category competency factors

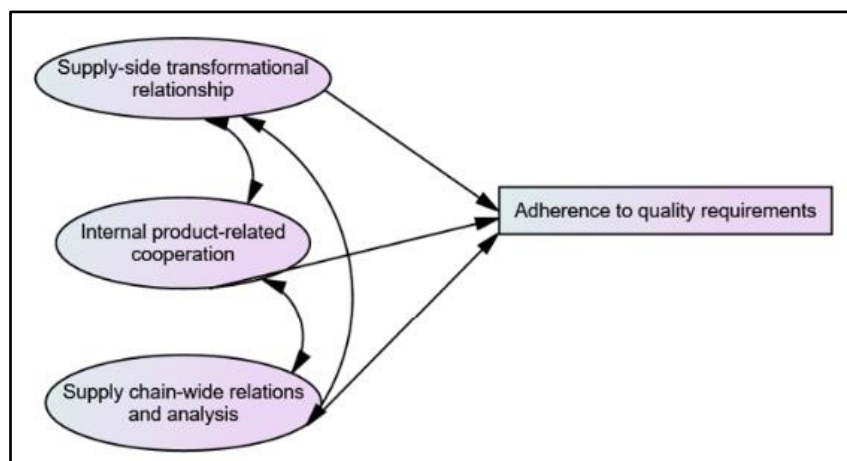
SEM 10 included the dependent variable, *adherence to quality requirements*, and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H42₁: Supply-side transformational-relationship competencies have a relationship with adherence to quality requirements.

H43₁: Internal product-related cooperation competencies have a relationship with adherence to quality requirements.

H44₁: Supply chain wide relations and analysis competencies have a relationship with adherence to quality requirements.

Figure 7.10 depicts the relationships between each internal and external enterprise sub-category competency factor and the PS objective, *adherence to quality requirements*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.10: SEM 10: PS objective *adherence to quality requirements* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. As with all the SEM models discussed thus far, the first step when evaluating a SEM, is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.19 below.

Table 7.19: Goodness-of-fit indices: PS objective *adherence to quality requirements* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Adherence to quality requirements Independent variables: Internal and external enterprise sub-category competency factors	0.926	0.923	0.049	1.751
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.926) and CFI (0.923) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.049 was well below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.751, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.20.

Table 7.20: Structural path estimates: PS objective *adherence to quality requirements* and the three internal and external enterprise sub-category competency factors

PS objective	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Adherence to quality requirements	Supply-side transformational-relationship competencies	0.214	0.117	No
Adherence to quality requirements	Internal product-related cooperation competencies	0.182	0.097	Yes (10%)
Adherence to quality requirements	Supply chain wide relations and analysis competencies	- 0.015	0.926	No

Source: AMOS output.

Considering the relationships between the PS objective, *adherence to quality requirements*, and the three internal and external enterprise sub-category competency factors, as with SEMs eight and nine, only one internal and external enterprise sub-category competency factor's associated structural path was statistically significant at the 10% level, namely, *internal product-related cooperation competencies*. Consequently, the standardised weight of the internal and external enterprise sub-category competency was considered – the standardised weight value of 0.182 indicated a positive, but weak relationship between *internal product-related cooperation competencies* and adherence to quality requirements.

It was, therefore, concluded that only H43₁ was supported (H42₁ and H44₁ were unsupported):

H43₁: Internal product-related cooperation competencies have a relationship with adherence to quality requirements.

7.2.2.4 SEM Model 11: *Promoting sustainability* and the three internal and external enterprise sub-category competency factors

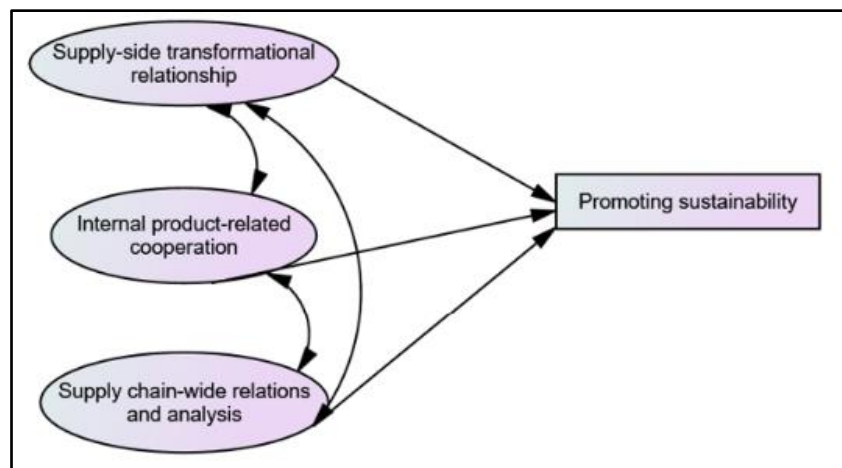
The 11th SEM included the dependent variable, *promoting sustainability*, and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H45₁: Supply-side transformational-relationship competencies have a relationship with promoting sustainability.

H46₁: Internal product-related cooperation competencies have a relationship with promoting sustainability.

H47₁: Supply chain wide relations and analysis competencies have a relationship with promoting sustainability.

Figure 7.11 depicts the relationships between each internal and external enterprise sub-category competency factor and the PS objective, *promoting sustainability*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.11: SEM 11: PS objective *promoting sustainability* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal and the first step when evaluating a SEM is

considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.21 below.

Table 7.21: Goodness-of-fit indices: PS objective *promoting sustainability* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting sustainability Independent variables: Internal and external enterprise sub-category competency factors	0.929	0.926	0.048	1.695
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.929) and CFI (0.926) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.048 was well below 0.08, also indicating the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 1.695, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.22.

Table 7.22: Structural path estimates: PS objective *promoting sustainability* and the three internal and external enterprise sub-category competency factors

PS objective	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting sustainability	Supply-side transformational-relationship competencies	0.198	0.137	No
Promoting sustainability	Internal product-related cooperation competencies	0.086	0.413	No
Promoting sustainability	Supply chain wide relations and analysis competencies	- 0.037	0.821	No

Source: AMOS output.

Considering the relationships between the PS objective *promoting sustainability* and the three internal and external enterprise sub-category competency factors, no factor's associated structural path was statistically significant. Consequently, it was concluded that H45₁, H46₁ and H47₁ were unsupported.

7.2.2.5 SEM Model 12: Alignment of PS with the business's competitive strategy and the three internal and external enterprise sub-category competency factors

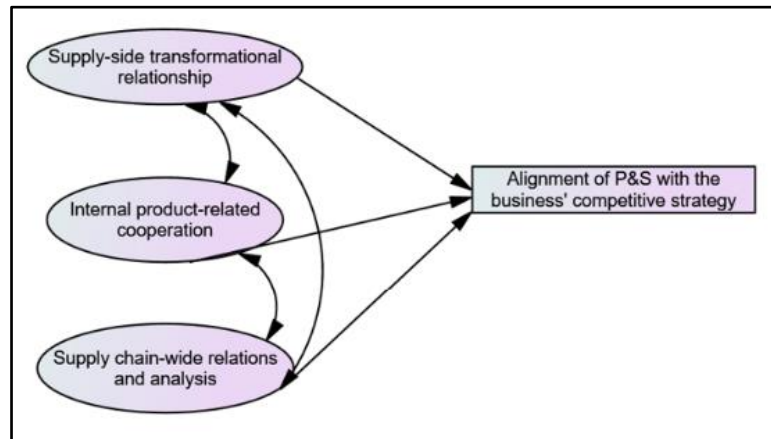
The 12th SEM model conducted by the researcher included the dependent variable, *aligning PS with the business's competitive strategy*, and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H48₁: Supply-side transformational-relationship competencies have a relationship with the alignment of PS with the business's competitive strategy.

H49₁: Internal product-related cooperation competencies have a relationship with the alignment of PS with the business's competitive strategy.

H50₁: Supply chain wide relations and analysis competencies have a relationship with the alignment of PS with the business's competitive strategy.

Figure 7.12 depicts the relationships between each internal and external enterprise sub-category competency factor and the PS objective, *aligning PS with the business's competitive strategy*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.12: SEM 12: PS objective *aligning of PS with the business's competitive strategy* and the three internal and external enterprise sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.23 below.

Table 7.23: Goodness-of-fit indices: PS objective *aligning of PS with the business's competitive strategy* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Aligning of PS with the business's competitive strategy Independent variables: Internal and external enterprise sub-category competency factors	0.915	0.911	0.055	1.929
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.915) and CFI (0.911) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.055 was well below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.929, which was well below 3. Thus, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.24.

Table 7.24: Structural path estimates: PS objective *aligning of PS with the business's competitive strategy* and the three internal and external enterprise sub-category competency factors

PS objective	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Aligning of PS with the business's competitive strategy	Supply-side transformational-relationship competencies	0.273	0.440	No
Aligning of PS with the business's competitive strategy	Internal product-related cooperation competencies	0.041	0.715	No
Aligning of PS with the business's competitive strategy	Supply chain wide relations and analysis competencies	0.117	0.045	Yes (5%)

Source: AMOS output.

Considering the relationships between the PS objective, *aligning PS with the business's competitive strategy*, and the three internal and external enterprise sub-category competency factors, only one factor's associated structural path was statistically significant; namely, *supply chain wide relations and analysis competencies* (5% level). Therefore, the standardised weight of the sub-category competency factor was considered. At a value of 0.177, the standardised weight indicated a weak positive relationship between *supply chain wide relations and analysis competencies* and the *alignment of PS with the business's competitive strategy*.

It was, therefore, concluded that H48₁ and H49₁ were unsupported and only H50₁ was supported:

H50₁: Supply chain wide relations and analysis competencies have a relationship with the alignment of PS with the business' competitive strategy.

7.2.2.6 SEM Model 13: *Facilitating a relationship with suppliers* and the three internal and external enterprise sub-category competency factors

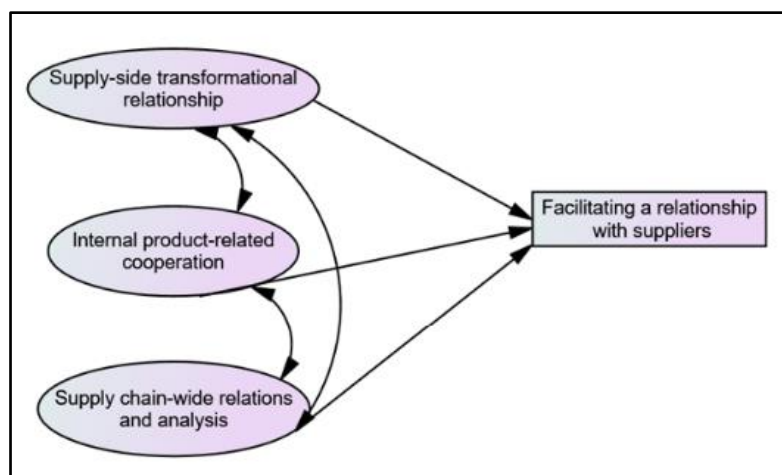
The 13th SEM model included the dependent variable, *facilitating a relationship with suppliers*, and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H51₁: Supply-side transformational-relationship competencies have a relationship with facilitating a relationship with suppliers.

H52₁: Internal product-related cooperation competencies have a relationship with facilitating a relationship with suppliers.

H53₁: Supply chain wide relations and analysis competencies have a relationship with facilitating a relationship with suppliers.

Below, figure 7.13 depicts the relationships between each internal and external enterprise sub-category competency factor and the PS objective, *facilitating a relationship with suppliers*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.13: SEM 13: PS objective *facilitating a relationship with suppliers* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is

considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.25 below.

Table 7.25: Goodness-of-fit indices: PS objective *facilitating a relationship with suppliers* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Facilitating a relationship with suppliers Independent variables: Internal and external enterprise sub-category competency factors	0.909	0.911	0.055	1.898
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.909) and CFI (0.911) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.055 was well below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.898, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.26.

Table 7.26: Structural path estimates: PS objective *facilitating a relationship with suppliers* and the three internal and external enterprise sub-category competency factors

PS objective	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Facilitating a relationship with suppliers	Supply-side transformational-relationship competencies	0.273	0.018	Yes (5%)
Facilitating a relationship with suppliers	Internal product-related cooperation competencies	0.163	0.101	No
Facilitating a relationship with suppliers	Supply chain wide relations and analysis competencies	- 0.020	0.875	No

Source: AMOS output.

Considering the relationships between the PS objective, *facilitating a relationship with suppliers*, and the three internal and external enterprise sub-category competency factors, only *supply-side transformational-relationship competencies'* associated structural path was statistically significant at the 5% level. Therefore, the standardised weight of the sub-category competency factor was considered. The standardised weight of 0.273 indicated a weak positive relationship between *supply-side transformational-relationship competencies* and *facilitating a relationship with suppliers*.

It was, therefore, concluded that H52₁ was supported and H52₁ and H53₁ were unsupported. The supported hypothesis was:

H51₁: Supply-side transformational-relationship competencies have a relationship with *facilitating a relationship with suppliers*.

7.2.2.7 SEM Model 14: *Promoting and facilitating innovativeness with suppliers* and the three internal and external enterprise sub-category competency factors

The dependent variable, *promoting and facilitating innovativeness with suppliers*, and the three internal and external enterprise sub-category competency factors are independent

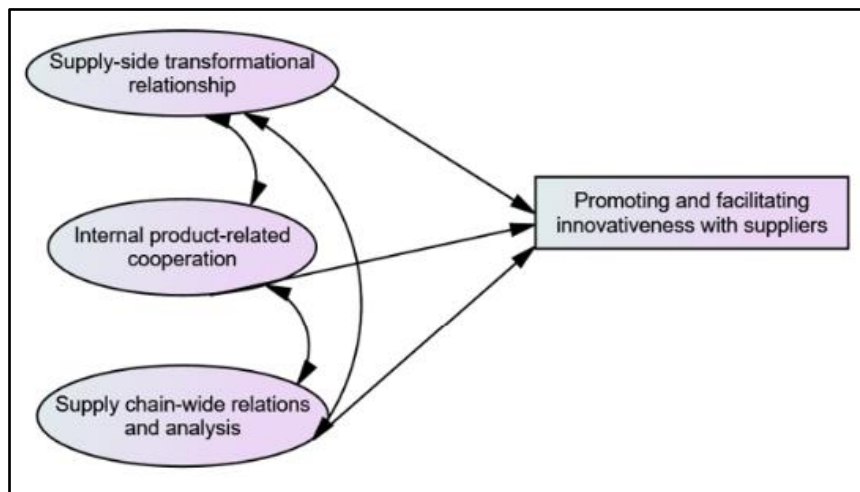
variables for the 14th SEM model conducted by the researcher. These relationships were represented by the following hypotheses:

H54₁: Supply-side transformational-relationship competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H55₁: Internal product-related cooperation competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H56₁: Supply chain wide relations and analysis competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Below, figure 7.14 depicts the relationships between each internal and external enterprise sub-category competency factor and the PS objective, *promoting and facilitating innovativeness with suppliers*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.14: SEM 14: PS objective *promoting and facilitating innovativeness with suppliers* and the three internal and external enterprise sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (section 5.9.3.2). Again, the first step when evaluating a SEM, is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.27 below.

Table 7.27: Goodness-of-fit indices: PS objective *promoting and facilitating innovativeness with suppliers* and the internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting and facilitating innovativeness with suppliers Independent variables: Internal and external enterprise sub-category competency factors	0.916	0.921	0.052	1.822
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.916) and CFI (0.921) were above 0.90, indicating an acceptable model fit. The RMSEA value (0.052) was well below 0.08, also indicating the model fit was adequate. Moreover, the CMIN/DF value indicated an acceptable model fit with a value of 1.822, which was well below 3. So, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.28.

Table 7.28: Structural path estimates: PS objective *promoting and facilitating innovativeness with suppliers* and the three internal and external enterprise sub-category competency factors

PS objective	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting and facilitating innovativeness with suppliers	Supply-side transformational-relationship competencies	0.330	0.011	Yes (5%)
Promoting and facilitating innovativeness with suppliers	Internal product-related cooperation competencies	0.225	0.027	Yes (5%)
Promoting and facilitating innovativeness with suppliers	Supply chain wide relations and analysis competencies	- 0.162	0.305	No

Source: AMOS output.

Considering the relationships between the PS objective, *promoting and facilitating innovativeness with suppliers*, and the three internal and external enterprise sub-category competency factors, two factors' associate structural paths were statistically significant at the 5% level, namely, *supply-side transformational-relationship competencies* and *internal product-related cooperation competencies*. The standardised weights of these sub-category competency factors were therefore considered. The standardised weight of 0.330 indicated a moderately positive relationship between *supply-side transformational-relationship competencies* and promoting and facilitating *innovativeness with suppliers*. The standardised weight of 0.225 indicated a weak positive relationship between *supply chain wide relations and analysis competencies* and promoting and facilitating innovativeness with suppliers.

It was, therefore, concluded that H56₁ was unsupported, but H54₁ and H55₁ were supported:

H54₁: Supply-side transformational-relationship competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H55₁: Internal product-related cooperation competencies have a relationship with promoting and facilitating innovativeness with suppliers.

7.2.3 SEM: Relationship between PS objectives and the three interpersonal sub-category competency factors

7.2.3.1 SEM Model 15: *Cost consciousness* and the three interpersonal sub-category competency factors

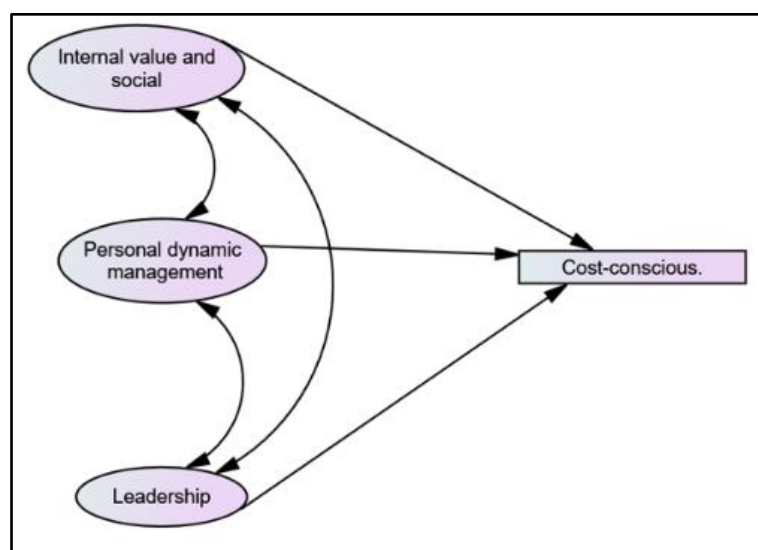
The 15th SEM included the dependent variable, *cost consciousness*, and the three interpersonal sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H57₁: Internal values and social competencies have a relationship with cost consciousness.

H58₁: Personal-dynamics management competencies have a relationship with cost consciousness.

H59₁: Leadership competencies have a relationship with cost consciousness.

Figure 7.15 below depicts the relationships between each interpersonal competency sub-category factor and the PS objective, *cost consciousness*. The covariances between the three interpersonal competency factors (internal values and social competencies, personal-dynamics management competencies, and leadership competencies) are also presented in figure 7.15.



Source: AMOS output.

Figure 7.15: SEM 15: PS objective *cost consciousness* and the three interpersonal sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.29 below.

Table 7.29: Goodness-of-fit indices: PS objective *cost consciousness* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Cost consciousness Independent variables: Interpersonal sub-category competency factors	0.763	0.756	0.066	2.335
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.763) and CFI (0.756) were below 0.90, indicating that the model fit was inadequate. In contrast, the RMSEA value, at 0.066, was well below 0.08, indicating that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.335, which was well below 3. Still, when considering the goodness-of-fit indices overall, it was decided the model presented an unsatisfactory fit with the observed data.

Potential improvements to a model can be made by studying the modification indices for possible additional residual covariances, on the condition that these need to be theoretically justified. However, for this study it was crucial that these changes were not made purely to improve the model fit statistics; the model used should still portray the core theoretical model postulated. SEM assumes that the items are only related in terms of the latent variable to which they correspond. Residuals covariances with higher modification indices indicate that there are additional common variances between some of the items. The modification indices for this model indicated that the covariance between the residual terms of g10²³ (self-

²³ When considering residual terms, it should be noted that the letter refers to the section in the questionnaire and the questions within the specific section. For example, g10 refers to question 10 in section G of the questionnaire. This applies to all residual terms discussed within Chapter 7.

assurance) with g11 (confidence), if added to the model, would improve model fit. In the literature, self-assurance is described as a component of confidence. Confidence refers to the belief that a PSP has in their ability; whereas self-assurance refers to the PSP being comfortable and secure. Thus, self-assurance can contribute to one’s confidence (Upadhyay, Talwar, Tiwari & Gujral, 2020:120-121). Consequently, the additional covariance was included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *cost consciousness*, and the three interpersonal sub-category competency factors with covariances are presented below in table 7.30.

Table 7.30: Goodness-of-fit indices: PS objective *cost consciousness* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Cost consciousness Independent variables: Interpersonal sub-category competency factors	0.777	0.770	0.064	2.267
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.777) and CFI (0.770) increased but were still below the acceptable fit of 0.90. However, the RMSEA value of 0.064 was well below 0.08, which indicated that the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.267, which was below 3.

Although the SEM model’s IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) determined that if the RMSEA value indicates an acceptable fit (as with this SEM model), but the IFI and CFI values do not indicate an acceptable fit, the SEM model may still be classified as acceptable. Lai and Green (2016:1) provided three reasons why these indices might disagree, namely: ‘a) they evaluate, by design, the magnitude of the model’s fit function value from different perspectives; (b) the cut-off values for these indices are arbitrary; and (c) the meaning of “good” fit and its relationship with fit indices are not well

understood.’ Based on these considerations, the researcher concluded that the model fitted the observed data satisfactorily and was therefore acceptable. This allowed the interpretation of the structural path estimates to proceed (see table 7.31).

Table 7.31: Structural path estimates: PS objective *cost consciousness* and the three interpersonal sub-category competency factors with covariances

PS objective	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Cost consciousness	Internal values and social competencies	0.079	0.566	No
Cost consciousness	Personal-dynamics management competencies	-0.197	0.304	No
Cost consciousness	Leadership competencies	0.315	0.503	No

Source: AMOS output.

Considering the relationships between the PS objective, *cost consciousness*, and the three interpersonal sub-category competency factors, none of the associated structural paths were statistically significant. It was, therefore, concluded that H57₁, H58₁ and H59₁ were not supported.

7.2.3.2 SEM Model 16: *Ensuring stable supply* and the three interpersonal sub-category competency factors

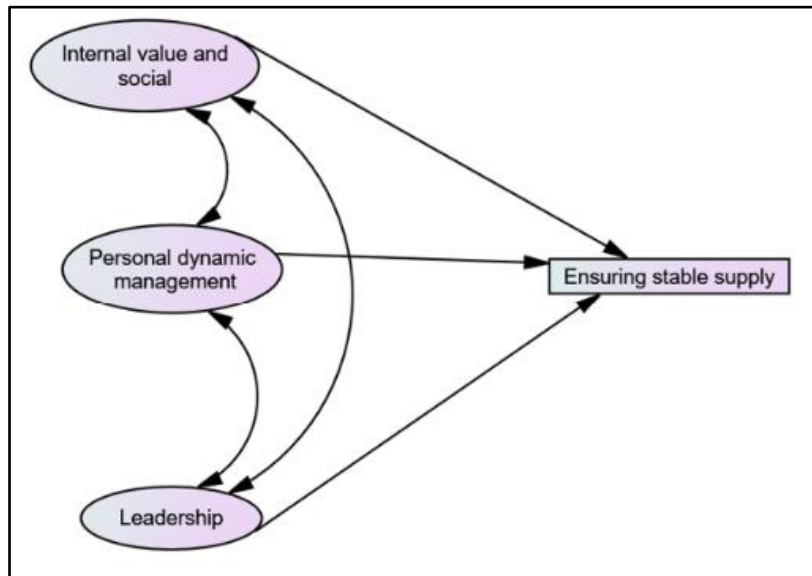
The 16th SEM included the dependent variable, *ensuring stable supply*, and the three interpersonal competency factors as independent variables. The following hypotheses represented these relationships:

H60₁: Internal values and social competencies have a relationship with ensuring stable supply.

H61₁: Personal-dynamics management competencies have a relationship with ensuring stable supply.

H62₁: Leadership competencies have a relationship with ensuring stable supply.

Figure 7.16 depicts the relationships between each interpersonal sub-category competency factor and the PS objective, *ensuring stable supply*. The covariances between the three interpersonal sub-category competency factors (internal values and social competencies, personal-dynamics management competencies, and leadership competencies) are presented in figure 7.16.



Source: AMOS output.

Figure 7.16: SEM 16: PS objective *ensuring stable supply* and the three interpersonal sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the model’s goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.32 below.

Table 7.32: Goodness-of-fit indices: PS objective *ensuring stable supply* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Ensuring stable supply Independent variables: Interpersonal sub-category competency factors	0.741	0.741	0.073	2.652

Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3
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Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.741) and CFI (0.741) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.073 (which was well below 0.08), indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.652, which was well below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM16) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, and the residual terms of g10 (self-assurance) with g16 (conscientious), which, if added to the model, would improve model fit. The covariances between *self-assurance* and *confidence* have previously been discussed (see SEM 15). However, the covariances between *self-assurance* and *conscientiousness* might be due to these having similar characteristics: being organised, reliable, and goal orientated. Conscientious individuals generally have high self-assurance – they have confidence in achieving their goals and success. Consequently, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *ensuring stable supply*, and the three interpersonal sub-category competency factors with covariances are presented below in table 7.33.

Table 7.33: Goodness-of-fit indices: PS objective *ensuring stable supply* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Ensuring stable supply Independent variables: Interpersonal sub-category competency factors	0.786	0.780	0.068	2.424

Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3
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Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.786) and CFI (0.780) increased but were still below the acceptable model fit of 0.90. Contrasting with this, the RMSEA value of 0.068 was well below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.424, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Thus, the researcher concluded that the model fitted the observed data satisfactorily and could be deemed acceptable. This allowed the interpretation of the structural path estimates presented in table 7.34.

Table 7.34: Structural path estimates: PS objective *ensuring stable supply* and the three interpersonal sub-category competency factors with covariances

PS objective	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Ensuring stable supply	Internal values and social competencies	-0.148	0.484	No
Ensuring stable supply	Personal-dynamics management competencies	0.467	0.397	No
Ensuring stable supply	Leadership competencies	0.058	0.894	No

Source: AMOS output.

Considering the relationships between the PS objective, *ensuring stable supply*, and the three interpersonal sub-category competency factors, none of the associated structural paths were statistically significant. It was, therefore, concluded that H60₁, H61₁ and H62₁ were not supported.

7.2.3.3 SEM Model 17: *Adherence to quality requirements* and the three interpersonal sub-category competency factors

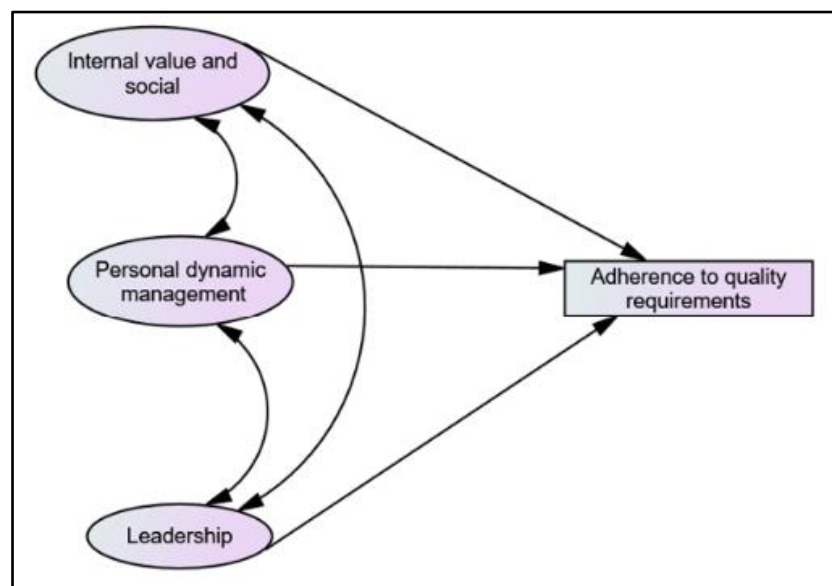
SEM 17 included the dependent variable, *adherence to quality requirements*, and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H63₁: Internal values and social competencies have a relationship with adherence to quality requirements.

H64₁: Personal-dynamics management competencies have a relationship with adherence to quality requirements.

H65₁: Leadership competencies have a relationship with adherence to quality requirements.

Figure 7.17 below depicts the relationships between each interpersonal sub-category competency factor and the PS objective, *adherence to quality requirements*. The covariances between the three interpersonal sub-category competency factors (internal values and social competencies, personal-dynamics management competencies, and leadership competencies) are also presented in figure 7.17.



Source: AMOS output.

Figure 7.17: SEM 17: PS objective *adherence to quality requirements* and the three interpersonal sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.35 below.

Table 7.35: Goodness-of-fit indices: PS objective *adherence to quality requirements* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Adherence to quality requirements Independent variables: Interpersonal sub-category competency factors	0.735	0.728	0.072	2.603
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.735) and CFI (0.728) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value (0.072) was well below 0.08, indicating that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.603, which was well below 3. Nevertheless, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 17) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) with g11 (confidence) was correlated, and the covariance between the residual terms of g4 (cross-cultural awareness) with g7 (creativity), would improve model fit, if added to the model.

The covariance between self-assurance and confidence has already been established (see SEM 15). The covariance between *cross-cultural awareness* and *creativity* could be attributed to a PSP's exposure to diverse traditions and perspectives that can stimulate innovative thinking. PSPs' understanding of different cultures generally enhances their ability to think outside conventional norms, which leads to a more open-minded and adaptable mindset. Cross-cultural awareness fosters creativity by inspiring creative problem-solving and assists in

creating unique PS solutions (Yong, Mannucci & Lander, 2020:1; Shao, Zhang, Zhou, Gu and Yuan, 2019:1). Therefore, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *adherence to quality requirements*, and the three interpersonal sub-category competency factors with covariances are presented below in table 7.36.

Table 7.36: Goodness-of-fit indices: PS objective *adherence to quality requirements* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Adherence to quality requirements Independent variables: Interpersonal sub-category competency factors	0.776	0.769	0.067	2.381
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.776) and CFI (0.769) increased but were still below the acceptable fit of 0.90. However, the RMSEA value of 0.067 was well below 0.08, which indicated that the model fit was adequate. The CMIN/DF value also indicated an acceptable model fit with a value of 2.381, which was below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.37.

Table 7.37: Structural path estimates: PS objective *adherence to quality requirements* and the three interpersonal sub-category competency factors with covariances

PS objective	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Adherence to quality requirements	Internal values and social competencies	0.144	0.323	No
Adherence to quality requirements	Personal-dynamics management competencies	0.426	0.037	Yes (5%)
Adherence to quality requirements	Leadership competencies	-0.332	0.067	Yes (10%)

Source: AMOS output.

Considering the relationships between the PS objective, *adherence to quality requirements*, and the three interpersonal sub-category competency factors, the associated structural paths of two factors were statistically significant; namely *personal-dynamics management competencies* (5% significant level) and *leadership competencies* (10% significant level). The standardised weights of the two interpersonal sub-category competency factors were considered. With a standardised weight value of 0.426, *personal-dynamics management competencies* indicated a moderately positive relationship with *adherence to quality requirements*, and *leadership competencies* indicated a moderately negative relationship with the PS objective, *adherence to quality requirements*, with a standardised weight of -0.332. A negative relationship indicates a tendency for an increase in the importance of the PS objective to be associated with a decrease in the importance of this competency factor. It was, therefore, concluded that H64₁ and H65₁ were supported:

H64₁: Personal-dynamics management competencies have a relationship with adherence to quality requirements.

H65₁: Leadership competencies have a relationship with adherence to quality requirements.

7.2.3.4 SEM Model 18: *Promoting sustainability* and the three interpersonal sub-category competency factors

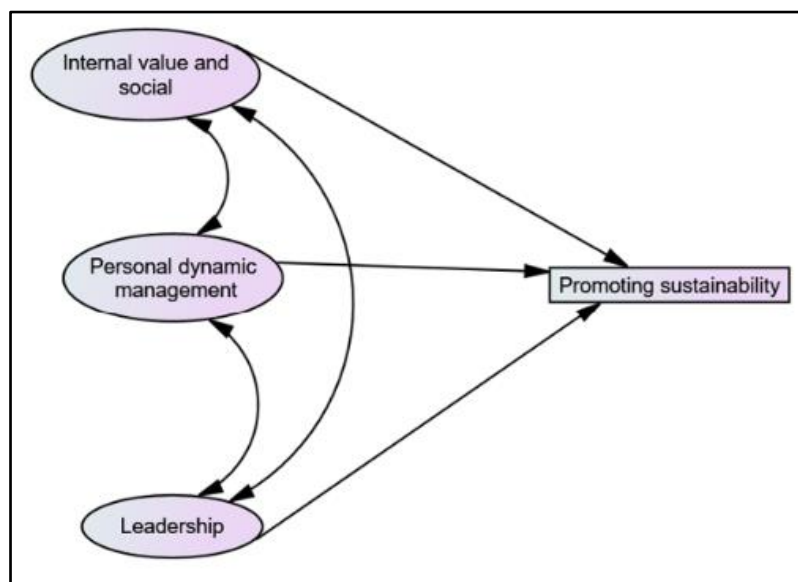
SEM 18 included the dependent variable, *promoting sustainability*, and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H66₁: Internal values and social competencies have a relationship with promoting sustainability.

H67₁: Personal-dynamics management competencies have a relationship with promoting sustainability.

H68₁: Leadership competencies have a relationship with promoting sustainability.

Figure 7.18 below depicts the relationships between each interpersonal sub-category competency factor and the PS objective, *promoting sustainability*. The covariances between the three interpersonal sub-category competency factors (internal values and social competencies, personal-dynamics management competencies, and leadership competencies) are also presented in figure 7.18.



Source: AMOS output.

Figure 7.18: SEM 18: PS objective *promoting sustainability* and the three interpersonal sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.38 below.

Table 7.38: Goodness-of-fit indices: PS objective *promoting sustainability* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting sustainability Independent variables: Interpersonal sub-category competency factors	0.781	0.739	0.070	2.497
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.781) and CFI (0.739) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.070 (which was well below 0.08), indicated that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.497, which was below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 18) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) was correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity); and if added to the model would improve model fit. The covariances between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, and *cross-cultural awareness* and *creativity*, were previously discussed in SEM 15, 16 and 17, respectively. Therefore, the additional covariances

were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *promoting sustainability*, and the three interpersonal sub-category competency factors with covariances are presented below in table 7.39.

Table 7.39: Goodness-of-fit indices: PS objective *promoting sustainability* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting sustainability Independent variables: Interpersonal sub-category competency factors	0.841	0.837	0.060	2.113
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.841) and CFI (0.837) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.060 was well below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable fit with a value of 2.113, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher deemed the model acceptable and continued with the interpretation of the structural path estimates as presented in table 7.40.

Table 7.40: Structural path estimates: PS objective *promoting sustainability* and the three interpersonal sub-category competency factors with covariances

PS objective	Interpersonal sub-category competency	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting sustainability	Internal values and social competencies	0.183	0.212	No
Promoting sustainability	Personal-dynamics management competencies	-0.163	0.503	No
Promoting sustainability	Leadership competencies	0.197	0.392	No

Source: AMOS output.

Considering the relationships between the PS objective, *promoting sustainability*, and the three interpersonal sub-category competency factors, none of the associated structural paths were statistically significant. It was, therefore, concluded that H66₁, H67₁ and H68₁ were not supported.

7.2.3.5 SEM Model 19: Alignment of PS with the business's competitive strategy and the three interpersonal sub-category competency factors

The 19th SEM conducted for this study included the dependent variable, *aligning PS with the business's competitive strategy*, and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

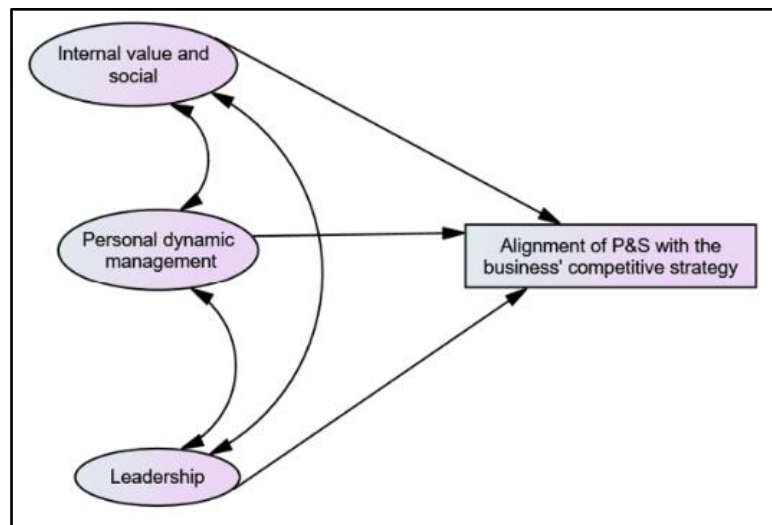
H69₁: Internal values and social competencies have a relationship with the alignment of PS with the business's competitive strategy.

H70₁: Personal-dynamics management competencies have a relationship with the alignment of PS with the business's competitive strategy.

H71₁: Leadership competencies have a relationship with the alignment of PS with the business's competitive strategy.

Figure 7.19 below depicts the relationships between each interpersonal sub-category competency factor and the PS objective, *aligning PS with the business's competitive strategy*. The covariances between the three interpersonal sub-category competency factors (internal

values and social competencies, personal-dynamics management competencies, and leadership competencies) are also presented in figure 7.19.



Source: AMOS output.

Figure 7.19: SEM 19: PS objective *aligning PS with the business's competitive strategy* and the three interpersonal sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.41 below.

Table 7.41: Goodness-of-fit indices: PS objective *aligning PS with the business's competitive strategy* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Aligning of PS with the business's competitive strategy Independent variables: Interpersonal sub-category competency factors	0.743	0.736	0.075	2.718
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.743) and CFI (0.736) were below 0.90, indicating the model fit was inadequate. In contrast, the RMSEA value at 0.075 (which was well below 0.08), indicated the model fit was adequate. Moreover, the CMIN/DF value indicated an acceptable model fit with a value of 2.718, which was below 3. Nevertheless, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 19) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms g10 (self-assurance) and g11 (confidence) was correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), and g4 (cross-cultural awareness) with g7 (creativity), which, if added to the model, would improve model fit. As stated in SEM 18, the covariances between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, and *cross-cultural awareness* and *creativity* were discussed in SEM 15, 16, and 17, respectively. Therefore, the additional covariances were included in the SEM model. The goodness-of-fit indices of the model presenting the PS objective, *aligning PS with the business's competitive strategy*, and the three interpersonal sub-category competency factors with covariances are presented below in table 7.42.

Table 7.42: Goodness-of-fit indices: PS objective *aligning PS with the business's competitive strategy* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Aligning of PS with the business's competitive strategy Independent variables: Interpersonal sub-category competency factors	0.777	0.770	0.071	2.538
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.777) and CFI (0.770) increased but were still below the acceptable fit of 0.90. The RMSEA value (0.071), however, was well below 0.08, indicating the model fit was adequate. The CMIN/DF value also indicated an acceptable model fit with a value of 2.538, which was below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Thus, the researcher concluded that the model fitted the observed data satisfactorily and was therefore acceptable. This allowed the interpretation of the structural path estimates presented in table 7.43.

Table 7.43 Structural path estimates: PS objective *aligning PS with the business's competitive strategy* and the three interpersonal sub-category competency factors with covariances

PS objective	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Aligning of PS with the business's competitive strategy	Internal values and social competencies	-0.041	0.798	No
Aligning of PS with the business's competitive strategy	Personal-dynamics management competencies	-0.180	0.324	No
Aligning of PS with the business's competitive strategy	Leadership competencies	0.576	0.035	Yes (5%)

Source: AMOS output

Considering the relationships between the PS objective, *aligning PS with the business's competitive strategy*, and the three interpersonal sub-category competency factors, only the associated structural path of interpersonal sub-category competency *leadership competencies* was statistically significant at the 5% level. With a standardised weight value of 0.576, *leadership competencies* indicated a strong positive relationship with *aligning PS with the business's competitive strategy*. It was, therefore, concluded that only H71₁ was supported:

H71₁: Leadership competencies have a relationship with the alignment of PS with the business's competitive strategy.

7.2.3.6 SEM Model 20: *Facilitating a relationship with suppliers* and the three interpersonal sub-category competency factors

SEM 20 conducted for this study included the dependent variable, *facilitating a relationship with suppliers*, and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

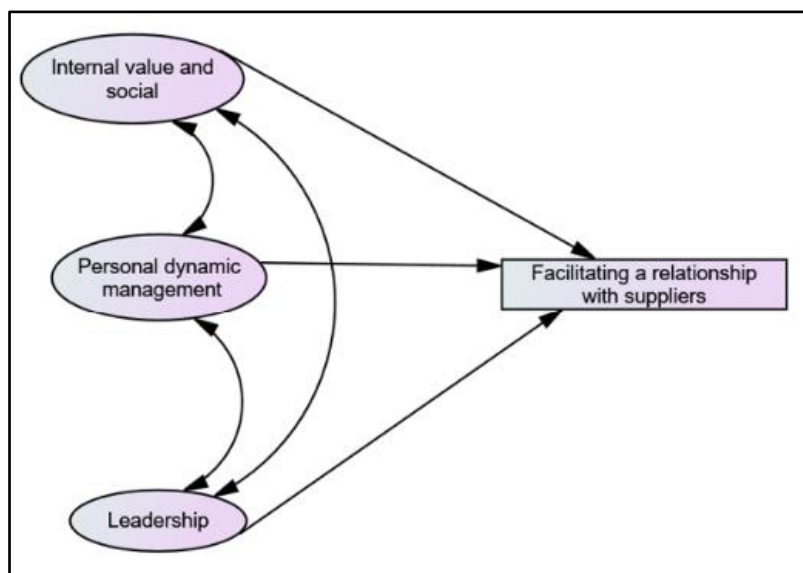
H72₁: Internal values and social competencies have a relationship with facilitating a relationship with suppliers.

H73₁: Personal-dynamics management competencies have a relationship with facilitating a relationship with suppliers.

H74₁: Leadership competencies have a relationship with facilitating a relationship with suppliers.

Figure 7.20 below depicts the relationships between each interpersonal sub-category competency factor and the PS objective, *facilitating a relationship with suppliers*. The covariances between the three interpersonal sub-category competency factors (internal values and social competencies, personal-dynamics management competencies, and leadership competencies) are also presented in figure 7.20.

Figure 7.20 SEM 20: PS objective *facilitating a relationship with suppliers* and the three interpersonal sub-category competency factors



Source: AMOS output.

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables are ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.44 below.

Table 7.44 Goodness-of-fit indices: PS objective *facilitating a relationship with suppliers* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Facilitating a relationship with suppliers Independent variables: Interpersonal sub-category competency factors	0.749	0.743	0.075	2.747
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.749) and CFI (0.743) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.075, which was below 0.08, indicated the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 2.747, which was well below 3. Nevertheless, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 20) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) was correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity) and g12 (results-driven) with g18 (analytical abilities), which, if included, would improve the model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, and *cross-cultural awareness* and *creativity*, were discussed in SEM 15, 16, and 17, respectively. The covariance between being *results-driven* and *analytical* abilities can be explained due to the fact that *analytical abilities* often include breaking down complex problems, identifying patterns, drawing conclusions and making data-driven decisions; whereas, being *results-driven* implies focusing on achieving objectives or outcomes. Possessing analytical abilities

can assist a PSP in achieving the set objectives or preferred outcomes by making strategic adjustments, identifying areas for improvement and assessing progress.

Consequently, the additional covariances were included in the model. The goodness-of-fit indices of the SEM model presenting the PS objective, *facilitating a relationship with supplier*, and the three interpersonal sub-category competency factors with covariances are presented below in table 7.45.

Table 7.45: Goodness-of-fit indices: PS objective *facilitating a relationship with suppliers* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Facilitating a relationship with suppliers Independent variables: Interpersonal sub-category competency factors	0.815	0.810	0.066	2.332
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.815) and CFI (0.810) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.066 was well below 0.08, which indicated that the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.332, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.46.

Table 7.46: Structural path estimates: PS objective *facilitating a relationship with suppliers* and the three interpersonal sub-category competency factors with covariances

PS objective	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Facilitating a relationship with suppliers	Internal values and social competencies	0.302	0.102	No
Facilitating a relationship with suppliers	Personal-dynamics management competencies	-0.290	0.144	No
Facilitating a relationship with suppliers	Leadership competencies	0.222	0.458	No

Source: AMOS output.

Considering the relationships between the PS objective, *facilitating a relationship with suppliers*, and the three interpersonal sub-category competency factors, none of the associated structural paths were statistically significant. It was, therefore, concluded that H72₁, H73₁ and H74₁ were not supported.

7.2.3.7 SEM Model 21: *Promoting and facilitating innovativeness with suppliers* and the three interpersonal sub-category competency factors

SEM 21 conducted for this study included the dependent variable, *promoting and facilitating innovativeness with suppliers*, and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represent these relationships:

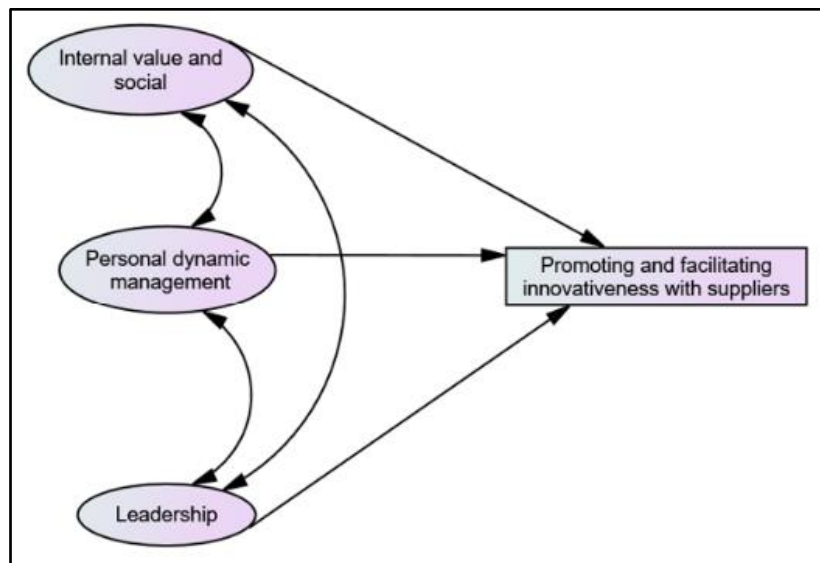
H75₁: Internal values and social competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H76₁: Personal-dynamics management competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H77₁: Leadership competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Figure 7.21 below depicts the relationships between each interpersonal sub-category competency factor and the PS objective, *promoting and facilitating innovativeness with suppliers*. The covariances between the three interpersonal competency factors (internal

values and social competencies, personal-dynamics management competencies, and leadership competencies) are also presented in figure 7.21.



Source: AMOS output.

Figure 7.21: SEM 21: PS objective *promoting and facilitating innovativeness with suppliers* and the three interpersonal sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the model’s goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.47 below.

Table 7.47: Goodness-of-fit indices: PS objective *promoting and facilitating innovativeness with suppliers* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting and facilitating innovativeness with suppliers Independent variables: Interpersonal sub-category competency factors	0.733	0.726	0.072	2.590
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.733) and CFI (0.726) were below 0.90, indicating that the model fit was inadequate. In contrast, the RMSEA value at 0.072 (which was well below 0.080) indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.590, which was below 3. Still, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 21) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity) and g12 (results-driven) with g18 (analytical abilities), which, if added, would improve model fit. The covariances between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities* were discussed in SEM 15, 16, 17 and 20. Consequently, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *facilitating a relationship with suppliers*, and the three interpersonal sub-category competency factors with covariances are presented below in table 7.48.

Table 7.48: Goodness-of-fit indices: PS objective *promoting and facilitating innovativeness with suppliers* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting and facilitating innovativeness with suppliers Independent variables: Interpersonal sub-category competency factors	0.781	0.774	0.066	2.346
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.781) and CFI (0.774) increased but were still below the acceptable fit of 0.90. However, the RMSEA value (0.066) was well below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.346, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.49.

Table 7.49: Structural path estimates: PS objective *promoting and facilitating innovativeness with suppliers* and the three interpersonal sub-category competency factors with covariances

PS objective	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting and facilitating innovativeness with suppliers	Internal values and social competencies	0.143	0.573	No
Promoting and facilitating innovativeness with suppliers	Personal-dynamics management competencies	-0.147	0.345	No
Promoting and facilitating innovativeness with suppliers	Leadership competencies	0.258	0.398	No

Source: AMOS output.

Considering the relationships between the PS objective, *promoting and facilitating innovativeness with suppliers*, and the three interpersonal sub-category competency factors, none of the associated structural paths were statistically significant. It was, therefore, concluded that H75₁, H76₁ and H77₁ were not supported.

7.2.4 SEM: Relationship between PS objectives and the two strategic sub-category competency factors

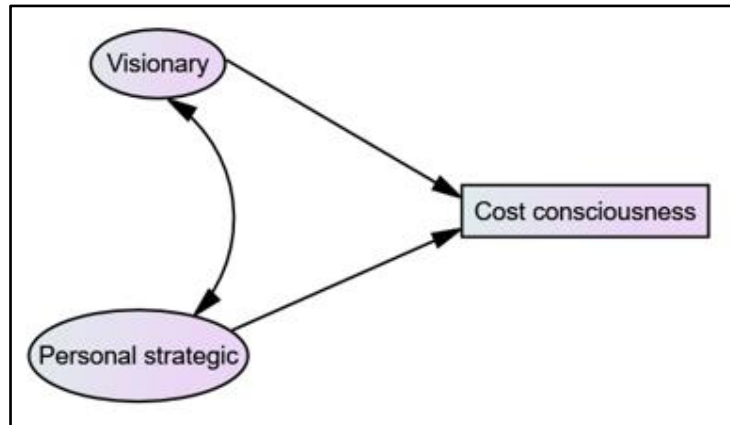
7.2.4.1 SEM Model 22: *Cost consciousness* and the two strategic sub-category competency factors

The 22nd SEM included the dependent variable, *cost consciousness*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H77₁: Visionary competencies have a relationship with cost consciousness.

H78₁: Personal strategic competencies have a relationship with cost consciousness.

Figure 7.22 below depicts the relationships between each strategic sub-category competency factor and the PS objective, *cost consciousness*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.22: SEM 22: PS objective *cost consciousness* and the two strategic sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the model’s goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.50 below.

Table 7.50: Goodness-of-fit indices: PS objective *cost consciousness* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Cost consciousness Independent variables: Strategic sub-category competency factors	0.650	0.618	0.065	2.313
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.650) and CFI (0.618) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value (0.065) was well below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value

indicated an acceptable model fit with a value of 2.313, which was well below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 22) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management) and h3 (corporate social responsibility) with h5 (supply risk management) were correlated and could potentially improve model fit.

The covariance between *strategic management* and *supply risk management* may be attributed to ensuring effective strategic management, which entails mitigating risks (including supply chain risks). A robust supply chain that enhances resilience and addresses supply risks is required to implement a business's strategic plans and achieve its strategic goals (Gurtu & Johnny, 2021:1; Shashi, Centobelli, Cerchione & Ertz, 2020:2). The covariance between *corporate social responsibility* and *supply risk management* may be due to both contributing to sustainable business practices. By embracing corporate social responsibility, PSPs can enhance supplier relationships by fostering transparency and promoting ethical behaviour, potentially reducing purchasing and supply risks (Singh, 2021:258). Accordingly, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *cost consciousness*, and the two strategic sub-category competency factors with covariances are presented below in table 7.51.

Table 7.51: Goodness-of-fit indices: PS objective *cost consciousness* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Cost consciousness Independent variables: Strategic sub-category competency factors	0.833	0.811	0.071	2.537
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, IFI (0.833) and CFI (0.811) increased but were still below 0.90. The RMSEA value at 0.071, which was well below 0.08, indicated that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.537, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.52.

Table 7.52: Structural path estimates: PS objective *cost consciousness* and the two strategic sub-category competency factors with covariances

PS objective	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Cost consciousness	Visionary competencies	0.242	0.166	No
Cost consciousness	Personal strategic competencies	-0.091	0.619	No

Source: AMOS output.

Considering the relationships between the PS objective, *cost consciousness*, and the two strategic sub-category competency factors, none of the factors' associated structural paths were statistically significant; therefore, none of the hypotheses were supported.

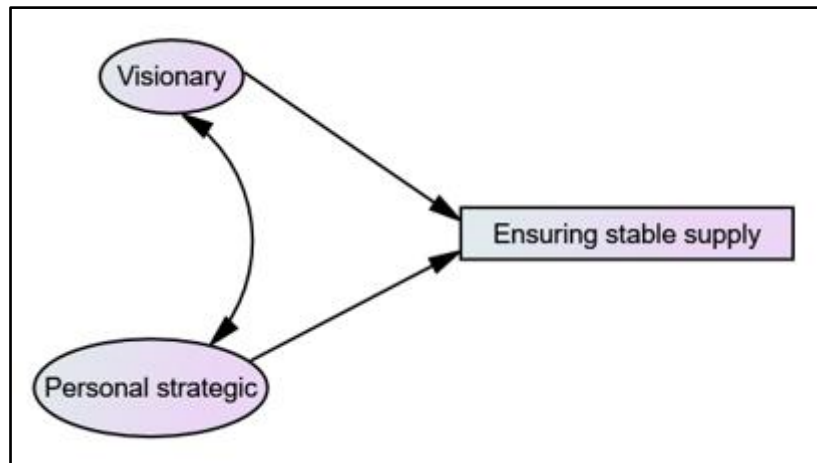
7.2.4.2 SEM Model 23: *Ensuring stable supply* and the two strategic sub-category competency factors

The 23rd SEM included the dependent variable, *ensuring stable supply*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H79₁: Visionary competencies have a relationship with ensuring stable supply.

H80₁: Personal strategic competencies have a relationship with ensuring stable supply.

Figure 7.23 below depicts the relationships between each strategic sub-category competency factor and the PS objective, *ensuring stable supply*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.23: SEM 23: PS objective *ensuring stable supply* and the two strategic sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.53 below.

Table 7.53: Goodness-of-fit indices: PS objective *ensuring stable supply* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Ensuring stable supply Independent variables: Strategic sub-category competency factors	0.733	0.711	0.093	3.683
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.733) and CFI (0.711) were below 0.90, indicating the model fit was inadequate. Additionally, the RMSEA value of 0.093 was above 0.090, which indicated the model fit was inadequate. The CMIN/DF value also indicated an unacceptable model fit with a value of 3.683, which was above 3. When considering the goodness-of-fit indices overall, it was decided the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 23) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management) and h3 (corporate social responsibility) with h5 (supply risk management) and h2 (strategic management) with h4 (sustainability) were correlated, and, if included, would improve model fit. The covariance between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management*, were discussed in SEM 22. The covariance between *strategic management* and *sustainability* might be due to the importance of including *sustainability* in *strategic management*, as including *sustainability* as a principal business objective in running a business can increase long-term competitiveness, exceed stakeholders' expectations, and reduce environmental impact (Engert, Rauter & Baumgartner, 2016:2833, 2843). Consequently, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective,

ensuring stable supply, and the two strategic sub-category competency factors with covariances are presented below in table 7.54.

Table 7.54: Goodness-of-fit indices: PS objective *ensuring stable supply* and two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Ensuring stable supply Independent variables: Strategic sub-category competency factors	0.877	0.864	0.074	2.686
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, IFI (0.877) and CFI (0.864) increased but were still below 0.90. The RMSEA value at 0.074 was below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.686, which was below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90, Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Thus, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.55.

Table 7.55: Structural path estimates: PS objective *ensuring stable supply* and the two strategic sub-category competency factors

PS objective	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Ensuring stable supply	Visionary competencies	0.034	0.840	No
Ensuring stable supply	Personal strategic competencies	0.143	0.431	No

Source: AMOS output.

Considering the relationships between the PS objective, *ensuring stable supply*, and the two strategic sub-category competency factors, none of the factors' associated structural paths were statistically significant, therefore, none of the hypotheses were supported.

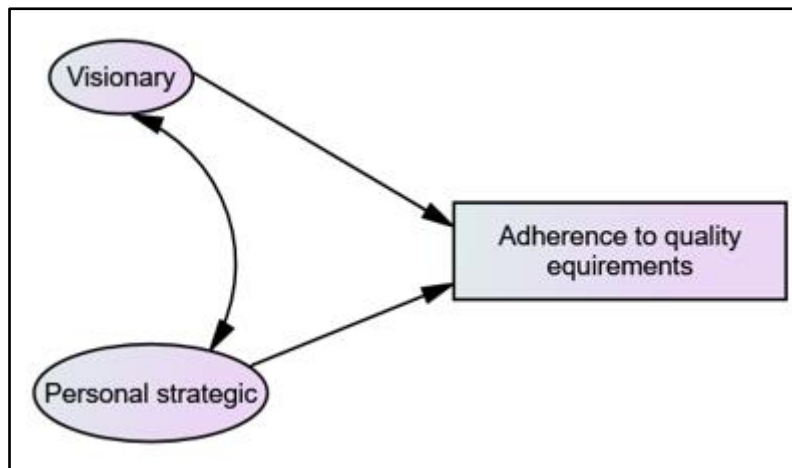
7.2.4.3 SEM Model 24: *Adherence to quality requirements* and the two strategic sub-category competency factors

SEM 24 included the dependent variable, *adherence to quality requirements*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H81₁: Visionary competencies have a relationship with adherence to quality requirements.

H82₁: Personal strategic competencies have a relationship with adherence to quality requirements.

Figure 7.24 below depicts the relationships between each strategic sub-category competency factor and the PS objective, *adherence to quality requirements*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.24: SEM 24: PS objective *adherence to quality requirements* and the two strategic sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.56 below.

Table 7.56: Goodness-of-fit indices: PS objective *adherence to quality requirements* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Adherence to quality requirements Independent variables: Strategic sub-category competency factors	0.840	0.826	0.069	2.487
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.840) and CFI (0.826) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.069, below 0.08, indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.487, which was below 3. Nevertheless, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 24) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management) and h3 (corporate social responsibility) with h5 (supply risk management) and h2 (strategic management) with h4 (sustainability), were correlated, and if added, could improve model fit. The covariance between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management*, were discussed in SEM 22. The covariance between *strategic management* and *sustainability* was discussed in SEM 23. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *adherence to quality requirements*, and the two strategic sub-category competency factors with covariances are presented below in table 7.57.

Table 7.57: Goodness-of-fit indices: PS objective *adherence to quality requirements* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Adherence to quality requirements Independent variables: Strategic sub-category competency factors	0.877	0.864	0.074	2.686
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, IFI (0.877) and CFI (0.864) increased but were still below 0.90. However, the RMSEA value at 0.074, which was below 0.08, indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.686, which was below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.58.

Table 7.58: Structural path estimates: PS objective *adherence to quality requirements* and the two strategic sub-category competency factors with covariances

PS objective	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Adherence to quality requirements	Visionary competencies	0.034	0.840	No
Adherence to quality requirements	Personal strategic competencies	0.143	0.431	No

Source: AMOS output.

Considering the relationships between the PS objective, *adherence to quality requirements*, and the two strategic sub-category competency factors, none of the factors' associated structural paths were statistically significant; therefore, none of the hypotheses were supported.

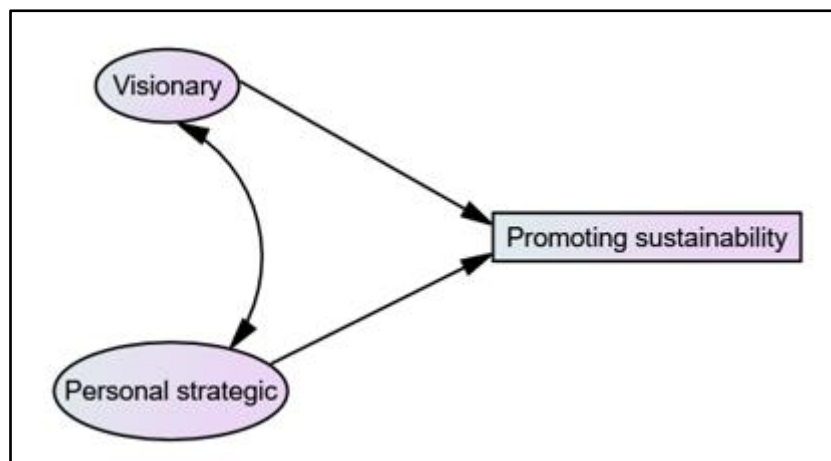
7.2.4.4 SEM Model 25: *Promoting sustainability* and the two strategic sub-category competency factors

SEM 25 included the dependent variable, *promoting sustainability*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H83₁: Visionary competencies have a relationship with promoting sustainability.

H84₁: Personal strategic competencies have a relationship with promoting sustainability.

Figure 7.25 below depicts the relationships between each strategic sub-category competency factor and the PS objective, *adherence to quality requirements*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.25: SEM 25: PS objective *promoting sustainability* and the two strategic sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.59 below.

Table 7.59: Goodness-of-fit indices: PS objective *promoting sustainability* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting sustainability Independent variables: Strategic sub-category competency factors	0.779	0.756	0.075	2.740
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.779) and CFI (0.756) were below 0.90, indicating the model fit was inadequate. In contrast, the RMSEA value at 0.075 was below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.740, which was below 3. However, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 25) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management) and h3 (corporate social responsibility) with h5 (supply risk management) and h2 (strategic management) with h4 (sustainability) were correlated and, if included, would improve model fit. The covariances between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management*, were discussed in SEM 22. The covariance between *strategic management* and *sustainability* was discussed in SEM 23. Consequently, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *promoting sustainability*, and the two strategic sub-category competency factors with covariances are presented below in table 7.60.

Table 7.60: Goodness-of-fit indices: PS objective *promoting sustainability* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting sustainability Independent variables: Strategic sub-category competency factors	0.867	0.849	0.068	2.439
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, IFI (0.867) and CFI (0.849) increased but were still below 0.90. The RMSEA value (0.068) was well below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable fit with a value of 2.439, which was below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Hence, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.61.

Table 7.61: Structural path estimates: PS objective *promoting sustainability* and the two strategic sub-category competency factors with covariances

PS objective	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting sustainability	Visionary competencies	0.644	<0.001	Yes (1%)
Promoting sustainability	Personal strategic competencies	-0.101	0.405	No

Source: AMOS output.

Considering the relationship between the PS objective, *promoting sustainability*, and the two strategic sub-category competency factors, only *visionary competencies'* associated structural

path was statistically significant at the 1% level. The researcher, therefore, considered this factor's standardised weight. With a standardised weight value of 0.644, *visionary competencies* indicated a strong positive relationship with *promoting sustainability*. It was, therefore, concluded that H83₁ was supported:

H83₁: Visionary competencies have a relationship with promoting sustainability.

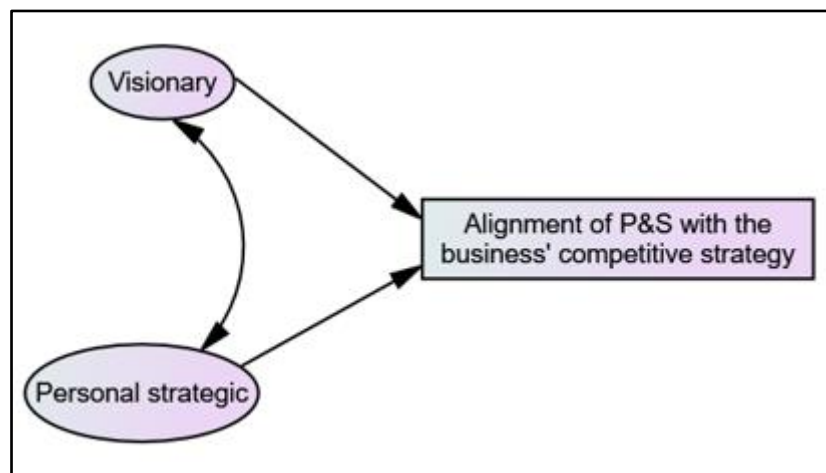
7.2.4.5 SEM Model 26: *Alignment of PS with the business's competitive strategy and the two strategic sub-category competency factors*

The 26th SEM included the dependent variable, *aligning PS with the business's competitive strategy*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H85₁: Visionary competencies have a relationship with the alignment of PS with the business's competitive strategy.

H86₁: Personal strategic competencies have a relationship with the alignment of PS with the business's competitive strategy.

Figure 7.26 below, depicts the relationships between each strategic sub-category competency factor and *aligning PS with the business's competitive strategy*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.26: SEM 26: PS objective *aligning of PS with the business's competitive strategy* and the two strategic sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.62 below.

Table 7.62: Goodness-of-fit indices: PS objective *aligning of PS with the business's competitive strategy* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Aligning PS with the business's competitive strategy Independent variables: Strategic sub-category competency factors	0.827	0.811	0.070	2.497
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.827) and CFI (0.811) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.070 was below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.497, which was below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 26) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management) and h3 (corporate social responsibility) with h5 (supply risk management) and h2 (strategic management) with h4 (sustainability) were correlated, and if included, could improve model fit. The covariances between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management* were discussed in SEM 22. The

covariance between *strategic management* and *sustainability* was discussed in SEM 23. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *aligning PS with the business's competitive strategy*, and the two strategic sub-category competency factors with covariances are presented below in table 7.63.

Table 7.63: Goodness-of-fit indices: PS objective *aligning PS with the business's competitive strategy* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Alignment of PS with the business's competitive strategy Independent variables: Strategic sub-category competency factors	0.914	0.904	0.057	2.015
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.914) and CFI (0.904) increased and were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.057, which was well below 0.08, also indicated that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable fit with a value of 2.015, which was below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.64.

Table 7.64: Structural path estimates: PS objective *aligning PS with the business's competitive strategy* and the two strategic sub-category competency factors with covariances

PS objective	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Alignment of PS with the business's competitive strategy	Visionary competencies	0.524	0.006	Yes (1%)
Alignment of PS with the business's competitive strategy	Personal strategic competencies	-0.234	0.205	No

Source: AMOS output.

Considering the relationship between the PS objective, *aligning PS with the business's competitive strategy*, and the two strategic sub-category competency factors, only *visionary competencies'* associated structural path was statistically significant at the 1% level. The researcher, therefore, considered the factor's standardised weight. With a standardised weight value of 0.524, *visionary competencies* indicated a strong positive relationship with promoting sustainability. It was, therefore, concluded that H85₁ was supported:

H85₁: Visionary competencies have a relationship with the alignment of PS with the business's competitive strategy.

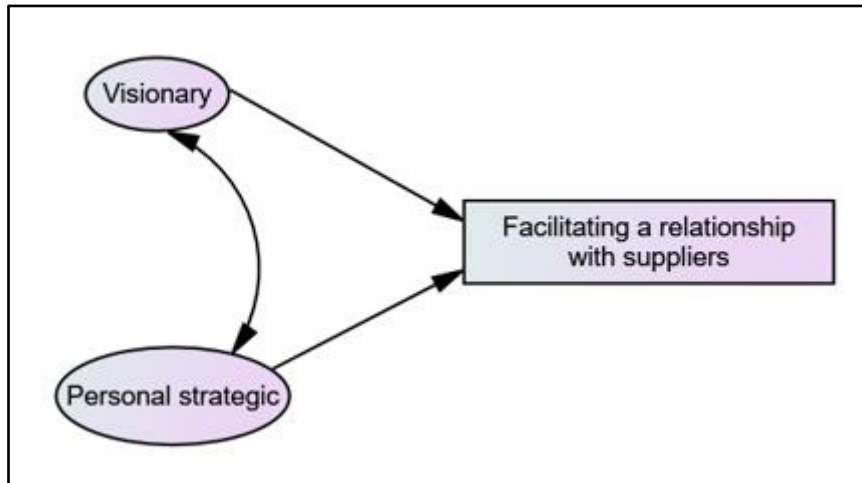
7.2.4.6 SEM Model 27: *Facilitating a relationship with suppliers* and the two strategic sub-category competency factors

The 27th SEM included the dependent variable, *facilitating a relationship with suppliers*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H87₁: Visionary competencies have a relationship with facilitating a relationship with suppliers.

H88₁: Personal strategic competencies have a relationship with facilitating a relationship with suppliers.

Figure 7.27 below depicts the relationships between each strategic sub-category competency factor and the PS objective, *facilitating a relationship with suppliers*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.27: SEM 27: PS objective *facilitating a relationship with suppliers* and the two sub-category strategic competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the model’s goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.65 below.

Table 7.65: Goodness-of-fit indices: PS objective *facilitating a relationship with suppliers* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Facilitating a relationship with suppliers Independent variables: Strategic sub-category competency factors	0.823	0.802	0.064	2.266
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.823) and CFI (0.802) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.064, which was below 0.08, indicated that the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 2.266, which was well below 3. Still, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 27) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management) and h3 (corporate social responsibility) with h5 (supply risk management) and h2 (strategic management) with h4 (sustainability) were correlated and could, if included, improve model fit. The covariance between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management*, were discussed in SEM 22. The covariance between *strategic management* and *sustainability* was discussed in SEM 23. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *facilitating a relationship with suppliers*, and the two strategic sub-category competency factors with covariances are presented below in table 7.66.

Table 7.66: Goodness-of-fit indices: PS objective *facilitating a relationship with suppliers* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Facilitating a relationship with suppliers Independent variables: Strategic sub-category competency factors	0.941	0.932	0.043	1.582
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.941) and CFI (0.932) increased and were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.043, which was well below 0.08, also indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.582, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.67.

Table 7.67: Structural path estimates: PS objective *facilitating a relationship with suppliers* and the two strategic sub-category competency factors with covariances

PS objective	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Facilitating a relationship with suppliers	Visionary competencies	0.215	0.128	No
Facilitating a relationship with suppliers	Personal strategic competencies	0.038	0.797	No

Source: AMOS output.

Considering the relationships between the PS objective, *facilitating a relationship with suppliers*, and the two strategic sub-category competency factors, none of the factors' associated structural paths were statistically significant; therefore, none of the hypotheses were supported.

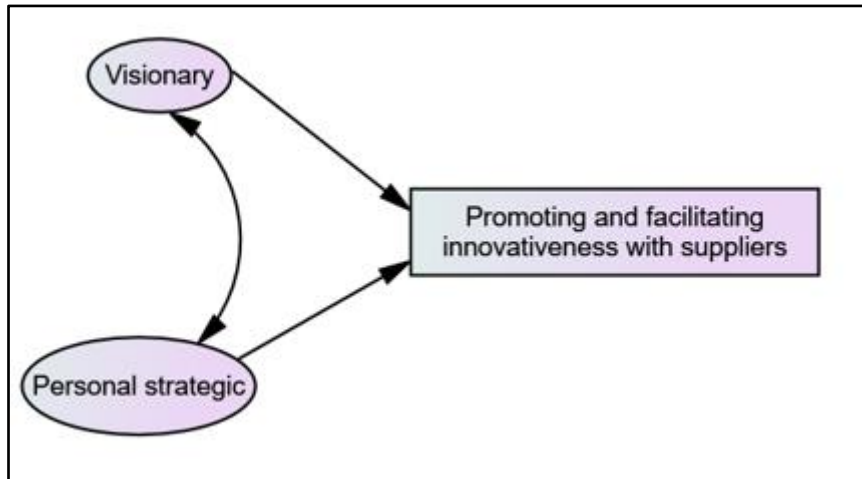
7.2.4.7 SEM Model 28: *Promoting and facilitating innovativeness with suppliers* and the two strategic sub-category competency factors

SEM 28 included the dependent variable, *promoting and facilitating innovativeness with suppliers*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H89₁: Visionary competencies have a relationship with promoting and facilitating innovativeness with suppliers.

H90₁: Personal strategic competencies have a relationship with promoting and facilitating innovativeness with suppliers.

Figure 7.28 depicts the relationships between each strategic sub-category competency factor and the PS objective, *promoting and facilitating innovativeness with suppliers*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.28: SEM 28: PS objective *promoting and facilitating innovativeness with suppliers* and the two strategic sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model’s goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.68 below.

Table 7.68: Goodness-of-fit indices: PS objective *promoting and facilitating innovativeness with suppliers* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting and facilitating innovativeness with suppliers Independent variables: Strategic sub-category competency factors	0.773	0.753	0.083	3.133
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.773) and CFI (0.753) were below 0.90, indicating the model fit was inadequate. Additionally, the RMSEA value of 0.083 was above 0.08, also indicating the model fit was inadequate. The CMIN/DF value indicated an unacceptable fit with a value of 3.133, which was above 3. Therefore, the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 28) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management) and h3 (corporate social responsibility) with h5 (supply risk management) and h2 (strategic management) with h4 (sustainability) were correlated, and could improve model fit if included in the model. The covariances between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management*, were discussed in SEM 22. The covariance between *strategic management* and *sustainability* was addressed in SEM 23. Consequently, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting the PS objective, *promoting and facilitating innovativeness with suppliers*, and the two strategic sub-category competency factors with covariances are presented below in table 7.69.

Table 7.69: Goodness-of-fit indices: PS objective *promoting and facilitating innovativeness with suppliers* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Promoting and facilitating innovativeness with suppliers Independent variables: Strategic sub-category competency factors	0.898	0.886	0.065	2.315
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, IFI (0.898) and CFI (0.886) increased but were still below 0.90. The RMSEA value decreased to 0.065 (well below 0.08), indicating that the model fit was adequate. In addition, the CMIN/DF value decreased to 2.315, well below 3, indicating an acceptable model fit.

Although the model’s IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.70.

Table 7.70: Structural path estimates: PS objective *promoting and facilitating innovativeness with suppliers* and the two strategic sub-category competency factors with covariances

PS objective	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Promoting and facilitating innovativeness with suppliers	Visionary competencies	0.201	0.106	No
Promoting and facilitating innovativeness with suppliers	Personal strategic competencies	0.186	0.192	No

Source: AMOS output.

Considering the relationships between the PS objective, *promoting and facilitating innovativeness with suppliers*, and the two strategic sub-category competency factors, none of the factors’ associated structural paths were statistically significant; therefore, none of the hypotheses were supported.

7.3 PS processes as dependent variables

7.3.1 SEM: Relationship between PS processes and the five technical sub-category competency factors

7.3.1.1 SEM Model 29: *Tactical and operational purchasing process* and the five technical sub-category competency factors

SEM model 29 included the *tactical and operational purchasing process* as the dependent variable, and the five technical sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H91₁: Operational PS competencies have a relationship with the tactical and operational purchasing process.

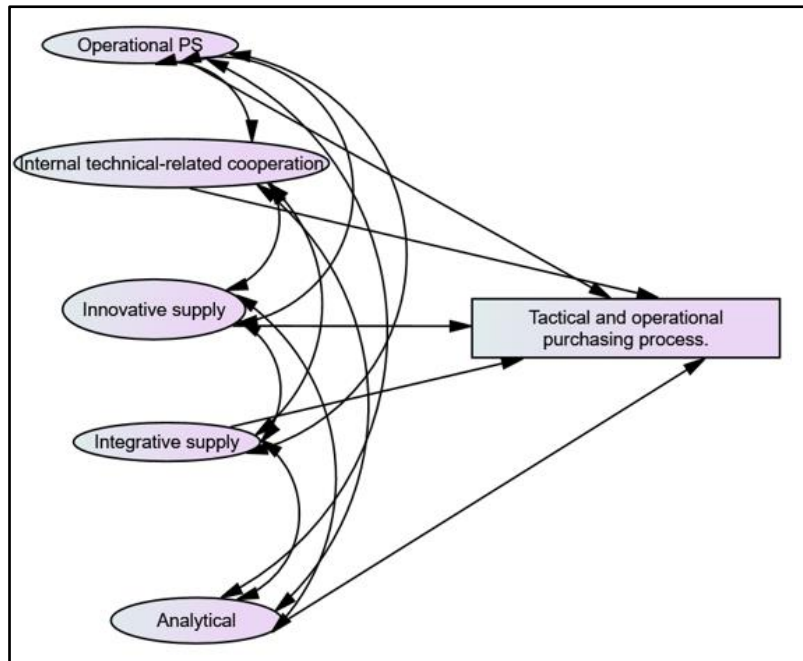
H92₁: Internal technical-related cooperation competencies have a relationship with the tactical and operational purchasing process.

H93₁: Innovative supply competencies have a relationship with the tactical and operational purchasing process.

H94₁: Integrative supply competencies have a relationship with the tactical and operational purchasing process.

H95₁: Analytical competencies have a relationship with the tactical and operational purchasing process.

Figure 7.29 below depicts the relationships between each technical sub-category competency factor and the *tactical and operational purchasing process*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.29: SEM 29: The tactical and operational purchasing process and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model’s goodness-of-fit indices. These indices are presented in table 7.71 below.

Table 7.71: Goodness-of-fit indices: The tactical and operational purchasing process and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: The tactical and operational purchasing process Independent variables: Technical sub-category competency factors	0.924	0.923	0.066	2.345
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.924) and CFI (0.923) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.066, (below 0.08), also indicated the model fit was adequate. Moreover, the CMIN/DF value indicated an acceptable model fit with a value of 2.345, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.72.

Table 7.72: Structural path estimates: The *tactical and operational purchasing process* and the five technical sub-category competency factors

PS process	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
The tactical and operational purchasing process	Operational PS competencies	- 0.437	0.002	Yes (1%)
The tactical and operational purchasing process	Internal technical-related cooperation competencies	0.026	0.861	No
The tactical and operational purchasing process	Innovative supply competencies	0.200	0.077	Yes (10%)
The tactical and operational purchasing process	Integrative supply competencies	0.862	<0.001	Yes (1%)
The tactical and operational purchasing process	Analytical competencies	- 0.521	0.003	Yes (1%)

Source: AMOS output.

Considering the relationships between *the tactical and operational purchasing process* and the five technical sub-category competency factors, the associated structural paths of four factors were statistically significant: *operational PS competencies* (1% level), *innovative supply competencies* (10% level), *integrative supply competencies* (1% level) and *analytical competencies* (1% level). *Operational PS competencies* and *analytical competencies* indicated a negative relationship with values of -0.437 (moderately negative) and -0.521 (strongly negative), respectively. A negative relationship indicates a tendency for an increase in the importance of the process to be associated with a decrease in the importance of this competency factor. *Innovative supply competencies* indicated a weak positive relationship

with a value of 0.200, and *integrative supply competencies* indicated a strong positive relationship with a value of 0.862.

It was, therefore, concluded that only H92₁ was unsupported, and the following hypotheses were supported:

H91₁: Operational PS competencies have a relationship with the tactical and operational purchasing process.

H93₁: Innovative supply competencies have a relationship with the tactical and operational purchasing process.

H94₁: Integrative supply competencies have a relationship with the tactical and operational purchasing process.

H95₁: Analytical competencies have a relationship with the tactical and operational purchasing process.

7.3.1.2 SEM Model 30: *Strategic sourcing* and the five technical sub-category competency factors

The 30th SEM model conducted by the researcher included the PS process, *strategic sourcing*, as the dependent variable and the five technical sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H96₁: Operational PS competencies have a relationship with strategic sourcing.

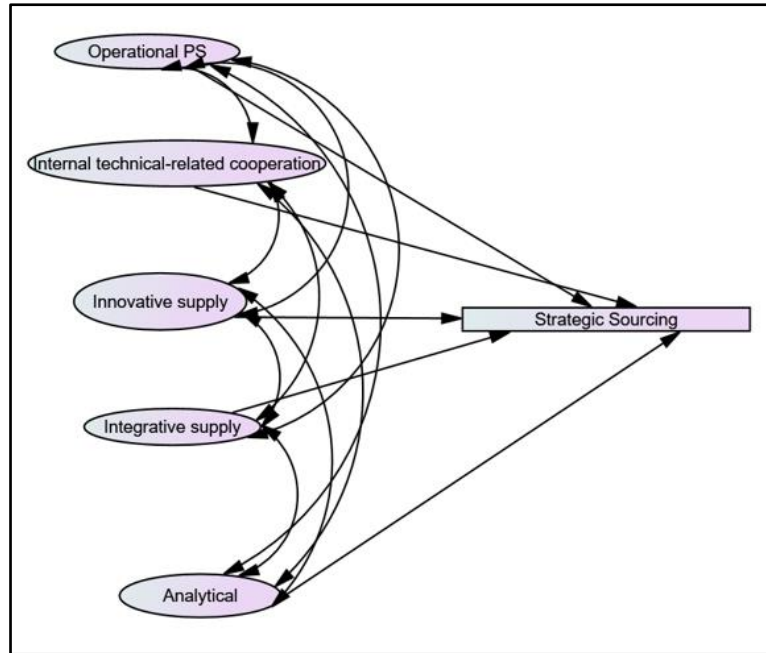
H97₁: Internal technical-related cooperation competencies have a relationship with strategic sourcing.

H98₁: Innovative supply competencies have a relationship with strategic sourcing.

H99₁: Integrative supply competencies have a relationship with strategic sourcing.

H100₁: Analytical competencies have a relationship with ensuring strategic sourcing.

Figure 7.30 below depicts the relationships between each technical sub-category competency factor and *strategic sourcing*, as well as the covariance between operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.30: SEM 30: *Strategic sourcing* and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.73 below.

Table 7.73: Goodness-of-fit indices: *Strategic sourcing* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Strategic sourcing Independent variables: Technical sub-category competency factors	0.929	0.928	0.063	2.231
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.929) and CFI (0.928) were above 0.90, indicating an acceptable fit; the RMSEA value of 0.063 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable fit with a value of 2.231, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.74.

Table 7.74: Structural path estimates: *Strategic sourcing* and the five technical sub-category competency factors

PS process	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Strategic sourcing	Operational PS competencies	0.061	0.729	No
Strategic sourcing	Internal technical-related cooperation competencies	- 0.165	0.091	Yes (10%)
Strategic sourcing	Innovative supply competencies	0.371	<0.001	Yes (1%)
Strategic sourcing	Integrative supply competencies	0.446	0.018	Yes (5%)
Strategic sourcing	Analytical competencies	- 0.213	0.033	Yes (5%)

Source: AMOS output.

Considering the relationships between *strategic sourcing* and the five technical sub-category competency factors, the associated structural paths of four factors were statistically significant: *internal technical-related cooperation competencies* (10% level), *innovative supply competencies* (1% level), *integrative supply competencies* (5% level), and *analytical competencies* (5% level).

Both *internal technical-related cooperation competencies* and *analytical competencies* indicated a negative relationship with standardised weights of -0.165 (weak negative) and - 0.213 (weak negative), respectively. A negative relationship indicates a tendency for an increase in the importance of the process to be associated with a decrease in the importance of this competency factor. *Innovative supply competencies* and *integrative supply competencies* indicated a moderately positive relationship with standardised weights of 0.371 and 0.446, respectively.

It was, therefore, concluded that H97₁, H98₁, H99₁ and H100₁ were supported and valid:

H97₁: Internal technical-related cooperation has a relationship with strategic sourcing.

H98₁: Innovative supply competencies have a relationship with strategic sourcing.

H99₁: Integrative supply competencies have a relationship with strategic sourcing.

H100₁: Analytical competencies have a relationship with ensuring strategic sourcing.

7.3.2 SEM: Relationship between PS processes and the three internal and external enterprise sub-category competency factors

7.3.2.1 SEM Model 31: *Tactical and operational purchasing process* and the three internal and external enterprise sub-category competency factors

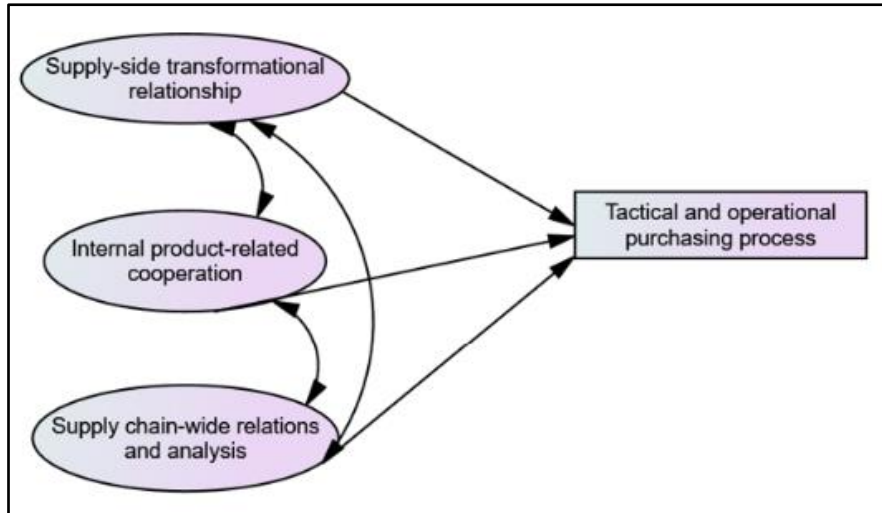
SEM model 31 included the *tactical and operational purchasing process* as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H101₁: Supply-side transformational-relationship competencies have a relationship with the tactical and operational purchasing process.

H102₁: Internal product-related cooperation competencies have a relationship with the tactical and operational purchasing process.

H103₁: Supply chain wide relations and analysis competencies have a relationship with the tactical and operational purchasing process.

Figure 7.31 below depicts the relationships between each internal and external enterprise sub-category competency factor and the *tactical and operational purchasing process*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.31: SEM 31: The *tactical and operational purchasing process* and the three internal and external enterprise sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. These indices are presented in table 7.75 below.

Table 7.75: Goodness-of-fit indices: The *tactical and operational purchasing process* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: The tactical and operational purchasing process Independent variables: Internal and external enterprise sub-category competency factors	0.907	0.903	0.057	2.003
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.907) and CFI (0.903) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.057 was below

0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.003, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.76.

Table 7.76: Structural path estimates: The *tactical and operational purchasing process* and the three internal and external enterprise sub-category competency factors

PS process	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
The tactical and operational purchasing process	Supply-side transformational-relationship competencies	0.254	0.039	Yes (5%)
The tactical and operational purchasing process	Internal product-related cooperation competencies	0.304	0.008	Yes (1%)
The tactical and operational purchasing process	Supply chain wide relations and analysis competencies	- 0.312	0.044	Yes (5%)

Source: AMOS output.

Considering the relationships between the *tactical and operational purchasing process* and the three internal and external enterprise sub-category competency factors; all three the associated structural paths of the internal and external enterprise sub-category competency factors were statistically significant. The paths of *supply-side transformational-relationship competencies* and *supply chain wide relations and analysis competencies* were statistically significant at the 5% level; whereas the path of *internal product-related cooperation competencies* was statistically significant at the 1% level. When the standardised weights of these factors were considered, *supply-side transformational-relationship competencies* (0.254) indicated a weak positive relationship with the tactical and operational purchasing process, and *internal product-related cooperation competencies* (0.304) indicated a moderately positive relationship with the tactical and operational purchasing process. *Supply chain wide relations and analysis competencies* indicated a negative (moderately negative) relationship with the tactical and operational purchasing process – indicating a tendency for

an increase in the importance of the process to be associated with a decrease in the importance of this competency factor.

It was, therefore, concluded that the following hypotheses were supported:

H101₁: Supply-side transformational-relationship competencies have a relationship with the tactical and operational purchasing process.

H102₁: Internal product-related cooperation competencies have a relationship with the tactical and operational purchasing process.

H103₁: Supply chain wide relations and analysis competencies have a relationship with the tactical and operational purchasing process.

7.3.2.2 SEM Model 32: *Strategic sourcing* and the three internal and external enterprise sub-category competency factors

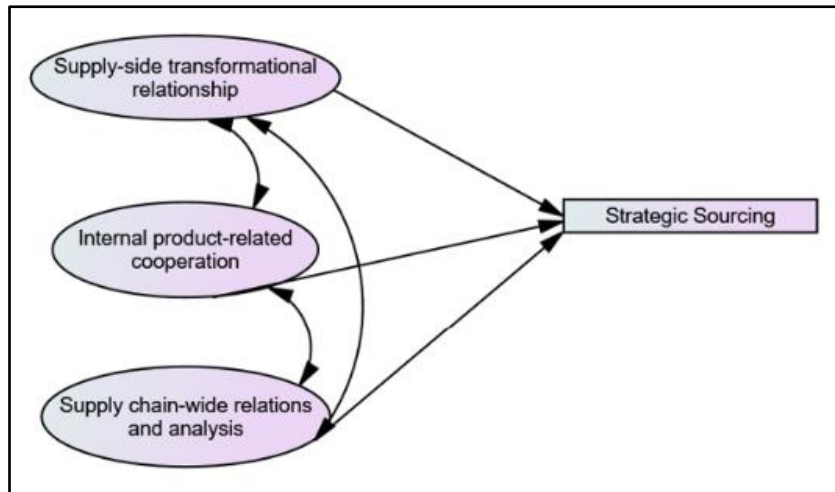
SEM model 32 included the PS process, *strategic sourcing*, as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H104₁: Supply-side transformational-relationship competencies have a relationship with strategic sourcing.

H105₁: Internal product-related cooperation competencies have a relationship with strategic sourcing.

H106₁: Supply chain wide relations and analysis competencies have a relationship with strategic sourcing.

Figure 7.32 below depicts the relationships between each internal and external enterprise sub-category competency factor and *strategic sourcing*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.32: SEM 32: *Strategic sourcing* and the three internal and external enterprise sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). Again, when evaluating a SEM, the first step is considering the model’s goodness-of-fit indices. The indices for this model are presented in table 7.77 below.

Table 7.77: Goodness-of-fit indices: *Strategic sourcing* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Strategic sourcing Independent variables: Internal and external enterprise sub-category competency factors	0.900	0.900	0.057	1.998
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.90) and CFI (0.90) were equal to 0.90, indicating an acceptable model fit; the RMSEA value (0.057) was below 0.08, also indicating the model fit was adequate. Furthermore, the CMIN/DF value indicated

an acceptable model fit with a value of 1.998, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.78.

Table 7.78: Structural path estimates: *Strategic sourcing* and the three internal and external enterprise sub-category competency factors

PS process	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Strategic sourcing	Supply-side transformational-relationship competencies	0.123	0.349	No
Strategic sourcing	Internal product-related cooperation competencies	0.029	0.773	No
Strategic sourcing	Supply chain wide relations and analysis competencies	0.123	0.081	Yes (10%)

Source: AMOS output.

Considering the relationships between *strategic sourcing* and the three internal and external enterprise sub-category competency factors, only *supply chain wide relations and analysis competencies'* associated structural path was statistically significant at the 10% level. Therefore, the standardised weight of the factor was considered. The value of 0.123 indicated a weak positive relationship between *strategic sourcing* and *supply chain wide relations and analysis competencies*.

It was, therefore, concluded that H104₁ and H105₁ were not supported and H106₁ was supported:

H106₁: Supply chain wide relations and analysis competencies have a relationship with strategic sourcing.

7.3.3 SEM: Relationship between PS processes and the three interpersonal sub-category competency factors

7.3.3.1 SEM Model 33: *Tactical and operational purchasing process* and the three interpersonal sub-category competency factors

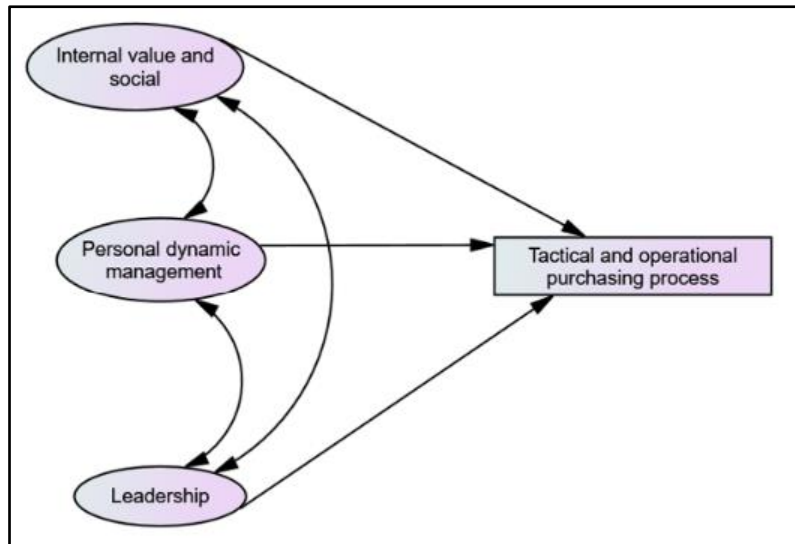
The 33rd SEM included the dependent variable, *the tactical and operational purchasing process*, and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H107₁: Internal values and social competencies have a relationship with the tactical and operational purchasing process.

H108₁: Personal-dynamics management competencies have a relationship with the tactical and operational purchasing process.

H109₁: Leadership competencies have a relationship with the tactical and operational purchasing process.

Figure 7.33 below depicts the relationships between each interpersonal sub-category competency factor and the *tactical and operational purchasing process*. The covariances between the three interpersonal sub-category competency factors and internal values and social competencies, personal-dynamics management competencies, and leadership competencies, are presented in figure 7.33.



Source: AMOS output.

Figure 7.33: SEM 33: The *tactical and operational purchasing process* and the three interpersonal sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model’s goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.79 below.

Table 7.79: Goodness-of-fit indices: The *tactical and operational purchasing process* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: The tactical and operational purchasing process Independent variables: Interpersonal sub-category competency factors	0.768	0.762	0.067	2.375
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.768) and CFI (0.762) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.067, which was below 0.08, indicated that the model fit was adequate. In addition, the CMIN/DF value indicated an acceptable model fit with a value of 2.375, which was below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 33) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-driven) with g18 (analytical abilities), which, if added to the model would improve model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, as well as *results-driven* and *analytical abilities*, were previously discussed in SEM 15, 16, 17 and 20, respectively. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting the *tactical and operational purchasing process* and the three interpersonal sub-category competency factors with covariances are presented below in table 7.80.

Table 7.80: Goodness-of-fit indices: The *tactical and operational purchasing process* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: The tactical and operational purchasing process Independent variables: Interpersonal sub-category competency factors	0.815	0.809	0.061	2.132
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.815) and CFI (0.809) increased but were still below the acceptable fit of 0.90. In contrast, the RMSEA value of 0.061 was well below 0.08, indicating that the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.132, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Thus, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.81.

Table 7.81: Structural path estimates: The *tactical and operational purchasing process* and the three interpersonal sub-category competency factors with covariances

PS process	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
The tactical and operational purchasing process	Internal values and social competencies	0.304	0.031	Yes (5%)
The tactical and operational purchasing process	Personal-dynamics management competencies	0.497	0.003	Yes (1%)
The tactical and operational purchasing process	Leadership competencies	-0.654	0.015	Yes (5%)

Source: AMOS output.

Considering the relationships between the *tactical and operational purchasing process* and the three interpersonal sub-category competency factors, all three competency factors' associated structural paths were statistically significant. *Internal values and social competencies* and *leadership competencies* paths were statistically significant at the 5% level; whereas the path of *personal-dynamics management competencies* was statistically significant at the 1% level. When the standardised weights of these factors were considered, *internal values and social competencies* (0.304) and *personal-dynamics management competencies* (0.497) indicated a moderately positive relationship with the *tactical and operational PS process*. *Personal-dynamics management competencies* indicated a strong negative relationship with the *tactical and operational purchasing process*, with a value of -0.654. A negative relationship indicates a tendency for an increase in the importance of the

process to be associated with a decrease in the importance of this competency factor. It was concluded that H107₁, H108₁ and H109₁ were supported:

H107₁: Internal values and social competencies have a relationship with the tactical and operational purchasing process.

H108₁: Personal-dynamics management competencies have a relationship with the tactical and operational purchasing process.

H109₁: Leadership competencies have a relationship with the tactical and operational purchasing process.

7.3.3.2 SEM Model 34: *Strategic sourcing* and the three interpersonal sub-category competency factors

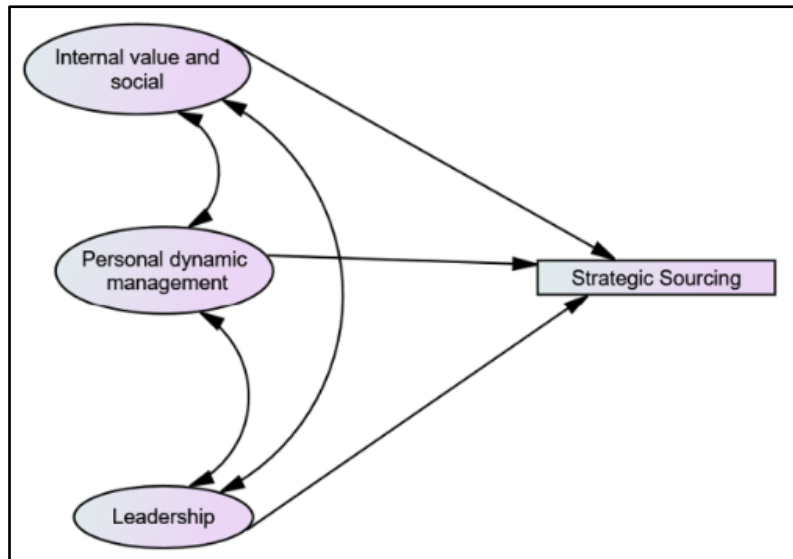
The 34th SEM included the PS process, *strategic sourcing*, as the dependent variable, and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H110₁: Internal values and social competencies have a relationship with strategic sourcing.

H111₁: Personal-dynamics management competencies have a relationship with strategic sourcing.

H112₁: Leadership competencies have a relationship with strategic sourcing.

Figure 7.49 below depicts the relationships between each interpersonal sub-category competency factor and *strategic sourcing*. The covariances between the three interpersonal sub-category competency factors, namely internal values and social competencies, personal-dynamics management competencies, and leadership competencies are also presented in figure 7.34.



Source: AMOS output.

Figure 7.34: SEM 34: *Strategic sourcing* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model’s goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.82 below.

Table 7.82: Goodness-of-fit indices: *Strategic sourcing* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Strategic sourcing Independent variables: Interpersonal sub-category competency factors	0.764	0.758	0.073	2.642
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.764) and CFI (0.758) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at

0.073, was below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.642, which was below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 34) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariances between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, as well as the covariances between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-driven) with g18 (analytical abilities), which, if included, would improve the model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities* were already discussed in SEM 15, 16, 17 and 20, respectively. Consequently, the additional covariances were included in the SEM model. When evaluating a SEM, the first step is considering the model’s goodness-of-fit indices. The indices for this model are presented in table 7.83 below.

Table 7.83: Goodness-of-fit indices: *Strategic sourcing* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Strategic sourcing Independent variables: Interpersonal sub-category competency factors	0.809	0.804	0.067	2.371
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.809) and CFI (0.804) increased but were still below the acceptable model fit of 0.90. The RMSEA value of 0.067

was below 0.08, which indicated that the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.371, which was below 3.

Although the model’s IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.81.

Table 7.84: Structural path estimates: *Strategic sourcing* and the three internal and external enterprise sub-category competency factors with covariances

PS process	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Strategic sourcing	Internal values and social competencies	0.091	0.579	No
Strategic sourcing	Personal-dynamics management competencies	-0.466	0.033	Yes (5%)
Strategic sourcing	Leadership competencies	0.561	0.029	Yes (5%)

Source: AMOS output.

Considering the relationships between *strategic sourcing* and the three interpersonal sub-category competency factors, the associated structural paths of two factors were statistically significant. The paths of *personal-dynamics management competencies* and *leadership competencies* were statistically significant at the 5% level. When the standardised weights of these factors were considered, *personal-dynamics management competencies* (-0.466) indicated a moderately negative relationship with strategic sourcing (indicating a tendency for an increase in the importance of the process to be associated with a decrease in the importance of this competency factor). Strategic sourcing and *leadership competencies* (0.561) indicated a moderately positive relationship. It was concluded that H111₁ and H112₁ were supported:

H111₁: Personal-dynamics management competencies have a relationship with strategic sourcing.

H112₁: Leadership competencies have a relationship with strategic sourcing.

7.3.4 SEM: Relationship between PS processes and the two strategic competency factors

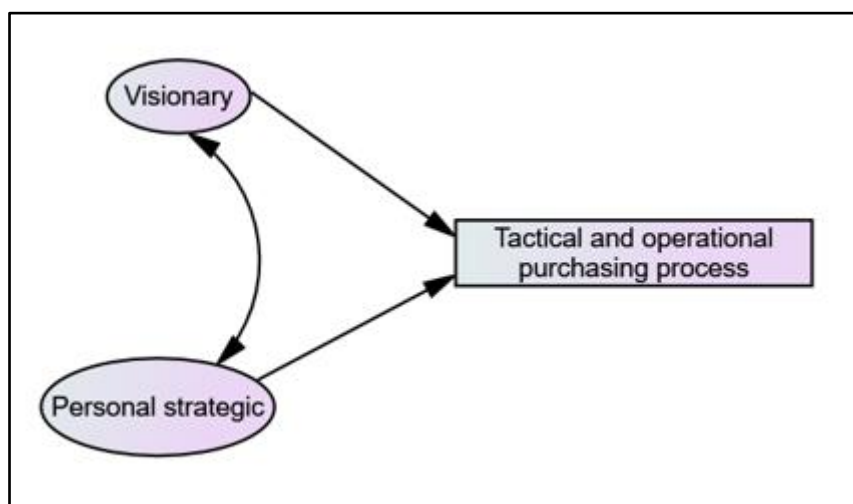
7.3.4.1 SEM Model 35: *Tactical and operational purchasing process* and the two strategic sub-category competency factors

The researcher conducted the SEM model 35, which included the dependent variable, *tactical and operational purchasing process*, and the two strategic sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H113₁: Visionary competencies have a relationship with the tactical and operational purchasing process.

H114₁: Personal strategic competencies have a relationship with the tactical and operational purchasing process.

Figure 7.35 below depicts the relationships between each strategic sub-category competency factor and the *tactical and operational purchasing process*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.35: SEM 35: The *tactical and operational purchasing process* and the two strategic sub-category competency factors

The asymptotic distribution-free estimation method was used (see section 5.9.3.2) as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model's goodness-of-fit indices. These indices are presented in table 7.85 below.

Table 7.85: Goodness-of-fit indices: The *tactical and operational purchasing process* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Tactical and operational purchasing process Independent variables: Strategic sub-category competency factors	0.789	0.765	0.071	2.534
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.789) and CFI (0.765) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.071, which was well below 0.08, indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.534, which was below 3. Nevertheless, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 35) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management), and h3 (corporate social responsibility) with h5 (supply risk management), and h2 (strategic management) with h4 (sustainability) were correlated; and, if added, would improve model fit. The covariance between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management* were discussed in SEM 22. The covariance between *strategic management* and *sustainability* was discussed in SEM 23. Accordingly, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting the *tactical and operational purchasing process* and the two strategic sub-category competency factors with covariances are presented below in table 7.86.

Table 7.86: Goodness-of-fit indices: The *tactical and operational purchasing process* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Tactical and operational purchasing process Independent variables: Strategic sub-category competency factors	0.893	0.877	0.059	2.072
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.893) and CFI (0.877) increased but were still below the acceptable fit of 0.90. In contrast, the RMSEA value of 0.059, was well below 0.08, which indicated that the model fit was adequate. The CMIN/DF value indicated an acceptable fit with a value of 2.072, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed for the interpretation of the structural path estimates to proceed. The estimates are presented in table 7.87.

Table 7.87: Structural path estimates: The *tactical and operational purchasing process* and the two strategic competency factors with covariances

PS process	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
The tactical and operational purchasing process	Visionary competencies	0.019	0.878	No
The tactical and operational purchasing process	Personal strategic competencies	0.071	0.645	No

Source: AMOS output.

Considering the relationships between the *tactical and operational purchasing process* and the two strategic sub-category competency factors, none of the associated structural paths of the factors were statistically significant: H113₁ and H114₁ were not supported.

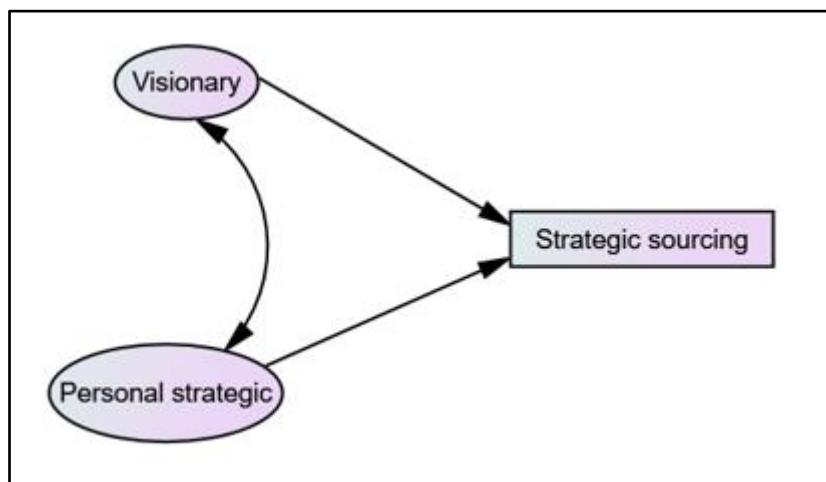
7.3.4.2 SEM Model 36: *Strategic sourcing* and the two strategic sub-category competency factors

SEM model 36, which was conducted by the researcher, included the dependent variable, *strategic sourcing*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H115₁: Visionary competencies have a relationship with strategic sourcing.

H116₁: Personal strategic competencies have a relationship with strategic sourcing.

Figure 7.36 below depicts the relationships between each strategic sub-category competency factor and *strategic sourcing*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.36: SEM 36: *Strategic sourcing* and the two strategic sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the model's goodness-of-fit indices are considered first. The fit indices for this model are presented in table 7.88 below.

Table 7.88: Goodness-of-fit indices: *Strategic sourcing* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Strategic sourcing Independent variables: Strategic sub-category competency factors	0.824	0.810	0.075	2.743
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.824) and CFI (0.810) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.075, which was below 0.08, indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.743, which was below 3. Still, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 36) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h2 (strategic management) with h5 (supply risk management), and h3 (corporate social responsibility) with h5 (supply risk management), and h2 (strategic management) with h4 (sustainability), were correlated and would improve model fit, if included in the model. The covariance between *strategic management* and *supply risk management*, and *corporate social responsibility* and *supply risk management* were discussed in SEM 22. The covariance between *strategic management* and *sustainability* was discussed in SEM 23. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *strategic sourcing* and the two strategic sub-category competency factors with covariances are presented below in table 7.89.

Table 7.89: Goodness-of-fit indices: *Strategic sourcing* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Strategic sourcing Independent variables: Strategic sub-category competency factors	0.874	0.860	0.075	2.710
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.874) and CFI (0.860) increased but were still below the acceptable fit of 0.90. In contrast, the RMSEA value of 0.075 was below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.710, which was below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Thus, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.90.

Table 7.90: Structural path estimates: *Strategic sourcing* and two strategic sub-category competency factors with covariances

PS process	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Strategic sourcing	Visionary competencies	0.189	0.154	No
Strategic sourcing	Personal strategic competencies	0.017	0.903	No

Source: AMOS output.

Considering the relationships between *strategic sourcing* and the two strategic sub-category competency factors, none of the associated structural paths of the strategic sub-category

competency factors were statistically significant; therefore, H115₁ and H116₁ were not supported.

7.4 PS management activities as dependent variables

7.4.1 SEM: Relationship between PS management activities and the five technical sub-category competency factors

7.4.1.1 SEM Model 37: *PS strategic planning* and the five technical sub-category competency factors

SEM model 37 included the PS management activity, *strategic planning*, as the dependent variable and the five technical sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H117₁: Operational PS competencies have a relationship with PS strategic planning.

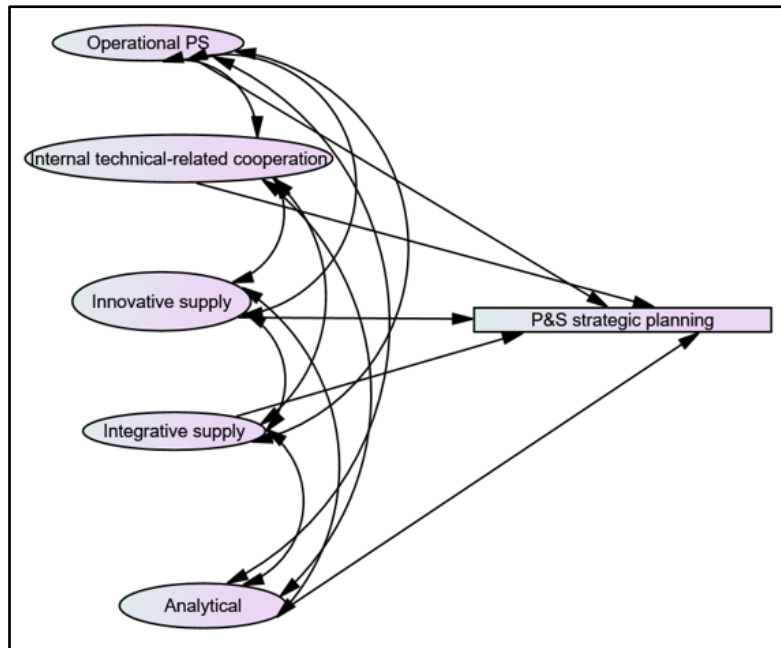
H118₁: Internal technical-related cooperation competencies have a relationship with PS strategic planning.

H119₁: Innovative supply competencies have a relationship with PS strategic planning.

H120₁: Integrative supply competencies have a relationship with PS strategic planning.

H121₁: Analytical competencies have a relationship with PS strategic planning.

Figure 7.37 below depicts the relationships between each technical sub-category competency factor and *strategic planning*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.37: SEM 37: Strategic planning and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.91 below.

Table 7.91: Goodness-of-fit indices: Strategic planning and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: Strategic planning Independent variables: Technical sub-category competency factors	0.913	0.911	0.068	2.434
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.913) and CFI (0.911) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.068 was below 0.08, also indicating that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.434, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.92.

Table 7.92: Structural path estimates: *Strategic planning* and the five technical sub-category competency factors

PS management activity	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
Strategic planning	Operational PS competencies	- 0.019	0.923	No
Strategic planning	Internal technical-related cooperation competencies	0.642	0.004	Yes (1%)
Strategic planning	Innovative supply competencies	0.100	0.416	No
Strategic planning	Integrative supply competencies	0.038	0.898	No
Strategic planning	Analytical competencies	- 0.294	0.031	Yes (5%)

Source: AMOS output.

Considering the relationships between *strategic planning* and the five technical sub-category competency factors, only two factors' associated structural paths were statistically significant: *internal technical-related cooperation competencies* (1% level) and *analytical competencies* (5% level). Consequently, these factors' standardised weights were considered. *Internal technical-related cooperation competencies* indicated a strong positive relationship with a standardised weight of 0.642; whereas *analytical competencies* indicated a weak negative relationship with a standardised weight of -0.294, indicating a tendency for an increase in the importance of the objective to be associated with a decrease in the importance of this competency factor.

It was, therefore, concluded that H117₁, H119₁, H120₁ were not supported; however, H118₁ and H121₁ were supported:

H118₁: Internal technical-related cooperation competencies have a relationship with PS strategic planning.

H121₁: Analytical competencies have a relationship with PS strategic planning.

7.4.1.2 SEM Model 38: *PS tactical and operational planning* and the five technical sub-category competency factors

The 38th SEM model conducted by the researcher included *PS tactical and operational planning* as the dependent variable and the five technical sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H122₁: Operational PS competencies have a relationship with PS tactical and operational planning.

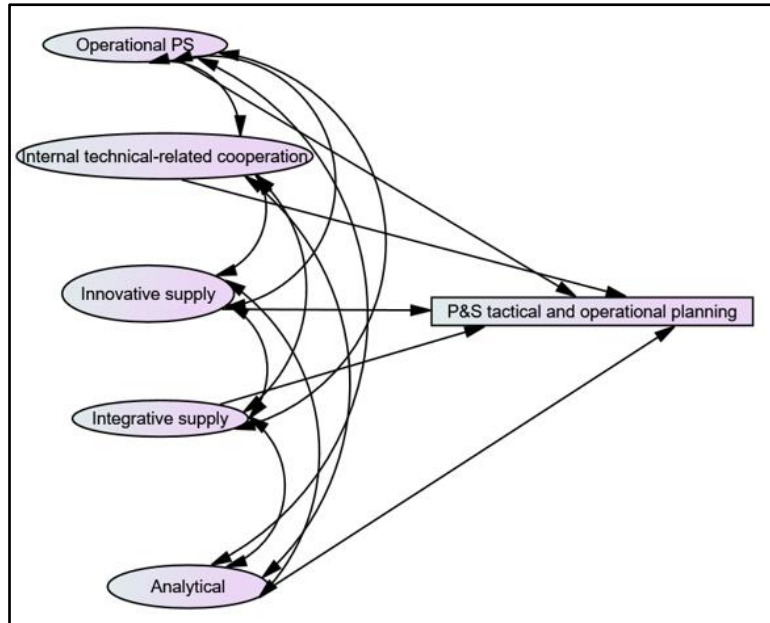
H123₁: Internal technical-related cooperation competencies have a relationship with PS tactical and operational planning.

H124₁: Innovative supply competencies have a relationship with PS tactical and operational planning.

H125₁: Integrative supply competencies have a relationship with PS tactical and operational planning.

H126₁: Analytical competencies have a relationship with PS tactical and operational planning.

Figure 7.38 below depicts the relationships between each technical sub-category competency factor and *PS tactical and operational planning*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.38: SEM 38: PS tactical and operational planning and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model’s goodness-of-fit indices. The indices for this model are presented in table 7.93 below.

Table 7.93: Goodness-of-fit-indices: PS tactical and operational planning and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS tactical and operational planning Independent variables: Technical sub-category competency factors	0.917	0.915	0.068	2.411
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.917) and CFI (0.915) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.068 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.411, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural parameter estimates presented in table 7.94.

Table 7.94: Structural path estimates: *PS tactical and operational planning* and the five technical competency factors

PS management activity	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS tactical and operational planning	Operational PS competencies	0.086	0.539	No
PS tactical and operational planning	Internal technical-related cooperation competencies	0.134	0.286	No
PS tactical and operational planning	Innovative supply competencies	0.268	0.019	Yes (5%)
PS tactical and operational planning	Integrative supply competencies	0.229	0.254	No
PS tactical and operational planning	Analytical competencies	- 0.306	0.004	Yes (1%)

Source: AMOS output.

Considering the relationships between *PS tactical and operational planning* and the five technical sub-category competency factors, only two factors' associated structural paths were statistically significant: *innovative supply competencies* (5% level) and *analytical competencies* (1% level). Considering these two technical factors' standardised weights, *innovative supply competencies* indicated a weak positive relationship with a value of 0.268; whereas *analytical competencies* indicated a moderately negative relationship with a value of -0.306 – indicating a tendency for an increase in the importance of the objective to be associated with a decrease in the importance of this competency factor.

It was, therefore, concluded that H122₁, H123₁, H125₁ were not supported, but H124₁ and H126₁ were supported:

H124₁: Innovative supply competencies have a relationship with PS tactical and operational planning.

H126₁: Analytical competencies have a relationship with PS tactical and operational planning.

7.4.1.3 SEM Model 39: *PS organising* and the five technical sub-category competency factors and the five technical competency factors

SEM model 39, which was conducted by the researcher, included *PS organising* as the dependent variable and the five technical sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H127₁: Operational PS competencies have a relationship with PS organising.

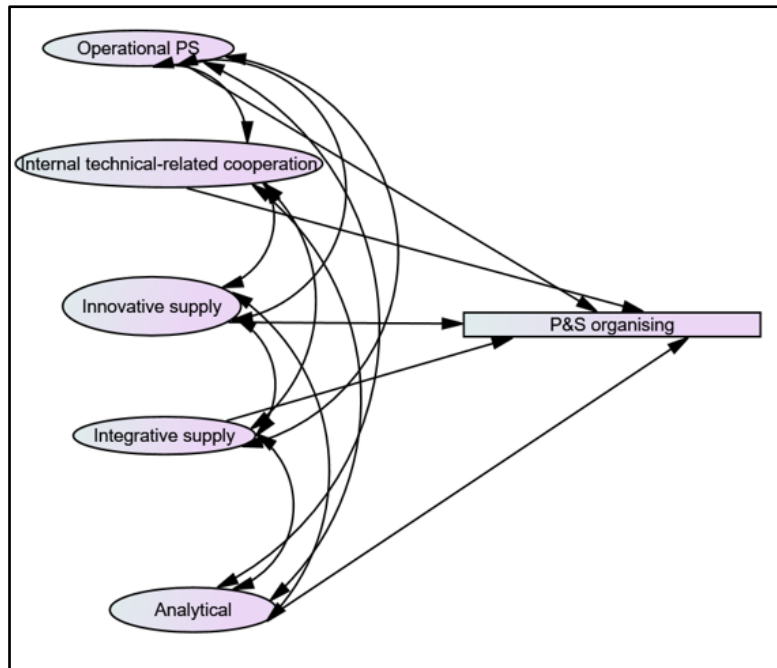
H128₁: Internal technical-related cooperation competencies have a relationship with PS organising.

H129₁: Innovative supply competencies have a relationship with PS organising.

H130₁: Integrative supply competencies have a relationship with PS organising.

H131₁: Analytical competencies have a relationship with PS organising.

Figure 7.39 below depicts the relationships between each technical competency factor and *PS organising*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.39: SEM 39: *PS organising* and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.95 below.

Table 7.95: Goodness-of-fit indices: *PS organising* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: <i>PS organising</i> Independent variables: Technical sub-category competency factors	0.919	0.918	0.072	2.602
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.919) and CFI (0.918) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.072 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.601, which was below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.96

Table 7.96: Structural path estimates: PS organising and the five technical sub-category competency factors

PS management activity	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS organising	Operational PS competencies	0.020	0.901	No
PS organising	Internal technical-related cooperation competencies	0.374	0.009	Yes (1%)
PS organising	Innovative supply competencies	0.154	0.102	No
PS organising	Integrative supply competencies	0.054	0.789	No
PS organising	Analytical competencies	- 0.105	0.235	No

Source: AMOS output.

Considering the relationships between PS organising and the five technical competency factors, only one factor's associated structural path was statistically significant at the 1% level, namely *internal technical-related cooperation competencies*. When considering the standardised weight of *internal technical-related cooperation competencies*, a value of 0.374 indicated a moderately positive relationship. It was, therefore, concluded that H127₁, H129₁, H130₁, and H131₁ were not supported, and only H128₁ was supported:

H128₁: Internal technical-related cooperation has a relationship with PS organising.

7.4.1.4 SEM Model 40: *PS coordination* and the five technical sub-category competency factors

SEM model 40 included *PS coordination* as the dependent variable and the five technical sub-category competency factors as independent variables. These relationships represented the following hypotheses:

H132₁: Operational PS competencies have a relationship with PS coordination.

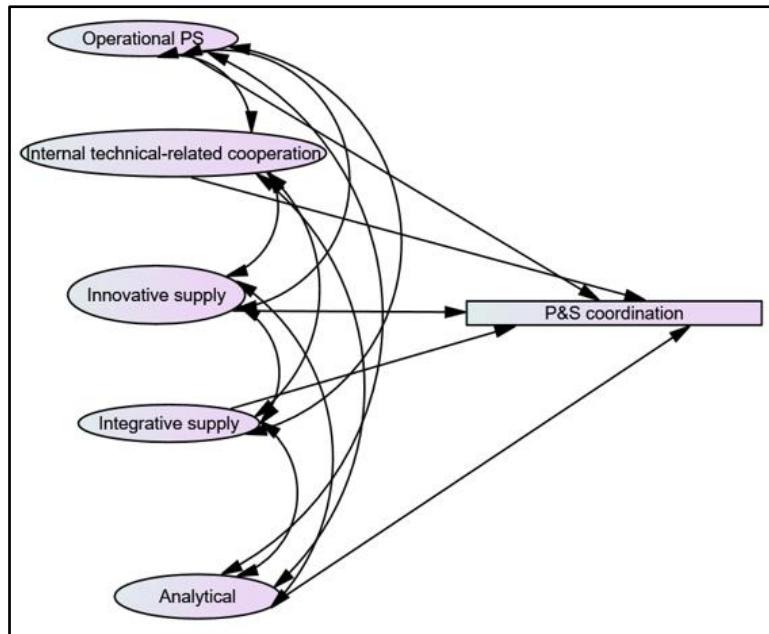
H133₁: Internal technical-related cooperation competencies have a relationship with PS coordination.

H134₁: Innovative supply competencies have a relationship with PS coordination.

H135₁: Integrative supply competencies have a relationship with PS coordination.

H136₁: Analytical competencies have a relationship with PS coordination.

Figure 7.40 below depicts the relationships between each technical sub-category competency factor and *PS coordination*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.40: SEM 40: *PS coordination* and the five technical sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (as discussed in section 5.9.3.2). When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.97 below.

Table 7.97: Goodness-of-fit indices: *PS coordination* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS coordination Independent variables: Technical sub-category competency factors	0.906	0.905	0.068	2.441
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.906) and CFI (0.905) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.068 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.441, which was well below 3. Hence, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.98.

Table 7.98: Structural path estimates: *PS coordination* and the five technical sub-category competency factors

PS management activity	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS coordination	Operational PS competencies	- 0.240	0.108	No
PS coordination	Internal technical-related cooperation competencies	0.340	0.002	Yes (1%)
PS coordination	Innovative supply competencies	0.166	0.040	Yes (5%)
PS coordination	Integrative supply competencies	0.099	0.617	No
PS coordination	Analytical competencies	0.015	0.881	No

Source: AMOS output.

Considering the relationships between *PS coordination* and the five technical sub-category competency factors, the associated structural paths of two factors were statistically significant: *internal technical-related cooperation competencies* at the 1% level, and *innovative supply competencies* at the 5% level. Both these factors indicated a positive relationship (one moderately positive and the other a weak positive) with standardised weights of 0.340 and 0.166.

It was, therefore, concluded that H132₁, H135₁ and H136₁ were not supported, but H133₁ and H134₁ were supported:

H133₁: Internal technical-related cooperation competencies have a relationship with PS coordination.

H134₁: Innovative supply competencies have a relationship with PS coordination.

7.4.1.5 SEM Model 41: *PS leadership* and the five technical sub-category competency factors

The 41st SEM model conducted by the researcher included *PS leadership* as the dependent variable and the five technical sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H137₁: Operational PS competencies have a relationship with PS leadership.

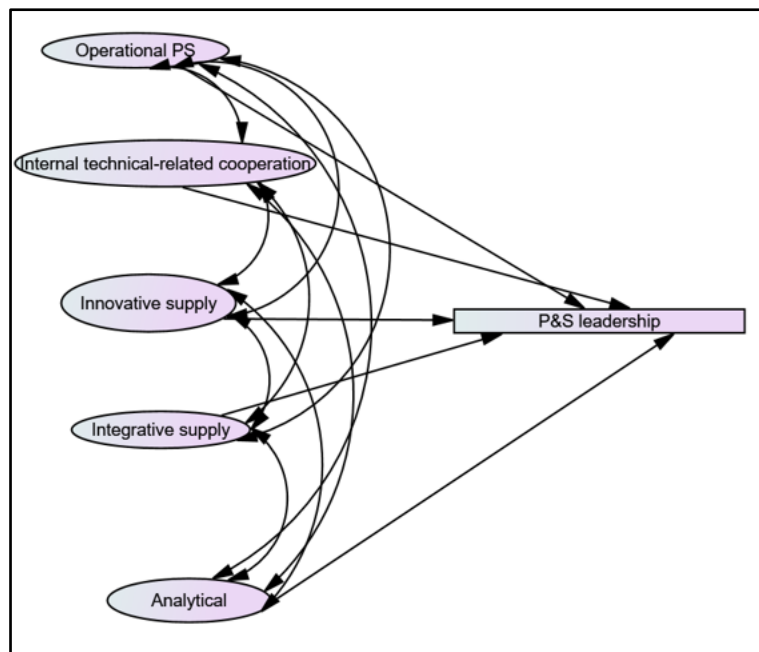
H138₁: Internal technical-related cooperation competencies have a relationship with PS leadership.

H139₁: Innovative supply competencies have a relationship with PS leadership.

H140₁: Integrative supply competencies have a relationship with PS leadership.

H141₁: Analytical competencies have a relationship with PS leadership.

Figure 7.41 below depicts the relationships between each technical sub-category competency factor and *PS leadership*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.41: SEM 41: *PS leadership* and the five technical sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.99 below.

Table 7.99: Goodness-of-fit indices: *PS leadership* and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS leadership Independent variables: Technical sub-category competency factors	0.925	0.924	0.063	2.237
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.925) and CFI (0.924) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.063 was below 0.08, also indicating the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable fit with a value of 2.237, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.100.

Table 7.100: Structural path estimates: *PS leadership* and the five technical sub-category competency factors

PS management activity	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS leadership	Operational PS competencies	- 0.129	0.083	Yes (10%)
PS leadership	Internal technical-related cooperation competencies	0.833	0.049	Yes (5%)
PS leadership	Innovative supply competencies	0.305	0.009	Yes (1%)
PS leadership	Integrative supply competencies	- 0.423	0.009	Yes (1%)
PS leadership	Analytical competencies	- 0.281	0.374	No

Source: AMOS output.

Considering the relationships between *PS leadership* and the five technical sub-category competency factors, four factors' associated structural paths were statistically significant, namely *operational PS competencies* (10% level), *internal technical-related cooperation competencies* (5% level), *innovative supply competencies* (1% level) and *integrative supply competencies* (1% level).

Internal technical-related cooperation competencies and *innovative supply competencies* indicated a strong positive and moderately positive relationship with standardised weights of 0.833 and 0.305, respectively. On the other hand, *operational PS competencies* and *integrative supply competencies* indicated a weak and moderately negative relationship with standardised weights of -0.129 and -0.423, respectively. A negative relationship indicates a tendency for an increase in the importance of the management activity to be associated with a decrease in the importance of this competency factor.

It was, therefore, concluded that H137₁, H138₁, H139₁ and H140₁ were supported:

H137₁: Operational PS competencies have a relationship with PS leadership.

H138₁: Internal technical-related cooperation competencies have a relationship with PS leadership.

H139₁: Innovative supply competencies have a relationship with PS leadership.

H140₁: Integrative supply competencies have a relationship with PS leadership.

7.4.1.6 SEM Model 42: *PS evaluation* and the five technical sub-category competency factors

The 42nd SEM model included *PS evaluation* as the dependent variable and the five technical sub-category competency factors as independent variables. These relationships represented the following hypotheses:

H142₁: Operational PS competencies have a relationship with PS evaluation.

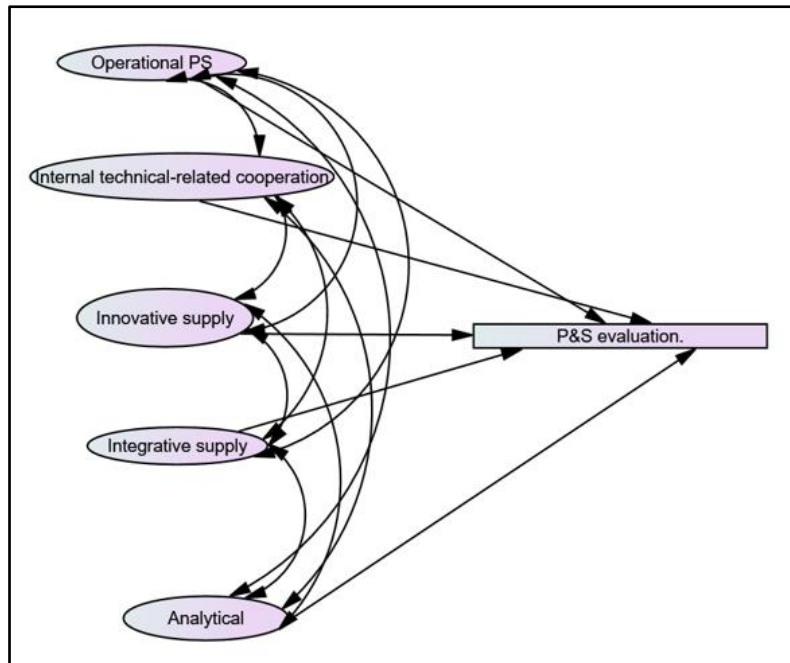
H143₁: Internal technical-related cooperation competencies have a relationship with PS evaluation.

H144₁: Innovative supply competencies have a relationship with PS evaluation.

H145₁: Integrative supply competencies have a relationship with PS evaluation.

H146₁: Analytical competencies have a relationship with PS evaluation.

Figure 7.42 below depicts the relationships between each technical sub-category competency factor and *PS evaluation*, as well as the covariance between: operational PS competencies, internal technical-related cooperation competencies, innovative supply competencies, integrative supply competencies, and analytical competencies.



Source: AMOS output.

Figure 7.42: SEM 42: PS evaluation and the five technical sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the first step is considering the model’s goodness-of-fit indices. The indices for this model are presented in table 7.101 below.

Table 7.101: Goodness-of-fit indices: PS evaluation and the five technical sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS evaluation Independent variables: Technical sub-category competency factors	0.930	0.929	0.068	2.409
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.930) and CFI (0.929) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.068 was below 0.08, thus also indicating the model fit was adequate. Additionally, the CMIN/DF value

indicated an acceptable model fit with a value of 2.409, which was well below 3. Thus, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.102.

Table 7.102: Structural path estimates: *PS evaluation* and the five technical sub-category competency factors

PS management activity	Technical sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS evaluation	Operational PS competencies	- 0.592	0.011	Yes (5%)
PS evaluation	Internal technical-related cooperation competencies	- 0.254	0.318	No
PS evaluation	Innovative supply competencies	0.628	0.012	Yes (5%)
PS evaluation	Integrative supply competencies	1.148	0.002	Yes (1%)
PS evaluation	Analytical competencies	- 0.505	0.019	Yes (5%)

Source: AMOS output.

Considering the relationships between *PS evaluation* and the five technical sub-category competency factors, four factors' associated structural paths were statistically significant: *operational PS competencies* (5% level), *innovative supply competencies* (5% level), *integrative supply competencies* (1% level) and *analytical competencies* (5%).

Innovative and *integrative supply competencies* indicated a strong positive relationship with standardised weights of 0.628 and 1.148, respectively. *Operational PS competencies* and *analytical competencies* indicated a strong negative relationship with standardised weights of -0.592 and -0.505, indicating a tendency for an increase in the importance of the management activity to be associated with a decrease in the importance of this competency factor. It was, therefore, concluded that H142₁, H144₁, H145₁, H146₁ were supported:

H142₁: Operational PS competencies have a relationship with PS evaluation.

H144₁: Innovative supply competencies have a relationship with PS evaluation.

H145₁: Integrative supply competencies have a relationship with PS evaluation.

H146₁: Analytical competencies have a relationship with PS evaluation.

7.4.2 SEM: Relationship between PS management activities and the three internal and external enterprise competency factors

7.4.2.1 SEM Model 43: *PS strategic planning* and the three internal and external enterprise sub-category competency factors

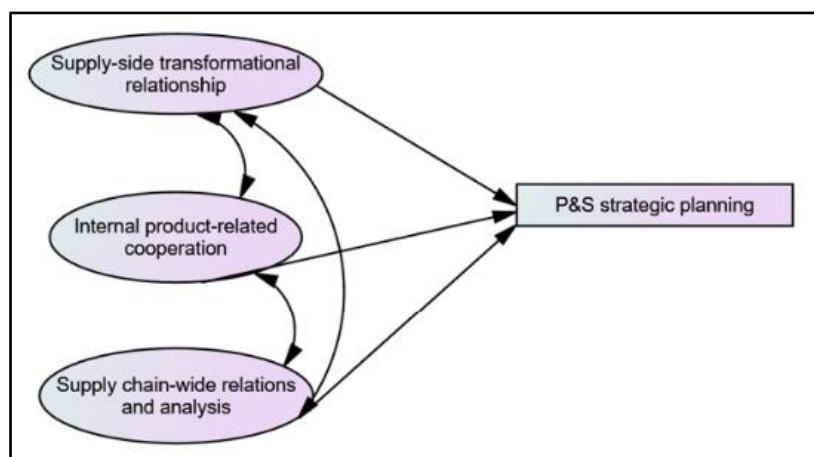
SEM model 43 included *PS strategic planning* as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H147₁: Supply-side transformational-relationship competencies have a relationship with PS strategic planning.

H148₁: Internal product-related cooperation competencies have a relationship with PS strategic planning.

H149₁: Supply chain wide relations and analysis competencies have a relationship with PS strategic planning.

Figure 7.43 below depicts the relationships between each internal and external enterprise sub-category competency factor and *PS strategic planning*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.43: SEM 43: *PS strategic planning* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.103 below.

Table 7.103: Goodness-of-fit indices: *PS strategic planning* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS strategic planning Independent variables: Internal and external enterprise sub-category competency factors	0.897	0.893	0.062	2.191
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.897) and CFI (0.893) were below 0.90, indicating that the model fit was inadequate. However, the RMSEA value of 0.062 was below 0.08, indicating the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 2.191, which was well below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 43) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of f7 (supplier relationship management) with f8 (supplier evaluation) correlated; and would improve model fit when included in the model. *Supplier evaluation* was part of *supplier relationship management*, the systematic approach to evaluating suppliers – which could explain the correlation between the variables (Kirvan, Daniel and Pratt, 2020). Consequently, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting *PS strategic planning* and the

three internal and external enterprise sub-category competency factors with covariances are presented below in table 7.104.

Table 7.104: Goodness-of-fit indices: *PS strategic planning* and the three internal and external enterprise sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS strategic planning Independent variables: Internal and external enterprise sub-category competency factors	0.917	0.912	0.057	2.007
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.917) and CFI (0.912) increased and were above the acceptable fit of 0.90. The RMSEA value of 0.057 was well below 0.08, which indicated that the model fit was adequate. The CMIN/DF value indicated an acceptable fit with a value of 2.007, which was well below 3. Therefore, the researcher deemed the model fitted the observed data satisfactorily – which allowed the interpretation of the structural path estimates presented in table 7.105.

Table 7.105: Structural path estimates: *PS strategic planning* and the three internal and external enterprise sub-category competency factors

PS management activity	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS strategic planning	Supply-side transformational-relationship competencies	0.088	0.549	No
PS strategic planning	Internal product-related cooperation competencies	0.139	0.156	No
PS strategic planning	Supply chain wide relations and analysis competencies	0.252	0.106	No

Source: AMOS output.

Considering the relationships between *PS strategic planning* and the three internal and external enterprise sub-category competency factors, none of the structural paths of the factors were statistically significant; therefore, H147₁, H148₁ and H149₁ were not supported.

7.4.2.2 SEM Model 44: *PS tactical and operational planning* and the three internal and external enterprise sub-category competency factors

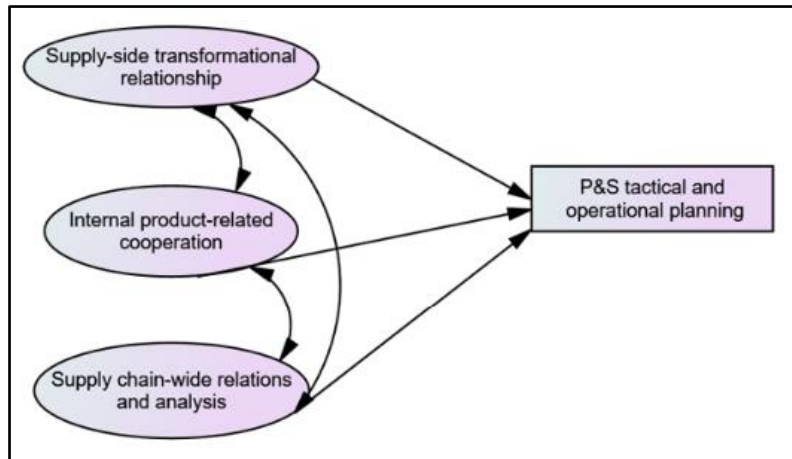
The 44th SEM model conducted by the researcher included *PS tactical and operational planning* as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. These relationships represented the following hypotheses:

H150₁: Supply-side transformational-relationship competencies have a relationship with PS tactical and operational planning.

H151₁: Internal product-related cooperation competencies have a relationship with PS tactical and operational planning.

H152₁: Supply chain wide relations and analysis competencies have a relationship with PS tactical and operational planning.

Figure 7.44 below depicts the relationships between each internal and external enterprise sub-category competency factor and *PS tactical and operational planning*, as well as the covariance between supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis.



Source: AMOS output.

Figure 7.44: SEM 44: *PS tactical and operational planning* and the three internal and external enterprise sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The fit indices for this model are presented in table 7.106 below.

Table 7.106: Goodness-of-fit indices: *PS tactical and operational planning* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS tactical and operational planning Independent variables: Internal and external enterprise sub-category competency factors	0.910	0.907	0.054	1.904
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.910) and CFI (0.907) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.054 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.904, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.107.

Table 7.107: Structural path estimates: *PS tactical and operational planning* and the three internal and external enterprise sub-category competency factors

PS management activity	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS tactical and operational planning	Supply-side transformational-relationship competencies	0.139	0.345	No
PS tactical and operational planning	Internal product-related cooperation competencies	0.159	0.128	No
PS tactical and operational planning	Supply chain wide relations and analysis competencies	0.067	0.667	No

Source: AMOS output.

Considering the relationships between *PS tactical and operational planning* and the three internal and external enterprise sub-category competency factors, none of the associated structural paths were statistically significant. Hence, H150₁, H151₁ and H152₁ were unsupported.

7.4.2.3 SEM Model 45: *PS organising* and the three internal and external enterprise sub-category competency factors

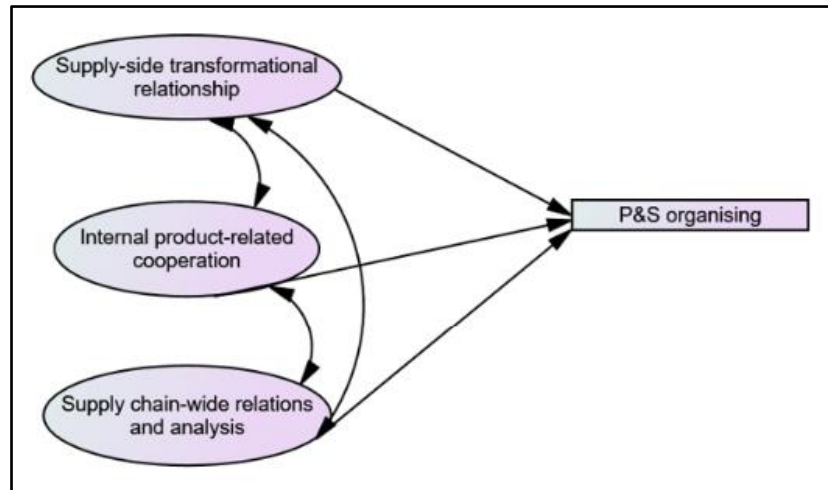
SEM model 45 included *PS organising* as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. These relationships represented the following hypotheses:

H153₁: Supply-side transformational-relationship competencies have a relationship with *PS organising*.

H154₁: Internal product-related cooperation competencies have a relationship with *PS organising*.

H155₁: Supply chain wide relations and analysis competencies have a relationship with *PS organising*.

Figure 7.45 below depicts the relationships between each internal and external enterprise sub-category competency factor and *PS organising*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis.



Source: AMOS output.

Figure 7.45: SEM 45: *PS organising* and the three internal and external enterprise sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.108 below.

Table 7.108: Goodness-of-fit indices: *PS organising* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS organising Independent variables: Internal and external enterprise sub-category competency factors	0.914	0.910	0.054	1.910
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.914) and CFI (0.910) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.054 was below 0.08, also indicating the model fit was adequate. In addition, the CMIN/DF value indicated an acceptable model fit with a value of 1.910, which was well below 3. Thus, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.109.

Table 7.109: Structural path estimates: *PS organising* and the three internal and external enterprise sub-category competency factors

PS management activity	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS organising	Supply-side transformational-relationship competencies	0.178	0.239	No
PS organising	Internal product-related cooperation	0.064	0.574	No
PS organising	Supply chain wide relations and analysis competencies	0.178	0.486	No

Source: AMOS output.

Considering the relationships between *PS organising* and the three internal and external enterprise sub-category competency factors, none of the factors' associated structural paths were statistically significant. Therefore, H153₁, H154₁ and H155₁ were unsupported.

7.4.2.4 SEM Model 46: *PS coordination* and the three internal and external enterprise sub-category competency factors

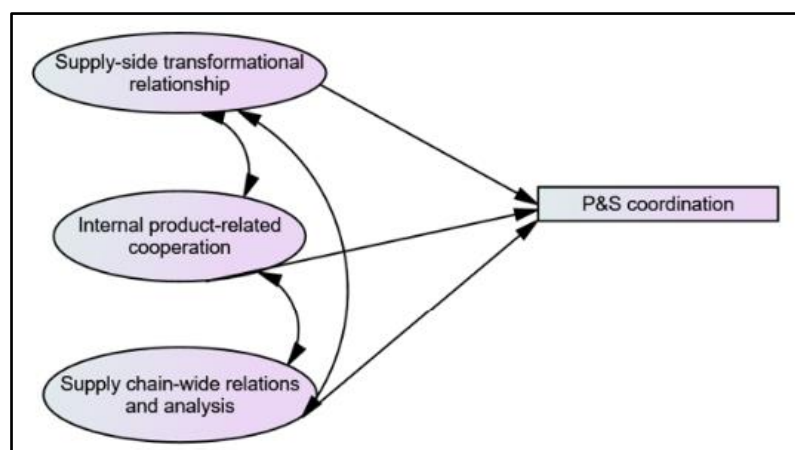
SEM model 46 included *PS coordination* as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H156₁: Supply-side transformational-relationship competencies have a relationship with PS coordination.

H157₁: Internal product-related cooperation competencies have a relationship with PS coordination.

H158₁: Supply chain wide relations and analysis competencies have a relationship with PS coordination.

Figure 7.46 below depicts the relationships between each internal and external enterprise sub-category competency factor and *PS coordination*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.46: SEM 46: *PS coordination* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.110 below.

Table 7.110: Goodness-of-fit indices: *PS coordination* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS coordination Independent variables: Internal and external enterprise sub-category competency factors	0.914	0.910	0.054	1.910
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.914) and CFI (0.910) were above 0.90, indicating the model fit was adequate. The RMSEA value of 0.054 was below 0.08, also indicating that the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.910, which was well below 3. Therefore, the researcher deemed the model fitted the observed data satisfactorily, which allowed for the interpretation of the structural path estimates presented in table 7.111.

Table 7.111: Structural path estimates: *PS coordination* and the three internal and external enterprise sub-category competency factors

PS management activity	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS coordination	Supply-side transformational-relationship competencies	0.178	0.239	No
PS coordination	Internal product-related cooperation competencies	0.061	0.574	No
PS coordination	Supply chain wide relations and analysis competencies	0.121	0.486	No

Source: AMOS output.

Considering the relationships between *PS coordination* and the three internal and external enterprise sub-category competency factors, none of the factors' associated structural paths were statistically significant. Therefore, H156₁, H157₁ and H158₁ were not supported.

7.4.2.5 SEM Model 47: *PS leadership* and the three internal and external enterprise sub-category competency factors

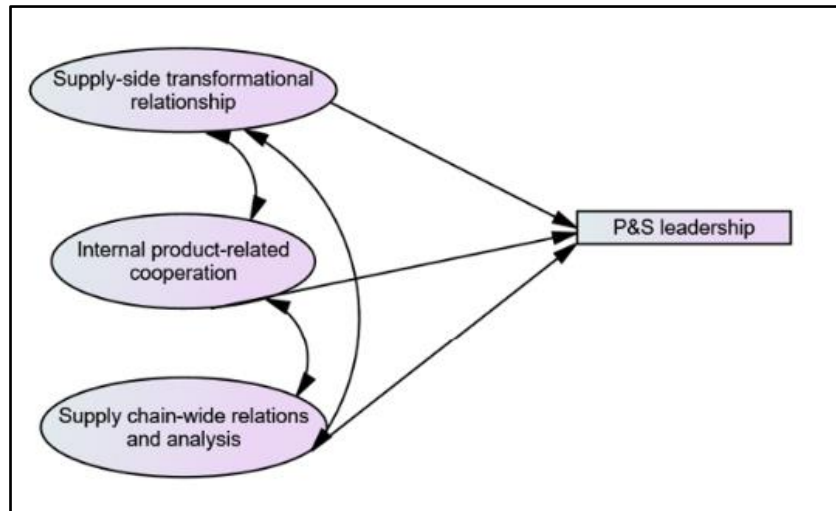
SEM model 47 included *PS leadership* as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H159₁: Supply-side transformational-relationship competencies have a relationship with *PS leadership*.

H160₁: Internal product-related cooperation competencies have a relationship with *PS leadership*.

H161₁: Supply chain wide relations and analysis competencies have a relationship with *PS leadership*.

Figure 7.47 below depicts the relationships between each internal and external enterprise sub-category competency factor and *PS leadership*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.47: SEM 47: *PS leadership* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.112 below.

Table 7.112: Goodness-of-fit indices: *PS leadership* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS leadership Independent variables: Internal and external enterprise sub-category competency factors	0.909	0.906	0.055	1.945
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.909) and CFI (0.906) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.055 was below 0.08, also indicating the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 1.945, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.113.

Table 7.113: Structural path estimates: *PS leadership* and the three internal and external enterprise sub-category competency factors

PS management activity	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS leadership	Supply-side transformational-relationship competencies	0.060	0.633	No
PS leadership	Internal product-related cooperation competencies	- 0.019	0.835	No
PS leadership	Supply chain wide relations and analysis competencies	0.301	0.039	Yes (5%)

Source: AMOS output.

Considering the relationships between *PS leadership* and the three internal and external enterprise sub-category competency factors, only the associated structural path of *supply chain wide relations and analysis competencies* was statistically significant at the 5% level. When the standardised weight of the factor was considered, *supply chain wide relations and analysis competencies* (0.301) indicated a moderately positive relationship with PS leadership.

It was, therefore, concluded that H159₁ and H160₁ were not supported and H161₁ was supported:

H161₁: Supply chain wide relations and analysis competencies have a relationship with PS leadership.

7.4.2.6 SEM Model 48: *PS evaluation* and the three internal and external enterprise sub-category competency factors

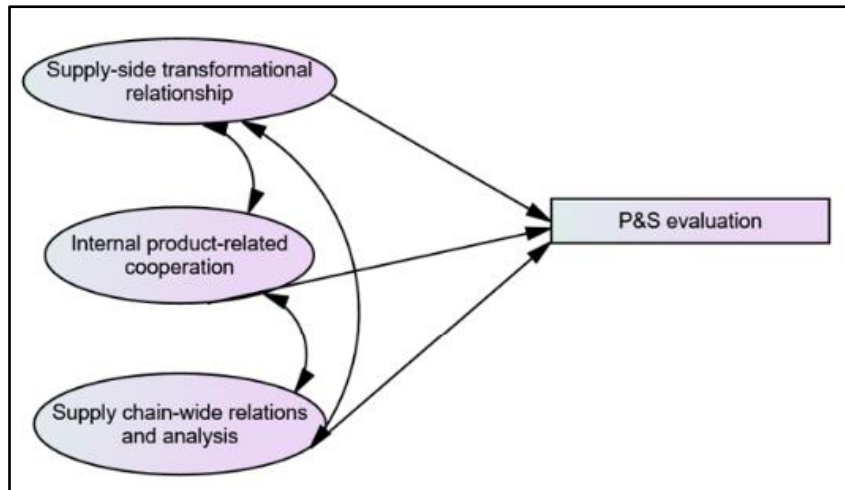
SEM model 48 included *PS evaluation* as the dependent variable and the three internal and external enterprise sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H162₁: Supply-side transformational-relationship competencies have a relationship with PS evaluation.

H163₁: Internal product-related cooperation competencies have a relationship with PS evaluation.

H164₁: Supply chain wide relations and analysis competencies have a relationship with PS evaluation.

Figure 7.48 below depicts the relationships between each internal and external enterprise sub-category competency factor and *PS evaluation*, as well as the covariance between: supply-side transformational-relationship competencies, internal product-related cooperation competencies, and supply chain wide relations and analysis competencies.



Source: AMOS output.

Figure 7.48: SEM 48: *PS evaluation* and the three internal and external enterprise sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.114 below.

Table 7.114: Goodness-of-fit indices: *PS evaluation* and the three internal and external enterprise sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS evaluation Independent variables: Internal and external enterprise sub-category competency factors	0.904	0.900	0.570	1.992
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.904) and CFI (0.900) were above 0.90, indicating an acceptable model fit; the RMSEA value of 0.057 was below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated

an acceptable model fit with a value of 1.992, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.115.

Table 7.115: Structural path estimates: *PS evaluation* and the three internal and external enterprise sub-category competency factors

PS management activity	Internal and external enterprise sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS evaluation	Supply-side transformational-relationship competencies	0.098	0.137	No
PS evaluation	Internal product-related cooperation	0.020	0.861	No
PS evaluation	Supply chain wide relations and analysis competencies	0.249	0.458	No

Source: AMOS output.

In considering the relationships between *PS evaluation* and the three internal and external enterprise sub-category competency factors, none of the factors' associated structural paths were statistically significant. Hence, H162₁, H163₁ and H164₁ were not supported.

7.4.3 SEM: Relationship between PS management activities and the three interpersonal sub-category competency factors

7.4.3.1 SEM Model 49: *PS strategic planning* and the three interpersonal sub-category competency factors

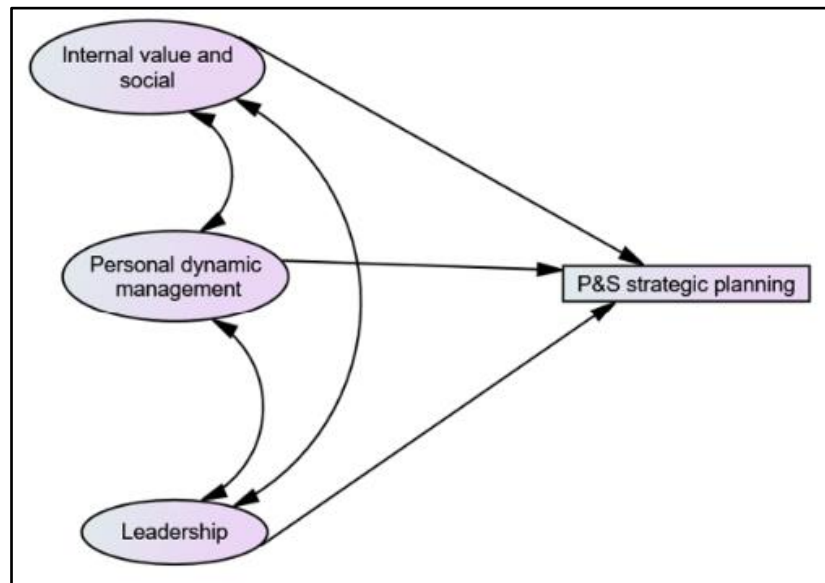
SEM model 49 included *PS strategic planning* as the dependent variable and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H165₁: Internal values and social competencies have a relationship with PS strategic planning.

H166₁: Personal-dynamics management competencies have a relationship with PS strategic planning.

H167₁: Leadership competencies have a relationship with PS strategic planning.

Figure 7.49 below depicts the relationships between each interpersonal sub-category competency factor and *PS strategic planning*, as well as the covariances between the three interpersonal competency factors: internal values and social competencies, personal-dynamics management competencies, and leadership competencies. These are presented in figure 7.49.



Source: AMOS output.

Figure 7.49: SEM 46: *PS strategic planning* and the three interpersonal sub-category competency factors

The asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.116 below.

Table 7.116: Goodness-of-fit indices: *PS strategic planning* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS strategic planning Independent variables: Interpersonal sub-category competency factors	0.748	0.741	0.071	2.569
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.748) and CFI (0.741) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value of 0.071 was below 0.08, indicating the model fit was adequate. The CMIN/DF value also indicated an acceptable model fit with a value of 2.569, which was well below 3. However, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 49) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariances between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, as well as the covariances between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-driven) with g18 (analytical abilities), which, if added, would improve the model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities*, were previously discussed in SEM 15, 16, 17 and 20, respectively. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *PS strategic planning* and the three interpersonal sub-category competency factors with covariances are presented below in table 7.117.

Table 7.117: Goodness-of-fit indices: *PS strategic planning* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable PS strategic planning Independent variables: Interpersonal sub-category competency factors	0.809	0.803	0.063	2.223
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.809) and CFI (0.803) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.063 was well below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.223, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.118.

Table 7.118: Structural path estimates: *PS strategic planning* and the three interpersonal sub-category competency factors

PS management activity	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS strategic planning	Internal values and social competencies	0.054	0.696	No
PS strategic planning	Personal-dynamics management competencies	-0.203	0.225	No
PS strategic planning	Leadership competencies	0.417	0.160	No

Source: AMOS output.

In considering the relationships between *PS strategic planning* and the three interpersonal sub-category competency factors, none of the factors' associated structural paths were statistically significant. Hence, H165₁, H166₁ and H167₁ were not supported.

7.4.3.2 SEM Model 50: *PS tactical and operational planning* and the three interpersonal sub-category competency factors

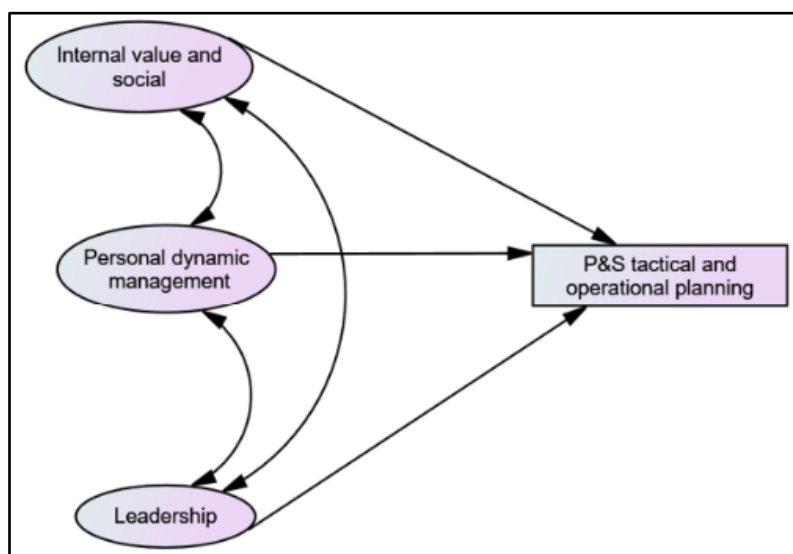
SEM model 50 included *PS tactical and operational planning* as the dependent variable and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H168₁: Internal values and social competencies have a relationship with PS tactical and operational planning.

H169₁: Personal-dynamics management competencies have a relationship with PS tactical and operational planning.

H170₁: Leadership competencies have a relationship with PS tactical and operational planning.

Figure 7.50 below depicts the relationships between each interpersonal sub-category competency factor and *PS tactical and operational planning*, as well as the covariances between the three interpersonal sub-category competency factors, namely internal values and social competencies, personal-dynamics management competencies, and leadership competencies.



Source: AMOS output.

Figure 7.50: SEM 50: *PS tactical and operational planning* and the three interpersonal sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.119 below.

Table 7.119: Goodness-of-fit indices: *PS tactical and operational planning* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS tactical and operational planning Independent variables: Interpersonal sub-category competency factors	0.754	0.746	0.065	2.293
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.754) and CFI (0.746) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value of 0.065 was below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.296, which was well below 3. Still, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 50) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariances between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, as well as the covariances between the residual terms of g10 (self-assurance) with g16 (conscientiousness), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-

driven) with g18 (analytical abilities), which, if included, would improve the model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities*, were discussed in SEM 15, 16, 17 and 20, respectively. Accordingly, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *PS tactical and operational planning* and the three interpersonal sub-category competency factors with covariances are presented below in table 7.120.

Table 7.120: Goodness-of-fit indices: *PS tactical and operational planning* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable PS tactical and operational planning Independent variables: Interpersonal sub-category competency factors	0.812	0.805	0.058	2.021
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.812) and CFI (0.805) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.058 was well below 0.08, which indicated that the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.021, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.121.

Table 7.121: Structural path estimates: *PS tactical and operational planning* and the three interpersonal sub-category competency factors

PS management activity	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS tactical and operational planning	Internal values and social competencies	-0.253	0.165	No
PS tactical and operational planning	Personal-dynamics management competencies	-0.607	<0.001	Yes (1%)
PS tactical and operational planning	Leadership competencies	1.057	<0.001	Yes (1%)

Source: AMOS output.

Considering the relationships between *PS tactical and operational planning* and the three interpersonal sub-category competency factors, only two factors' associated structural paths were statistically significant: *personal-dynamics management competencies* and *leadership competencies* at the 1% level. Considering these two interpersonal sub-category factors' standardised weights, *leadership competencies* indicated a strong positive relationship with a value of 1.057, whereas *personal-dynamics management competencies* indicated a strong negative relationship with a value of -0.607, indicating a tendency for an increase in the importance of the management activity to be associated with a decrease in the importance of this competency factor.

It was, therefore, concluded that H169₁, and H170₁, were supported:

H169₁: Personal-dynamics management competencies have a relationship with PS tactical and operational planning.

H170₁: Leadership competencies have a relationship with PS tactical and operational planning.

7.4.3.3 SEM Model 51: *PS organising* and the three interpersonal sub-category competency factors

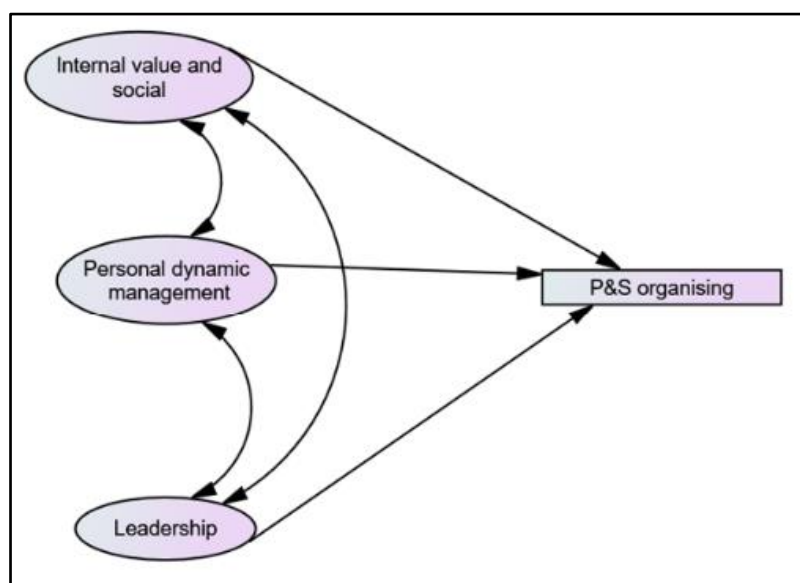
SEM model 51 included *PS organising* as the dependent variable and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H171₁: Internal values and social competencies have a relationship with PS organising.

H172₁: Personal-dynamics management competencies have a relationship with PS organising.

H173₁: Leadership competencies have a relationship with PS organising.

Figure 7.51 below depicts the relationships between each interpersonal sub-category competency factor and *PS organising*, as well as the covariances between the three interpersonal sub-category competency factors, namely internal values and social competencies, personal-dynamics management competencies, and leadership competencies.



Source: AMOS output.

Figure 7.51: SEM 51: *PS organising* and the three interpersonal sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.122 below.

Table 7.122: Goodness-of-fit indices: *PS organising* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: <i>PS organising</i> Independent variables: Interpersonal sub-category competency factors	0.771	0.765	0.067	2.367
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.771) and CFI (0.765) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value of 0.067 was below 0.08, indicating the model fit was adequate. Furthermore, the CMIN/DF value indicated an acceptable model fit with a value of 2.367, which was well below 3. Nonetheless, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 51) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) was correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-driven) with g18 (analytical abilities), which, if included, would improve the model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities*, were previously discussed in SEM 15, 16, 17 and 20, respectively. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *PS organising* and the three interpersonal sub-category competency factors with covariances are presented below in table 7.123.

Table 7.123: Goodness-of-fit indices: *PS organising* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable PS organising Independent variables: Interpersonal sub-category competency factors	0.812	0.806	0.061	2.159
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.812) and CFI (0.806) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.061 was well below 0.08, which indicated that the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 2.159, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.124.

Table 7.124: Structural path estimates: *PS organising* and the three interpersonal sub-category competency factors

PS management activity	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS organising	Internal values and social competencies	-0.330	0.368	No
PS organising	Personal-dynamics management competencies	-1.089	0.020	Yes (5%)
PS organising	Leadership competencies	1.638	0.013	Yes (5%)

Source: AMOS output.

Considering the relationships between *PS organising* and the three interpersonal sub-category competency factors, only two of the associated structural paths of these factors were statistically significant: *personal-dynamics management competencies* and *leadership competencies* at the 5% level. Considering these two interpersonal sub-category factors' standardised weights, *leadership competencies* indicated a strong positive relationship with a value of 1.638; whereas *personal-dynamics management competencies* indicated a strong negative relationship with a value of -1.089 (indicating a tendency for an increase in the importance of the management activity to be associated with a decrease in the importance of this competency factor).

It was, therefore, concluded that H172₁, and H173₁, were supported:

H172₁: Personal-dynamics management competencies have a relationship with PS organising.

H173₁: Leadership competencies have a relationship with PS organising.

7.4.3.4 SEM Model 52: *PS coordination* and the three interpersonal sub-category competency factors

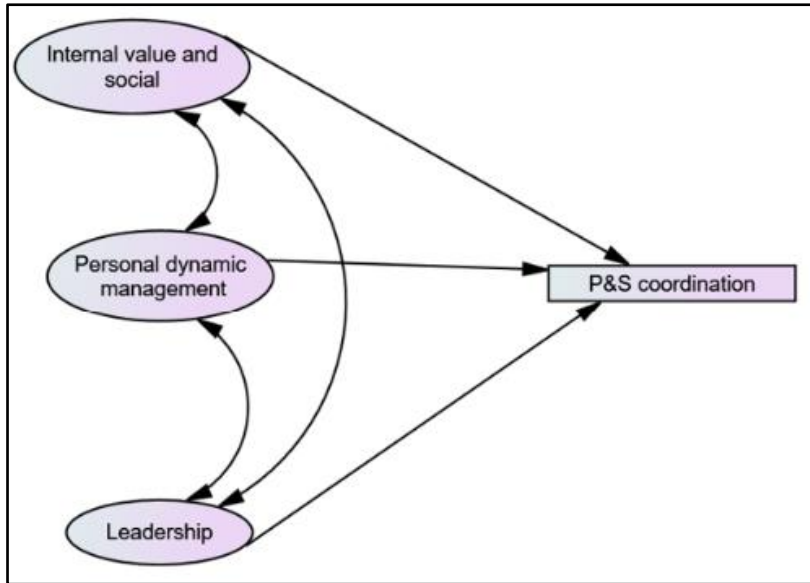
SEM model 52 included *PS coordination* as the dependent variable and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H174₁: Internal values and social competencies have a relationship with PS coordination.

H175₁: Personal-dynamics management competencies have a relationship with PS coordination.

H176₁: Leadership competencies have a relationship with PS coordination.

Figure 7.52 below depicts the relationships between each interpersonal sub-category competency factor and *PS coordination*, as well as the covariances between the three interpersonal sub-category competency factors, namely internal values and social competencies, personal-dynamics management competencies, and leadership competencies.



Source: AMOS output.

Figure 7.52: SEM 52: *PS coordination* and the three interpersonal sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. The indices for this model are presented in table 7.125 below.

Table 7.125: Goodness-of-fit indices: *PS coordination* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS coordination Independent variables: Interpersonal sub-category competency factors	0.766	0.759	0.065	2.287
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.766) and CFI (0.759) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value of

0.065 was below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable fit with a value of 2.287, which was well below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 52) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) was correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-driven) with g18 (analytical abilities), which, if included, would improve the model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities*, were discussed in SEM 15, 16, 17 and 20, respectively. Thus, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *PS coordination* and the three interpersonal sub-category competency factors with covariances are presented below in table 7.126.

Table 7.126: Goodness-of-fit indices: *PS coordination* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable PS coordination Independent variables: Interpersonal sub-category competency factors	0.843	0.837	0.054	1.900
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.843) and CFI (0.837) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.054 was well

below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable fit with a value of 1.900, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.127.

Table 7.127: Structural path estimates: *PS coordination* and the three interpersonal sub-category competency factors

PS management activity	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS coordination	Internal values and social competencies	-0.232	0.222	No
PS coordination	Personal-dynamics management competencies	-0.299	0.034	Yes (5%)
PS coordination	Leadership competencies	0.881	<0.001	Yes (1%)

Source: AMOS output.

Considering the relationships between *PS coordination* and the three interpersonal sub-category competency factors, only two associated structural paths of these factors were statistically significant: *personal-dynamics management competencies* at the 5% level and *leadership competencies* at the 1% level. Considering these two interpersonal factors' standardised weights, *leadership competencies* indicated a strong positive relationship with a value of 0.881, whereas *personal-dynamics management competencies* indicated a moderately negative relationship with a value of -0.299 (indicating a tendency for an increase in the importance of the management activity to be associated with a decrease in the importance of this competency factor).

It was, therefore, concluded that H175₁, and H176₁, were supported:

H175₁: Personal-dynamics management competencies have a relationship with PS coordination.

H176₁: Leadership competencies have a relationship with PS coordination.

7.4.3.5 SEM Model 53: *PS leadership* and the three interpersonal sub-category competency factors

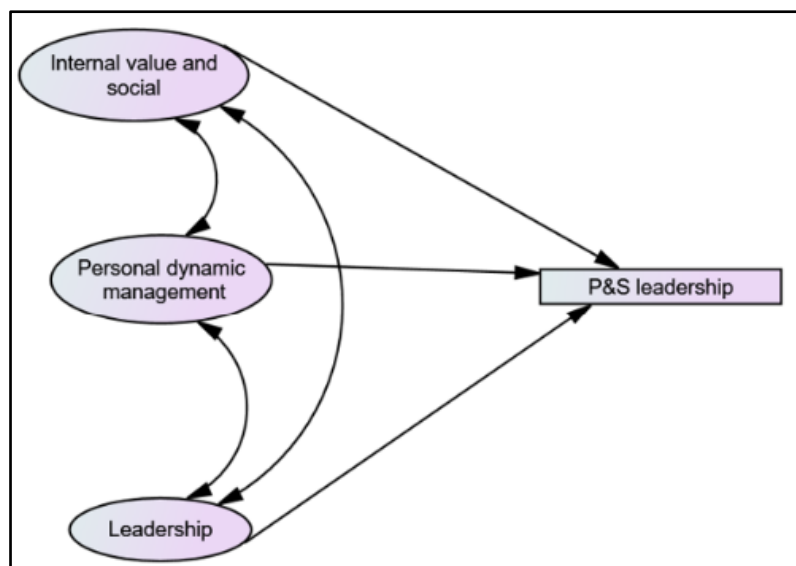
The 53rd SEM model included *PS leadership* as the dependent variable and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H177₁: Internal values and social competencies have a relationship with PS leadership.

H178₁: Personal-dynamics management competencies have a relationship with PS leadership.

H179₁: Leadership competencies have a relationship with PS leadership.

Figure 7.53 below depicts the relationships between each interpersonal sub-category competency factor and *PS leadership*, as well as the covariances between the three interpersonal sub-category competency factors, namely internal values and social competencies, personal-dynamics management competencies, and leadership competencies.



Source: AMOS output.

Figure 7.53: SEM 53: *PS leadership* and the three interpersonal sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. These goodness-of-fit indices for this model are presented in table 7.128 below.

Table 7.128: Goodness-of-fit indices: *PS leadership* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS leadership Independent variables: Interpersonal sub-category competency factors	0.774	0.768	0.070	2.490
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.774) and CFI (0.768) were below 0.90, indicating the model fit was inadequate. In contrast, the RMSEA value of 0.070 was below 0.08, indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.490, which was well below 3. However, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 53) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-driven) with g18 (analytical abilities), which, if included, would improve the model fit. The correlations between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities*, were

previously discussed in SEM 15, 16, 17 and 20, respectively. Accordingly, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *PS leadership* and the three interpersonal sub-category competency factors with covariances are presented below in table 7.129.

Table 7.129: Goodness-of-fit indices: *PS leadership* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable PS leadership Independent variables: Interpersonal sub-category competency factors	0.830	0.825	0.062	2.166
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.830) and CFI (0.825) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.062 was well below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable fit with a value of 2.166, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.130.

Table 7.130: Structural path estimates: *PS leadership* and the three interpersonal sub-category competency factors

PS management activity	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS leadership	Internal values and social competencies	-0.435	0.163	No
PS leadership	Personal-dynamics management competencies	-0.235	0.004	Yes (5%)
PS leadership	Leadership competencies	0.942	0.184	No

Source: AMOS output.

Considering the relationships between *PS leadership* and the three interpersonal sub-category competency factors, only *personal-dynamics management competencies'* associated structural path was statistically significant at the 5% level. Considering the interpersonal sub-category factor's standardised weight, *personal-dynamics management competencies* indicated a moderately negative relationship with a value of -0.235, indicating a tendency for an increase in the importance of the management activity to be associated with a decrease in the importance of this competency factor. It was, therefore, concluded that only H178₁, was supported:

H178₁: Personal-dynamics management competencies have a relationship with PS leadership.

7.4.3.6 SEM Model 54: *PS evaluation* and the three interpersonal sub-category competency factors

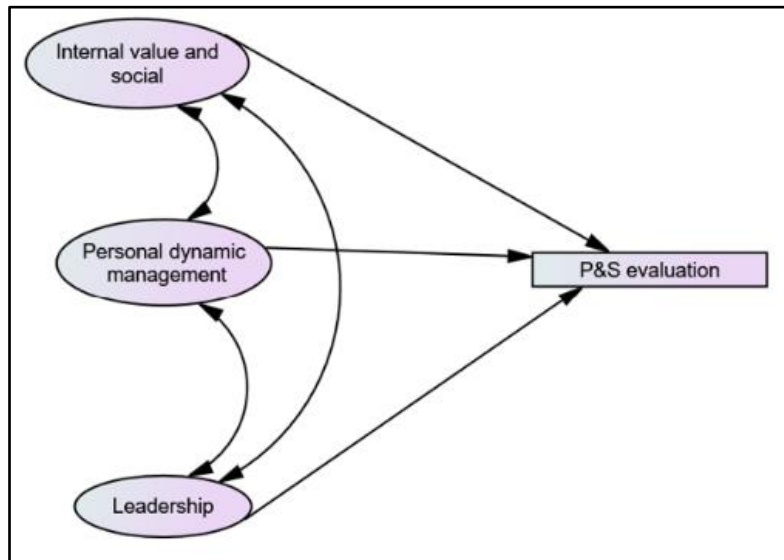
The 54th SEM model included *PS evaluation* as the dependent variable and the three interpersonal sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H180₁: Internal values and social competencies have a relationship with PS evaluation.

H181₁: Personal-dynamics management competencies have a relationship with PS evaluation.

H182₁: Leadership competencies have a relationship with PS evaluation.

Figure 7.54 below depicts the relationships between each interpersonal sub-category competency factor and *PS evaluation*, as well as the covariances between the three interpersonal sub-category competency factors, namely internal values and social competencies, personal-dynamics management competencies, and leadership competencies.



Source: AMOS output.

Figure 7.54: SEM 54: *PS evaluation* and the three interpersonal sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. When evaluating a SEM, the first step is considering the model's goodness-of-fit indices. These indices for this model are presented in table 7.131 below.

Table 7.131: Goodness-of-fit indices: *PS evaluation* and the three interpersonal sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: <i>PS evaluation</i> Independent variables: Interpersonal sub-category competency factors	0.778	0.772	0.069	2.452
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.778) and CFI (0.772) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value of 0.069 was below 0.08, indicating the model fit was adequate. Moreover, the CMIN/DF value indicated an acceptable model fit with a value of 2.452, which was well below 3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 54) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of g10 (self-assurance) and g11 (confidence) were correlated, as well as the covariance between the residual terms of g10 (self-assurance) with g16 (conscientious), g4 (cross-cultural awareness) with g7 (creativity), and g12 (results-driven) with g18 (analytical abilities), which, if included, would improve the model fit. The covariance between *self-assurance* and *confidence*, *self-assurance* and *conscientiousness*, *cross-cultural awareness* and *creativity*, and *results-driven* and *analytical abilities*, were previously discussed in SEM 15, 16, 17 and 20, respectively. So, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *PS evaluation* and the three interpersonal sub-category competency factors with covariances are presented below in table 7.132.

Table 7.132: Goodness-of-fit indices: *PS evaluation* and the three interpersonal sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable PS evaluation Independent variables: Interpersonal sub-category competency factors	0.817	0.812	0.064	2.243
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.817) and CFI (0.812) increased but were still below the acceptable fit of 0.90. The RMSEA value of 0.064 was well below 0.08, which indicated the model fit was adequate. The CMIN/DF value indicated an acceptable fit with a value of 2.243, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Accordingly, the researcher concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.133.

Table 7.133: Structural path estimates: *PS evaluation* and the three interpersonal sub-category competency factors

PS management activity	Interpersonal sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS evaluation	Internal values and social competencies	-0.207	0.297	No
PS evaluation	Personal-dynamics management competencies	-0.209	0.158	No
PS evaluation	Leadership competencies	0.689	0.003	Yes (1%)

Source: AMOS output.

Considering the relationships between *PS evaluation* and the three interpersonal sub-category competency factors, only the associated structural path of *leadership competencies* was statistically significant at the 1% level. Considering the factor's standardised weight, *leadership competencies* indicated a strong positive relationship with a value of 0.689. It was, therefore, concluded that H182₁, was supported:

H182₁: Leadership competencies have a relationship with PS evaluation.

7.4.4 SEM: Relationship between PS management activities and the two strategic sub-category competency factors

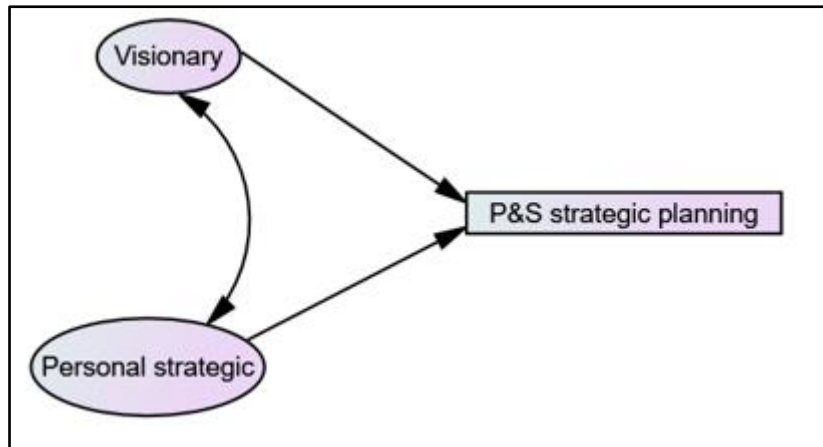
7.4.2.1 SEM Model 55: *PS strategic planning* and the two strategic competency factors

SEM model 55 included the dependent variable, *PS strategic planning*, and the two strategic sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H183₁: Visionary competencies have a relationship with PS strategic planning.

H184₁: Personal strategic competencies have a relationship with PS strategic planning.

Figure 7.55 below depicts the relationships between each strategic sub-category competency factor and *PS strategic planning*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.55: SEM 55: PS strategic planning and the two strategic sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model’s goodness-of-fit indices. These indices for this model are presented in table 7.134 below.

Table 7.134: Goodness-of-fit indices: PS strategic planning and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS strategic planning Independent variables: Strategic sub-category competency factors	0.949	0.944	0.037	1.425
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.949) and CFI (0.944) were above 0.90, indicating an acceptable fit. The RMSEA value at 0.037, which was well below 0.08, also indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable fit with a value of 1.425, which was well below 3. Therefore, the

model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.135.

Table 7.135: Structural path estimates: *PS strategic planning* and the two strategic sub-category competency factors

PS management activity	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS strategic planning	Visionary competencies	0.619	0.001	Yes (1%)
PS strategic planning	Personal strategic competencies	-0.252	0.195	No

Source: AMOS output.

Considering the relationships between *PS strategic planning* and the two strategic sub-category competency factors, only the associated structural path of *visionary competencies* was statistically significant at the 1% level. When one considers the standardised weight (0.619) of *visionary competencies*, a strong positive relationship existed between *PS strategic planning* and *visionary competencies*. It was, therefore, concluded that H183₁ was supported:

H183₁: Visionary competencies have a relationship with PS strategic planning.

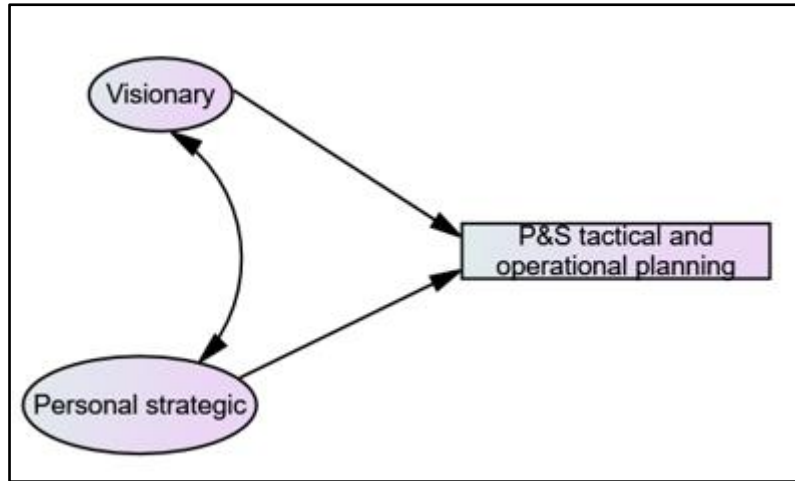
7.4.2.2 SEM Model 56: *PS tactical and operational planning* and the two strategic sub-category competency factors

SEM model 56 conducted by the researcher included the dependent variable, *PS tactical and operational planning*, and the two strategic sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H185₁: Visionary competencies have a relationship with PS tactical and operational planning.

H186₁: Personal strategic competencies have a relationship with PS tactical and operational planning.

Figure 7.56 below depicts the relationships between each strategic sub-category competency factor and *PS tactical and operational planning*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output

Figure 7.56: SEM 56: PS tactical and operational planning and the two strategic sub-category competency factors

As discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model's goodness-of-fit indices. These indices, for this model, are presented in table 7.136 below.

Table 7.136: Goodness-of-fit indices: PS tactical and operational planning and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS tactical and operational planning Independent variables: Strategic sub-category competency factors	0.910	0.900	0.043	1.564
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.910) and CFI (0.900) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.043, which was well below 0.08, also indicated the model fit was adequate. Additionally, the CMIN/DF value

indicated an acceptable model fit with a value of 1.564, which was well below 3. Therefore, the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.137

Table 7.137: Structural path estimates: *PS tactical and operational planning* and the two strategic sub-category competency factors

PS management activity	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS tactical and operational planning	Visionary competencies	0.057	0.735	No
PS tactical and operational planning	Personal strategic competencies	0.259	0.120	No

Source: AMOS output.

Considering the relationships between *PS tactical and operational planning* and the two strategic sub-category competency factors, none of the associated structural paths of the strategic competency factors were statistically significant, and H185₁ and H186₁ were unsupported.

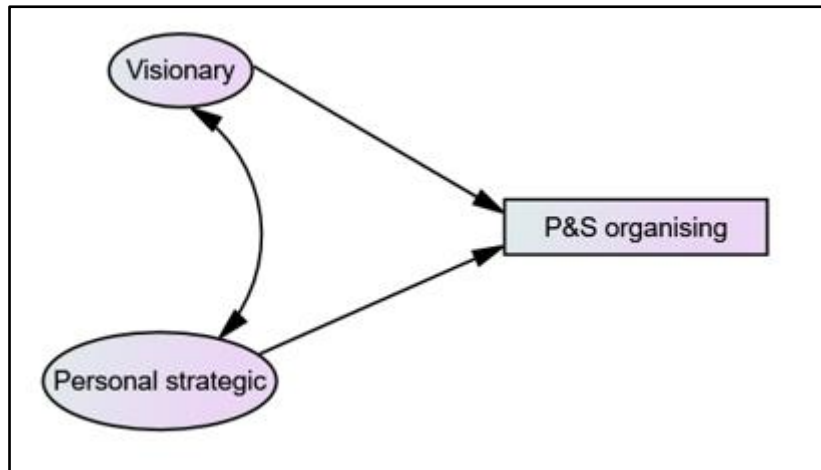
7.3.2.3 SEM Model 57: *PS organising* and the two strategic sub-category competency factors

The 57th SEM model included the dependent variable, *PS organising*, and the two strategic sub-category competency factors as independent variables. The following hypotheses represented these relationships:

H187₁: Visionary competencies have a relationship with adherence to *PS organising*.

H188₁: Personal strategic competencies have a relationship with *PS organising*.

Figure 7.57 below depicts the relationships between each strategic sub-category competency factor and *PS organising*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.57: SEM 57: PS organising and the two strategic sub-category competency factors

Again, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). The first step when evaluating a SEM, is considering the model's goodness-of-fit indices. These indices, for this model, are presented in table 7.138 below.

Table 7.138: Goodness-of-fit indices: PS organising and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS organising Independent variables: Strategic sub-category competency factors	0.909	0.900	0.047	1.672
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.909) and CFI (0.900) were above 0.90, indicating an acceptable fit. The RMSEA value at 0.047, which was well below 0.08, also indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.672, which was well below 3. Therefore,

the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.139.

Table 7.139: Structural path estimates: *PS organising* and the two strategic sub-category competency factors

PS management activity	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS organising	Visionary competencies	0.206	0.188	No
PS organising	Personal strategic competencies	0.230	0.142	No

Source: AMOS output.

Considering the relationships between the *PS organising* and the two strategic sub-category competency factors, none of the associated structural paths of the factors were statistically significant. Therefore, it was concluded that H187₁ and H188₁ were not supported.

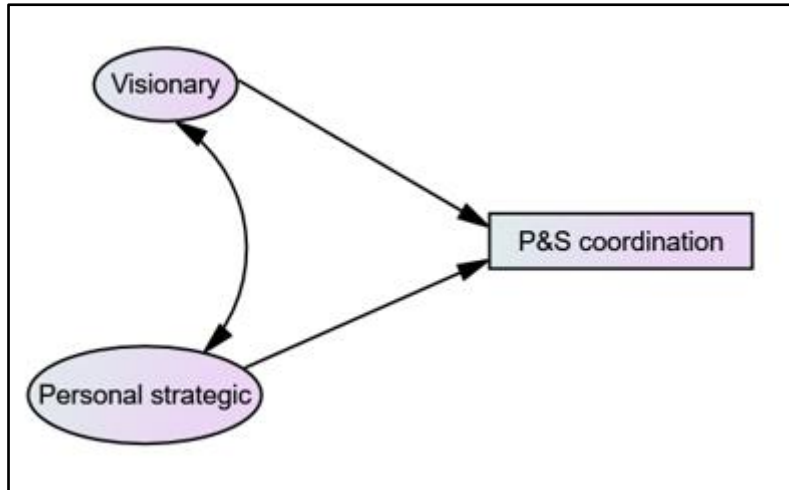
7.3.2.4 SEM Model 58: *PS coordination* and the two strategic sub-category competency factors

SEM model 58 included *PS coordination* as the dependent variable and the two strategic sub-category competency factors as independent variables. These relationships represented the following hypotheses:

H189₁: Visionary competencies have a relationship with PS coordination.

H190₁: Personal strategic competencies have a relationship with PS coordination.

Figure 7.58 below depicts the relationships between each strategic sub-category competency factor and *PS coordination*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.58: SEM 58: *PS coordination* and the two strategic sub-category competency factors

Again, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal (see section 5.9.3.2). The first step when evaluating a SEM, is considering the model’s goodness-of-fit indices. These indices, for this model, are presented in table 7.140 below.

Table 7.140: Goodness-of-fit indices: *PS coordination* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS coordination Independent variables: Strategic sub-category competency factors	0.920	0.911	0.041	1.520
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.920) and CFI (0.911) were above 0.90, indicating an acceptable model fit. The RMSEA value at 0.041 was well below 0.08, also indicating the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.520, which was well below 3. Therefore,

the model fitted the observed data satisfactorily, and the researcher considered the structural path estimates presented in table 7.141.

Table 7.141: Structural path estimates: *PS coordination* and the two strategic sub-category competency factors

PS management activity	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS coordination	Visionary competencies	0.231	0.138	No
PS coordination	Personal strategic competencies	0.115	0.461	No

Source: AMOS output.

Considering the relationships between *PS coordination* and the two strategic sub-category competency factors, none of the associated structural paths of the factors were statistically significant. Hence, H189₁ and H190₁ were not supported.

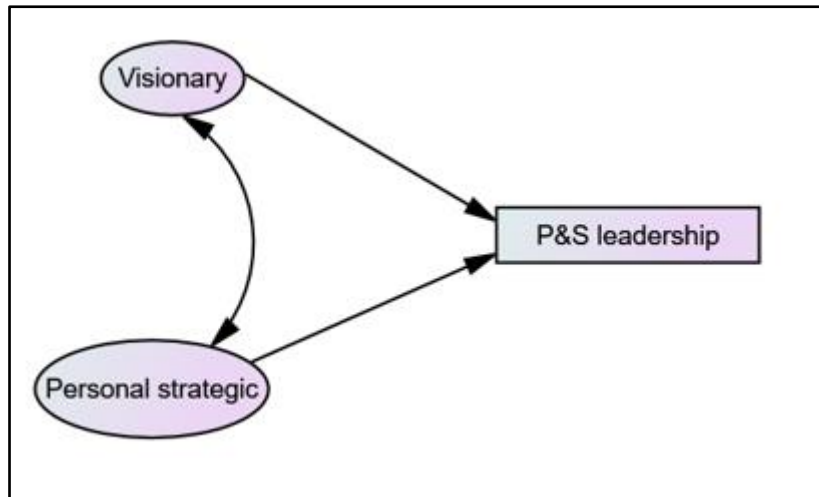
7.3.2.5 SEM Model 59: *PS leadership* and the two strategic sub-category competency factors

SEM model 59 included the dependent variable, *PS leadership*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H191₁: Visionary competencies have a relationship with *PS leadership*.

H192₁: Personal strategic competencies have a relationship with *PS leadership*.

Figure 7.59 below depicts the relationships between each strategic sub-category competency factor and *PS leadership*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.59: SEM 59: *PS leadership* and the two strategic sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model’s goodness-of-fit indices. These indices, for this model, are presented in table 7.142 below.

Table 7.142: Goodness-of-fit indices: *PS leadership* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS leadership Independent variables: Strategic sub-category competency factors	0.793	0.773	0.064	2.273
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.793) and CFI (0.773) were below 0.90, indicating the model fit was inadequate. In contrast, the RMSEA value at 0.061, which was well below 0.08, indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 2.273, which was well below

3. Still, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 59) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h3 (corporate social responsibility) with h4 (sustainability) was correlated and would improve the model fit. The covariance between *corporate social responsibility* and *sustainability* may be due to the former referring to a business's commitment to practice social and environmental sustainability (Belas, Cera, Dvorsky and Cepel, 2021:721). Accordingly, the additional covariances were included in the SEM model. The goodness-of-fit indices of the SEM model presenting *PS leadership* and the two strategic sub-category competency factors with covariances are presented below in table 7.143.

Table 7.143: Goodness-of-fit indices: *PS leadership* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS leadership Independent variables: Strategic sub-category competency factors	0.899	0.877	0.049	1.728
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.899) and CFI (0.877) increased but were still below the acceptable model fit of 0.90. However, the RMSEA value of 0.049 was well below 0.08, which indicated the model fit was adequate. The CMIN/DF value also indicated an acceptable model fit with a value of 1.728, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). Therefore, the researcher

concluded that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.144.

Table 7.144: Structural path estimates: *PS leadership* and the two strategic sub-category competency factors with covariances

PS management activity	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS leadership	Visionary competencies	0.435	0.003	Yes (1%)
PS leadership	Personal strategic competencies	0.087	0.534	No

Source: AMOS output.

Considering the relationships between *PS leadership* and the two strategic sub-category competency factors, only the associated structural path of *visionary competencies* was statistically significant at the 1% level. The competency's standardised weight indicated a strong positive relationship existed between *visionary competencies* and *PS leadership*. Hence, H191₁ was supported:

H191₁: Visionary competencies have a relationship with *PS leadership*.

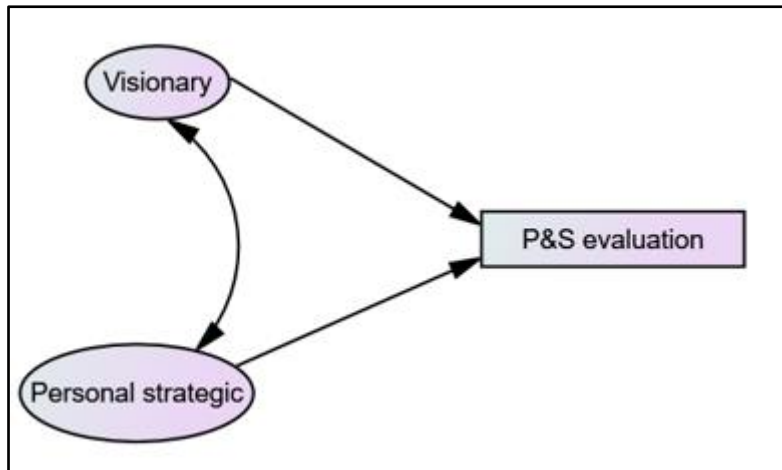
7.3.2.6 SEM Model 60: *PS evaluation* and the two strategic competency factors

SEM model 60 included the dependent variable, *PS evaluation*, and the two strategic sub-category competency factors as independent variables. These relationships were represented by the following hypotheses:

H193₁: Visionary competencies have a relationship with *PS evaluation*.

H194₁: Personal strategic competencies have a relationship with *PS evaluation*.

Figure 7.60 below depicts the relationships between each strategic sub-category competency factor and *PS evaluation*, as well as the covariance between visionary competencies and personal strategic competencies.



Source: AMOS output.

Figure 7.60: SEM 60: *PS evaluation* and the two strategic sub-category competency factors

Again, as discussed in section 5.9.3.2, the asymptotic distribution-free estimation method was used as the dependent variables were ordinal. The first step when evaluating a SEM, is considering the model’s goodness-of-fit indices. These indices, for this model, are presented in table 7.145 below.

Table 7.145: Goodness-of-fit indices: *PS evaluation* and the two strategic sub-category competency factors

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS evaluation Independent variables: Strategic sub-category competency factors	0.884	0.874	0.053	1.858
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

When interpreting the fit indices values, the following were noted: IFI (0.884) and CFI (0.874) were below 0.90, indicating the model fit was inadequate. However, the RMSEA value at 0.053 was well below 0.08, which indicated the model fit was adequate. Additionally, the CMIN/DF value indicated an acceptable model fit with a value of 1.858, which was well below

3. Yet, when considering the goodness-of-fit indices overall, it was decided that the model presented an unsatisfactory fit with the observed data.

The matter of potential improvements to a model, if theoretically justified, was discussed in SEM 15. This model (SEM 60) presented the same dilemma and the model was further studied for additional residual covariances. The modified indices indicated that the covariance between the residual terms of h3 (corporate social responsibility) and h4 (sustainability) correlated, and, if included, would improve model fit. The covariance between *corporate social responsibility* and *sustainability* was discussed in SEM 59. Consequently, the additional covariances were included in this SEM model. The goodness-of-fit indices of the SEM model presenting *PS evaluation* and the two strategic sub-category competency factors with covariances are presented below in table 7.146.

Table 7.146: Goodness-of-fit indices: *PS evaluation* and the two strategic sub-category competency factors with covariances

Model	Goodness-of-fit indices			
	IFI	CFI	RMSEA	CMIN/DF
Dependent variable: PS evaluation Independent variables: Strategic sub-category competency factors	0.891	0.881	0.053	1.863
Indicated acceptable fit	≥ 0.90	≥ 0.90	≤ 0.08	<3

Source: AMOS output.

The following were noted when interpreting the fit indices values: IFI (0.891) and CFI (0.881) increased but were still below the acceptable model fit of 0.90. Though, the RMSEA value of 0.053 (well below 0.08) indicated the model fit was adequate. The CMIN/DF value indicated an acceptable model fit with a value of 1.863, which was well below 3.

Although the model's IFI and CFI values were still below the acceptable fit of ≥ 0.90 , Lai and Green (2016:1) argued that if the RMSEA value indicates an acceptable fit, such a model can still be classified as acceptable (see the discussion in SEM 15). So, the researcher concluded

that the model fitted the observed data satisfactorily and was acceptable. This allowed the interpretation of the structural path estimates presented in table 7.147.

Table 7.147: Structural path estimates: *PS leadership* and the two strategic sub-category competency factors with covariances

PS management activity	Strategic sub-category competency factors	Standardised weights	P-value Sig	H ₀ rejected (level of significance)
PS leadership	Visionary competencies	0.211	0.173	No
PS leadership	Personal strategic competencies	0.364	0.028	Yes (5%)

Source: AMOS output.

Considering the relationships between *PS leadership* and the two strategic sub-category competency factors, only the associated structural path of *personal strategic competencies* was statistically significant at the 5% level. Considering the competency's standardised weight, a moderately positive relationship existed between *personal strategic competencies* and *PS leadership*. Hence, it could be stated that H194₁ was supported:

H194₁: Personal strategic competencies have a relationship with PS evaluation.

7.5 Conclusion

Chapter seven assisted in addressing SRO₉, SRO₁₀ and SRO₁₁ of this study:

SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

The chapter presented the results of the 60 SEMs. The first section reported the results of the 28 SEMs relating to the *PS objectives*. This section was followed by presenting the results of 8 SEMs relating to the *two PS processes* in section 7.3, and lastly, in section 7.4, the results of the remaining 24 SEMs on the different *PS management activities* were reported. Table 7.148

summarises the findings of the 60 SEMs by presenting the hypotheses that were supported, the type of relationships between the dependent and independent variables, and whether the specific competency will be included in the proposed South African PS competency framework.

Table 7.148: Summary of the supported hypotheses based on the results of the 60 SEMs

Competency category	SEM model	Hypotheses that were supported	Positive or negative relationship between dependent and independent variable	Is the sub-category competency included in the PS competency framework?
		PS objectives as dependent variables		
Technical competencies	1	H1 ₁ : <i>Operational PS competencies have a relationship with cost consciousness.</i>	Strong positive	Yes, possessing <i>operational PS competencies</i> assist a PSP in supporting the PS objective of <i>cost consciousness</i> .
		H2 ₁ : <i>Internal technical-related cooperation competencies have a relationship with cost consciousness.</i>	Weak negative	No, possessing <i>internal technical-related cooperation competencies</i> do not assist a PSP in supporting the PS objective of <i>cost consciousness</i> .
		H3 ₁ : <i>Innovative supply competencies have a relationship with cost consciousness.</i>	Moderate positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the PS

				objective of cost consciousness.
	2	H8 ₁ : <i>Innovative supply competencies have a relationship with ensuring stable supply.</i>	Moderate positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the PS objective of <i>ensuring stable supply</i> .
		H9 ₁ : <i>Integrative supply competencies have a relationship with ensuring stable supply.</i>	Strong positive	Yes, possessing <i>integrative supply competencies</i> assist a PSP in supporting the PS objective of <i>ensuring stable supply</i> .
		H10 ₁ : <i>Analytical competencies have a relationship with ensuring stable supply.</i>	Strong negative	No, possessing <i>analytical competencies</i> do not assist a PSP in supporting the PS objective of <i>ensuring stable supply</i> .
	3	H13 ₁ : <i>Innovative supply competencies have a</i>	Weak positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the PS

		relationship with <i>adherence to quality requirements</i> .		objective of <i>adhering to quality requirements</i> .
	4	H18 ₁ : <i>Innovative supply competencies</i> have a relationship with <i>promoting sustainability</i> .	Moderate positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the PS objective of <i>promoting sustainability</i> .
		H20 ₁ : <i>Analytical competencies</i> have a relationship with <i>promoting sustainability</i> .	Weak negative	No, possessing <i>analytical competencies</i> do not assist a PSP in supporting the PS objective of <i>promoting sustainability</i> .
	5	H21 ₁ : <i>Operational PS competencies</i> have a relationship with the <i>alignment of PS with the business's competitive strategy</i> .	Moderate positive	Yes, possessing <i>operational PS competencies</i> assist a PSP in supporting the PS objective of <i>aligning PS with the business's competitive strategy</i> .
		H22 ₁ : <i>Internal technical-related cooperation competencies</i>	Strong positive	Yes, possessing <i>internal technical-related cooperation</i>

		have a relationship with the <i>alignment of PS with the business's competitive strategy.</i>		<i>competencies</i> assist a PSP in supporting the PS objective of <i>aligning PS with the business's competitive strategy.</i>
		H24 ₁ : <i>Integrative supply competencies</i> have a relationship with the <i>alignment of PS with the business's competitive strategy.</i>	Strong negative	No, possessing <i>integrative supply competencies</i> do not assist a PSP in supporting the PS objective of <i>aligning PS with the business's competitive strategy.</i>
		H25 ₁ : <i>Analytical competencies</i> have a relationship with the <i>alignment of PS with the business's competitive strategy.</i>	Weak positive	Yes, possessing <i>analytical competencies</i> assist a PSP in supporting the PS objective of <i>aligning PS with the business's competitive strategy.</i>
	6	H29 ₁ : <i>Integrative supply competencies</i> have a relationship with <i>facilitating a relationship with suppliers.</i>	Strong positive	Yes, possessing <i>integrative supply competencies</i> assist a PSP in supporting the PS objective of <i>facilitating a relationship with suppliers.</i>

	7	H31 ₁ : <i>Operational PS competencies have a relationship with promoting and facilitating innovativeness with suppliers.</i>	Moderate positive	Yes, possessing <i>operational PS competencies</i> assist a PSP in supporting the PS objective of <i>promoting and facilitating innovativeness with suppliers.</i>
		H33 ₁ : <i>Innovative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.</i>	Strong positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the PS objective of <i>promoting and facilitating innovativeness with suppliers.</i>
		H34 ₁ : <i>Integrative supply competencies have a relationship with promoting and facilitating innovativeness with suppliers.</i>	Moderate negative	No, possessing <i>integrative supply competencies</i> do not assist a PSP in supporting the PS objective of <i>promoting and facilitating innovativeness with suppliers.</i>
		H35 ₁ : <i>Analytical competencies have a relationship with</i>	Moderate positive	Yes, possessing <i>analytical competencies</i> assist a PSP in

		<i>promoting and facilitating innovativeness with suppliers.</i>		supporting the PS objective of <i>promoting and facilitating innovativeness with suppliers.</i>
Internal and external competencies	8	H38 ₁ : <i>Supply chain wide relations and analysis competencies have a relationship with cost consciousness.</i>	Weak positive	Yes, possessing <i>supply chain wide relations and analysis competencies</i> assist a PSP in supporting the PS objective of <i>cost consciousness.</i>
	9	H40 ₁ : <i>Internal product-related cooperation competencies have a relationship with ensuring stable supply.</i>	Moderate positive	Yes, possessing <i>internal product-related cooperation competencies</i> assist a PSP in supporting the PS objective of <i>ensuring stable supply.</i>
	10	H43 ₁ : <i>Internal product-related cooperation has a relationship with adherence to quality requirements.</i>	Weak positive	Yes, possessing <i>internal product-related cooperation competencies</i> assist a PSP in supporting the PS objective of <i>adherence to quality requirements.</i>

	12	H50 ₁ : <i>Supply chain wide relations and analysis competencies have a relationship with the alignment of PS with the business's competitive strategy.</i>	Weak positive	Yes, possessing <i>supply chain wide relations and analysis competencies</i> assist a PSP in supporting the PS objective of <i>aligning PS with the business's competitive strategy.</i>
	13	H51 ₁ : <i>Supply-side transformational-relationship competencies have a relationship with facilitating a relationship with suppliers.</i>	Weak positive	Yes, possessing <i>supply-side transformational-relationship competencies</i> assist a PSP in supporting the PS objective of <i>facilitating a relationship with suppliers.</i>
	14	H54 ₁ : <i>Supply-side transformational-relationship competencies have a relationship with promoting and facilitating innovativeness with suppliers.</i>	Moderate positive	Yes, possessing <i>supply-side transformational-relationship competencies</i> assist a PSP in supporting the PS objective of <i>promoting and facilitating innovativeness with suppliers.</i>

		H55 ₁ : <i>Internal product-related cooperation competencies have a relationship with promoting and facilitating innovativeness with suppliers.</i>	Weak positive	Yes, possessing <i>internal product-related cooperation competencies</i> assist a PSP in supporting the PS objective of <i>promoting and facilitating innovativeness with suppliers.</i>
Interpersonal competencies	17	H64 ₁ : <i>Personal-dynamics management competencies have a relationship with adherence to quality requirements.</i>	Moderate positive	Yes, possessing <i>personal-dynamics management competencies</i> assist a PSP in supporting the PS objective of <i>adherence to quality requirements.</i>
		H65 ₁ : <i>Leadership competencies have a relationship with adherence to quality requirements.</i>	Moderate negative	No, possessing <i>leadership competencies</i> do not assist a PSP in supporting the PS objective of <i>adherence to quality requirements.</i>
	19	H71 ₁ : <i>Leadership competencies have a relationship with the alignment of PS with the</i>	Strong positive	Yes, possessing <i>leadership competencies</i> assist a PSP in supporting the PS objective of

		<i>business's competitive strategy.</i>		<i>aligning PS with the business's competitive strategy.</i>
Strategic competencies	25	H83 ₁ : <i>Visionary competencies have a relationship with promoting sustainability.</i>	Strong positive	<i>Yes, possessing visionary competencies assist a PSP in supporting the PS objective of promoting sustainability.</i>
	26	H85 ₁ : <i>Visionary competencies have a relationship with the alignment of PS with the business's competitive strategy.</i>	Strong positive	<i>Yes, possessing visionary competencies assist a PSP in supporting the PS objective of aligning PS with the business's competitive strategy.</i>
Competency category	SEM model	PS processes as dependent variables		
Technical competencies	29	H91 ₁ : <i>Operational PS competencies have a relationship with the tactical and operational purchasing process.</i>	Moderate negative	<i>No, possessing operational PS competencies do not assist a PSP in supporting the tactical and operational purchasing process.</i>
		H93 ₁ : <i>Innovative supply competencies have a</i>	Weak positive	<i>Yes, possessing innovative supply competencies assist a</i>

		relationship with <i>the tactical and operational purchasing process.</i>		PSP in supporting <i>the tactical and operational purchasing process.</i>
		H94 ₁ : <i>Integrative supply competencies</i> have a relationship with <i>the tactical and operational purchasing process.</i>	Strong positive	Yes, possessing <i>integrative supply competencies</i> assist a PSP in supporting <i>the tactical and operational purchasing process.</i>
		H95 ₁ : <i>Analytical competencies</i> have a relationship with <i>the tactical and operational purchasing process.</i>	Strong negative	No, possessing <i>analytical competencies</i> do not assist a PSP in supporting <i>the tactical and operational purchasing process.</i>
	30	H97 ₁ : <i>Internal technical-related cooperation competencies</i> have a relationship with <i>strategic sourcing.</i>	Weak negative	No, possessing <i>internal technical-related cooperation competencies</i> do not assist a PSP in supporting <i>strategic sourcing.</i>
		H98 ₁ : <i>Innovative supply competencies</i> have a	Moderate positive	Yes, possessing <i>innovative supply competencies</i> assist a

		relationship with <i>strategic sourcing</i> .		PSP in supporting <i>strategic sourcing</i> .
		H99 ₁ : <i>Integrative supply competencies</i> have a relationship with <i>strategic sourcing</i> .	Moderate positive	Yes, <i>integrative supply competencies</i> assist a PSP in supporting <i>strategic sourcing</i> .
		H100 ₁ : <i>Analytical competencies</i> have a relationship with <i>ensuring strategic sourcing</i> .	Weak negative	No, possessing <i>analytical competencies</i> do not assist a PSP in supporting <i>strategic sourcing</i> .
Internal and external enterprise competencies	31	H101 ₁ : <i>Supply-side transformational-relationship competencies</i> have a relationship with <i>the tactical and operational purchasing process</i> .	Weak positive	Yes, possessing <i>supply-side transformational-relationship competencies</i> assist a PSP in supporting <i>the tactical and operational purchasing process</i> .
		H102 ₁ : <i>Internal product-related cooperation competencies</i> have a relationship with <i>the</i>	Moderate positive	Yes, possessing <i>internal product-related cooperation competencies</i> assist a PSP in supporting <i>the tactical and</i>

		<i>tactical and operational purchasing process.</i>		<i>operational purchasing process.</i>
		H103 ₁ : <i>Supply chain wide relations and analysis competencies have a relationship with the tactical and operational purchasing process.</i>	Moderate negative	No, possessing <i>supply chain wide relations and analysis competencies</i> do not assist a PSP in supporting <i>the tactical and operational purchasing process.</i>
	32	H106 ₁ : <i>Supply chain wide relations and analysis competencies have a relationship with strategic sourcing.</i>	Weak positive	Yes, possessing <i>supply chain wide relations and analysis competencies</i> assist a PSP in supporting <i>strategic sourcing.</i>
Interpersonal competencies	33	H107 ₁ : <i>Internal values and social competencies have a relationship with the tactical and operational purchasing process.</i>	Moderate positive	Yes, possessing <i>internal values and social competencies</i> assist a PSP in supporting <i>the tactical and operational PS process.</i>
		H108 ₁ : <i>Personal-dynamics management competencies have a relationship with the</i>	Strong positive	Yes, possessing <i>personal-dynamics management competencies</i> assist a PSP in

		<i>tactical and operational purchasing process.</i>		<i>supporting the tactical and operational purchasing process.</i>
		H109 ₁ : <i>Leadership competencies have a relationship with the tactical and operational purchasing process.</i>	Strong negative	No, possessing <i>leadership competencies</i> do not assist a PSP in supporting <i>the tactical and operational purchasing process.</i>
	34	H111 ₁ : <i>Personal-dynamics management competencies have a relationship with strategic sourcing.</i>	Moderate negative	No, possessing <i>personal-dynamics management competencies</i> do not assist a PSP in supporting <i>strategic sourcing.</i>
		H112 ₁ : <i>Leadership competencies have a relationship with strategic sourcing.</i>	Strong positive	Yes, possessing <i>leadership competencies</i> assist a PSP in supporting <i>strategic sourcing.</i>
Competency category	SEM model	PS management activities as dependent variables		
Technical competencies	37	H118 ₁ : <i>Internal technical-related cooperation competencies</i>	Strong positive	Yes, possessing <i>internal technical-related cooperation</i>

		have a relationship with <i>PS strategic planning</i> .		<i>competencies</i> assist a PSP in supporting the management activity of <i>PS strategic planning</i> .
		H121 ₁ : <i>Analytical competencies</i> have a relationship with <i>PS strategic planning</i> .	Weak negative	No, possessing <i>analytical competencies</i> do not assist a PSP in supporting the management activity of <i>PS strategic planning</i> .
	38	H124 ₁ : <i>Innovative supply competencies</i> have a relationship with <i>PS tactical and operational planning</i> .	Weak positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the management activity of <i>PS tactical and operational planning</i> .
		H126 ₁ : <i>Analytical competencies</i> have a relationship with <i>PS tactical and operational planning</i> .	Moderate negative	No, possessing <i>analytical competencies</i> do not assist a PSP in supporting the management activity of <i>PS</i>

				<i>tactical and operational planning.</i>
	39	H128 ₁ : <i>Internal technical-related cooperation competencies have a relationship with PS organising.</i>	Moderate positive	Yes, possessing <i>internal technical-related cooperation competencies</i> assist a PSP in supporting the management activity of <i>PS organising</i> .
	40	H133 ₁ : <i>Internal technical-related cooperation competencies have a relationship with PS coordination.</i>	Moderate positive	Yes, possessing <i>internal technical-related cooperation competencies</i> assist a PSP in supporting the management activity of <i>PS coordination</i> .
		H134 ₁ : <i>Innovative supply competencies have a relationship with PS coordination.</i>	Weak positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the management activity of <i>PS coordination</i> .
	41	H137 ₁ : <i>Operational PS competencies have a</i>	Weak negative	No, possessing <i>operational PS competencies</i> do not assist a PSP in supporting the

		relationship with <i>PS leadership</i> .		management activity of <i>PS leadership</i> .
		H138 ₁ : <i>Internal technical-related cooperation competencies</i> have a relationship with <i>PS leadership</i> .	Strong positive	Yes, possessing <i>internal technical-related cooperation competencies</i> assist a PSP in supporting the management activity of <i>PS leadership</i> .
		H139 ₁ : <i>Innovative supply competencies</i> have a relationship with <i>PS leadership</i> .	Moderate positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the management activity of <i>PS leadership</i> .
		H140 ₁ : <i>Integrative supply competencies</i> have a relationship with <i>PS leadership</i> .	Moderate negative	No, possessing <i>integrative supply competencies</i> do not assist a PSP in supporting the management activity of <i>PS leadership</i> .
	42	H142 ₁ : <i>Operational PS competencies</i> have a	Strong negative	No, possessing <i>operational PS competencies</i> do not assist a PSP in supporting the

		relationship with <i>PS evaluation</i> .		management activity of <i>PS evaluation</i> .
		H144 ₁ : <i>Innovative supply competencies</i> have a relationship with <i>PS evaluation</i> .	Strong positive	Yes, possessing <i>innovative supply competencies</i> assist a PSP in supporting the management activity of <i>PS evaluation</i> .
		H145 ₁ : <i>Integrative supply competencies</i> have a relationship with <i>PS evaluation</i> .	Strong positive	Yes, possessing <i>integrative supply competencies</i> assist a PSP in supporting the management activity of <i>PS evaluation</i> .
		H146 ₁ : <i>Analytical competencies</i> have a relationship with <i>PS evaluation</i> .	Strong negative	No, possessing <i>analytical competencies</i> do not assist a PSP in supporting the management activity of <i>PS evaluation</i> .
Internal and external	47	H161 ₁ : <i>Supply chain wide relations and analysis competencies</i>	Moderate positive	Yes, possessing <i>supply chain wide relations and analysis competencies</i> assist a PSP in

enterprise competencies		have a relationship with <i>PS leadership</i> .		supporting the management activity of <i>PS leadership</i> .
Interpersonal competencies	50	H169 ₁ : <i>Personal-dynamics management competencies</i> have a relationship with <i>PS tactical and operational planning</i> .	Strong negative	No, possessing <i>personal-dynamics management competencies</i> do not assist a PSP in supporting the management activity of <i>PS tactical and operational planning</i> .
		H170 ₁ : <i>Leadership competencies</i> have a relationship with <i>PS tactical and operational planning</i> .	Strong positive	Yes, possessing <i>leadership competencies</i> assist a PSP in supporting the management activity of <i>PS tactical and operational planning</i> .
	51	H172 ₁ : <i>Personal-dynamics management competencies</i> have a relationship with <i>PS organising</i> .	Strong negative	No, possessing <i>personal-dynamics management competencies</i> do not assist a PSP in supporting the

				management activity of <i>PS organising</i> .
		H173 ₁ : <i>Leadership competencies</i> have a relationship with <i>PS organising</i> .	Strong positive	Yes, possessing <i>leadership competencies</i> assist a PSP in supporting the management activity of <i>PS organising</i> .
	52	H175 ₁ : <i>Personal-dynamics management competencies</i> have a relationship with <i>PS coordination</i> .	Moderate negative	No, possessing <i>personal-dynamics management competencies</i> do not assist a PSP in supporting the management activity of <i>PS coordination</i> .
		H176 ₁ : <i>Leadership competencies</i> have a relationship with <i>PS coordination</i> .	Strong positive	Yes, possessing <i>leadership competencies</i> assist a PSP in supporting the management activity of <i>PS coordination</i> .
	53	H178 ₁ : <i>Personal-dynamics management competencies</i> have a relationship with <i>PS leadership</i> .	Moderate negative	No, possessing <i>personal-dynamics management competencies</i> do not assist a PSP in supporting the

				management activity of <i>PS leadership</i> .
	54	H182 ₁ : <i>Leadership competencies</i> have a relationship with <i>PS evaluation</i> .	Strong positive	Yes, possessing <i>leadership competencies</i> assist a PSP in supporting the management activity of <i>PS evaluation</i> .
Strategic competencies	55	H183 ₁ : <i>Visionary competencies</i> have a relationship with <i>PS strategic planning</i> .	Strong positive	Yes, possessing <i>visionary competencies</i> assist a PSP in supporting the management activity of <i>PS strategic planning</i> .
	59	H191 ₁ : <i>Visionary competencies</i> have a relationship with <i>PS leadership</i> .	Moderate positive	Yes, possessing <i>visionary competencies</i> assist a PSP in supporting the management activity of <i>PS leadership</i> .
	60	H194 ₁ : <i>Personal strategic competencies</i> have a relationship with <i>PS evaluation</i> .	Moderate positive	Yes, possessing <i>personal strategic competencies</i> assist a PSP in supporting the management activity of <i>PS evaluation</i> .

Source: Compiled by the researcher, 2023.

Chapter 8 – Conclusions and recommendations

8.1 Introduction

The final chapter presents the newly developed South African PS competency framework that will support PSPs in the private business sector. The framework will provide PSPs with a competency set that will assist them to perform their tasks efficiently and effectively. The framework is based on the PS objectives PSPs are assigned, the PS processes they are involved in, and/or the PS management activities they are predominantly involved in.

This chapter is the culmination of the research conducted during this project. The conclusions and recommendations are based on the combined steps undertaken in the research process. It includes the literature review (see chapters two and three), the theoretical PS competency framework presented in chapter four, and the empirical research reported on in chapters six and seven.

This chapter is structured to first re-state the study's PRO and SROs in section 8.2; whereafter the focus shifts to the SROs. The findings and conclusions regarding each SRO are discussed separately. The South African PS competency framework, developed as a result of this study, is presented in section 8.4. Finally, the chapter concludes with a discussion of the theoretical and practical contribution of the study, its limitations, and future research opportunities in sections 8.5 to 8.7.

8.2 The primary and secondary research objectives addressed in this study

South African businesses are encouraged to identify occupations and professions without competent professionals, as incompetent professionals directly contribute to poor economic growth. Unfortunately, South Africa has an enormous shortage of competent PSPs. Although numerous studies have focused on identifying and developing PSP's competencies, none has been focused on or conducted in South Africa. Considering the lack of PS competency research within South Africa and the necessity thereof, the researcher determined that research should be conducted on PS competencies in the South African context. This research was essential to achieve a coherent view of the competency set PSPs (working within the

South African private sector) require to perform their tasks and responsibilities efficiently and effectively. Therefore, the following research question was formulated:

What competency set will support PSPs in the South African business environment's private sector in performing their tasks efficiently and effectively?

Based on this research question, the PRO of the study was framed as follows:

PRO: To develop a PS competency framework for PSPs working within the private sector in South Africa.

In order to achieve the PRO, the following eleven SROs were formulated:

- SRO₁ Examine PS as an internal support function to understand the different PS objectives a PSP may be assigned.
- SRO₂ Analyse PS as an internal support function to understand the different PS processes that a PSP may be involved in.
- SRO₃ Examine PS as an internal support function to understand the different PS management activities that a PSP may predominantly be involved in.
- SRO₄ Develop definitions of PS competence and PS competency.
- SRO₅ Select the most appropriate research approach to use as a foundation for the South African PS competency framework.
- SRO₆ Determine the different PS competency categories that will be included in the South African PS competency framework for PSPs in the South African private sector.
- SRO₇ Identify PS competencies from the literature that may form part of the competency set of a PSP in the private sector of the South African business environment.
- SRO₈ Determine from empirical findings the PS sub-category competency factors that will be used as independent variables in the South African PS competency framework.
- SRO₉ Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₁₀ Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

SRO₁₁ Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

The South African PS competency framework, presented in section 8.4, was developed after the researcher performed traditional literature reviews on PS as an internal management function and the different PS competencies required by a PSP (see chapters two and three) From the literature reviews, the researcher developed a theoretical framework that was used to develop the South African PS competency framework. The theoretical framework presented the independent and dependent variables that would be included in the South African PS competency framework. The independent variable included technical competencies, internal and external enterprise competencies, interpersonal competencies and strategic competencies, and the dependent variable included PS objectives, PS processes and PS management activities.

After developing a questionnaire, the researcher gathered primary data from 309 PSPs working within the South African private sector on the competencies they use to perform their tasks and responsibilities efficiently and effectively. The methodology used to gather and analyse the primary data was presented in chapter five. Both descriptive and inferential statistical analyses were performed. Chapter six presented the descriptive analysis and the EFA conducted on the four competency categories. Chapter seven presented the results of the 60 SEMs and concluded by presenting the supported hypotheses – the competencies that have a relationship with the dependent variables. The final South African PS competency framework is presented in section 8.4 below.

But first, section 8.3 presents the literature or empirical findings and conclusions regarding each SRO.

8.3 Findings and conclusions of the eleven secondary research objectives

Below is a summary of the eleven SROs outlined at the beginning of the study, their corresponding chapters, the literature or empirical findings, and the conclusions drawn from

them. By achieving the eleven SROs, the researcher addressed the PRO and ultimately answered the PRQ.

8.3.1 SRO₁ – Examine PS as an internal support function to understand the different PS objectives a PSP may be assigned.

In order to address SRO₁, chapter two started with a literature review of PS's main areas of responsibility (see section 2.2). The literature review focused on the following topics: PS's goal of ensuring a stable supply, the efficient and effective management of supply resources, resourceful management of suppliers, the alignment of PS function's goals with the goals of other business functions, and lastly, the development of integrated PS strategies. The following general literature findings were made in terms of SRO₁:

- PSM has increasingly become a strategic tool for management to achieve a business's long-term objectives.
- To achieve a business's long-term objectives, all business functions (including the PS function) should be managed efficiently and effectively.
- PS efficiency refers to the PS function's ability to assist the business in doing things right; whereas PS effectiveness refers to the PS function's ability to assist the business in doing the right things.
- The actions taken by PSPs to achieve PS efficiency and effectiveness depend significantly on the business's competitive strategy, as PS strategies are grounded within the business's competitive strategy.
- The competitive strategy, and, therefore, the PS strategy, determines the PS objectives of the business.
- A PSP's competency set will differ depending on the PS objectives the professional is tasked with achieving.
- The tasks and responsibilities of a PSP are encapsulated within seven PS objectives, namely:
 - Focusing on reducing costs or implementing cost-saving initiatives within the business.
 - Ensuring the sufficient and safe supply of inputs from suppliers.
 - Ensuring that inputs comply with the predetermined quality standards.

- Promoting social, economic and environmental sustainability when purchasing from suppliers.
- Aligning all PS decisions with the business's competitive strategy.
- Building relationships with suppliers to ensure access to sources of supply.
- Creating, promoting and facilitating relationships with suppliers that promote and advocate innovation.

The following conclusions were reached regarding SRO₁:

The importance of each PS objective differs among businesses because their competitive strategies differ. For example, a business focused on cost-efficiency will prioritise the PS objective of cost consciousness, whereas a business focused on responsiveness will prioritise the PS objective of ensuring stable supply. Thus, PSPs are assigned different PS objectives, depending on the business's competitive strategy. Because the tasks and responsibilities within each PS objective differ, the PSP's competency set required to achieve each PS objective will also differ. The seven PS objectives (identified in section 2.2) that were used in the statistical analyses to develop the South African PS competency framework as dependent variables are: cost consciousness, stable supply assurance, adherence to quality requirements, promoting sustainability, alignment with the competitive strategy, facilitating a preferred relationship with suppliers, and promoting and facilitating innovativeness with suppliers.

8.3.2 SRO₂ – Analyse PS as an internal support function to understand the different PS processes that a PSP may be involved in.

SRO₂ was addressed by analysing the PS process (see section 2.3). The PS process identifies the internal users' needs for products or services, assists with setting specific product or service requirements, finds potential suppliers who will comply with the specific product or service requirements, selects suitable suppliers, negotiates agreements (contracts) with suppliers, establishes an ordering mechanism, ensures that payments take place, evaluates the supplier's performance – while constantly building a relationship with the supplier. However, this PS process can be divided into two distinct processes: strategic sourcing and tactical and operational purchasing. The following general literature findings were made relating to SRO₂:

- The tasks and responsibilities of a PSP will differ within the strategic sourcing process and the tactical and operational purchasing process.
- Strategic sourcing entails analysing the business's needs and the marketplace to gain a competitive advantage through developing different sourcing strategies, selecting the appropriate suppliers to include in the supply base, negotiating terms, and entering into a contract with the selected supplier.
- The tactical and operational purchasing process focuses on identifying a product or service need, selecting an appropriate supplier from the supply base, ordering and expediting the order, receiving the order, organising payment and following up with suppliers to ensure adequate performance.
- Although there are some strategic aspects in the tactical and operational purchasing process (such as developing suppliers and measuring their performance), the process mainly manages the day-to-day tactical and operational activities of purchasing products and services.
- The literature does not agree on a single holistic PS-process model. Authors argue that the PS process will differ depending on the type of product being purchased and the purchasing situation.
- After considering the work of numerous authors²⁴ on strategic sourcing and the tactical and operational purchasing process, the researcher identified the following tasks and responsibilities included within these processes:
 - Analysing make-or-buy and insourcing-or-outsourcing decisions.
 - Understanding the business's spending in terms of the different products purchased and the different suppliers purchased from.
 - Establishing purchasing categories and developing appropriate category strategies.
 - Identifying and selecting suitable suppliers.
 - Managing negotiations and concluding purchasing contracts.
 - Ordering, expediting, inspecting, receiving and record-keeping of orders received from suppliers.
 - Managing and evaluating suppliers.

²⁴ Schiele (2020), Van Raaij (2016), Van Weele (2018), Badenhorst-Weiss et al. (2018) and Monczka et al. (2021)

- A PSP's competency set will differ depending on the PS process the professional is involved in.

The following conclusions were reached in terms of SRO₂:

Although no clear holistic definition of the PS process exists in the literature, authors agree that the PS process has a strategic and tactical as well as an operational component, namely strategic sourcing and the tactical and operational purchasing process. After analysing the different tasks and responsibilities within each process, it was determined that the tasks and responsibilities PSPs perform within the strategic sourcing process differ from those within the tactical and operational purchasing process; consequently, the competencies a PSP requires will differ depending on the process the professional is involved in. Therefore, *strategic sourcing* and *tactical and operational purchasing* were used as dependent variables when performing statistical analyses to develop the South African PS competency framework.

8.3.3 SRO3 – Examine PS as an internal support function to understand the different PS management activities that a PSP may predominantly be involved in.

Since the PS function is regarded as a management function, it was considered in section 2.4 from a management perspective – by considering PS planning, PS organising, PS coordination, PS leadership and PS evaluation. The following general literature findings were made:

- Due to changes in the business environment (such as globalisation, technological advances, an increased focus on the environment and changes in employee and customer expectations), management has had to move away from traditional management competencies and implement new management competencies to handle the ever-changing business environment.
- Managing the PS function forms an integral part of the broader management function (referred to as PSM) and includes: PS planning, PS organising, PS coordination, PS leadership and PS evaluation.
 - PS planning has two distinct levels: strategic planning and tactical and operational planning. Strategic PS planning directly contributes to the business's success: PSPs in top management formulate long-term strategies for purchasing products while maintaining the business's competitive advantage and the overall supply chain's success. During tactical PS planning,

the specific plans on how the internal support function of PS will contribute to the business's competitive strategy are defined by PSPs, followed by operational planning, where it is determined how PS will allocate its internal resources to achieve the PS function's tactical plans.

- PS organising entails PSPs indicating how people, equipment and materials should be utilised and organised to achieve the mission and long-term objectives of the business.
- PS coordination entails PSPs coordinating business function activities to ensure strategic consensus among different functions, which results in achieving long-term objectives.
- PS leadership refers to PS managers leading by influencing, guiding and directing PSPs to achieve the PS function's objectives.
- Evaluation as a management activity enables management to detect when a business deviates from its mission and long-term objectives. During PS evaluation, a PSP uses the policies and objectives established during PS planning to evaluate the PS function's performance.

The following conclusions were reached regarding SRO₃:

Although the five PS management activities should be viewed as an integrated process that cannot be managed separately, each PS management activity has distinctive tasks and responsibilities. Due to the uniqueness of the tasks and responsibilities of each PS management activity, a PSP will require different competencies to perform these management activities. For this reason, the different PS management activities were included as dependent variables within the statistical analyses to develop the South African PS competency framework.

8.3.4 SRO₄ – Establish a definition of PS competence and PS competency.

In addressing SRO₄ in section 3.2, an analysis of the concepts of competence and competency was done. First, from a general perspective, by considering the work of various authors²⁵ and,

²⁵ Derwik and Hellström (2017), Prifti, et al. (2017), Knight, Tu and Preston (2013), Guerrero and De los Rios (2012), Draganidis and Mentzas (2006), Mansfield (2004), Bartram, Robertson and Callinan (2002), Boon and van der Klink (2002), Dooley, et al. (2001), Hartle (1995), Spencer and Spencer (1993), Klemp(1980) in Prifti, et al. (2017) and McClelland (1973)

secondly, from a PS perspective by considering the work of authorities in the field.²⁶ The following general literature findings were made:

- Although the concepts of competence and competency have been researched in numerous disciplines, no consensus exists on their definitions.
- Despite the disagreement on the definitions of competence and competency, the importance of competence research has been acknowledged in various disciplines, including PS.
- Competence and competency are often used interchangeably and as synonyms for skills, knowledge, resources, assets and capabilities.
- Three key perspectives should be considered when defining the concepts of competence and competency, namely the observable performance of an individual, the standard and quality of an individual's performance and the underlying knowledge, skills, abilities and attributes of a person.

The following conclusions were reached regarding SRO₄:

The definitions of competence and competency depend on the discipline's perspective in which the concepts are researched. This study defined PS competence and competency as a person's underlying knowledge, skills, abilities and attributes. Therefore, it was concluded that *PS competency* refers to the attributes that an individual must have to ensure superior job performance and *PS competence* is categorised into different competency categories (refer to figure 3.1).

8.3.5 SRO5 – Select the most appropriate research approach to use as a foundation for the South African PS competency framework.

Various approaches exist to understanding and researching competence. In section 3.3, three approaches were considered in selecting the most appropriate approach as a foundation when classifying PS competencies for this study. After selecting the holistic approach to competence research, the seminal studies of Cheetham and Chivers (1996) and Delamare-Le Deist and Winterton (2005) on competence classification were also studied.

²⁶ Schulze and Bals (2020), Bals et al. (2019), Karttunen (2018), Derwik and Hellström (2017), Knight, et al. (2014), Bichon, et al. (2009) and Giunipero and Pearcy (2000).

In addressing SRO₅, the following literature findings were made:

- There are three approaches to competence research: behavioural, functional and holistic.
- The behavioural approach to competence research focuses on the individual's behavioural aspects when determining a competency set. This approach presents a general and abstract list of competencies that will lead to effective work performance and does not provide a meaningful foundation for developing competencies.
- The functional approach views competencies as the attributes a professional needs to accomplish a task. A professional's work is evaluated against a series of standards developed for each competence to identify the competencies the professional needs to develop. However, because the functional approach does not consider knowledge and cognitive processes, an inability to develop competencies leaves this approach lacking.
- The holistic approach integrates knowledge, understanding, values and skills within the professional self. The holistic approach combines the behavioural and functional approaches to competency research and addresses the limitations of these approaches to competency research. Thus, the holistic approach considers the different characteristics of competencies, allowing for cognitive, functional, behavioural and ethical competencies within a professional's competency set.
- The seminal competency studies by Cheetham and Chivers in 1996 and Delamare-Le Deist and Winterton in 2005 are grounded within the holistic approach to competency research.
- Cheetham and Chivers (1996) maintained that all competencies are grounded within one of five competency classifications: knowledge/cognitive, functional, personal/behavioural, value and ethical and meta-competencies.
- Delamare-Le Deist and Winterton (2005) based their multi-dimensional holistic typology of competency on the work of Cheetham and Chivers (1996). However, they asserted that all competencies are grounded within one of four competency classifications: cognitive, functional, social/behavioural and meta-competencies.

- Delamare-Le Deist and Winterton's (2005) multi-dimensional holistic typology of competency approach (with the four competence classifications) is the most widely used by researchers, including in the PS field.

Research for SRO₅ generated the following conclusions:

The holistic approach incorporates the advantages and disadvantages of the behavioural and functional research approaches. The holistic approach is aligned with Hoffmann's (1999) perspective on defining competence and competencies (discussed in section 3.2) by focusing on the professional's underlying knowledge, skills, abilities, values, attributes and understanding. Based on the decision to use the holistic approach to competence research for this study, Delamare-Le Deist and Winterton's (2005) multi-dimensional holistic typology was used as the foundation to determine the competency set for a PSP working within the South African private sector. Therefore, the PSP's competency set will include cognitive, functional, social/behavioural and meta-competencies in this framework.

8.3.6 SRO₆ – Determine the different PS competency categories that will be included in the South African PS competency framework for PSPs in the South African private sector.

In order to address SRO₆, the researcher focused on previous research on PS competencies (section 3.4). Four studies on PS competence were identified, namely Tassabehji and Moorhouse's 2008 PS competency effectiveness matrix; Karttunen's extensive systematic literature review (2000-2017) of PS competency research; Bals et al.'s 2019 qualitative study on establishing current and future PS competencies; and Schulze, Bals and Warwick's 2022 systematic literature review and Delphi study on PS competencies. Hence, literature from 1987 to 2022 was analysed to determine the competency categories that should be included in the South African PS competency framework.

The following literature findings were made in terms of SRO₆:

- The ever-changing business environment requires PSPs to update their competency set constantly.
- Tassabehji and Moorhouse (2008) analysed PS competency research from 1993 to 2006 and found that:

- More emphasis is placed on general management competencies applied within a PS perspective than on PS-specific competencies.
- The shift in the importance of PS-specific competencies to more general management competencies applied within a PS context is due to the changing business environment.
- PS competencies can be divided into five PS competency categories, namely technical competencies, internal enterprise competencies, external enterprise competencies, strategic competencies and interpersonal competencies.
- The success of a PSP depends on the degree of support the PS function receives from the business and the level of integration of different business functions.
- Karttunen (2018) analysed 17 years of PS competency research in 2018 and found that:
 - There are four PS competency categories, namely technical and business administration competencies, internal and external enterprise competencies, strategic competencies, and social competencies.
 - Entrepreneurial and political competencies should be included in the strategic competency category of a PSP.
- Bals et al. (2019) set out to determine what current and future competencies are required by PSPs and found that:
 - When referring to PS competencies, a distinction is generally made between PS-specific competencies, general management competencies, and inter- and intrapersonal competencies.
 - The PS competency categories, as identified by Tassabehji and Moorhouse's 2008 PS taxonomy, are still applicable, but Bals et al. (2019) added 17 additional PS competencies to the taxonomy.
- Schulze, Bals and Warwick (2022) set out to determine the PS competencies required by PSPs with a focus on sustainability. In their research, they determined that:
 - Delamare-Le Deist and Winterton's (2005) multi-dimensional holistic typology of competence is suitable for classifying PS competencies.
 - PS is one of the main contributors to implementing sustainable practices within a business; therefore, sustainability is already embedded in a PSP's daily tasks and responsibilities.

- There are 27 PS competencies that promote sustainability in PSM.

Research for SRO₆ led to the following conclusions:

The South African PS competency framework will consist of four competency categories founded on Delamare-Le Deist and Winterton's (2005) multi-dimensional holistic typology.

The competency categories are described as follows:

- Technical PS competencies refer to cognitive and functional competencies required to perform specific tasks. These competencies relate to PSPs' technical knowledge, ability to perform tasks and advanced PS-process knowledge. They also include management-related competencies generally linked to a specific system and output. Technical PS competencies provide the foundation for developing strategic PS competencies.
- Internal and external enterprise PS competencies are cognitive and functional competencies that refer to a PSP's ability to manage internal and external relationships. Internal PS competencies relate to a PSP's ability to facilitate interaction with internal stakeholders and generally involve high-level business decisions. External PS competencies relate to a PSP's ability to manage relationships with stakeholders outside the business and better understand suppliers.
- Interpersonal PS competencies (social competence) are entry-level competencies, though essential for a PSP to perform well. These competencies are sometimes described as the PSP's emotional intelligence. They relate to the PSP knowing how to behave and make sound judgements in work-orientated situations.
- Strategic PS competencies (meta-competencies) include the competencies the PSP needs to develop to execute creative and collaborative solutions that positively impact business value.

8.3.7 SRO₇ – Identify PS competencies from the literature that may form part of the competency set of a PSP in the private sector of the South African business environment.

SRO₇ was also addressed in section 3.4 by studying the same sources²⁷ as those for SRO₆. The following findings were made in terms of SRO₇ based on PS literature spanning from 1987 to 2022:

- Two hundred and thirty-two PS competencies were identified from the literature (see table 3.10).
- Sixty-four technical PS competencies were identified in the literature.
- Fifty-five internal and external enterprise PS competencies were identified in the literature.
- Seventy interpersonal PS competencies were identified in the literature.
- Thirty-three strategic PS competencies were identified in the literature.
- Competencies are repeated within and among competency categories as authors defined and categorised competencies differently.

The following conclusions were reached in terms of SRO₇:

- The 232 PS competencies are repeated within and among competency categories as authors defined and categorised competencies differently.
- After consolidating the 232 PS competencies identified in the literature, only 64 PS competencies remained:
 - twenty-two technical PS competencies,
 - twelve internal and external enterprise PS competencies,
 - twenty interpersonal PS competencies, and
 - ten strategic PS competencies.
- The 64 PS competencies were included in the statistical analyses to establish the final competencies for inclusion into the competency framework.

²⁷ Tassabehji and Moorhouse's 2008 PS competency effectiveness matrix; Karttunen's (2018) extensive systematic literature review (2000-2017) of PS competency research; Bals et al.'s 2019 qualitative study on establishing current and future PS competencies; and Schulze, Bals and Warwick's 2022 systematic literature review and Delphi study on PS competencies.

8.3.8 SRO₈ – Determine from empirical findings the PS sub-category competency factors that will be used as independent variables in the South African PS competency framework.

Chapter six aimed to reduce the 64 PS competencies identified through the PS literature examined in chapter three. Three statistical methods were considered to determine and confirm factors; eventually, EFA was deemed most suitable for this study. Each competency category was subjected to EFA, and only after all reliability and validity measures were met could each sub-category competency factor be accepted as a dependent variable. The following empirical findings were made:

- The 22 technical PS competencies identified in chapter three were reduced to five technical sub-category competencies.
- The five technical sub-category PS competencies complied with all reliability and validity measures.
- The 12 internal and external enterprise PS competencies identified in chapter three were reduced to three internal and external sub-category competencies.
- The three internal and external sub-category PS competencies complied with all reliability and validity measures.
- The 20 interpersonal PS competencies identified in chapter three were reduced to three interpersonal sub-category competencies.
- The three interpersonal sub-category PS competencies complied with all reliability and validity measures.
- The 10 strategic PS competencies identified through literature were reduced to two strategic sub-category competencies.
- The two strategic sub-category PS competencies complied with all reliability and validity measures.

In terms of SRO₈, the following conclusions were reached:

Thirteen sub-category PS competency factors were identified through EFA and used as independent variables to perform SEM. The five technical sub-category PS competency factors were labelled: *operational PS competencies*, *internal technical-related cooperation competencies*, *innovative supply competencies*, *integrative supply competencies*, and

analytical competencies. The three internal and external enterprise sub-category PS competency factors were labelled: *supply-side transformational-relationship competencies*, *internal product-related cooperation competencies*, and *supply chain wide relations and analysis competencies*. The three interpersonal sub-category PS competency factors were labelled: *internal values and social competencies*, *personal-dynamics management competencies*, and *leadership competencies*. The two strategic sub-category PS competency factors were labelled: *visionary competencies* and *personal strategic competencies*.

8.3.9 SRO₉ – Determine the competency set that will support a PSP in the South African private sector to achieve different PS objectives.

SRO₉ was addressed in both chapters six and seven. The descriptive findings regarding the importance of and time spent on each PS objective were considered to gain a general understanding of each PS objective. Thereafter, the researcher determined whether a relationship existed between the 13 sub-category PS competency factors and each PS objective by performing SEM in chapter seven.

In terms of SRO₉, the following empirical findings were made in chapter six:

- The respondents rated all seven PS objectives as *highly to critically important*.
- The importance rating (*highly to critically important*) of the seven PS objectives in descending order were:
 - Ensuring stable supply (96.1%)
 - Being cost conscious (95.5%) and adhering to quality requirements (95.5%)
 - Facilitating a relationship with suppliers (92.6%)
 - Aligning PS with the business's competitive strategy (91.9%)
 - Promoting and facilitating innovativeness with suppliers (75.7%)
 - Promoting sustainability (social/economic/environmental) (71.9%)
- Respondents indicated that they *often to always* spend time on the seven PS objectives.
- In descending order, respondents indicated that they *often to always* spend time on:
 - Being cost conscious (95.2%)
 - Ensuring stable supply (92.9%)
 - Adhering to quality requirements (89.3%)

- Facilitating a relationship with suppliers (88%)
- Aligning PS with the business's competitive strategy (80.3%)
- Promoting and facilitating innovativeness with suppliers (60.8%)
- Promoting sustainability (social/economic/environmental) (58.9%)

Based on these findings, the following conclusions (regarding SRO₉) were reached in chapter six:

Since all seven PS objectives were rated as *highly to critically* important by the PSPs and they indicated they *often to always spent* time on the seven PS objectives, the inclusion of the seven PS objectives into the South African PS competency framework was justified. The PS objective, *ensuring stable supply*, received the respondents' highest rating (*highly to critical*); whereas being *cost conscious* received the highest rating regarding the amount of time spent (*often to always*) on the specific PS objective.

In terms of SRO₉, the following empirical findings were made in chapter seven:

- The following hypotheses were supported: H1₁; H2₁; H3₁; H8₁; H9₁; H10₁; H13₁; H18₁; H20₁; H21₁; H22₁; H24₁; H25₁; H29₁; H31₁; H33₁; H34₁; H35₁; H38₁; H40₁; H43₁; H50₁; H51₁; H54₁; H55₁; H64₁; H65₁; H71₁; H83₁ and H85₁
- Each supported hypothesis indicated either a positive (weak, moderate or strong) or a negative (weak, moderate or strong) relationship between the sub-category competency factor and the specific PS objective.

The following conclusions were made in chapter seven in terms of SRO₉:

- Operational PS competencies have a strong positive relationship with cost consciousness.
- Internal technical-related cooperation competencies have a weak negative relationship with cost consciousness.
- Innovative supply competencies have a moderately positive relationship with cost consciousness.
- Innovative supply competencies have a moderately positive relationship with ensuring stable supply.

- Integrative supply competencies have a strong positive relationship with ensuring stable supply.
- Analytical competencies have a strong negative relationship with ensuring stable supply.
- Innovative supply competencies have a weak positive relationship with adherence to quality requirements.
- Innovative supply competencies have a moderately positive relationship with promoting sustainability.
- Analytical competencies have a weak negative relationship with promoting sustainability.
- Operational PS competencies have a moderately positive relationship with the alignment of PS with the business's competitive strategy.
- Internal technical-related cooperation competencies have a strong positive relationship with the alignment of PS with the business's competitive strategy.
- Integrative supply competencies have a strong negative relationship with the alignment of PS with the business's competitive strategy.
- Analytical competencies have a weak positive relationship with the alignment of PS with the business's competitive strategy.
- Integrative supply competencies have a strong positive relationship with facilitating a relationship with suppliers.
- Operational PS competencies have a moderately positive relationship with promoting and facilitating innovativeness with suppliers.
- Innovative supply competencies have a strong positive relationship with promoting and facilitating innovativeness with suppliers.
- Integrative supply competencies have a moderately negative relationship with promoting and facilitating innovativeness with suppliers.
- Analytical competencies have a moderately positive relationship with promoting and facilitating innovativeness with suppliers.
- Supply chain wide relations and analysis competencies have a weak positive relationship with cost consciousness.

- Internal product-related cooperation competencies have a moderately positive relationship with ensuring stable supply.
- Internal product-related cooperation has a weak positive relationship with adherence to quality requirements.
- Supply chain wide relations and analysis competencies have a weak positive relationship with the alignment of PS with the business's competitive strategy.
- Supply-side transformational-relationship competencies have a weak positive relationship with facilitating a relationship with suppliers.
- Supply-side transformational-relationship competencies have a moderately positive relationship with promoting and facilitating innovativeness with suppliers.
- Internal product-related cooperation competencies have a weak positive relationship with promoting and facilitating innovativeness with suppliers.
- Personal-dynamics management competencies have a moderately positive relationship with adherence to quality requirements.
- Leadership competencies have a moderately negative relationship with adherence to quality requirements.
- Leadership competencies have a strong positive relationship with the alignment of PS with the business's competitive strategy.
- Visionary competencies have a strong positive relationship with promoting sustainability.
- Visionary competencies have a strong positive relationship with the alignment of PS with the business's competitive strategy.

The South African PS competency framework will include only the sub-category PS competencies that have a positive relationship with a PS objective.

8.3.10 SRO₁₀ – Determine the competency set that will support a PSP in the South African private sector with the PS processes they are involved in.

As with SRO₉, SRO₁₀ was addressed in both chapters six and seven. The descriptive findings regarding the importance of and time spent on each PS process were analysed to gain a general understanding of each PS process. Thereafter, the researcher determined whether a relationship existed between the 13 sub-category PS competency factors and each PS process – by performing SEM in chapter seven.

The following empirical findings were made in chapter six (in terms of SRO₁₀):

- The respondents rated both PS processes as *highly to critically important*.
- The vast majority of respondents (93.2%) indicated that strategic sourcing is of *high to critical importance*. In contrast, 85.1% indicated that the *tactical and operational purchasing process* is of *high to critical importance*.
- Respondents indicated that they *often to always* spend time on the two PS processes.
- 85.8% of respondents *often to always* spend time on strategic sourcing, compared with 78.3% who *often to always* spend time on tactical and operational purchasing.

In terms of SRO₁₀, the following conclusions were reached in chapter six:

Both PS processes were rated as *highly to critically important*. The PSPs also indicated that they *often to always* spend time on the two PS processes. This *highly to critically important* rating, along with the fact that the majority of PSPs *often to always* spend time on the two PS processes, justified the inclusion of these PS processes in the South African PS competency framework. In terms of importance rating (*highly to critical important*) and time spent (*often to always*), *strategic sourcing* was the highest-rated PS process by South African PSPs working within the private sector.

Regarding SRO₁₀, the following empirical findings were made in chapter seven:

- The following hypotheses were supported: H91₁; H93₁; H94₁; H95₁; H97₁; H98₁; H99₁; H100₁; H101₁; H102₁; H103₁; H106₁; H107₁; H108₁; H109₁; H111₁ and H112₁.
- Each supported hypothesis indicated either a positive (weak, moderate or strong) or a negative (weak, moderate or strong) relationship between the sub-category competency factor and the specific PS objective.

In terms of SRO₁₀, the following conclusions were reached in chapter seven:

- Operational PS competencies have a moderately negative relationship with the tactical and operational purchasing process.
- Innovative supply competencies have a weak positive relationship with the tactical and operational purchasing process.
- Integrative supply competencies have a strong positive relationship with the tactical and operational purchasing process.
- Analytical competencies have a strong negative relationship with the tactical and operational purchasing process.
- Internal technical-related cooperation competencies have a weak negative relationship with strategic sourcing.
- Innovative supply competencies have a moderately positive relationship with strategic sourcing.
- Integrative supply competencies have a moderately positive relationship with strategic sourcing.
- Analytical competencies have a weak negative relationship with ensuring strategic sourcing.
- Supply-side transformational-relationship competencies have a weak positive relationship with the tactical and operational purchasing process.
- Internal product-related cooperation competencies have a moderately positive relationship with the tactical and operational purchasing process.
- Supply chain wide relations and analysis competencies have a moderately negative relationship with the tactical and operational purchasing process.
- Supply chain wide relations and analysis competencies have a weak positive relationship with strategic sourcing.
- Internal values and social competencies have a moderately positive relationship with the tactical and operational purchasing process.
- Personal-dynamics management competencies have a strong positive relationship with the tactical and operational purchasing process.
- Leadership competencies have a strong negative relationship with the tactical and operational purchasing process.

- Personal-dynamics management competencies have a moderately negative relationship with strategic sourcing.
- Leadership competencies have a strong positive relationship with strategic sourcing.

8.3.11 SRO₁₁ – Determine the competency set that will support a PSP in the South African private sector with the PS management activities they are predominantly involved in.

SRO₁₁ was addressed in chapters six and seven. The descriptive findings regarding the importance of and time spent on each PS management activity were analysed to gain a general understanding of each PS management activity. Thereafter, the researcher determined whether a relationship existed between the 13 sub-category PS competency factors and each PS management activity by performing SEM in chapter seven.

The following empirical findings were made (in terms of SRO₁₁) in chapter six:

- The respondents rated all six PS management activities as *highly to critically important*.
- The importance ratings (*highly to critically*) of the six PS management activities in descending order were:
 - PS strategic planning (91.2%)
 - PS leadership (88.9%)
 - PS tactical and operational planning (85.1%)
 - PS evaluation (83.2%)
 - PS coordination (82.5%)
 - PS organising (79.9%)
- Respondents indicated that they *often to always* spend time on the six PS management activities.
- In descending order, respondents indicated that they *often to always* spend time on:
 - PS leadership (80.2%)
 - PS strategic planning (77.4%)
 - PS tactical and operational planning (76.7%)
 - PS coordination (74.5%)
 - PS evaluation (66.1%)

- PS organising (67.3%)

In terms of SRO₁₁, the following conclusions were reached in chapter six:

Since all the PS management activities were rated as *highly to critically important*, and the PSPs indicated that they *often to always spent* time on these activities, the decision to include them in the South African PS competency framework was justified. In terms of importance (*highly to critical importance*), strategic planning was the highest-rated PS management activity. PS leadership received the highest rating regarding the time spent (*often to always*) on PS management activities.

In terms of SRO₁₁, the following empirical findings were made in chapter seven:

- The following hypotheses were supported: H118₁; H121₁; H124₁; H126₁; H128₁; H133₁; H134₁; H137₁; H138₁; H139₁; H140₁; H142₁; H144₁; H145₁; H146₁; H161₁; H169₁; H170₁; H172₁; H173₁; H175₁; H176₁; H178₁; H182₁; H191₁ and H194₁
- Each supported hypothesis indicated either a positive (weak, moderate or strong) or a negative (weak, moderate or strong) relationship between the sub-category competency factor and the specific PS objective.

In terms of SRO₁₁, the following conclusions were reached in chapter seven:

- Internal technical-related cooperation competencies have a strong positive relationship with PS strategic planning.
- Analytical competencies have a weak negative relationship with PS strategic planning.
- Innovative supply competencies have a weak positive relationship with PS tactical and operational planning.
- Analytical competencies have a moderately negative relationship with PS tactical and operational planning.
- Internal technical-related cooperation competencies have a moderately positive relationship with PS organising.
- Internal technical-related cooperation competencies have a moderately positive relationship with PS coordination.
- Innovative supply competencies have a weak positive relationship with PS coordination.

- Operational PS competencies have a weak negative relationship with PS leadership.
- Internal technical-related cooperation competencies have a strong positive relationship with PS leadership.
- Innovative supply competencies have a moderately positive relationship with PS leadership.
- Integrative supply competencies have a moderately negative relationship with PS leadership.
- Operational PS competencies have a strong negative relationship with PS evaluation.
- Innovative supply competencies have a strong positive relationship with PS evaluation.
- Integrative supply competencies have a strong positive relationship with PS evaluation.
- Analytical competencies have a strong negative relationship with PS evaluation.
- Supply chain wide relations and analysis competencies have a moderately positive relationship with PS leadership.
- Personal-dynamics management competencies have a strong negative relationship with PS tactical and operational planning.
- Leadership competencies have a strong positive relationship with PS tactical and operational planning.
- Personal-dynamics management competencies have a strong negative relationship with PS organising.
- Leadership competencies have a strong positive relationship with PS organising.
- Personal-dynamics management competencies have a moderately negative relationship with PS coordination.
- Leadership competencies have a strong positive relationship with PS coordination.
- Personal-dynamics management competencies have a moderately negative relationship with PS leadership.
- Leadership competencies have a strong positive relationship with PS evaluation.
- Visionary competencies have a strong positive relationship with PS strategic planning.
- Visionary competencies have a moderately positive relationship with PS leadership.

- Personal strategic competencies have a moderately positive relationship with PS evaluation.

8.4 The South African PS Competency Framework

The South African PS Competency Framework is presented in three separate tables, based on the results of all the research process steps and the conclusions of the eleven SROs. Table 8.1 presents the PS competencies, with their contributions to support PSPs in achieving the PS objective that they are assigned. Table 8.2 presents the two PS processes and the PS competencies, with their contributions to support PSPs with the PS process they are predominantly involved in. Lastly, in table 8.3, the different PS management activities are presented with the PS competencies and their contributions to support PSPs with the management activity they are involved in.

Table 8.1: Competency framework based on the specific *PS objectives* assigned to South African PSPs in the private sector

Competency set required by PSPs in the South African private sector when assigned the following PS objectives					
PS objectives assigned to PSPs		Competency sub-categories			
Cost consciousness		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS objective, cost consciousness	Strong	<ul style="list-style-type: none"> Operational PS competencies Integrative supply competencies 			
	Moderate	<ul style="list-style-type: none"> Innovative supply competencies 		<ul style="list-style-type: none"> Personal-dynamics management competencies 	
	Weak		<ul style="list-style-type: none"> Supply chain wide relations and analysis competencies 		
Ensuring stable supply		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS objective, ensuring stable supply	Strong	<ul style="list-style-type: none"> Integrative supply competencies 			

Strength of contribution in supporting the PS objective, ensuring stable supply	Strong	<ul style="list-style-type: none"> Integrative supply competencies 			
	Moderate	<ul style="list-style-type: none"> Innovative supply competencies 	<ul style="list-style-type: none"> Internal product-related cooperation competencies 		
	Weak				
Adherence to quality requirements		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS objective, adherence to quality requirements	Strong				
	Moderate				
	Weak	<ul style="list-style-type: none"> Innovative supply competencies 	<ul style="list-style-type: none"> Internal product-related cooperation 		
Promoting sustainability		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS objective, promoting sustainability	Strong				<ul style="list-style-type: none"> Visionary competencies
	Moderate	<ul style="list-style-type: none"> Innovative supply competencies 			
	Weak				

Alignment of PS with the business's competitive strategy		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS objective, alignment of PS with the business's competitive strategy	Strong	<ul style="list-style-type: none"> Internal technical-related cooperation 		<ul style="list-style-type: none"> Leadership competencies 	<ul style="list-style-type: none"> Visionary competencies
	Moderate	<ul style="list-style-type: none"> Operational PS competencies 			
	Weak	<ul style="list-style-type: none"> Analytical competencies 	<ul style="list-style-type: none"> Supply chain wide relations and analysis competencies 		
Facilitating a relationship with suppliers		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS objective, facilitating a relationship with suppliers	Strong	<ul style="list-style-type: none"> Integrative supply competencies 			
	Moderate				
	Weak		<ul style="list-style-type: none"> Supply-side transformational-relationship competencies 		

Promoting and facilitating innovativeness with suppliers		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS objective, promoting and facilitating innovativeness with suppliers	Strong	<ul style="list-style-type: none"> Innovative supply competencies 			
	Moderate	<ul style="list-style-type: none"> Operational PS competencies Analytical competencies 	<ul style="list-style-type: none"> Supply-side transformational-relationship competencies 		
	Weak		<ul style="list-style-type: none"> Internal product-related cooperation competencies 		

Source: Compiled by the researcher, 2024.

Table 8.2: Competency framework based on the *PS processes* that the South African PSP in the private sector is predominantly involved in

Competency set required by PSPs in the South African private sector when involved in specific PS processes					
PS process the PSP is involved in		Competency sub-categories			
Tactical and operational purchasing		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS process, tactical and operational purchasing	Strong	<ul style="list-style-type: none"> Integrative supply competencies 		<ul style="list-style-type: none"> Personal-dynamics management competencies 	
	Moderate		<ul style="list-style-type: none"> Internal product-related cooperation competencies 	Internal values and social competencies	
	Weak	<ul style="list-style-type: none"> Innovative supply competencies 	<ul style="list-style-type: none"> Supply-side transformational-relationship competencies 		
Strategic sourcing		Technical Competencies	Internal and External Enterprise Competencies	Interpersonal Competencies	Strategic Competencies
Strength of contribution in supporting the PS process, strategic sourcing	Strong		<ul style="list-style-type: none"> Supply chain wide relations and analysis competencies 	<ul style="list-style-type: none"> Leadership competencies 	
	Moderate	<ul style="list-style-type: none"> Innovative supply competencies 			
	Weak				

Source: Compile by the researcher, 2024.

Table 8.3: Competency framework based on the specific *PS management activities* South African PSPs in the private sector are involved in

Competency set required by PSPs in the South African private sector when involved in specific PS management activities					
PS management activity that the PSP is involved in		Competency sub-categories			
PS strategic planning		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS management activity, PS strategic planning	Strong	<ul style="list-style-type: none"> Internal technical-related cooperation competencies 			<ul style="list-style-type: none"> Visionary competencies
	Moderate				
	Weak				
PS tactical and operational planning		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS management activity, tactical and operational planning	Strong			<ul style="list-style-type: none"> Leadership competencies 	
	Moderate				
	Weak	<ul style="list-style-type: none"> Innovative supply competencies 			

PS organising		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS management activity, PS organising	Strong			• Leadership competencies	
	Moderate	• Internal technical-related cooperation competencies			
	Weak				
PS coordination		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS management activity, PS coordination	Strong			• Leadership competencies	
	Moderate	• Internal technical-related cooperation competencies			
	Weak	• Innovative supply competencies			

PS strategic leadership		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the PS management activity, PS leadership	Strong	<ul style="list-style-type: none"> Internal technical-related cooperation competencies 			
	Moderate	<ul style="list-style-type: none"> Innovative supply competencies 	<ul style="list-style-type: none"> Supply chain wide relations and analysis competencies 		<ul style="list-style-type: none"> Visionary competencies
	Weak				
PS evaluation		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Strength of contribution in supporting the management activity PS evaluation	Strong	<ul style="list-style-type: none"> Innovative supply competencies Integrative supply competencies 		<ul style="list-style-type: none"> Leadership competencies 	
	Moderate				<ul style="list-style-type: none"> Personal strategic competencies
	Weak				

Source: Compiled by the researcher, 2024.

The specific sub-category competency factors supporting the PS objectives, PS processes, and PS management activities are identified within the South African PS competency framework, as presented in tables 8.1 to 8.3 above. The individual competencies that a PSP must develop for each identified sub-category competency factor are presented below in table 8.4.

Table 8.4 Individual competencies a PSP must focus on developing – based on the sub-category competency factors

Sub-category competencies required to support a PSP with their tasks and responsibilities	Individual competencies that a PSP must focus on developing
Technical competencies	
Operational PS competencies	<ul style="list-style-type: none"> • Ability to request quotations, information or proposals from suppliers. • Being knowledgeable about global sourcing. • Performing and interpreting cost analysis. • Negotiating with suppliers.
Internal technical-related cooperation competencies	<ul style="list-style-type: none"> • Having technical knowledge of a supplier’s products and production processes. • Cooperating with production/operations. • Cooperating with quality management. • Cooperating with logistics.
Innovative supply competencies	<ul style="list-style-type: none"> • Being knowledgeable regarding the products that need to be purchased. • Being innovative in sourcing. • Being able to perform strategic sourcing. • Having sufficient knowledge of the PS function in general. • Facilitating optimisation of systems and processes within the business.
Integrative supply competencies	<ul style="list-style-type: none"> • Being knowledgeable about project management. • Setting, and reporting on, suppliers' key performance indicators.

	<ul style="list-style-type: none"> • Being able to use e-procurement applications or systems. • Facilitating the automation of the purchasing process.
Analytical competencies	<ul style="list-style-type: none"> • Using numerical (mathematical/statistical) techniques for decision-making. • Being knowledgeable about big data analyses.
Internal and external enterprise competencies	
Supply-side transformational-relationship competencies	<ul style="list-style-type: none"> • Being actively involved in supplier-relationship management. • Performing supplier evaluation. • Being actively involved in supplier development. • Facilitating change management. • Networking and building relationships.
Internal product-related cooperation competencies	<ul style="list-style-type: none"> • Cooperating with marketing. • Cooperating with research and development.
Supply chain wide relations and analysis competencies	<ul style="list-style-type: none"> • Being involved in stakeholder-relationship management. • Performing supply market analysis. • Cooperating in supply chain analysis.
Interpersonal competencies	
Internal values and social competencies	<ul style="list-style-type: none"> • Having social manners. • Being self-assured. • Having confidence. • Being empathetic. • Being conscientious.
Personal-dynamics management competencies	<ul style="list-style-type: none"> • Having communication skills. • Being honest. • Being result-driven. • Having conflict-resolution skills. • Being able to influence and persuade.

	<ul style="list-style-type: none"> • Having problem-solving skills. • Having analytical abilities. • Having decision-making skills. • Having knowledge-sharing skills.
Leadership competencies	<ul style="list-style-type: none"> • Having leadership skills. • Working in cross-functional teams. • Having cross-cultural awareness. • Showing willingness towards personal development. • Being motivated to learn. • Being creative.
Strategic competencies	
Visionary competencies	<ul style="list-style-type: none"> • Adding value to the business through purchasing. • Being involved in strategic management. • Cooperating in social responsibility. • Pursuing sustainability. • Being involved in supply risk management. • Managing strategic business partnerships.
Personal strategic competencies	<ul style="list-style-type: none"> • Thinking holistically. • Being proactive. • Being inventive. • Having critical-thinking skills.

Source: Compiled by the researcher, 2024.

8.5 Contribution of this study

This study contributed to the South African PSM research field's body of knowledge by developing a PS competency framework that will assist PSPs working within the South African private sector to identify the competency set or competencies that they lack and need to develop. These competencies are necessary in order to perform their tasks and responsibilities efficiently and effectively. There is no evidence of any previous study on this topic in South Africa. In addition to contributing to the body of knowledge by developing the South African PS competency framework, the following contributions are relevant.

- The competency framework can serve as a departure point for developing PS competencies and developmental programmes.
- Businesses can use the competency framework to identify the required skills of potential employees during the hiring process.
- Educational institutions can include the competencies identified in the competency framework in their curriculum; ensuring that PS students are equipped with the correct competencies before entering the working environment.
- The framework provides a foundation for additional research on individual PS competencies.

8.6 Limitations of the study

During the study's conceptualisation, the researcher decided only to conduct research after carefully considering what was needed for a study of this nature to ensure that the research design and methodologies would lead to meaningful outcomes. Despite the researcher taking these steps, the following limitations need to be considered along with the findings:

- The lack of previous studies on PS competencies in South Africa limited the literature review to primarily considering international studies on PS competencies. The international business environment may differ from the South African business environment and may affect the PSP competency set.
- The primary data were gathered from PSPs who worked within the South African context. Given South Africa's status as a developing country, the PS competency framework may not be comparable to those created in developed countries.
- The PS competency framework was developed for PSPs in the South African private sector. It is, therefore, not applicable to the large number of public sector PSPs who work under different circumstances where purchasing transactions are primarily subjected to regulation.
- The 232 PS competencies identified by the traditional literature review were based on the findings of four studies spanning the period 1987 to 2022. Despite the thoroughness of these studies, some PS competencies may have been omitted and, consequently, not included in the South African PS competency framework.

8.7 Future research possibilities

The South African PS competency framework for PSPs operating within the private sector creates some avenues for future research. The following areas have been identified:

- This study is focused on PSPs working within the private sector; however, due to the large number of PSPs working within the South African public sector and spending large amounts of public funds, it will be beneficial to do a similar study focusing on the public sector in South Africa.
- The current study does not differentiate the competency set based on the PSP's seniority level. The tasks and responsibilities of a PSP will, most likely, differ between seniority levels. The PS competency framework developed in this study can be refined and developed further to differentiate the required PS competencies based on seniority level.
- The current study does not differentiate the competency set based on the industry in which the PSP works. The tasks and responsibilities of a PSP might differ between industries; therefore, doing a similar study and considering the industry might refine the current PS competency framework for specific industries.
- Using the current PS framework as a reference, South African educational institutions can develop curriculums that will emphasise the competencies needed by PSPs in the South African private sector.
- Further guidelines can be provided on how PSPs can develop the individual competencies identified in this study by conducting a follow-up qualitative study.

8.8 A final word

By developing a unique PS competency framework for South African PSPs in the private sector, the researcher aimed to identify the competency set that would assist PSPs in performing their tasks and responsibilities efficiently and effectively – thereby contributing to business success and the well-being of the South African economy.

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Appendix A – Consolidation of competencies indicated by different sources

Classification of consolidated competency	Consolidated competency	Tassabehji and Moorhouse (2008)				Karttunen (2018)				Bals et al. (2019)				Schulze, Bals and Warwick (2022)			
		Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies	Technical competencies	Internal and external enterprise competencies	Interpersonal competencies	Strategic competencies
Technical competencies	Demand forecasting	Forecasting				Forecasting								Demand management			
Technical competencies	Product knowledge	Product knowledge								Product knowledge							
Technical competencies	Innovative sourcing									Innovative sourcing, Innovative sourcing approaches							
Technical competencies	Strategic sourcing	Category management; Strategic sourcing					Single vs multiple sourcing			Strategic sourcing							
Technical competencies	Purchasing knowledge				Following PSM best practices	Purchase management				Basic knowledge of PSM and PSM processes			PSM best practice	Basic individual knowledge of PSM			
Technical competencies	Process management					Integration of systems and processes				Process optimisation: Tools and system implementation	Engineering						

Technical competencies	Technical knowledge	Reading of designs and blueprints; Technical writing and reporting				Technical capabilities to help suppliers improve their processes and products; Blueprint readings											
Technical competencies	Cooperation with production/operations	Knowledge of production systems				Operations management			Total systems understanding, in order to achieve strategic goals		Manufacturing/production			System thinking			
Technical competencies	Involvement in quality management	Total quality management				Quality management				Quality assurance	Quality						
Technical competencies	Cooperation with logistics					Inventory management; Logistics and transport					Logistics						
Technical competencies	Legislation knowledge	Legislation knowledge															
Technical competencies	Obtain quotations, information or proposals					Information integration and search; Resource integration	Supply base research										
Technical competencies	Global sourcing	Global sourcing development	International buying			Global sourcing; Import and export processes											

Technical competencies	Cost analysis	Cost analysis; Performing cost driver analysis	Financial skills				Supplier cost targeting			Cost savings	Finance		Financial acumen			
Technical competencies	Negotiation	Negotiation					Negotiating with strategic suppliers	Negotiation		Negotiation						
Technical competencies	Contract management	Contract management								Contract management				Contract management		
Technical competencies	Project management	Project planning						Coordination skills		Project management						
Technical competencies	Establishing and reporting on key performance indicators									KPI reporting design						
Technical competencies	Numerical skills	Mathematical skills					Ability to make use of numerical techniques for decision-making; Mathematical skills		Analysing statistical data							
Technical competencies	Big data analysis									Big data analysis						
Technical competencies	Working with E-procurement application	Working with e-procurement applications;					Software and applications; Computer skills; E-			Computer literacy; E-Procurement technology						

	ions or systems	computing skills				commerce ; Information technology											
Technical competencies	Automation of purchasing processes								Automation								
Internal and external enterprise competencies	Customer orientated		Managing internal customers and internal relationships				Managing internal customers; Customer relations management				Customer focus						
Internal and external enterprise competencies	Stakeholder-relationship management		Stakeholder-relationship management				Stakeholder mapping proficiency ; Capable of opening new communication channels with stakeholders				Stakeholder-relationship management				Stakeholder management		
Internal and external enterprise competencies	Supply market analysis			Investigation			Integration of information flows externally										
Internal and external enterprise competencies	Supply chain analysis		Supply chain knowledge			Supply chain management					Supply chain						
Internal and external enterprise competencies	Collaborate with marketing										Marketing						

Internal and external enterprise competencies	Collaborate with research and development		Conducting adequate market research	Research		R&D and new product launches					Research and development						
Internal and external enterprise competencies	Supplier relationship management		Managing supplier relationships				Supplier relationship management; Managing the supply base				Supplier management				Supplier relationship management		
Internal and external enterprise competencies	Supplier evaluation		Evaluating suppliers				Supplier evaluation; Supplier analysis								Measuring and reporting		
Internal and external enterprise competencies	Supplier development						Supplier development										
Internal and external enterprise competencies	Change management		Facilitating internal change management				Change management				Change management				Change management		
Internal and external enterprise competencies	Sales knowledge						Sales interface management				Sales						
Internal and external enterprise competencies	Networking							Networking	Political skills / people skills		Networking					Politically savvy	
Interpersonal competencies	Leadership		Motivational	Leadership			Relationship management ability		Leadership			Leadership					

Interpersonal competencies	Working in cross-functional teams		Working in cross-functional teams	Group dynamics; Team building			Cross-functional teamwork	Teamwork			Cross-functional abilities and knowledge	Teamwork -working in teams				Ability to work in a cross-functional team, cooperative attitude for supplier relationship management	
Interpersonal competencies	Communication			Communication		Technical writing and expertise		Interpersonal communication; Written communication; Foreign language		Languages	Communication skills	Interpersonal communication; Deal with ambiguity				Communication skills; Communication relating to supplier relationship management; Communication relating to stakeholder management	
Interpersonal competencies	Cross-cultural awareness			Cultural awareness				Cross-cultural awareness			Cultural awareness						
Interpersonal competencies	Personal development			Interpersonal development								Self-reflection				Self-awareness	
Interpersonal competencies	Motivated to learn											Curiosity; Learning agility					
Interpersonal competencies	Creativity			Creative thinking					Creativity			Creativity					

Interpersonal competencies	Honesty			Integrity							Integrity					
Interpersonal competencies	Social manners										Humility				Interpersonal savvy; Organisationally savvy	
Interpersonal competencies	Self-assurance										Self-reliance; Resilience; Mobility; Openness/Open-minded; Passion					
Interpersonal competencies	Confidence			Stress management				Presentation			Self-confidence				Confidence	
Interpersonal competencies	Result-driven			Results-focused							Results focus - driving for results				Persistence	
Interpersonal competencies	Conflict resolution		Managing internal politics and barriers	Conflict resolution				Conflict management			Conflict resolution					
Interpersonal competencies	Influencing and persuasion		Relationship influencing skills	Influencing and persuasion					Influencing and persuasion							
Interpersonal competencies	Empathise			Listening; understanding				Listening							Thoughtfulness towards others	

Interpersonal competencies	Conscientiousness			Time management								Structured way of working				Conscientiousness	
Interpersonal competencies	Problem-solving		Resolving internal PS issues	Problem-solving					Problem-solving								
Interpersonal competencies	Analytical abilities			Analytical abilities					Analytical skills			Analytical skills					
Interpersonal competencies	Decision-making			Decision-making					Decision-making skills			Decision-making					
Interpersonal competencies	Knowledge sharing			Knowledge sharing			Passing on information					Knowledge sharing					
Strategic competencies	Adding value to the business through purchasing				Ability to add value to the business								Business acumen				
Strategic competencies	Strategic management				Strategic thinking				Strategic thinking; Ability to develop and implement business strategies, including strategic thinking; Planning				Strategic thinking				

Strategic competencies	Corporate social responsibility																Corporate social responsibility
Strategic competencies	Sustainability											Sustainability	Basic sustainability knowledge				Sustainability compliance
Strategic competencies	Supply risk management				Risk management				Risk management				Risk management				
Strategic competencies	Managing strategic business partnerships				Planning and managing strategic alliances and partnerships		Manage strategic alliances or partnerships										
Strategic competencies	Holistic thinking												Holistic supply thinking				Holistic view on supplier relationship management
Strategic competencies	Proactivity								Proactivity								
Strategic competencies	Inventiveness								Entrepreneurial skills, including innovativeness, creativity and proactivity ; Innovativeness							Resourcefulness	



Source: Compiled by the researcher, 2022.

Appendix B – Permission letter from Dr K.P.M Stek

Permission letter to adapt questionnaire on purchasing and supply competencies developed by Dr K.P.M Stek

To:

Department of Applied Management Research Ethical Review
Committee
School of Public and Operations Management
College of Economic and Management Sciences
UNISA
Pretoria
South Africa

From:

Dr K.P.M Stek
Assistant Professor
University of Twente
Enschede
Netherlands

I, **Dr K.P.M Stek** hereby, grant **Ms T Grebe** (UNISA student number: 45509271) permission to adapt the questionnaire I developed relating to competencies among European purchasing and supply professionals. I acknowledge and grant permission that the data gathered by Ms T Grebe through the adapted questionnaire will be used in her PhD dissertation and future publications.

Regards,



Dr K.P.M Stek

Date: 15/08/2022

Appendix C – Questionnaire

The development of a South African purchasing and supply competency framework

Ethical clearance #: 2022_CEMS_DAM_008

Dear Prospective participant,

You are invited to participate in a study conducted by Ms T Grebe, under the supervision of Prof J.A. Badenhorst-Weiss, Emeritus Professor in the Department of Applied Management, towards a PhD degree at the University of South Africa.

The online questionnaire you received was designed to study the competencies needed by purchasing and supply professionals to perform their tasks and responsibilities efficiently and effectively. You were selected to participate in this study because you work in the private sector of the South African purchasing and supply management field. By completing this online questionnaire, you agree that the information you provide may be used for research purposes, including dissemination through peer-reviewed publications and conference proceedings.

You are, however, under no obligation to complete the online questionnaire, and you can withdraw from the study before submitting the online questionnaire. The online questionnaire is developed to be anonymous, meaning that we will have no way of connecting the information that you provide to you personally. Consequently, you will not be able to withdraw from the study once you have finished and clicked the submit button. If you choose to participate in this online questionnaire, it will take no more than 10 - 15 minutes of your time.

You will not benefit from your participation as an individual; however, it is envisioned that the findings of this study will contribute to the private and educational/academic sectors in terms of practical application and theory construction.

We do not foresee that you will experience any negative consequences by completing the online questionnaire. The researcher(s) undertake to keep any information provided herein confidential, not to let it out of our possession and to report on the findings from the perspective of the participating group and not from the perspective of any individual.

Records of the data will be kept for five years for audit purposes, whereafter it will be permanently destroyed, and all electronic versions will be permanently deleted from the hard drive of a password-protected computer. You will not be reimbursed or receive any incentives for your participation in the online questionnaire.

The research was reviewed and approved by the Ethical Review Committee of the Department of Applied Management Research. The primary researcher, Ms T Grebe, can be contacted during office hours at dvillit@unisa.ac.za. The study leader, Prof J.A. Badenhorst-Weiss, can be contacted during office hours at hanniebw@gmail.com. Should you have any questions regarding the ethical aspects of the study, you can contact the chairperson of the Ethical Review Committee of the Department of Applied Management Research at dameroc@unisa.ac.za. Alternatively, you can report any serious unethical behaviour at the University's Toll-Free Hotline 0800 86 96 93.

By continuing with the online questionnaire, you are making an informed decision (you are providing informed consent) to participate in the research. You are free to withdraw from the online questionnaire at any time prior to clicking the submit button. If you have already completed this online questionnaire, please do not complete it a second time.

If you decide to continue, we thank you for your participation.

Next

Qualifying Questions

*Do you work in the purchasing and supply management (PSM) field?

<input checked="" type="radio"/> Yes	<input type="radio"/> No
--------------------------------------	--------------------------

Previous

Next

Qualifying Questions

*Do you work within the South African business environment?



Yes



No

Previous

Next

Qualifying Questions

*Do you work or consult within the private sector of the South African business environment?



Yes



No

Previous

Next

Section A

Abbreviations:
PSM – Purchasing and supply management
P&S – Purchasing and supply

*How did you receive the link to this questionnaire?

● Choose one of the following answers

Through SAPICS

Through AISCR

Through CIPS

Through LinkedIn

Through a referral by another P&S professional

Other (please specify)

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Next

Section B

Abbreviations:
PSM – Purchasing and supply management
P&S – Purchasing and supply

*Please indicate the level of importance and extent of time you spend on the following P&S objectives:

	Level of importance						Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance		Never	Rarely	Sometimes	Often	Always
Being cost-conscious.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance						Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance		Never	Rarely	Sometimes	Often	Always
Ensuring stable supply.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance						Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance		Never	Rarely	Sometimes	Often	Always
Adherence to quality requirements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance						Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance		Never	Rarely	Sometimes	Often	Always
Promoting sustainability (social/economic/environmental).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance						Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance		Never	Rarely	Sometimes	Often	Always
Alignment of P&S with the business' competitive strategy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
Facilitating a relationship with suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
Promoting and facilitating innovativeness with suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Next

Section C

Abbreviations:
 PSM – Purchasing and supply management
 P&S – Purchasing and supply

Consider the following two definitions before answering the two questions below:

The **tactical and operational purchasing process** mainly focuses on:

- identifying a product or service need,
- selecting an appropriate supplier from the supply base,
- ordering and expediting the order,
- receiving the order,
- organising payment and following up with suppliers to ensure adequate performance.

Strategic sourcing entails:

- analysing the business's needs and the marketplace to gain a competitive advantage through developing different sourcing strategies,
- selecting the appropriate suppliers to include in the supply base,
- negotiating terms,
- establishing a contract with the selected suppliers,
- develop strategic alliances or partnerships with suppliers.

*Please indicate the **level of importance** and **extent of time you spend** on the following P&S processes:

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
Tactical and operational purchasing process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
Strategic sourcing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Section D

Abbreviations:
PSM - Purchasing and supply management
P&S - Purchasing and supply

Consider the following six definitions before answering the six questions below:

P&S strategic planning:
Formulating long-term strategies for purchasing products while maintaining the business's competitive advantage and contributing to the overall supply chain's success.

P&S tactical and operational planning:
Develop specific plans on how the internal support function of P&S will contribute to the business's competitive strategy. Determine how P&S will allocate their internal resources to achieve tactical P&S plans.

P&S organising:
Develop a business model to integrate P&S in the business's organisational structures and the necessary actions that should be taken when the business has deviated from its mission and long-term objectives.

P&S coordination:
Aligning the P&S activities with the internal requirements of other business functions.

P&S leadership:
Leading, influencing, guiding and directing P&S professionals to achieve P&S objectives and assist in identifying opportunities available in the business environment.

P&S evaluation:
Detect when the P&S function deviates from its mission and long-term objectives

*Please indicate the level of importance and extent of time you spend on the following P&S management activities:

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
P&S strategic planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
P&S tactical and operational planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
P&S organising.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
P&S coordination.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
P&S leadership.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*

	Level of importance					Extent of time spend				
	Of no importance	Of little importance	Of moderate importance	Of high importance	Of critical importance	Never	Rarely	Sometimes	Often	Always
P&S evaluation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Section E

Abbreviations:
PSM – Purchasing and supply management
P&S – Purchasing and supply

*The following questions relate to technical purchasing and supply competencies:

Considering your **current position** as a P&S professional, please rate the following statements from fully disagree to fully agree.

'In order to perform my tasks and responsibilities as a P&S professional efficiently and effectively, I should ...'

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be able to forecast demand (e.g. planning of annual demand based on sales forecasts).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be knowledgeable regarding the products I need to purchase (e.g. technical specifications, the industry).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to source innovatively (e.g. identifying different supply possibilities available in the supply market).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to perform the tasks relating to strategic sourcing (e.g. spend and demand analyses, category management, category strategy management, source-to-contract process).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have thorough knowledge of the P&S function in general (e.g. P&S systems and best practices).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understand optimisation of systems and processes within the business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Understand the technical aspects of the supplier's products and production processes (e.g. reading of designs, technical writing and reporting).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperate with production/operations (e.g. knowing the basics about production/operations, building a relationship with the production/operations department).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be involved with quality management/assurance of purchases.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperate with logistics (e.g. knowing the basics about logistics, building a relationship with the department responsible for the business's logistics).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have some legislative knowledge pertaining to purchasing and supply.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to request quotations, information or proposals from suppliers (e.g. inviting suppliers to submit a bid).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be able to source globally (materials, processes, designs or technology) .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform and interpret cost analysis (e.g. calculating total cost of ownership, performing cost driver analyses).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to negotiate with suppliers (e.g. determine specific details that should be included in the contract).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manage supplier contracts that have been signed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to manage projects (e.g. initiating, planning, executing, controlling, and closing of work).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to report on suppliers' key performance indicators set by the purchasing organisation (your employer).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Have the ability to make use of numerical (mathematical/statistical) techniques for decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to analyse large amounts of data (Big data analyses).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to work with E-procurement applications or systems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to assist with the automation of the purchasing process.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Previous

Next

Section F

Abbreviations:
PSM – Purchasing and supply management
P&S – Purchasing and supply

*The following questions relate to internal and external enterprise purchasing and supply competencies:

Considering your **current position** as a P&S professional, please rate the following statements from fully disagree to fully agree.

'In order to perform my tasks and responsibilities as a P&S professional as efficient and effective as possible, I should ...'

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be focused on the internal customer or internal user group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be focussed on all stakeholders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to perform supply market analyses (e.g. investigate opportunities within the supply market).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to consider the impact of P&S decisions on the entire supply chain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperate with marketing (e.g. knowing the basics about marketing, building a relationship with the marketing department).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperate with research and development (e.g. knowing the basics about research and development, building a relationship with stakeholders involved with research and development).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be able to manage supplier relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to perform supplier evaluations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to assist with developing suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to facilitate change (e.g. the ability to lead a team through a change process).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have salesmanship skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to network and build relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Section G

Abbreviations:
PSM – Purchasing and supply management
P&S – Purchasing and supply

*The following questions relate to interpersonal purchasing and supply competencies:

Considering your **current position** as a P&S professional, please rate the following statements from fully disagree to fully agree.

'In order to perform my tasks and responsibilities as a P&S professional as efficient and effective as possible, I should ...'

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be a leader (e.g. being motivational, managing different relationships within a team).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to work in cross-functional teams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to communicate (oral and written) with all stakeholders (internal and external).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be aware of cultural values, beliefs and perceptions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be motivated to develop myself as a P&S professional (e.g. self-reflection, identifying lacking skills).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be professionally curious and motivated to learn continuously.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be creative.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be honest and trustworthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have social manners (be tactful, diplomatic, sensitive)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be assertive and have self-assurance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be confident.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be results-driven.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to resolve conflicts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to influence and persuade people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be empathetic (e.g. Listening, understanding).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be conscientious.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to solve problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have analytical abilities (e.g. data and metrics interpretation).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to make decisions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Share knowledge with stakeholders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Section H

Abbreviations:
PSM – Purchasing and supply management
P&S – Purchasing and supply

*The following questions relate to strategic purchasing and supply competencies:

Considering your **current position** as a P&S professional, please rate the following statements from fully disagree to fully agree.

'In order to perform my tasks and responsibilities as a P&S professional as efficient and effective as possible, I should ...'

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Be focused on adding value to the business through the purchasing function.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Think strategically (e.g. develop and implement business strategies).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be focused on corporate social responsibility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be focused on sustainable purchasing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to manage supply risk strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Fully disagree	Disagree	Neither agree nor disagree	Agree	Fully agree
Manage strategic business partnerships with suppliers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Think holistically (e.g. understanding large-scale patterns and reacting to them).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be proactive (e.g. self-initiated behaviour in situations).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be inventive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be able to think critically.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Demographic Information

Abbreviations:
PSM – Purchasing and supply management
P&S – Purchasing and supply

*How many years have you worked in the PSM field?

Choose one of the following answers

- Less than 3 years
- 3 years but less than 5 years
- 5 years but less than 8 years
- 8 years or more

*Did you specifically study in the field of PSM?

Choose one of the following answers

- Yes
- No

*What is your highest level of formal qualification?

Choose one of the following answers

If you choose 'Other (please specify)' please also specify your choice in the accompanying text field.

- | | |
|---|---|
| <input type="radio"/> Matric certificate | <input type="radio"/> Honours degree |
| <input type="radio"/> Post matric certificate | <input type="radio"/> Masters degree |
| <input type="radio"/> Diploma | <input type="radio"/> Doctoral degree |
| <input type="radio"/> Training certificates | <input type="radio"/> None |
| <input type="radio"/> Undergraduate degree | <input type="radio"/> Other (please specify) <input type="text"/> |

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Organisational Information

Abbreviations:

PSM – Purchasing and supply management
P&S – Purchasing and supply

*In what industry does the business you work for operate?

👉 Choose one of the following answers

- Agriculture – e.g. farming, forestry, fishing
- Mining – e.g. metal mining, coal mining, oil and gas extraction
- Construction – e.g. building construction, special trade contractors
- Manufacturing – e.g. food products, textiles, furniture, paper
- Wholesale trade – e.g. businesses selling to retailers
- Retail trade – e.g. businesses selling to end-customers
- Finance, Insurance – e.g. insurance brokers, investment officers
- Other (Please specify)

*What is your current job title/position?

*What level best describes the current position that you are in?

👉 Choose one of the following answers

- Non-management member of the P&S team
- Lower-level management
- Middle-level management
- Senior-level management
- Other (Please specify)

Thank you for your participation and willingness to complete this online questionnaire.

If you know of another P&S professional willing to complete this questionnaire, it will be appreciated if you could share the questionnaire link.

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Submit

Appendix D – Ethical clearance certificate



UNISA DEPARTMENT APPLIED MANAGEMENT RESEARCH ETHICS REVIEW COMMITTEE (DAM-RERC)

Date: 28 September 2022

Dear Ms Themari Grebe

ERC Reference # :
2022_CEMS_DAM_008

Name: Ms Themari Grebe

Student #: 45509271

Staff #:

**Decision: Ethics Approval from
September 2022 to September 2025**

Researcher(s): Ms Themari Grebe
071 334 3819 / 012 429 3481 / dvillt@unisa.ac.za

Supervisor (s): Prof J.A Badenhorst-Weiss
082 449 7507 / hanniebw@gmail.com

Working title of research:
Purchasing and supply competency framework – A South African perspective

Qualification: PhD Management Studies: Purchasing and Supply Chain Management

Thank you for the application for research ethics clearance by the Unisa DAM Ethics Review Committee for the above-mentioned research. Ethics approval is granted for three years.

The low-risk application was reviewed by the DAM Ethics Review Committee in September 2022 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment. The decision was approved on the 28th of September 2022.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.



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