THE ADOPTION AND DIFFUSION OF E-COMMERCE BY TOWNSHIP SMEs: A MIXED METHODS METHODOLOGY

by

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I declare that this thesis (title above) is my work and that all the sources that I have used or quoted have been indicated and acknowledged using complete references.

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Naledi DD Gallant **Date**

DEDICATION

This thesis is dedicated to my late Mother, Nnaki Esther Gallant. You are my mentor, my source of inspiration and my anchor. You had an incredibly positive influence in my life that is forever ingrained in me. Thank you for influencing my high internal locus of control which has been the backdrop that has paved the way too many unimaginable successes in my life. This PhD degree being one of them.

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ABSTRACT

The changing business landscape has made e-commerce crucial for small and medium enterprises (SMEs), thus enabling market expansion, increased profitability, enhanced competitiveness and innovation. However, e-commerce adoption in developing countries, particularly in townships such as Soweto, differs from developed countries because of cultural, infrastructural and business environment variations. Previous research has mainly used quantitative methodologies, limiting the understanding of Soweto SMEs' perspectives and experiences in the adoption and diffusion of e-commerce. Moreover, existing innovation theoretical models are difficult to apply in this instance, and there is a paucity of research in post-adoption phases, hindering insights into e-commerce implementation among Soweto-based SMEs.

This study aimed to determine the factors that influence the adoption and diffusion of e-commerce among Soweto-based SMEs. For this reason, an integrated theoretical framework was developed on the adoption and diffusion of e-commerce to address the unique peculiarities of Soweto-based SMEs using three theoretical models: Technology Acceptance Model (TAM), Technology-Organisation-Environment (TOE), and Diffusion of Innovation (DOI).

This study employed mixed research methods, which was influenced mainly by the research questions and the pragmatist research paradigm of the study. Purposeful sampling was used to select Soweto-based SMEs that were registered on the databases of three enterprise development organisations. It deployed the triangulation convergent mixed method design, where both quantitative and qualitative data are collected in a single phase. The researcher analysed the two datasets separately and independently using quantitative (SPSS) and qualitative (Atlas. ti) analytical procedures. This study employed exploratory factor analysis (EFA) and the Kaizer-Meyer-Olkin (KMO) index to address the validity of the findings. The findings indicated that Soweto-based SMEs' adoption of e-commerce was significantly influenced by perceived benefits, perceived usefulness and ease of use. Soweto-based SMEs rely on social media to market and run their businesses. They can afford mobile data costs; however, they do not rely on the government for support. The study

recommends four strategies to enhance internet access, boost e-commerce adoption, and increase government support for Soweto-based SMEs, thus emphasising the importance of expanding theoretical models and employing integrated frameworks in township business environment. In addition, this study contributes to the body of knowledge through the integration of multiple theories, coupled with a rigorous research design, to enable a more in-depth exploration of the field of e-commerce adoption among Soweto-based SMEs.

Key words: adoption, diffusion, E-commerce, integrated framework, mixed methods methodology, perceived benefits, pragmatic, SMEs, Soweto, technology acceptance, township

ISIFINQO

Ukushintsha kwesimo sebhizinisi kwenze i-e-commerce yabaluleka kuma-SME, ivumela ukwanda kwemakethe, inzuzo, ukuncintisana, kanye nokusungula izinto ezintsha. Kodwa-ke, ukwamukelwa kwe-e-commerce emazweni asathuthuka, ikakhulukazi, amalokishi afana neSoweto, kuyahluka ngenxa yokuhlukahluka kwamasiko, ingqalasizinda, kanye nemvelo yebhizinisi.

Ucwaningo lwangaphambilini lusebenzise kakhulu izindlela zokulinganisa, ezinciphisa ukuqonda kwemibono yama-SME aseSoweto nolwazi ngokwamukelwa nokusabalalisa ukuhweba nge-inthanethi. Kunzima ukusebenzisa amamodeli etiyori akhona manje, futhi kunokuntuleka kocwaningo ezigabeni zangemuva kokutholwa, okuvimbela imininingwane ekusetshenzisweni kwe-e-commerce phakathi kwama-SME aseSoweto.

Inhloso yocwaningo kwakuwukunquma izinto ezinomthelela ekwamukelweni nasekusabalaleni kwe-e-commerce phakathi kwama-SME azinze eSoweto kanye nokuthuthukisa uhlaka oludidiyelwe lokutholwa kwe-e-commerce olubhekele izici ezihlukile zama-SME asebenza endaweni yamabhizinisi asemalokishini. usebenzisa amamodeli amathathu etiyori okuyilawa, TAM, TOE, kanye ne-DOI. Kusetshenziswe izindlela ezixubile zocwaningo ocwaningweni, zathonywa kakhulu imibuzo yocwaningo kanye phecelezi (ne-pragmatist research paradigm) okuwucwaningo lokubheka izinto ngeso lukubanjalo, okowuhlobo kwe-pharadayimi.

Ucwaningo lwamanje lusatshalaliswe ukwakheka kwendlela exubekile engunxantathu lapho idatha yobuningi nekhwalithi esigabeni esisodwa. Kulomqulu lona, Umcwaningi uhlaziye amasethi edatha amabili ngokwehlukana nangokuzimela esebenzisa izinqubo zokuhlaziya ze-(quantitative) (uncwaningo ngezinombolo) (SPSS) kanye (ne-qualitative) ucwaningo lobunjalo besimo (Atlas.ti).Lezizindlela ngokudidiyelwa ukuba zibe isixaxambiji.

Ucwaningo lusebenzise i-exploratory factor analysis (EFA) kanye nenkomba ye-Kaizer-Meyer-Olkin (KMO) yekheli lenkomba yokuba semthethweni kokutholakele. Okutholakele kubonise ukuthi ukwamukela kwama-SME azinze eSoweto ukuhweba ngokobuchwephese ngabe omakhalekhukwini okanye ama-computer, kwathlwa kakhulu izinzuzo

ezicatshangelwayo, ukusebenziseka okubonwayo, kanye nokusebenziseka kalula, ngokulandelana.

Ama-SME azinze eSoweto athembele ezinkundleni zokuxhumana ukuthi amakethe futhi aqhube amabhizinisi awo, akwazi ukukhokhela izindleko zamaselula futhi awazange athembele kuhulumeni ukuze athole ukwesekwa.

Ucwaningo lunomthelela endikimbeni yolwazi ngokuhlanganiswa kwemibono eminingi, ehambisana nomklamo oqinile wocwaningo, ukuze kunikwe amandla ukuhlola okujulile emkhakheni wokwamukelwa kwe-e-commerce phakathi kwama-SME azinze e-Soweto.

Amagama angundoqo: *amathuba okunyuselwa, iinkqubo zabasebenzi, imbuyekezo,* ingcingane yokutshintshiselana kwezentlalo *(social exchange theory), ubulungisa, ukuqesha nokukhetha abasebenzi, ukwaneliseka ngumsebenzi, uqeqesho nophuhliso*

ABSTRAK

Die veranderende besigheids landskap het e-handel krities gemaak vir SME om mark uitbreiding, winsgewendheid, kompeteering en inovasie te aktiveer. Maar die aanneming van e-handel in ontwikkellende lande en lokasies soos Soweto sal verskil as gevolg van kultuur, infrastruktuur en besigheids omgewings variante. Historiese navorsing het grootliks van kwantitatiewe metodologiee gebruik gemaak wat begrip in Soweto van SME perspektiewe en ervarings beperk en ontlonting van e-handel. Bestaande innovasie van theoretiese modelle is moeilik om toe te pas in die geval en daar is n gebrek van navorsing vir na aaneming fases wat insig belemmer van e-handel se implementasie in Soweto se SME.

Die doel van die studie is om vas te stel watter faktore beinvloed die aanneming en uitbreiding van E-handel in Soweto gebaseerde SME en om n e-handel geinkorporeerde aannemings raamwerk te ontwikkel wat die unieke eienaardighede van n SME in lokasies bedryf, integreer deur van drie teoretiese modelle namens TAM, TOE en DOI gebruik te maak.

Die gemengde navorsing metode wat toegepas in die studie was, hoofsaaklik beinvloed by die navorsing vraag en navorsings paradigma van die studie. Die huidige studie gebruik die gemengde navorsings metode waar kwantatief en kwalitatiewe data in enkel fase ontplooi word. Die navorser het die twee stelle data apart en onafhanklik geanaliseer met die gebruik van kwantatiewe(SPSS) en kwalitatiewe(Atlas.ti) analitiese prosedures. Die studie het Exploratory factor analysis(EFA), asook Kaizer-Meyer-Olkin(KMO) gebruik om die bevindings te valideer. Die bevindings wys dat Soweto-gebaseerde SME aanneem of e-handel was grootliks beinvloed en ervaar onderskeidelik deur voordele, bruikbaarheid en gemak van gebruik. Soweto- gebaseerde SME steun op sosiaale media vir bemarking en om hulle besighede te bestuur want hulle kon die mobiele data bekostig en was nie afhanklik van hulp van die regering nie.

Die studie dra by die liggaam van kennis van die veld van e-handel aanneming in Soweto gebaseerde SME deur integrasie van verskeie teoriee gekoppel met n streng navorsing model om n meer indiepte ondersoek te doen.

Sleutel woorde:

aanneming, E-Handel, ervaar, gemak, gemenge metode, lokasie, Ontwikkelende lande, raamwerk, SME, Soweto, teoriee, uitbreiding, voordele

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ANOVA	**Analysis of Variance**
ANT	**Actor Network Theory**
B2B	**Business to Business**
B2C	**Business to Consumer**
B2G	**Business to Government**
C2C	**Customer to Customer**
C2G	**Customer to Government**
CC	**Cloud Computing**
CIPRO	**Companies and Intellectual Property Commission**
COVID-19	**Corona Virus Disease 2019**
DESI	**Digital Economy and Society Index**
DOI	**Diffusion of Innovation Theory**
EDI	**Electronic Data Interchange**
EFA	**Exploratory Factor Analysis**
EFT	**Electronic Fund Transfer**
EO	**Entrepreneurial Orientation**
EU	**European Union**

GDP	**Gross Domestic Product**
G2G	**Government to Government**
ICT	**Information and Communication Technologies**
IT	**Information Technology**
KMO	**Kaizer-Meyer-Olkin index**
M	**Mean**
MANOVA	**Multivariate Analysis of Variance**
OECD	**The Organisation for Economic Co-operation and Development**
PEOU	**Perceived Ease Of Use**
PERM	**Perceived E-readiness Model**
PU	**Perceived Usefulness**
RBT	**Resource-Based Theory**
SD	**Standard Deviation**
SLF	**Sustainability Livelihood Framework**
SME	**Small and Medium Enterprise**
SSL	**Secure Socket Layer**
TAM	**Technology Acceptance Model**

TOE	**Technology-Organisation-Environment framework**
TPB	**Theory of Planned Behaviour**
TRA	**Theory of Reasoned Action**
UK	**United Kingdom**
UNISA	**University of South Africa**
USA	**United States of America**
UTAUT	**Unified Theory of Acceptance and Use of Technology**
VAT	**Value Added Tax**
VIF	**Variance Inflation Factor**
WWW	**World Wide Web**

CHAPTER 1
INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 INTRODUCTION

The increased usage of digital technologies by both ordinary people and businesses has resulted in a 45.8% surge in online sales worldwide and an estimated 2.14 billion people who purchased goods or services online in 2022 (Har, Rashid, Te Chuan, Sen, & Xia, 2022:1617). Therefore, customers' value creation processes have shifted from physical goods to online digital information and intelligence as the primary source of value creation and profit (Adam, Alhassan & Afriyie, 2020:835; Simakov, 2020:77). Electronic commerce (e-commerce) represents the economic activity of buying and selling products as well as services using online platforms such as the Internet (Johnson & Iyamu, 2019:1; Kartiw, Hussin, Suhaimi, Mohamed Jalaldeen, & Amin, 2018:1; Patelimon *et al.,* 2020:27). It provides a link between technology and people or businesses or consumers or customers through information sharing to facilitate supplier and customer interactions (Barroso, Ferreira, Meidutė-Kavaliauskienė, Banaitienė, Falcão & Rosa, 2019:498; Triandini, Hermawan, & Suniantara, 2020:112).

This has resulted in businesses feeling pressured to reach out to customers and respond to market changes; thus, e-commerce has become a necessity for business continuity of most business enterprises (Almeida, Santos, & Monteiro, 2020:1; Ait, 2020:3; Katz, Callorda & Jung, 2020:2; Nachit & Belhcen, 2020:1). Moreover, rapid global changes due to the Coronavirus Disease 2019 (COVID-19) outbreak have significantly changed ordinary people's lives and how businesses operate globally by accelerating e-commerce and its usage (Almeida *et al.,* 2020:1; Fitriasari, 2020:53; Pantelimon, Georgescu & Posedaru, 2020:27).

Kuckertz, Brändle, Gaudig, Hinderer, Morales Reyes, Prochotta, Steinbrink and Berger (2020:2) established that to lessen the disruption caused by the rapid changes in the business environment, e-commerce has played a significant role in ensuring that businesses continue to provide goods and services to their customers. As a result,small and medium enterprises (SMEs) are compelled to embrace e-commerce as an essential function within their business (Fitriasari, 2020:57; Zhelyazkova, 2020:263).

The adoption of e-commerce among SMEs globally, is becoming one of the fastest growing domains influenced by potential benefits such as improved operational efficiency and innovation, improved customer or supplier relationships, reduced costs, increased market reach, and enhanced business performance (Iyamu, 2020:2; Johnson & Iyamu, 2019:1; Mendieta, 2018:19; Ocloo, Xuhua, Akaba, Shi & Worwui- Brown, 2020:191; Xuhua, Chosniel Elikem & Akaba, 2019:81). Furthermore, essential customer feedback, enabled by automated e-commerce capabilities can help SMEs pivot speedily in response to changes in the external business environment to improve business efficiency (Triandini *et al.,* 2020:112; Zhelyazkova, 2020:263).

Research on Internet usage indicates that a growing number of South African SMEs embrace technological innovations and that the use of e-commerce is increasing steadily (Chimucheka, Dodd & Chinyamurindi, 2018:10; Iyamu, 2020:8; Mathu, 2019:4). However, despite the considerable benefits of e-commerce adoption mentioned above, the uptake among SMEs in developing countries is still lagging behind as compared to developed countries due to factors such as low Internet security, lack of skills, government support, information and communication technologies (ICT) infrastructure, including lack of awareness (Johnson & Iyamu, 2019:2; Mkansi, de Leeuw & Amosun, 2019:29; Napitupulu, Syafrullah, Rahim, Abdullah & Setiawan, 2018:2).

Research conducted on SMEs from townships (overpopulated residential areas reserved for black people under the apartheid system) to determine the extent to which technology is adopted reveals that technology is under-utilised and does not play a vital part in SME business operations (Marnewerk, 2014:11; Mkansi *et al.,* 2019:26). Through the adoption and diffusion of e-commerce, township SMEs could play a role in bridging the physical infrastructure gap by creating value for their customers, which in turn can increase their business efficiency by leapfrogging their level of global competitiveness (Almeida *et al.,* 2020:4; Mkansi *et al.,* 2019:30; Acheampong Otoo *et al.*, 2019:263; Zhelyazkova, 2020:263). Despite the value creation and benefits derived through e-commerce, its adoption and diffusion by township SMEs such as the SMEs in Soweto, remains very low due to historical structural impediments, perceived high costs, and lack of skills and awareness (Bvuma & Marnewick, 2020b:11; Cant & Wiid, 2016:1879; Mkansi *et al.,* 2019:29).

1.2 PROBLEM STATEMENT

Numerous research studies on the adoption and diffusion of e-commerce have found that SMEs in developing countries have not yet capitalised on the power of digital transformation to advance their level of competitiveness and take advantage of global economic offerings (Ezzaouia & Bulchand-Gidumal, 2020:100675: Mendieta, 2018:182; Govinnage & Sachitra, 2019:8; Ocloo *et al.,* 2020:208). Furthermore, it is argued that the adoption of e-commerce by Soweto township SMEs is different from how SMEs in developed countries adopt e-commerce due to the types of infrastructure, different cultures, and diverse business philosophies (Amornkitvikai & Lee, 2020:2; Ajao, Oyebisi & Aderemi, 2018:474; Herzallah & Mukhtar, 2016:2; Mendieta, 2018:22). In addition, Ajao *et al.* (2018;476) and Hayati and Andrawina (2019:2) criticise the generalisability of current research findings and argue that because of the unique peculiarities and characteristics of the township business environment, existing theoretical models are difficult to apply among township SMEs such as those in Soweto.

Furthermore, there is a paucity of research on the post-adoption phase to determine how e-commerce is implemented and diffused into the business operational activities of Soweto township SMEs (Almeida *et al.,* 2020:1; Sheth, 2020:281). Moreover, there is a lack of empirical research to explore and gain a better understanding to explain the perceptions, experiences, and opinions of township SMEs towards the processes and activities that facilitate the diffusion of e-commerce in their businesses (Hayati & Andrawina, 2019:3; Hoffman, 2017:4; Malaquias & Malaquias, 2020:118; Samad, Asadi, Nilashi, Ibrahim, Abumalloh, & Abdullah, 2020:4). Additionally, there is a need to understand what barriers hinder the adoption and diffusion of e-commerce among township SMEs (Nazir & Roomi, 2020:2; Worku & Muchie, 2019:351).

Thus, current research on e-commerce activities in Soweto offers a narrow understanding of the specific factors influencing its adoption and diffusion among SMEs and leaves a significant gap that requires attention to understand the complete process of e-commerce adoption (Ajao *et al.,* 2018:474; Chau, Deng & Tay, 2020:2; Kabanda & Matsinhe, 2019:328; Mapeshoane & Pather, 2016:2; Mkansi *et al.,* 2019:28). The problem statement for this study is therefore formulated as follows:

The existing literature has primarily focused on identifying factors influencing the adoption of e-commerce among SMEs in the townships, neglecting an examination of post-adoption strategies for implementation and diffusion, thereby creating a research gap that necessitates investigation into the effective post-adoption methods in this context.

1.3 RESEARCH OBJECTIVES

1.3.1 Primary research objective

To investigate whether the identified factors from the literature reviewed influence the adoption and diffusion of e-commerce among Soweto-based SMEs.

1.3.2 Secondary research objectives

- To explore the relationship between the identified factors from the reviewed literature and the adoption of e-commerce among Soweto-based SMEs.
- To determine how the adoption of e-commerce is implemented and diffused among Soweto-based SMEs.
- To explore what barriers hinder the adoption of e-commerce among Soweto-based SMEs.

1.3.3 Primary research question

Do the identified factors from the literature review influence the adoption and diffusion of e-commerce among Soweto SMEs?

1.3.4 Secondary research questions

- What is the relationship between the identified factors from the literature review and the adoption of e-commerce among Soweto-based SMEs?
- How is the adoption of e-commerce implemented and diffused amongst Soweto-based SMEs?

- What are the barriers that hinder the adoption of e-commerce amongst Soweto-based SMEs?

1.4 LITERATURE REVIEW

This section presents an introductory review of the literature related to the adoption of e-commerce as a key driver to enhance township SMEs' business performance. This introductory literature review explores South African SMEs, their definition, types and their role in the economy.

1.4.1 Defining South African SMEs

There is no standard global definition for SMEs as literature reveals many definitions that differ from one country to another (Bvuma & Marnewick, 2020:3; Govuzela, 2018:15; Kibuuka & Tustin, 2019:34). In South Africa, The National Small Business Act (Act No. 102 of 1996) defines a small business organisation as any entity, whether or not incorporated or registered under any law, which consists mainly of persons carrying on small business concerns in any economic sector, or which has been established to promote the interests of or represent small business concerns, and includes any federation consisting wholly or partly of such association, and also any branch of such organisation. The Act further categorises SMEs into distinct groups, namely; survivalist, micro, very small, small and medium microenterprises by using the size of the business and annual turnover as measures. According to Kibuuka and Tustin (2019:34) as well as Kubone (2019:32), the definitions for the different enterprise categories are as follows:

- **Survivalist enterprise:** the income made is below the poverty line. This category is referred to as pre-entrepreneurial and includes street vendors, hawkers and subsistence farmers. Traditionally, survivalist enterprises are categorised in the microenterprise sector.
- **Microenterprise:** the income produced is less than the value-added tax (VAT) registration limit (R150 000 per year). Microenterprises often lack formality regarding registration. A typical example would include mini-bus taxis, spaza shops, and

household industries. A microenterprise does not employ more than five (5) people.

- **Very small enterprise:** the turnover is between R200 000 and R500 000 per year, and the enterprise employs less than ten (10) people, except those in construction, mining, manufacturing and electricity sectors which employ less than 20 employees. Such enterprises have access to technology and operate in a formal market.
- **Small enterprise:** the turnover is between R2 million and R25 million, and the enterprise employs up to 50 employees. Small enterprises are typically more established than very small enterprises and demonstrate more complex business practices.
- **Medium enterprise:** the turnover is between R4 million and R50 million and the enterprise employs between 100 and 200 employees within the construction mining, manufacturing, and electricity sectors. Medium enterprises are often characterised by the decentralisation of decision-making with an additional layer of a management team.

The National Small Business Act's (Act No. 102 of 1996) definitions of the various business categories are summarised in Table 1.1 below.

Table 1.1 Small and medium enterprises (SME) categories

Enterprise size	Number of employees	Annual turnover	s assets, excluding fixed property
Medium	<100–200	<R4m–R50m	<R2m–R18m
Small	<50	<R2m–R25m	<R2m–R4.5m
Very small	<10–20	<200k–R500k	<R150k–R500k
Micro	<5	<150k	<R100k

Source: Govuzela (2018:35)

1.4.2 Formal and informal SMEs

South Africa has two separate economies that are legally and spatially divided by different levels of development which vary between formal and informal socioeconomic structures as well as technological infrastructure (Charman, Peterson, Piper, Liedeman & Legg, 2017:37;

Kalitanyi, 2019:56). The formal economy is highly regulated, taxed, and operates within a structured legal framework. An informal economy is unregulated (Charman *et al.,* 201736). Ouédraogo (2017:2) defines the informal economy as "unregulated by society's institutions, in a social and legal setting where similar activities are regulated." In South Africa, the informal economy is usually synonymous with people who are poor (Kalitanyi, 2019:56; Kubone, 2019:23). The informal sector accounts for 67.5% of all SMEs in South Africa (SEDA, 2019:19). Since the informal economy forms a broad scope of SMEs in South Africa, both formal and informal SMEs in Soweto's township formed part of this study.

1.4.3 Role of SMEs in the economy

Research indicates that SMEs are regarded as dynamic business entities crucial in promoting global economies (Chege & Wang, 2020:256; Hashim, Raza & Minai, 2018:2; Igwe, Ebenuwa & Idenedo, 2020:46). Scholars concur that SMEs stimulate economic activities through employment creation and poverty alleviation (Al-tIt, Omri & Euchi, 2019:1; Kibuuka & Tustin, 2019:35; Tang & Konde, 2020:268). Furthermore, SMEs are recognised as critical players in creating new market opportunities, developing new product niches, and leveraging new technological developments (Malaquias & Malaquias, 2020:106; Williams, Manley, Aaron & Daniel, 2018:33; Tsou & Chen, 2020:1). They pursue competitiveness through innovation and continuous improvement of their business offerings such as products and services or processes in a competitive market (Giang, 2019:1; Mahliza, 2019:290; Tang & Konde, 2020:68).

In South Africa, SMEs' success is essential to advancing inclusive growth and sustainable economic development (Bhorat, Asmal, Lilenstein & Van Der Zee, 2018:2; Chimucheka *et al.,* 2018:1; Fatoki, 2018:1). According to Govuzela (2018:1), the private sector, which SMEs form part of, is at the forefront of economic development and contributes 70% of total employment in most developing countries. Kibuuka and Tustin (2019:36) estimate that 91% of businesses in South Africa are SMEs. According to the Small Enterprise Development Agency (SEDA, 2019:2), there are currently 2,65 million SMEs in South Africa, which contribute 37% of the country's gross domestic product (GDP).

In townships, SMEs play a critical role in employment creation and income generation (Kalitanyi, 2019:57; Mathu & Tlare, 2017:63). They are the main channels through which the grassroots population gains access to economic opportunities (Manala, 2018:2). An economically thriving SME sector in townships is an essential driver of economic stimulation and growth in South Africa because of its ability to transform and economically develop townships (Kubone, 2019:3).

1.5 CONCEPTUAL FRAMEWORK

To empirically validate the understanding of factors influencing the adoption and diffusion of e-commerce, it is essential to rely on specific theoretical frameworks for testing propositions related to e-commerce adoption (Adjin-Tettey, 2018:94; Chau *et al.,* 2020:3; Edoru, 2018:26). The researcher conducted a comprehensive literature review of prominent theories employed to comprehend the adoption and diffusion of e-commerce, at both individual and organisational levels (Ajzen, 1991; Davis, 1989; Fishbein & Ajzen, 1975; Tornatzky & Fleischer, 1990; Rogers, 1995; Venkatesh *et al*., 2003). The literature review will highlight a crucial challenge in applying most of the existing studies and theoretical frameworks on the adoption and diffusion of e-commerce conducted in advanced countries as contrasted against developing countries, especially in township settings such as Soweto. This limitation arises from significant disparities in social, cultural, economic, legal, and political contexts (Hassen, Abd Rahim & Shah, 2019:75; Sanchez- Torres & Juarez-Acosta, 2019:138).

Furthermore, literature review reveals a lack of consensus regarding the most suitable theory or model to comprehensively explain the adoption and diffusion of e-commerce within township SMEs. This absence of consensus can be attributed to the distinct characteristics and peculiarities found in township environments (Adam *et al.,* 2020; Chau *et al.,* 2020:6; Harizi & Marhoon, 2019:87). Notably, the prevalent theoretical frameworks and models fail to account for critical contextual factors affecting township SMEs. These factors encompass issues such as inadequate government support policies, infrastructural deficiencies, including cultural and socio-economic complexities (Hassen *et al.,* 2019:73; Moos & Sambo, 2018:471).

Thus, a gap exists to explore how the integration of the theoretical frameworks can enhance the understanding of this phenomenon. In addressing the gap that has been identified, this study integrated three theoretical frameworks, namely, the technology acceptance model (TAM) (Davis, 1989), technology-organisation-environment (TOE) framework (Tornatzky & Fleischer, 1990), and diffusion of innovation theory (DOI) (Rogers, 2010). Integrating the above-mentioned theoretical frameworks provide a solid academic foundation for providing a more resonant understanding of the adoption and diffusion of e-commerce among township SMEs, as illustrated by the conceptual framework in Figure 1.1.

Based on the insights gained in the literature review, the conceptual framework is constructed around nine commonly sighted factors stemming from TAM and TOE that exert influence on the adoption and diffusion of e-commerce. As a complementary addition, the researcher introduced "perceived benefits" as a tenth factor, which is consistently highlighted in the literature but not explicitly articulated within the TAM and TOE frameworks. Furthermore, five more core elements based on the DOI model explaining the adoption and diffusion processes (see 3.4.2 of chapter 3) have been incorporated into the conceptual framework (Chandra & Kumar 2018:238; Ha, 2020:2822; Iyamu, 2020; Ocloo et al., 2020). The different frameworks have been colour-coded, and the red colour symbolises the perceived benefits added by the researcher (see Figure 1.1).

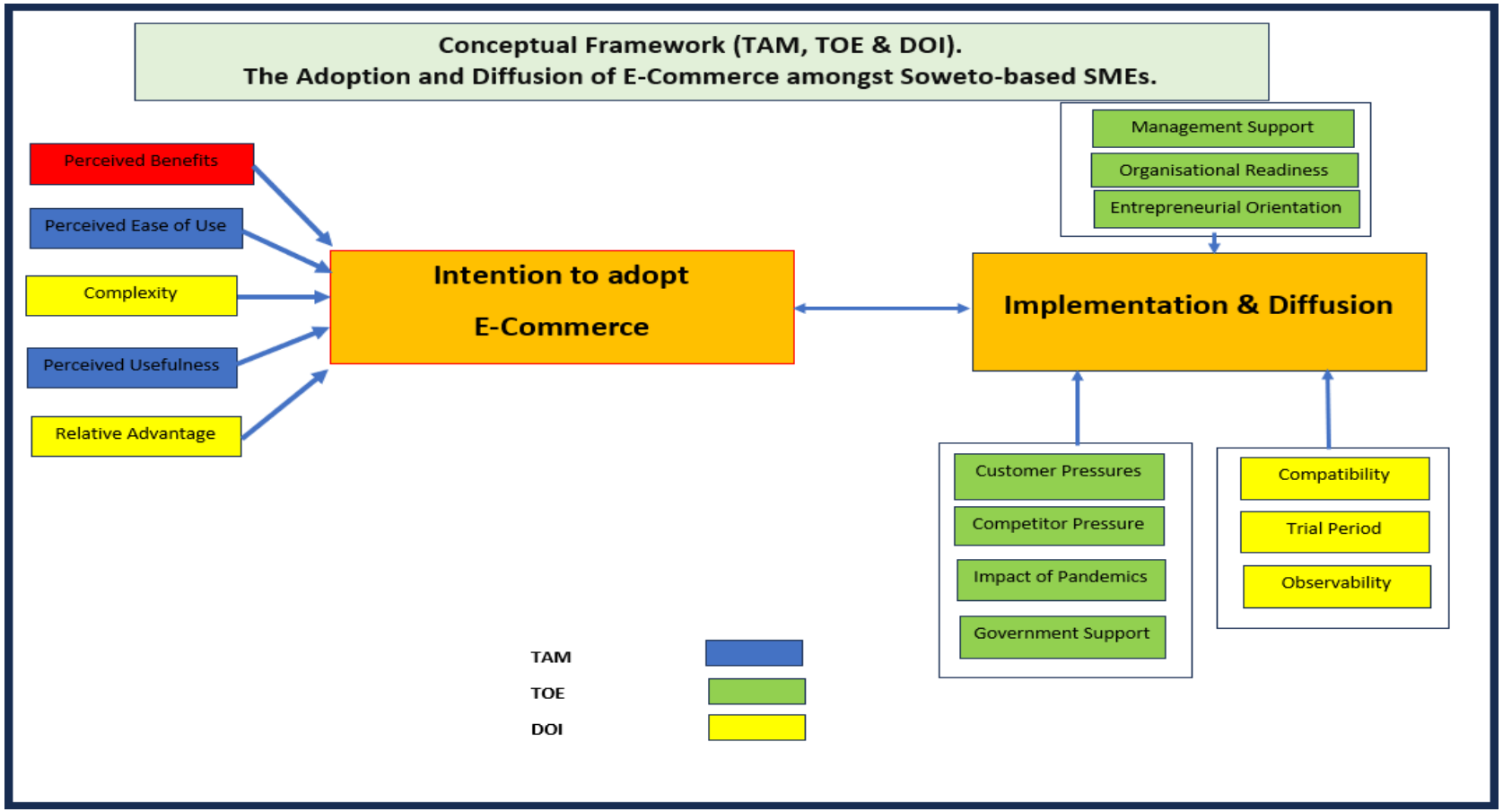

Figure 1.1 Conceptual framework

Source: Researcher's own compilation (2023)

1.6 RESEARCH METHODOLOGY

A research methodology enables a research problem to be addressed systematically to provide the researcher with a general strategy to answer research questions (Creswell & Creswell, 2018:34). The research onion, a metaphor for describing methodology layers, includes research methodologies, philosophies, designs, strategies, and time horizons (Saunders, Lewis, Thornhill & Bristow, 2019:130). Research methods used to support the research methodology include research techniques and procedures (Gray, 2013:34). The techniques and procedures outline the data collection and data analysis (Denzin & Lincoln, 2011:14).

1.6.1 Philosophical worldview

The term worldview means "a basic set of beliefs that guide action" (Guba, 1990:17). According to Creswell and Creswell (2018:5), a worldview is a general philosophical outlook about the world and the type of research that a researcher adds to a study, ultimately deciding which research methodology and research design will be used.

This study adopted a pragmatic worldview, as it prioritises the research problem over the specific research methodology employed (Biesta, 2015:2). Furthermore, pragmatism emphasises the use of diverse data collection methods to inform the research questions at hand (Maree, 2020:333; Tashakkori & Creswell, 2007:305). Pragmatism, as a research philosophy rooted in epistemology, posits that there is no singular path to acquiring knowledge; rather, there exist multiple avenues for comprehension due to the existence of diverse realities (Cherryholmes, 1992:14; Corban & Strauss, 2015:19-20). Consequently, a comprehensive understanding of these myriad realities is achieved through the integration of various research approaches, encompassing both qualitative and quantitative methods (Greene, 2007:20).

The pragmatic worldview emerges from actions, situations and their subsequent outcomes rather than being determined by preceding conditions (Creswell & Creswell 2018:10). By employing a combination of qualitative and quantitative research techniques, the researcher will achieve a more comprehensive understanding of factors impacting e-commerce adoption

in Soweto township. This understanding is derived from the viewpoints, first-hand experiences, and opinions of township SMEs, as well as from the scientific modelling and testing of various variables (Biesta, 2015:2; Patton, 2014:89).

The core tenet of pragmatism posits that quantitative and qualitative methodologies can coexist harmoniously. Consequently, these two methodologies share enough fundamental value to permit their integration within a single research (Reichardt & Rallis, 1994:10). Furthermore, the pragmatic worldview contributes to a well-rounded assessment of the challenges and opportunities surrounding e-commerce adoption and the subsequent diffusion of e-commerce practices among township SMEs (Teddlie & Tashakkori, 2009:72).

1.6.2 Research methodology

This study adopted a mixed methods methodology to delve deeper into the research problem. This methodology combines both quantitative and qualitative research methods, encompassing data collection, analysis, and integration. Its aim is to underscore the research study's purpose while mitigating the limitations associated with relying solely on a single research method (Bowen, Rose & Pilkington, 2017:11; Creswell & Creswell, 2018:14; Johnson & Onwuegbuzie, 2004:15; Morse & Niehaus, 2016). In the context of this study, a qualitative research methodology is exploratory and devoid of predetermined responses, often realised through techniques such as interviews. In contrast, a quantitative research methodology typically employs closed-ended inquiries, exemplified by surveys and questionnaires (Bowen *et al.,* 2017:16).

Thus, the justification for opting for mixed methods lies in the absence of empirical studies investigating the factors that influence the adoption of e-commerce among Soweto SMEs, which hinders the expansion of our comprehension both in breadth and depth and the corroboration of data essential for a comprehensive understanding of the research problem (Bowen *et al.,* 2017:11; Johnson, Onwuegbuzie & Turner, 2007:123). Consequently, harnessing the strengths inherent in both research approaches can yield additional insights and enhance the interpretation of results concerning the factors influencing e-commerce adoption. The mixed methods approach also allows for a more thorough examination of the

diffusion process of e-commerce adoption among Soweto-based SMEs (Creswell & Plano Clark, 2018:3; Ivankova, Creswell & Stick, 2006:3).

1.6.3 Research design

Research designs are various modes of inquiry employed within qualitative, quantitative, and mixed methods methodologies that provide specific guidance for conducting research procedures (Creswell & Creswell 2018:11; Schutte, 2018:12).

This research adopted a triangulation convergent design to attain a more profound contextual understanding of the adoption and diffusion of e-commerce among Soweto-based SMEs (Kommey, 2020:119; Saunders & Townsend, 2018:34; Teddlie & Tashakkori, 2011:35). The triangulation convergent design encompasses the simultaneous collection, analysis, and integration of both quantitative and qualitative data results (Creswell & Plano Clark, 2018:69; Moseholm & Fetters, 2017:2).

Furthermore, the primary objective of the triangulation convergent design is to leverage the strengths and address the limitations of both quantitative and qualitative methodologies. It aims to identify areas of convergence, divergence, contradictions, or potential relationships between the two datasets to yield well-validated conclusions (Plano Clark & Ivankova, 2016:74; Plonsky, 2017:33). In chapter 4, Figure 4.2 illustrates a single-phase approach, wherein quantitative and qualitative data are collected and analysed independently before they are merged. The merger allows for a comparison of results to determine whether they corroborate or conflict with each other (Creswell & Creswell 2018:217).

1.6.4 Research methods

Research methods encompass the specific methodologies for collecting, analysing, and interpreting data in a study (Maree, 2020:31). In the context of the triangulation convergent design, there are four essential steps for implementing the single-phase triangulation convergent approach (Bowen *et al*., 2017:12; Nunfam, 2021:3). The four steps are elaborated upon below.

In the initial step, the researcher simultaneously gathered both quantitative and qualitative data related to the adoption and diffusion of e-commerce among township SMEs, employing distinct research methodologies (Nanfam, 2021:3). Subsequently, in the second step, the researcher separately and autonomously analysed the two datasets, employing quantitative and qualitative analytical methodologies (Moseholm & Fetters, 2017:2). Once the researcher had the two sets of preliminary results at hand, the researcher reached the point of convergence and amalgamated the findings derived from both datasets (Plano Clark & Ivankova, 2016:9).

The third step involved a direct comparison of the different outcomes by the researcher, followed by a discussion of the findings (Moseholm & Fetters, 2017:2). In the fourth and final step, the researcher interpreted the degree of convergence or divergence between the two sets of results, their inter-relationships, and how they collectively contribute to a more comprehensive understanding aligned with the study's overarching objectives (Doyle, Brady & Byrne 2017:4). In cases where disparities emerged in the results, the researcher further elucidated how both quantitative and qualitative methods individually provided unique insights that might have remained undiscovered had the study not employed mixed methods approach (Creswell & Creswell, 2018:220). Based on the above underlying principle, the researcher chose the triangulation convergent mixed methods design to explore what factors from the literature review influence the adoption of e-commerce and subsequently determine how the adoption of e-commerce is diffused among township SMEs in Soweto.

1.6.5 Target population and sample selection

A population comprises all units or a defined set of individuals or items for analysis that the researcher aims to investigate (Salkind, 2012:396). According to Statistcis South Africa or Stats SA (2018) in short, the estimated number of SMEs in South Africa is 2.8 million, with 46% of these SMEs found in the Gauteng province (Cilliers, 2018:2; Kalitanyi, 2019:57). Nevertheless, there are currently no available data regarding the specific number of SMEs operating within the Soweto area (SEDA, 2019:20). This study enlisted participants from Soweto-based SMEs that were registered on the Ekasi Entrepreneurship Movement, Transformation Legacy, and Vuleka databases. These organisations actively engage in initiatives aimed at fostering small business enterprises within township areas. Furthermore,

this study encompassed a study population that consisted of both formal and informal SMEs, including those with varying numbers of employees, including zero or more.

The process of choosing appropriate participants for the study is referred to as sampling (Saunders & Lewis, 2012:133). A sample represents a subset of a population chosen to mirror the characteristics of the entire population (Abt, Boreham, Davison, Jackson, Nevill, Wallace & Williams, 2020:1933). In contrast, sampling entails the selection of a small portion from a defined population to draw inferences or generalise to a specific group (Neuman, 2011:241). The researcher employed a sampling methodology that encompassed decisions about the research location, the selection of participants contributing data to the study, the method of their selection, and the requisite number of participants to address the research inquiries (Creswell & Plano Clark, 2018:175).

The data collection process within the triangulation convergent design entails the simultaneous yet separate collection and analysis of both quantitative and qualitative data. To achieve this, the researcher employed distinct sampling methods for gathering quantitative and qualitative data. A comprehensive examination of the research methodology can be found in Chapter 4.

1.6.6 Pilot study

A quantitative pilot study was conducted to identify any items or instructions within the questionnaire that might be unclear or ambiguously formatted (Ivankova *et al.,* 2006:6). The researcher administered the developed questionnaire to ten SMEs in Soweto, known to the researcher, to assess their interpretation of the quantitative questions and ensure that the questions did not contain any bias (Leedy & Ormrod, 2010:223; Rubin & Babbie, 2011:404). Additionally, the researcher selected two SMEs from the same Soweto group to take part in the qualitative pilot study using online communication platforms such as Microsoft Teams (MS Teams) or Zoom, both of which are Voice Over Internet Protocol (VoIP) systems. The qualitative pilot study aimed to test the interview questions and gather feedback from participants to allow the researcher to make any necessary adjustments before conducting the final interviews with the research participants (Magnusson & Maracek, 2015:114).

1.7 QUANTITATIVE METHODOLOGY

The quantitative methodology presents the sampling procedure, data collection technique, and rationale, followed by the data analysis.

1.7.1 Sample and sampling technique

Given the absence of available data on the exact number of SMEs operating in Soweto, the application of a simple random sampling technique was not feasible for the researcher (Maree, 2020:215). Instead, the study employed purposive sampling, where the researcher intentionally selected SMEs with the potential to provide valuable insights into the phenomenon of interest, thus allowing for a deeper understanding (McCrudden & Sparks, 2018:8). To identify respondents who could address the research questions of this study, the researcher sought the assistance of eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka. These organisations collaborate with Soweto-based SMEs, making them likely candidates to consider the adoption of e-commerce activities in their businesses (Sharma, 2017:752).

In adherence to the guidelines established by the Protection of Personal Information (POPI) Act of 2017, which aims to safeguard the privacy and personal information of individuals in South Africa (Chetty, 2020:2), the researcher created an online survey questionnaire. This questionnaire was subsequently provided to eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka for electronic distribution among the Soweto-based SMEs listed in their databases for completion.

Ensuring a comprehensive representation of the studied population is of paramount importance (Abt *et al.,* 2020:1933; Sharma, 2017:752). As such, participants for this study were drawn from three distinct sources: eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka. The online questionnaire survey, unique to each organisation, was accessed via hyperlinks. Furthermore, a comparative analysis was conducted on the diverse datasets obtained from each of these organisations to juxtapose findings and identify any notable disparities. This comparative approach served to enhance our understanding of how the phenomenon impacts other Soweto-based SMEs (Palinkas, Garcia, Aarons, Finno-

Velasquez, Holloway, Mackie, Leslie & Chamberlain 2016:4). Equally important, the convergence of results from these three distinct organisations, all responding to related questions in a complementary manner, not only add depth but also enriches the information.

Earlier research concentrated on the adoption of technology among township SMEs with sample sizes ranging between 100 and 500 respondents (Govuzela, 2018:128; Marnewick, 2014:5; Mathu & Tlare, 2017:66). For the purposes of this study, a quantitative survey comprising 32 questions, 19 of which are 5-point Likert scale questions. According to Fowler (2014:660), the minimum number of respondents needs to equal the number of questions multiplied by the 5-point Likert scale to arrive at an optimum number of respondents of at least 300. This number is deemed to be adequate for the target population of Soweto-based SMEs drawn from the eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka (Abt *et al.,* 2020:1933).

1.7.2 Data collection method

In the development of the standardised survey questionnaire instrument for data collection, the researcher adhered to the principles of deductive reasoning (Fowler, 2014:87; Saunders *et al.,* 2019:153). Deductivism involves referencing hypotheses and ideas that are deduced from theoretical propositions to elucidate causal relationships between variables (Denzin & Lincoln, 2013:17; Saunders & Lewis, 2012:108). The content of the survey questionnaire instrument was informed by information about township SMEs, literature review, theoretical framework, and the research objectives (Fowler, 2014:89). Quantitative data were collected through a closed-ended, web-based standardised survey questionnaire that employed a 5-point Likert scale (Ivankova *et al.,* 2006:10; Maree, 2020:203).

This study seeks to explore whether the factors identified in the reviewed literature exert an influence on the adoption and diffusion of e-commerce among township SMEs in Soweto. To address the “what” questions, the researcher employed a standardised survey questionnaire instrument. As per the perspective of Lewis-Beck, Bryman, and Liao (2004:966), “what” questions are designed to reveal and describe characteristics associated with a social phenomenon. Consequently, in the context of this study, the 'what' questions are concerned with the factors affecting e-commerce adoption among SMEs.

The use of survey questionnaire instrument allowed for efficient collection of substantial volume of data from the population while remaining cost-effective (Muijis, 2011:38-39; Best & Kahn, 2006:313). Owing to limitations in time and financial resources, this study employed a cross-sectional methodology. In this context, a cross-sectional methodology signifies that the research was conducted at a specific point in time (Quinlan, 2011:180).

The researcher developed and administered a standardised questionnaire that provided clear, consistent instructions to respondents for completing the questionnaire. Moreover, the researcher rigorously scrutinised the questionnaire to ensure that no content with potential to introduce bias in this research was included (Leedy & Ormrod, 2010:223; Rubin & Babbie, 2011:404). The survey questionnaire included four inclusion criteria for each participant group:

- The number of employees;
- The location of the SME;
- The age group category; and
- The exclusive participation of business owners and managers in the research.

Quantitative data were gathered using closed-ended questions that required respondents to choose from predefined response categories. Respondents were asked to rate their answers on a scale ranging from “strongly agree” to “strongly disagree” (Creswell & Plano Clark, 2018:179). For most of the variables, a 5-point Likert scale was utilised, where the options ranged from (1) “strongly agree” to (5) “strongly disagree”. To gauge the internal reliability of the instrument, such as the 5- 5-point Likert scale in the questionnaires, the researcher employed the Cronbach alpha coefficient to mitigate potential biases (Maree, 2020:261). Cavana, Delahaye, and Sekaran (2001:206) caution against using scales exceeding five points, stating that they do not significantly enhance the reliability of ratings, as a five-point scale is generally adequate.

The web-based survey questionnaire was disseminated to Soweto-based SMEs registered on the databases of eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka, facilitated by a hyperlink. The returned questionnaires were meticulously reviewed by the researcher to identify and rectify any omissions or inconsistencies. Questionnaires that were returned with such issues were excluded from this study’s analysis.

1.7.3 Data analysis

Quantitative data analysis primarily revolves around numerical values and statistics (Bryman, 2001:20). The researcher transformed the raw data by assigning numeric values to each response using the Statistical Programme for the Social Sciences (SPSS version 27.0). This process involved cleaning the database to identify and rectify data entry errors and recoding items on instruments with inverted scores, as advised by Creswell and Plano Clark (2018:212). A codebook was established, detailing the variables, their definitions, and the corresponding numeric values for the responses. The data underwent scrutiny to identify trends and assess their distribution, including checks for normality using measures such as kurtosis and skewness. For major variables, including both independent and dependent variables, the analysis encompassed both descriptive and inferential statistics.

The data analysis was executed using Statistical Package for the Social Sciences (SPSS) to address the quantitative research questions and test hypotheses. Inferential tests were conducted, with the calculation of effect sizes and confidence intervals via factor analysis. It is noteworthy that the same instrument was used for both the pilot study and the main study. The outcomes of the analysis were presented in the form of statements, tables, and figures, providing a succinct summary of the statistical evidence for the quantitative results (Creswell & Plano Clark, 2018:215). A comprehensive depiction of the data analysis process is elaborated upon in Chapter 5.

1.8 QUALITATIVE METHODOLOGY

The qualitative methodology presents the sample and sampling procedure and data collection technique followed the data analysis.

1.8.1 Sample and sampling technique

The qualitative sample consisted of Soweto township SMEs listed in the databases of eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka, all of which are actively involved in promoting small business development initiatives within township areas. As per the guidelines outlined in the Protection of Personal Information (POPI) Act of 2017, the

researcher contacted these three organisations and requested them to send emails to all Soweto-based SMEs in their databases who had already embraced e-commerce practices or expressed interest in adopting e-commerce. These emails sought to gauge the willingness of these SMEs to participate in qualitative research interviews with the researcher (Creswell & Creswell, 2018:222). In addition, a note was included in the quantitative survey, urging Soweto-based SMEs engaged in e-commerce activities or contemplating their adoption to provide their contact information if they wished to partake in the qualitative phase of the study.

Participant selection followed a simple random sampling method, drawing from the lists provided by the three organisations, as well as from the SMEs who willingly provided their contact details on the survey questionnaire for potential interview participation. All interested SMEs expressed consent to engage in the qualitative research phase of the study. Simple random sampling entails the random selection of respondents through a systematic procedure, which may involve methods such as using a random numbers table. This approach ensures that each respondent within the identified population has a known probability of being selected (Abt *et al.,* 2020:1933; Saunders & Lewis, 2012:138). All interested SMEs granted consent for the three organisations to share their contact information with the researcher and willingly signed consent forms to participate in the qualitative research.

1.8.2 Data collection method

The qualitative phase adopts an inductive approach, enabling the researcher to delve into the contextual aspects and grasp the meanings attributed by individuals to their real-life experiences (Creswell & Poth, 2018:7; Denzin & Lincoln, 2011:3). It primarily delves into the "how, why, and at what rate" e-commerce diffuses among township SMEs in Soweto (Maree, 2020:109). Additionally, this phase aids in the identification of activities that facilitate the diffusion process by evaluating the pace at which e-commerce spreads. Thus, the qualititative phase focuses on the lived experiences, rationale, and perspectives of township SMEs to provide a deeper understanding of the e-commerce diffusion process (Babbie & Mouton, 2012:279; Daniel, 2016:93; Leedy & Ormrod, 2014:141).

Qualitative data were collected through semi-structured open-ended interviews by the researcher and chosen for their suitability in uncovering in-depth information needed to

address the “how” and “why” questions mentioned earlier (Maree, 2020:109; Hamilton & Finley, 2020:3). These interview questions offer flexibility, enabling the researcher to pose follow-up queries in response to participants' responses (Sutton & Austin, 2015:227). Given the challenges posed by the COVID-19 pandemic and associated lockdown restrictions, telephonic and online interviews using Voice Over Internet Protocol (VoIP) systems such as Microsoft Teams or Zoom were considered the most suitable means of data collection techniques (Tiidenberg, 2018:469).

The researcher conducted interviews that typically lasted between forty-five minutes and one hour. These interviews were scheduled at times convenient for the participants, and prior permission was sought to record the sessions in the interest of accuracy (Bowen *et al.,* 2017:17). To maintain confidentiality, pseudonyms were used to shield participants from any form of personal or business identification. Participants were encouraged to ask questions and seek clarity where needed.

A set of seven interview questions was devised to delve into the perspectives and experiences of township SMEs concerning the adoption and diffusion of e-commerce into their business operations. These interviews were digitally recorded via Microsoft Teams or Zoom, securely transferred to a designated laptop, transcribed verbatim, and rigorously reviewed for accuracy (Edmonds & Kennedy, 2019:4). The interviews spanned over a period of four weeks. To bolster credibility, thick descriptions were employed, thus offering detailed accounts of events that included comprehensive notes on the interviews with participants and an examination of all materials pertinent to the research process. Personal notes were taken throughout the research (Connelly, 2016:436).

For the qualitative sample, recommendations from Hamilton and Finley (2020:3) and Saunders *et al.* (2012:283) suggest that a minimum sample size of five to fifteen interviews is typically adequate to achieve saturation, a point in data collection where new insights are no longer derived from interviews. In alignment with this guidance, eight out of the fourteen Soweto-based SMEs were interviewed, as also endorsed by Cooper and Schindler(2011:147). SMEs were randomly selected from each of the three organisations to participate in the qualitative interviews. SMEs were randomly selected from the list of the participants that volunteered to be interviewed. This was a combined list of respondents from the three organisations who gave

their consent to participate in the qualitative interviews. Data saturation was reached after the eighth interview

1.8.3 Data analysis

For the analysis of qualitative data, the text from interviews was meticulously transcribed and transferred into word processing files. The transcripts were subjected to a thorough accuracy check, and the data were methodically categorised into themes using specialised qualitative data analysis software known as Atlas.ti (Creswell & Plano Clark, 2018:213). Atlas.ti proved to be an invaluable tool for analysing the transcribed interview data, allowing for the identification of crucial key dimensions. For this reason, Atlas.ti is particularly well suited for the analysis of qualitative data, especially from interviews.

The researcher initially read through the data to gain an overall sense of its content and documented initial thoughts in memos. Subsequently, the development of initial codes commenced, leading to the creation of a codebook, which served as a comprehensive reference of codes for organising the database. Additionally, the codebook facilitates agreement on the analysis of the transcripts as new codes are added during the coding process (Bowen *et al.,* 2017:18). The data underwent coding and conceptual grouping, ultimately leading to the identification of key themes that allowed the researcher to formulate interpretations about the data (Quinlan, 2011:425). A comprehensive account of the data analysis process is expounded upon in Chapter 5.

1.8.4 Integration and merging of results

The integration process within a convergent design involved amalgamating the findings from both the quantitative and qualitative components (Doyle *et al.,* 2017:9; Moseholm & Fetters, 2017:2). These results were effectively compared and presented in a structured tabular format, often referred to as a joint table. In the joint table, this study's outcomes were methodically arranged into sections corresponding to the major topics under investigation (Creswell & Plano Clark, 2018:222; Usher, Ford, Li & Weidner 2019:38). The presentation of results for addressing the research questions followed a specific sequence, with the quantitative results being presented before the qualitative results (Creswell & Creswell, 2018:220).

1.9 VALIDITY AND CREDIBILITY

Validity and credibility stand as fundamental principles in the realms of research and information assessment. Validity chiefly addresses the reliability of quantitative research methods, assuring that the measurements accurately reflect what they intend to measure. In contrast, credibility encompasses the qualities of dependability, transferability, confirmability, and completeness in qualitative research, emphasising the trustworthiness and reliability of its findings.

1.9.1 Validity and reliability of quantitative research

Saunders and Lewis (2012:127) emphasise that the cornerstone of designing a research strategy hinges on the assurance of the validity and reliability of the employed research methods. In quantitative research, the emphasis is on the validity and reliability of standard measuring instruments to replicate study findings (Maree, 2020:260). Furthermore, the concept of generalisability in quantitative research pertains to the ability to extend results from a sample to an entire population, provided that the sample is a representative reflection of the population, regardless of the context (Neuman, 2011:241). In this study, research was conducted on three distinct samples from the databases of eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka to ensure a reasonable representation of the population (Abt *et al.,* 2020:1933).

Validity pertains to the meaningfulness of scores obtained from respondents as indicators of the construct being measured by the study (Creswell & Plano Clark, 2018:217). Saunders and Lewis (2012:127) highlight that validity is rooted in the extent to which data collection methods accurately measure their intended parameters and whether findings genuinely reflect what they purport to represent.

Creswell and Creswell (2018:169) recommend incorporating procedures throughout the study to mitigate potential threats to internal validity (pertaining to the extent to which cause-and-effect claims can be established) and external validity (pertaining to the extent to which conclusions can be applied to other individuals, settings, or time periods). To address these concerns, this study employed exploratory factor analysis (EFA) and the Kaizer-Meyer-Olkin

(KMO) index to establish the commonality between the variables in order to assess the construct validity of the questionnaires, thereby reducing threats to both internal and external validity (Maree, 2020:263). The same instrument was utilised for both the pilot and main study.

Reliability, in essence, signifies that the scores obtained from respondents are consistent and stable over time (Creswell & Plano Clark, 2018:217). Saunders and Lewis (2012:127) emphasise that research methods and analysis procedures producing consistent findings are key elements in ensuring research reliability. Threats to the reliability of the study may stem from subject errors occurring when measurements are taken at different times, leading to significantly different results, or from subject bias, where participants provide unreliable information influenced by fear.

A pilot test, as described by Saunders and Lewis (2012:149), serves as a small-scale study aimed at assessing the appropriateness and sufficiency of the research methodology, its instruments, and analysis before embarking on the main research study. In pursuit of credibility for this study, a pilot test, including the application of Cronbach's alpha coefficient techniques, was conducted to address reliability concerns. The Cronbach alpha coefficient was employed to measure the internal reliability of the measurement instrument, such as the 5-point Likert scale in the questionnaires, to eliminate bias (Maree, 2020:261).

Various methods can be used to test the instrument's reliability, including the test-retest and split-half techniques (Cooper & Schindler 2011:283; Gratton & Jones, 2010:92). For this study, a test-retest was executed using a pilot study involving 10 SMEs from Soweto. The reliability of the measurement instrument (questionnaire) was assessed using Cronbach's alpha coefficient, with a threshold value of 0.7 or higher to determine the scale's reliability for internal consistency or homogeneity of the items in this study. Adjustments were made as necessary before the actual research process.

Trustworthiness, credibility, dependability, transferability, confirmability and completeness are major components of qualitative research. The reliability of qualitative data is assessed through the lens of trustworthiness and credibility. Trustworthiness encompasses dependability, transferability, and conformability (Lincoln & Guba, 1985:290), while credibility pertains to the level of confidence various stakeholders place in the researcher's findings and

how well these findings align with reality (Maree, 2020:144). Despite the researcher's sole responsibility for data collection, meticulous documentation of all aspects of the research was maintained to guard against potential bias. Moreover, data saturation was employed to ensure credibility, with the researcher remaining in the research field until data saturation had been reached.

To further reinforce the credibility and rigour of the study, peer and research supervisor reviews were conducted at all stages of the research process (Patton, 2002:552). Data triangulation from interviews and literature review was also implemented (Bryman, 2012:472). The credibility of a study hinges on three key elements: the use of robust methods that yield high-quality data, the credibility of the researcher, and the philosophical framework underpinning the study (Patton, 2002:552). Data credibility was further achieved through effective notetaking and transcription (Creswell & Miller, 2000). Moreover, the researcher upheld the accuracy of data interpretations by sharing the collected data with the participants, a practice in line with the pragmatist paradigm adopted for this study (Connelly, 2016:435). To enhance credibility, Creswell and Poth (2018:256) advocate for extended engagement in the research field and the triangulation of data sources, methods and investigators.

Dependability revolves around whether another researcher employing the same design (instruments and techniques) would arrive at similar results in a comparable population (Lincoln & Guba, 1985:290). The dependability of this study was enhanced by unwavering adherence to sound research practices that were selected to ensure reliability and replicability. For this reason, data triangulation was employed by interviewing Soweto-based SMEs from 3 different enterprise development programmes (Bryman, 2012:472).

Transferability pertains to the extent to which the findings of a study can be applied to another context. As noted by Patton (2002:438) and Creswell and Poth (2018:256), to ensure transferability, it is imperative to preserve thick descriptions derived from the qualitative phase of the study. These descriptions include comprehensive notes from participant interviews and a review of all relevant materials associated with the research process, such as personal notes prepared during the research journey (Connelly, 2016:435).

Confirmability is attained when the data and findings can be traced back to the participants (Maree, 2020:145). To establish this, the researcher maintained meticulous records and notes throughout the study to create an audit trail of the interview transcripts and coding guide at various stages. Semi-structured interviews were conducted to maintain consistency. This process serves to ensure that the participants were subjected to the same questions so that the perceptions, experiences and voices of the township SMEs are faithfully reflected to ensure trustworthiness.

To ensure completeness, the researcher verified that the themes identified during data analysis were explicitly mentioned in the transcripts (Moustakas, 1994:121). The themes that did not find explicit mention in the transcripts were cross-referenced with the research questions for relevance, and those found to be unrelated were omitted from the final report.

1.10 ETHICAL CONSIDERATIONS

Research ethics encompass the moral principles and conduct that govern appropriate research activities (Gray, 2013:73). Guillemin and Gillam (2004:263) delineate two facets of research ethics: procedural ethics and ethics in practice. To adhere to procedural ethics, ethical approval for this study was acquired from the Research Ethics Committee of the College of Applied Management Studies. In terms of ethics in practice, this research was conducted in accordance with the ethical guidelines established by the University of South Africa (UNISA). This included safeguarding the data's security with robust passwords, regular data backups, and implementing measures to ensure the safe storage of data.

Informed Consent – informed consent was obtained from all individual research participants. The researcher requested permission from the Ekasi Entrepreneurship Movement, Transformation Legacy, and Vuleka to distribute the survey questionnaire to all Soweto-based township SMEs in their databases. Each participant also granted their consent to participate in this study (see Appendix 2). There was no dependent relationship between those involved in the recruitment process and the participants.

The researcher adhered to research ethics principles as outlined by Guillemin, Gillam, Barnard, Steward, Walker, and Rosenthal (2016:2). These principles emphasise that participants should

not be exploited, coerced, or compensated for their participation in the study. Each participant signed a consent form to indicate their willingness to participate in the study. Moreover, participants were assured that their responses would remain anonymous, ensuring their names and personal information would be anonymised. Participants were informed of their right to withdraw from the research process at any point, emphasising the voluntary nature of their participation (Saunders & Lewis, 2012:81; Tiidenberg, 2018:469).

The researcher addressed the following risks about the study in the ethical clearance application:

- Risk of discomfort and direct participation;
- Risk of feeling obligated to participate in the research;
- Risk of insufficient data;
- Risk of collecting irrelevant information; and
- Risk of COVID-19 transmission.

In addition, the researcher advised all participants that their responses would only be strictly used for academic purposes. The results were interpreted without bias. At the core of the ethics discourse is the quest to maintain beneficence (minimisation of harm and maximisation of benefits), respect and justice for the people involved (Maree, 2020:99).

1.11 SIGNIFICANCE OF THE STUDY

Given the economic contributions of township SMEs, this study collected important information that assists in determining the factors that influence the adoption of e-commerce among township SMEs as well as determining how e-commerce is diffused among township SMEs through an integrated theoretical framework. The integrated framework will be helpful for industry authorities and other relevant bodies interested in the development of township SMEs, SME business managers, the government, and academics interested in understanding the advancement of SMEs through technology adoption. The stakeholders mentioned above will gain valuable insights regarding the lived experiences, reasoning, perceptions and opinions of township SMEs pertaining to the adoption and diffusion of e-commerce within their business operations. In addition, this study will provide an enhanced understanding of barriers that

hinder the adoption and diffusion of e-commerce within the business operations of township SMEs.

This study adds value on three levels, namely; theoretical, empirical and practical levels.

1.11.1 Significance at a theoretical level

At a theoretical level, this study provides a foundation that contributes to understanding the relevant constructs that should comprise an integrated framework for understanding the factors that influence the adoption and diffusion of e-commerce among township SMEs. The theories that underpin this study consist of an integrated theoretical framework made up of TAM, TOE and DOI. To date, there is no existing integrated framework combining TAM, TOE and DOI to understand the factors that influence the adoption of e-commerce and to further determine how e-commerce is diffused into business operations of township SMEs. Furthermore, this study adds value to the body of knowledge regarding the processes and activities involved in the diffusion of e-commerce within the business operations of township SMEs, mainly because the integrated theoretical framework contextualises the business environment that township SMEs operate within. The integrated framework to be developed in this study is expected to guide future research to understand the phenomenon under investigation.

1.11.2 Significance at an empirical level

This study established the relevant constructs that should comprise an integrated theoretical framework to understand factors that influence the adoption and diffusion of e-commerce among township SMEs. Previous research has investigated the factors that influence the adoption of e-commerce, disregarding the post-adoption environment to include how e-commerce is implemented and diffused amongst township SMEs. Previous research predominantly used quantitative methodologies. This research explored the use of e-commerce among SMEs in the township of Soweto by employing a mixed methods methodology. As a result, richer and more diverse perspectives of phenomena that were previously researched in other contexts have become available from the Soweto context.

Equally important, with mixed methods, each type of data can be collected and analysed separately and independently using the techniques traditionally associated with each research methodology. The quantitative methodology was applied to address the peculiarities and distinct characteristics of SMEs from townships and to gain a better understanding of the factors that influence the adoption of e-commerce among township SMEs. The qualitative method was used to gain an in-depth understanding of the lived experiences, reasoning, perceptions and opinions of township SMEs pertaining to the adoption and diffusion of e-commerce in their business operations. This study, therefore, contributes to the advancement of township SMEs' usage of technology and aims to empirically develop an integrated theoretical framework to gain a comprehensive understanding of the adoption and diffusion of e-commerce among township SMEs using mixed methods.

1.11.3 Significance at a practical level

On a practical level, industry authorities and other relevant bodies interested in the development of SMEs may also refer to this study's findings to pursue measures to enhance SMEs' competitiveness through the adoption of e-commerce and to facilitate the rate at which SMEs adopt and diffuse e-commerce into core business operations. SME business owners could gain valuable insights regarding the key factors that influence their adoption of e-commerce to enhance business efficacy. Aditionally, the government can refer to the findings of this study to create policies and design programmes that can develop entrepreneurs. Incubators may also refer to the findings to inform training and support township SMEs with the adoption and diffusion of e-commerce. The three organisations can also refer to the findings to understand how they can better support the SMEs affiliated with them. Lastly, this study contributes to the growing body of knowledge and benefits academic research aimed at understanding technology and innovation adoption by township SMEs. This study, therefore, makes several significant theoretical, empirical and practical contributions to the body of knowledge.

1.12 LIMITATIONS OF THE STUDY

Limitations are defined as the shortcomings of the research findings beyond the researcher's control (Simon, 2011). The uniqueness of townships, with the majority of SMEs being informal,

presents a challenge due to a lack of data. This study is limited to township SMEs in Soweto. Cohen *et al.* (2007:184) identify the inherent limitation in this by stating that the study's findings might not be generalisable to other townships with different characteristics from Soweto. It is essential to acknowledge that due to their novelty, SMEs in Soweto are not fully representative of most SMEs in South Africa. The triangulation convergent mixed-methods design can be time-consuming. Conducting both methodology phases in a rigorous manner, especially if they involve a large amount of data or complex procedures, can take a considerable amount of time. As a result, researchers may need extended access to Soweto-based SMEs for consultation, data validation, or other purposes throughout the research process. This may not always be possible, as Soweto-based SMEs might have busy schedules or limited availability (Creswell & Plano Clark, 2018:81). Moreover, time constraints to perform the study could present a weakness because it is a cross-sectional study that is a snapshot of the research setting at a specific point in time only (Saunders & Lewis, 2012:123). A longitudinal study may be required in the future.

1.13 THESIS LAYOUT

The thesis layout refers to the structure and organisation of this doctoral thesis to ensure that readers can easily navigate the document, understand the research process, and appreciate the scholarly contributions made by the researcher. The final thesis is apportioned into the following chapters:

Chapter 1: Introduction: This chapter provides an introduction and background for this study. It highlights the problem statement, the research objectives, the conceptual framework, the research methodology and the scope of this study.

Chapter 2: E-Commerce theoretical review: This chapter comprises a comprehensive literature overview of e-commerce, e-commerce adoption, and the theoretical underpinnings of e-commerce adoption by SMEs.

Chapter 3: Factors that influence the adoption and diffusion of e-commerce: This chapter comprises a broad literature overview of the township economy and identifies factors that

influence the adoption of e-commerce, diffusion processes of e-commerce and barriers to the adoption of e-commerce.

Chapter 4: Research methodology: This chapter provides a comprehensive depiction of the research methodology, research design, data collection and data analysis, reliability, validity and ethical considerations applicable to this study.

Chapter 5: Research findings: This chapter deals with the analysis of data as well as the interpretation and evaluation of the research results. It also addresses the findings in terms of the research objectives and the hypotheses.

Chapter 6: Discussion: This chapter integrated the findings on the two sets of data and discusses implications. The proposed integrated theoretical framework is presented and discussed.

Chapter 7: Conclusions and recommendations: This chapter concludes the study with a final summary, core findings, limitations, recommendations and implications for future research.

The next chapter provides a comprehensive overview of e-commerce, the evolution of e-commerce, the various theoretical underpinnings of e-commerce adoption by SMEs as well as a comparative analysis of the adoption of e-commerce between developed and developing countries

CHAPTER 2
LITERATURE REVIEW: E-COMMERCE ADOPTION

2.1 INTRODUCTION

This chapter presents a broad spectrum of literature on the background of the e-commerce economy and the definition of e-commerce. This literature review delves into the history and evolution of e-commerce. Furthermore, this chapter explores various theoretical frameworks that influence the adoption and diffusion of e-commerce by SMEs. Thereafter, this chapter explores the role of the adoption of e-commerce among SMEs including the adoption of e-commerce by SMEs in developed and developing countries as well as the adoption of e-commerce by South African SMEs.

2.1.1 Background to the e-commerce economy

Industries and businesses in the current economic climate are evolving and changing at a rapid rate, mainly owing to the wide diffusion of new information and communication technologies (ICT) within business enterprises (North, Aramburu & Lorenzo, 2019:1; Dahbi & Benmoussa, 2019:811). Emerging technologies, such as e-commerce, empower and support a diverse array of business operations by providing companies with a competitive edge to improve their overall business performance (Giotopoulos, Kontolaimou, Korra & Tsakanikas, 2017:60; Widjaja, Sumintapura & Yani, 2020:164). Indeed, the business environment is rapidly changing and has fostered an intensified dependency on technology by SMEs to improve profitability, gain and maintain competitiveness, and succeed in today's dynamic business market (Yunis, Tarhini & Kassar, 2018:344; Bagheri, Mitchelmore, Bamiatzi & Nikolopoulos, 2019:122). Furthermore, Yunis *et al.* (2018:344) posit that the changing business environment has been the driver of innovation-related activities such as e-commerce because businesses are predisposed to technology that is designed to obtain higher business performance and better efficiency for SMEs. According to Chege and Wang (2020:257), e-commerce constitutes an essential factor of the digital economy and knowledge economy. Thus, access to e-commerce refers to an economy where growth and business performance are dependent on the availability, quality and quantity of information available to entrepreneurs (Mendieta, 2018:19; Pradhan, Arvin, Nair, Bennett & Hall, 2019:1530). As a result, the majority of empirical studies

conducted in both developed and developing countries confirm that the competitiveness of nations and the business performance of enterprises in digital and knowledge economies depend primarily on their capabilities to diffuse and use e-commerce in business operations (Khalifa, 2016:151; Mikhaylova & Gorochnaya, 2019:1109; Tang, Park, Agarwal & Liu, 2020:3; Wambugu & Ndiege, 2018:1).

The dawn of the digital economy has dramatically altered business operations by enabling SMEs to reach international markets and customers directly through multichannels and e-commerce platforms (Dahbi & Benmoussa, 2019:811; Matikiti, Mpinganjira & Roberts-Lombard, 2018:1; North *et al.,* 2019:1). Consequently, digital multichannels and e-commerce platforms lead to the creation of new business opportunities which render the capability to effectively harness and utilise technology to facilitate innovation and enhance SME business performance (Awiagah, Kang & Lim 2016:815; Bagheri, *et al.,* 2019:122; Schmidthuber, Maresch & Ginner, 2020:1).

The digital era can offer township SMEs opportunities to develop high-value products and services that are entirely new, enhance the value of existing products and services, reduce operational expenses, while also resulting in the marketing of local products on global platforms (Bvuma & Marnewick, 2020b:1; Chege & Wang, 2020:257; North *et al.,* 2019:2). The transformation of the business environment through e-commerce disrupts existing markets and value networks. E-commerce has created opportunities for new entrants in the business market, new products and new markets where township SMEs play a pivotal enabling role in growing the South African economy, which may displace market-leading businesses and existing products including alliances (Li *et al.,* 2016:186; Nachit & Belhcen, 2020:1; Ocloo *et al.,* 2020:191; Tang *et al.,* 2020:3).

The application of e-commerce by SMEs is further disrupting a wide range of industries where the prevailing ways of doing business and existing business models are being transformed (Barrosso *et al.,* 2019:498; Das, 2019:280; Pradhan *et al.,* 2019:1530). According to Jan, de Jager, Ameziane and Sultan (2019:202), the rapid advancement of e-commerce continues to offer unprecedented approaches to how SMEs operate. E-commerce is widely used to integrate societies and countries into a global market economy.

The increasing interdependence between various countries through international trade has encouraged the adoption of e-commerce in both developed and developing economies through improved access to information (Awiagah *et al.,* 2016:815; Ocloo *et al.,* 2020:191; Xuhua *et al.,* 2019:81). Subsequently, SMEs' increased rate of e-commerce adoption is at the heart of economic transformation (Hassen, Rahim & Shah, 2019:1; Ait, 2020:3; Nachit & Belhcen, 2020:1). E-commerce is perceived as significant innovation that can promote good governance, enhance economic and social development while also reducing poverty in developing countries (Hassen *et al.,* 2019:1; Kartiwi *et al.,* 2018:1; Olanrewaju, Hossain, Whiteside & Mercieca, 2020:87; Simakov, 2020:77).

Amidst market globalisation and the exponential growth of e-commerce in developed countries, there is growing concern that developing countries are still lagging behind by a substantial margin (Awiagah *et al.,* 2016:815; Iyamu & Johnson, 2020:1; Ndayizigamiye, Khoase & Jere, 2019:53; Olanrewaju, 2020:87). Approximately 91% of businesses in developed countries are ready to use, adopt and adapt to frontier technologies compared to just over 30% of African and Latin American businesses (United Nations Conference on Trade and Development, 2021:25). Furthermore, existing theoretical models that explain factors that influence the adoption of e- commerce as well as the understanding of how e-commerce is implemented and diffused by SMEs, are not generalisable to developing countries due to contextual factors and socio-economic challenges such as inadequate infrastructure and lack of government support among other factors, which are unique to their economies (Agyapong, 2018:269; Amaglo, 2020:28; Kabanda & Brown, 2017:120; Sanchez-Torres & Juarez- Acosta, 2019:137). In addition, townships face similar socio-economic challenges and unique characteristics in developing countries, which leads to barriers when it comes to the generalisability of existing theoretical frameworks (Bvuma & Marnewick 2020b:1; Iyamu & Johnson, 2020:3).

Consequently, understanding factors influencing the adoption of e-commerce will allow township SMEs to enhance their global market presence and improve their business performance (Awaigah *et al.,* 2018:817; Dahdi & Benmoussa, 2019:812; Mavimbela & Dube, 2016:121; Mendieta, 2018:20). The paucity of research on the factors that influence the adoption of e-commerce and the subsequent diffusion thereof by SMEs in emergent countries, particularly in townships, provides a significant gap that requires attention for further research

to be conducted and forms the basis for this study (Alhassan, 2018:23; Awaigah *et al.,* 2018:817; Kabanda & Matsinhe, 2019:327; Mamun, 2017:114; Ndayizigamiye & Khoase*,* 2018:263; Rahayu & Day, 2017:27).

Furthermore, the success of e-commerce adoption and diffusion by township SMEs will facilitate an improved contribution towards the growth and development of township economy and allow township SMEs to compete globally alongside their larger counterparts (Allen 2018:13; Bvuma & Marnewick, 2020b:2; Chimucheka *et al.,* 2018:2). The major motivating factor for this study is the lack of research on the adoption of e-commerce by township SMEs and the factors that influence their adoption or non-adoption of e-commerce (Amaglo, 2020:1; Mbuyisa & Leonard, 2017:161; Nazir & Roomi, 2020:44). Moreover, there is a lack of conclusive results in determining the rate of adoption of e-commerce and the extent to which township SMEs have implemented and diffused e-commerce into their business operations (Bvuma & Marnewick, 2020:2; Marnewick, 2014:11; Mkansi *et al.,* 2019:26; Rahayu, 2017:27).

As evidenced by this literature review, it is apparent that township SMEs require enhancement and expansion in order to explore their potential and to fully participate in the economy. This necessitates an enhanced understanding of factors influencing e-commerce adoption to determine how e-commerce is diffused in the business operations of township SMEs (Amaglo, 2020:1; Kabanda & Matsinhe, 2019:327; Al Mamun, 2017:114; Moos & Sambo, 2018:10). It is essential to understand the perceptions, experiences and opinions of individuals who operate township SMEs especially regarding the factors that influence adoption of e-commerce (Moos & Sambo, 2018:6; Ndayizigamiye & Khoase, 2018:63). Therefore, this study aims to explore whether the identified factors from the reviewed literature influence the adoption of e-commerce among township SMEs and subsequently determine how the adoption of e-commerce is diffused among township SMEs in Soweto.

2.2 DEFINITION OF E-COMMERCE

Authors have differing perspectives on the definition of e-commerce, leading to substantial debate over the interpretation of its meaning (Kartiwi *et al.,* 2018:1; Uneanya, 2018:15; Amaglo, 2020:20; Khan & Uwemi, 2018:456). E-commerce is often recognised as the practice of purchasing and selling goods and services via the Internet. However, some authors view e-

commerce as a broader business activity conducted through any electronic medium (Iyamu, 2020:1; Patelimon *et al.,* 2020:27; Ibam, Boyinbode & Afolabi 2018:1). Amaglo (2020:20), Barroso, Ferreira, Meidutė-Kavaliauskienė, Banaitienė, Falcão and Rosa, (2019:498), and Triandini, Hermawan and Suniantara (2020:112) define e-commerce as the practice of buying, selling, transferring, or exchanging products, services, and or information using computer networks, which include the Internet. However, Johnson and Iyamu (2019:1) posit that, in addition to the sale of products and services, e-commerce enables a variety of financial transactions over the Internet. Thus, e-commerce can broadly be defined as conducting business transactions, maintaining business relationships, sharing business information and employing telecommunication networks (Khan & Uwemi, 2018:456; Mendieta, 2018:19; Sombultawee, 2020:256).

Electronic networks are the key enabler for transforming the sale and exchange of products and services from the traditional physical form to online platforms such as e-commerce (Hayati & Andrawina, 2019:1; Iyamu, 2020:2). Thus, e-commerce entails business activities conducted through electronic data exchanges using the Internet as a mediator and electronic data transmitter (Johnson & Iyamu, 2019:2; Hayati & Andrawina, 2019:1). Furthermore, the Organisation for Economic Co-operation and Development (OECD) defines e-commerce as sales or the purchase of products and services performed through computer-mediated networks such as cellphones, other smart devices and electronic media; however, payment and delivery of goods can be online or offline (OECD, 2002:89).

Khan and Uwemi (2018:456) as well as Zhelyazkova (2020:262) argue that literature review provides a narrow definition of e-commerce that fails to address various unique contextual backgrounds and hardships of developing countries, such as a lack of resources, infrastructure and awareness. The scope of e-commerce for this study applies the broader definition of e-commerce, where parties interact electronically to perform one or more activities depending on their circumstantial backgrounds, including their resources and constraints (Dahdi & Benmoussa, 2019:811; Hassen *et al.,* 2019:1; Sombultawee, 2020:256; Uneanya, 2018:16). For the purposes of this study, e-commerce is defined as the practice of buying, selling products and services and or conducting financial services transactions through all computer-mediated networks, including cellphones and electronic or social media where payment and

delivery of goods can be online or offline (Khan & Uwemi, 2018:456; OECD, 2002:89; Iyamu, 2020:1).

2.3 CATEGORIES OF E-COMMERCE

E-commerce is divided into four main categories, namely, business-to-consumer (B2C), business-to-business (B2B), customer-to-customer (C2C) and business-to-government (B2G).

2.3.1 Business-to-consumer transactions

B2C is a commonly used form of e-commerce where a business sells products or services directly to the user, which is the customer, over the Internet (Zhelyazkova, 2020:262). B2C transactions are commercial transactions that involve exchanging information, products or services between businesses and the general public, usually through catalogues supported by shopping cart software (Alazab, Dick & Far, 2020:2351). Online shopping platforms such as Amazon.com and Alibaba are examples of B2C e-commerce initiatives in which the business enterprise directly contacts its customers (Worku & Muchie, 2019:350). Takealot.com is South Africa's leading online retailer selling thousands of products, including electronics, home and kitchen appliances as well as clothing (Kühn & Petzer, 2018:259). Online shopping platforms on the websites of some business enterprises are another example of B2C e-commerce (Ibam *et al.*, 2018:3). Although most developed economies make extensive use of B2C, most developing countries are still lagging behind in adopting e-commerce platforms (Triandini *et al.,* 2020:112). However, social media has created various online marketplace platforms that bring buyers and sellers together, thus affording the consumer an opportunity to bid for or buy almost anything either at a fixed price or through an online auction to help bridge the gap due to a lack of resources (Mathitha, 2016:4; Olarewaju *et al.,* 2020:90).

2.3.2 Business-to-business transactions

B2B is when business enterprises sell products or services to other business enterprises (Adam *et al.,* 2020:836; Hussein, Akbar, Shahzad, Poulova, Akbar & Hassan, 2020:5528).

B2B transactions refer to business transactions in which products, services or information are exchanged between "two distinct business entities," such as between a wholesaler and a retailer or between a manufacturer and a wholesaler (Ibam *et al.,* 2018:3).

This classification of B2B e-commerce involves more voluminous participants than B2C, needs an extensive infrastructure and has transaction volumes that are commonly higher than B2C transaction volumes (Zoroja, Klopotan & Stjepić, 2020:313). B2B transactions are regulated by intricate business rules between buyer and seller, comprise higher transaction amounts, and require that order fulfilment be more specific than B2C orders (Alazab *et al.,* 2020:2351). B2B transactions were traditionally reserved for larger companies with advanced resources to implement them; however, SMEs have recently started adopting B2B (Ocloo *et al.,* 2020:192).

2.3.3 Customer-to-customer transactions

Conducting online business is not only reserved for business enterprises because consumers can also exchange products, services or information among themselves (Alazab *et al.,* 2019:3). Customer-to-customer (C2C) transactions encompass consumers who choose to engage in their business dealings primarily through online communities, auctions, chat rooms, third-party consumer listing services or web-based discussion forums such as WhatsApp and Facebook. These platforms enable individuals to directly purchase and sell their products and services to other individuals (Leonard & Jones, 2019:2).

Gumtree and OLX are South Africa's leading C2C online classified platforms where individuals can buy, lease and sell everything from second-hand cars, electronics and lease houses to positing job vacancies (Ruttell, 2018:1). C2C markets eliminate intermediaries that would otherwise pocket a certain percentage of the selling price as a commission (Shihab, Maulana & Hidayanto, 2018:55). Consumers not only buy and sell but can also share their past experiences and learn from each other’s bidding strategies at auctions and forums (Santosa, Mudiantono, Murniyono, Hersugondo & Soesanto, 2020:753). Furthermore, due to the ease of interactions between users, C2C e-commerce has become popular among the general public because C2C online transactions have no space or time restrictions compared to traditional auction models (Santosa, 2020:753).

2.3.4 Business-to-government transactions

Businesses can also conduct B2G via computers and a web-enabled presence (Zhelyazkova, 2020:262; Zoroja *et al.,* 2020:313). The interchange of products, services, or information between consumers (C2G), businesses (B2G), and governmental entities (G2G) can encompass a wide spectrum from government's procurement of services to its collection of taxes (Riyadh, Alfaiza, Sultan, Marlinda, Rusiyati, Adi & Komarudin 2019:2144; Worku & Muchie, 2019:351).

This research focused on B2C, which is when the business sells products or services directly to customers and end users in order to investigate whether the identified factors in literature review influence the adoption of e-commerce by township SMEs. This study further aimed to determine how township SMEs sell products or services directly to their customers through the diffusion of e-commerce within their business operations.

2.4 HISTORY AND EVOLUTION OF E-COMMERCE

The origins of e-commerce can be traced as far back as the 1960s when electronic data transactions were primitive. Subsequently, in 1994, the first online retail transactions occurred, and digital e-commerce is currently dominated by giant platforms such as Amazon, Alibaba and eBay (Kysh, 2020:15). During the 1960s, companies conducted electronic transactions through the usage of electronic data interchange (EDI) to exchange business documents such as payment receipts and order forms with other companies (Ibam *et al.*, 2018:3; Kabbaj, 2018:4). The EDI method was introduced to replace the archaic system of mailing and faxing business documents from one company to another with a digital system (Simakov, 2020:78; Zoroja *et al.,* 2020:315). The history and evolution of e-commerce can be split into three significant eras: 1960–2000, the years of origination and discovery; 2001–2006, the period of amalgamation; and 2007– present, the years of reinvention with various electronic media platforms (Kabbaj, 2018:4).

During the invention and discovery period, the term "e-commerce" originally meant the process of performing commercial transactions electronically through the usage of leading technologies such as EDI and electronic fund transfer (EFT) which enabled users to exchange

business information and enter into electronic transactions (Simakov, 2020:78). Through the 1980s, an attempt was made to standardise the digital exchange of information using EDI; however, the implementation was cumbersome and very expensive, resulting in limited commercial viability (Ibam *et al.,* 2018:3; Liang & Wei, 2004:9). The Internet and open computer technology in the early 1990s resulted in connectivity being affordable (Senn, 2000:148). The interconnections between individuals and businesses facilitated the creation of the world wide web (WWW). The advent of robust search engines and websites transformed the web into a rich information resource (Chu, Leung, Van Hui & Cheung, 2006:154; Zoroja *et al.,* 2020:315). Businesses began reaching potential customers through online marketing catalogues to provide information, products and services (Kysh, 2020:15).

In 1994, a protocol named Secure Socket Layer (SSL), which secures the sending and receiving features of an online transaction, enabled the synchronisation between e-commerce and online payments (Simakov, 2020:78). In the same year, the first third-party credit card processing companies were launched and significantly amplified the opportunities for e-commerce financial transactions (Simakov, 2020:78). Consequently, the WWW evolved from being solely an information resource to serving as a platform for e-commerce websites. This transition necessitated an interactive and secure environment by enabling e-commerce activities to shift from individual buyer-seller transactions to multiple exchanges (Chu *et al.,* 2006:154; Zoroja *et al.,* 2020:315). Henceforth, business enterprises commenced to adopt wireless technology for the Internet (Kysh, 2020:15).

Simakov (2020:79) opines that the period from 2007 to date can be deemed an era of dynamic growth, innovation and the trajectory of sustainable growth for entrepreneurship worldwide through e-commerce. Sombultawee (2020:256) further acknowledges that modern-day e-commerce also incorporates customer-focused web-based sales either directly through an enterprise's own website or indirectly through intermediaries such as Amazon or eBay and increasingly through social media-based e-commerce.

E-commerce has become especially important due to social distancing as a result of the COVID-19 pandemic, with people spending 10–30% of their time and money shopping online for essential goods (Zoroja *et al.,* 2020:316). From a global perspective, the global B2C e-

commerce market was estimated at $3 667 billion in 2020 and was expected to increase by 20% in 2021 (Kysh, 2020:15). The five most significant e-commerce markets in the world are China, the United States, Germany, Great Britain and Japan (Kysh, 2020:15). Table 2.1 provides a timeline of key occurrences that promoted the development of e-commerce since 1969. The main events that contributed to the development of e-commerce.

Table 2.1 The evolution of e-commerce

Year	Major events in the field of e-commerce
1969	The first large e-commerce company was founded - CompuServe.
1979	Michael Aldrich invents e-shopping.
1982	Boston Computer Exchange is launched as one of the first e-commerce platforms.
1992	Book Stacks Unlimited is launched as one of the first online bookstores.
1994	Netscape launches Netscape Navigator, a web browser, making it easier for users to search the web.
1995	Launch of Amazon and eBay.
1998	PayPal is launched as an online payment system.
1999	Alibaba.com is launched.
2000	Google launches AdWords as an online advertising search tool.
2005	Amazon launches Amazon Prime with accelerated fixed delivery for users.
2005	Esty, an online platform for launching handmade and vintage goods.
2009	BigCommerce is launched as an online store platform.
2009	Founded Square, Inc.
2011	Google Wallet is launched as an online payment system.
2011	Facebook is launching sponsored stories as a form of early advertising.

2011	The Stripe service starts
2014	Apple Pay is launched as a form of mobile payment.
2014	Jet.com is launched.
2017	Introduce posts on Instagram.
2017	Cyber Monday sales exceed $ 6.5 billion

Source: Samikov (2020:80)

2.5 THEORIES ON E-COMMERCE ADOPTION

Understanding factors that influence the adoption of e-commerce has result in scholars paying attention to this phenomenon (Adam, Alhassan & Afriyie, 2020:835; Amornkitvikai & Lee, 2020:1; Babenko, Kulczyk, Perevozova, Syniavska & Davydova, 2019:346; Mahliza, 2019:290). Furthermore, empirical validation for understanding factors that influence the adoption of e-commerce relies on specific theoretical frameworks to test propositions made concerning the adoption of e-commerce (Adjin-Tettey, 2018:94; Chau *et al.,* 2020:3; Edoru, 2018:26; Selase, Selase, Ayishetu, Comfort, Stanley & Ebenezer 2019:1). The examination of existing literature indicates that numerous theoretical frameworks and diverse methodologies have evolved over the years to elucidate and enhance comprehension of e-commerce adoption. These have been formulated for both at individual and at organisational levels. (Eze *et al.*, 2019:572; Kabanda & Brown, 2017:121; Tongsuksai, Mathrani & Taskin, 2019:4). This literature review explores various theories formulated to explain the adoption of e-commerce.

According to Das (2019:283), renowned theories applied to understand the adoption of e-commerce at individual level include technology acceptance model (TAM) (Davis, 1989), theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), unified theory of acceptance and use of technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003) and theory of planned behaviour (TPB) (Ajzen, 1991). The abovementioned theories were expanded on further to explain their description and the circumstances under which each theoretical framework is deployed.

At organisational level of adoption, renowned theories comprise the diffusion of innovation theory (DOI) (Rogers, 2010), the tri-core model (Swanson, 1994) and the technology-organisation-environment (TOE) framework (Tornatzky & Fleischer, 1990). The theories mentioned above present a collection of factors that influence the organisational level for the adoption of e-commerce. Abed (2020:3), Eze *et al.* (2019:572) and Tongsuksai *et al.* (2019:4) pinpoint TOE as the most commonly used e-commerce adoption theory for adoption studies at an organisational level, whereas TAM is widely used to understand individual user acceptance of technology (Jan, de Jager *et al.*, 2019:203; Scherer, Siddiq & Tondeur, 2019:15; Schmidthuber *et al.,* 2020:3). A summary of the prominent theoretical frameworks deployed for exploring the adoption of e-commerce by various researchers from literature review is presented in Table 2.2.

Table 2.2 Theoretical frameworks used in the adoption of e-commerce

Theory	**Description**	**Empirical and theoretical work on the adoption of new technologies**
Technology acceptance model (TAM) and its extensions	The adoption of a new technology's characteristics can be explained by an individual's perceptions regarding the perceived usefulness (PU) and perceived ease of utilising (PEOU) the innovation (Davis, 1989).	Davis, 1989, Matikiti *et al.,* 2018:3 Jan *et al.,* 2019:203 Yuan, Song, Iqbal, Vahdat, & Kautz, 2023. Schmidthuber *et al.,* 2020:3 Das, 2019:283 Scherer *et al.,* 2019:15 Mpofu, Milne & Mathys 2012:6 Babić & Golob, 2018:1376. Rafique, Almagrabi, Shamim, Anwar, & Bashir, 2020.

Theory	Description	Empirical and theoretical work on the adoption of new technologies
Technology-organisation-environmet (TOE)	Categorises technology, organisation and environment as the three categories of factors influencing enterprises' adoption of innovations. The framework provides a set of factors that have an impact on the adoption of innovations at either individual or organisational level (Tornatzky & Fleischer, 1990).	Tornatzky & Fleischer, 1990 Mathauer & Hofmann, 2019:423 Ezzaouia & Bulchand-Gidumal, 2020:4 Tongsuksai *et al.,* 2019:4 Maduku *et al.,* 2016:713 Abed, 2020:3 Eze *et al.,* 2019:573 Ramayah *et al.,* 2016:151 Igwe *et al.,* 2020:45 Raut *et al.,* 2017:127 Giotopoulos *et al.,* 2017:66
		Mpofu, *et al.,* 2012:5 Zappalà & Gray, 2006:10 Sullivan & Kim, 2018:203
Diffusion of innovation theory (DOI)	The rate at which a new technology spreads is impacted by factors such as relative advantage, compatibility, complexity, trialability and observability (Rogers, 1995).	Rogers, 1995 Pantano & Vannucci, 2019:299 Chau *et al.,* 2020:6 Burgess, Sellitto, Cox, Buultjens, & Bingley 2017:3 Amaglo, 2020:17 Al Mamun, 2017:115 Alkhalil, Sahandi & John, 2017:7

Theory	Description	Empirical and theoretical work on the adoption of new technologies
TRA	Adopted from the realm of social psychology, the adoption characteristics of new technology are shaped by an individual's attitude towards the behaviour, their perception of the norms related to that behaviour and the interpretation of subjective norms governing that conduct (Fishbein & Ajzen, 1975).	Fishbein & Ajzen, 1975 Mpofu *et al.,* 2012:7 Brown & Licker, 2003:10 Manueli, Latu & Ko, 2007:176 Mwathi, 2018:11 Matyila, 2019:66 Amaglo, 2020:14
TPB	The attributes of adopting new technology can be explained through the individual's perspective regarding the behaviour, their perception of the norms associated with that behaviour and their assessment of ease of executing the behaviour (Ajzen, 1991).	Ajzen, 1991 Mwathi, 2018:11 Brown & Licker, 2003:10 Manueli *et al.,* 2007:176 Babić & Golob, 2018:1377 Das, 2019:283
UTAUT	The characteristics of adopting new technology can be explained by the individual's perception of execution expectancy, activity expectancy, the influence of the community and the enabling conditions. These connections are moderated by factors such as gender, age, expertise and the choice of usage (Venkatesh *et al.,* 2003).	Venkatesh *et al.,* 2003 Tongsuksai *et al.,* 2019:5 Rokhim, Wulandari & Mayasari, 2018:691 Sombultawee, 2020:257 Hassen *et al.,* 2019:73

Source: Researcher's own compilation

2.5.1 Technology Acceptance Model (TAM)

Fred D. Davis introduced the technology acceptance model (TAM) in 1989 by adapting it from the theory of reasoned action which was initially developed by Fishbein and Ajzen in 1975. This adaptation was presented in his dissertation at the Sloan School of Management, Massachusetts Institute of Technology (Davis, 1989). TAM aims to understand and explain the technological system used by an individual or an organisation (Matikiti *et al.,* 2018:3). Davis (1989) asserts that system use is a response that may be explained and predicted by user motivation, which is, in turn, directly influenced by the system's features and attributes. System use ultimately acts as a stimulus for inquiry or investigation for acceptance and potential use (Rokhim, Wulandari & Mayasari, 2018:691). Davis narrowed down the explanation of user motivation to three factors, namely; PU and PEOU and attitude towards using the system (Davis, 1989; Matyila, 2019:70). PU and PEOU are Abdulhakeem, Edwards and McDonald (2017:2) and Selase *et al.,* (2019:5) as follows:

- **Perceived Usefulness (PU)**: is "the degree to which a person is certain that the continuous usage of a particular system will enhance their job performance".
- **Perceived Ease of Use (PEOU)**: is "the extent to which a person believes that using a particular system would be free of physical and mental effort".

Since TAM is based on the theory of reasoned action which centres on people's behaviour and intentions, particularly towards e-commerce, perceived usefulness is a key factor used by researchers for the study of e-commerce adoption (Jan *et al.,* 2019:203). The results from research conducted by Schmidthuber, Maresch and Ginner (2020:8) found that SMEs' intention to use new innovations is influenced by perceived usefulness, perceived compatibility and perceived social influence. Furthermore, Abed (2020:3) established that SMEs tend to accept new technology when they believe that it will boost the performance of an assigned task which can improve the SMEs' business performance.

In addition, while PEOU describes the degree to which the potential user deems that using the innovation will be free from effort, the extent of literature backs the causative link between PEOU and attitude and is a crucial factor for the adoption and use of new technology (Jan *et al.,* 2019:204). PEOU as an inherent aspect of technology has always played a significant role

in the diffusion of new technology mainly because the degree of intricacy negatively impacts users' intention to adopt a specific technology (Jan *et al.,* 2019:204). Furthermore, Babić and Golob (2018:1377) state that PEOU refers to the extent to which individuals think using a particular technology is easy and will reduce efforts.

Likewise, when technological applications have high perceived usefulness, operators believe in the existence of a positive user-performance relationship (Selase *et al.,* 2019:1; Abed, 2020:3). Modern products bring up-to-date technology and usually offer an enhanced and pleasurable experience by signifying the role and ease of use and thus contributing to the use of the technology (Jan *et al.,* 2019:204).

Several e-commerce studies have used TAM to investigate the adoption of e-commerce among SMEs (Abed, 2020:3; Ajao *et al.,* 2018; Al Harizi & Marhoon, 2019:87; Matikiti *et al.,* 2018:3; Schmidthuber *et al.,* 2020:8). For example, TAM has been used as a model to investigate the factors influencing e-commerce adoption in the Nigerian informal sector (Ajao *et al.,* 2018). TAM was also used to explore the attitudes of entrepreneurs towards the use of innovative ICT amongst SMEs in Croatia (Babić & Golob, 2018:1376). Both studies attest to TAM being a practical theoretical framework for understanding SMEs' intention to adopt e-commerce.

Evidently, TAM has proven to be a robust theoretical model that has been applied in many SME research studies for explaining attitude and behaviour towards user acceptance of technology (Das, 2019:283; Matikiti *et al.,* 2018:3; Pantano & Vannucci, 2019:298; Rafique *et al.,* 2020:3). The TAM model also aids researchers in comprehending how SME adopters decide to accept or reject the use of technology (Harizi & Marhoon, 2019:87; Rokhim *et al.,* 2018:695). Despite the model's prominent role in technology acceptance research, the TAM theoretical framework has been criticised for having several shortcomings (Adjin-Tettey, 2018:83).

TAM has been critiqued for primarily focusing on perceived usefulness as the key acceptance model as opposed to considering the actual use of the technology (Selase *et al.,* 2019:5). This is contentious because Abdulhakeem *et al.* (2017:2) argue that studying the actual use of technology is equally as important as studying its perceived usage. TAM was also critiqued for

not recognising the influence and personal control factors on behaviour, including the lack of concern for other factors from environmental attributes such as external influences that include suppliers, customers and competitors (Mpofu *et al.,* 2012:6; Sanchez-Torres and Juarez-Acosta, 2019:138). Furthermore, Hassen, Rahim and Shah (2019:73) point out that SMEs in developing countries have unique particularities, including lack of infrastructure and socio-economic issues, not considered by the TAM model.

2.5.2 Technology, organisation and environment (TOE)

The technology, organisation and environment (TOE) framework was developed by Tomatzky and Fleischer (1990) to explain the factors that influence an enterprise's decision to adopt an innovative technology (Giotopoulos *et al.,* 2017:61). The framework posits that three facets of an enterprise's context influence the process it chooses to implement a novel technology, namely; the technological context, organisational context and environmental context (Adam *et al.,* 2020:836; Maduku, Mpinganjira & Duh; 2016:713; Tomatzky & Fleischer, 1990).

The technological context of the TOE framework is related to the technologies available to the enterprise (Matikiti *et al.,* 2018:3). Abed (2020:3) opines that the technological attributes of an organisation typically explain the IT innovation characteristics that influence the organisational adoption of an innovative technology. The technological context also entails the competency and technological capacity of the enterprise (Giotopouplos *et al.,* 2017:61; Matyila, 2019:67). According to Eze *et al.*(2019:573), the technological context also represents the internal and external perceived benefits of the technology, which can advance the enterprise's productivity and operational efficiency. The technology context entails internal variables associated with the expected performance of the technology as well as the technical skills required that SME owners deliberate on before they adopt (Maduku *et al.,* 2016:713; Matikiti *et al.,* 2018:3). The technological context relates to the much- anticipated benefits that enterprises can expect to derive from the technology (Eze *et al.,* 2019:573). Several studies have examined variables connected to the technology context such as compatibility, relative advantages and perceived affordability (Sanchez-Torres & Juarez-Acosta, 2019; Giotopoulos *et al.,* 2017; Mamun, 2017). The alleged benefits of e-commerce may persuade the adoption of e-commerce among township SMEs. However, lack of technological skills among township SMEs could be a barrier to the adoption of e-commerce (Verdugo, 2019:303).

The organisational context is associated with the internal resources available for technology adoption within an enterprise (Chau *et al.,* 2020:6). The organisational context refers to the entrepreneurial orientation (EO), management support and organisational readiness (Abed, 2020:3). The organisational context also consists of casual and formal processes, enterprise size and communication processes (Giotopoulos *et al.,* 2017:61). The organisational context helps explain how the enterprise's internal resources, enterprise characteristics and lack of resources influence decisions concerning the adoption of technology (Eze *et al.,* 2019:573). Most township SMEs are micro and informal businesses that are not registered with relevant authorities in South Africa (Kalitanyi, 2019:57). Furthermore, the majority of township SMEs are necessity-based, which means they do not create employment opportunities and usually earn enough income to sustain the entrepreneur's daily needs (Khubone, 2019:19).

The environmental context is associated with the surroundings in which an enterprise conducts its business (Matikiti *et al.,* 2018:3). The environmental context incorporates the industry's structure and factors such as government, regulations, market structure, technology infrastructure and vis major (Abed, 2020:4). Environmental factors measure how external agents such as customers and competitors exert pressure on SMEs to adopt e-commerce (Sanchez-Torres & Juarez-Acosta, 2019:139). The environmental context in the TOE framework such as the township environment within which SMEs operate, provides an enhanced understanding of the influence of external environment pressures on organisational adoption of new technologies (Giotopoulos *et al.,* 2017:61). The township economy refers to the environment where township SMEs operate (Charman *et al.,* 2017:1). Before the new dispensation in South Africa pre-1994, the township economy was excluded in governmental development policies (Cant, 2017:108). Thus, townships typically lack adequate infrastructure and amenities and are characterised by high levels of unemployment (Manyaka-Boshielo, 2017:3; Moos & Sambo, 2018:6).

TOE benefits from stronger empirical backing and a more robust theoretical foundation as noted by Tongsuksai *et al.* (2019:5). In the same vein, Chau *et al.* (2020:7) highlight that the TOE framework addresses the inherent limitations of a predominant technical perspective and provides a valuable analytical tool for distinguishing the intrinsic characteristics of an innovation, its drivers, its capabilities, and the broader environmental factors within the

adopting organisation. Moreover, TOE demonstrates empirical robustness in explaining the adoption of technological innovations (Adam *et al.,* 2020:837).

The TOE framework was preiously successfully applied to several research studies linked to the adoption of ecommerce among SMEs (Tongsuksai *et al.,* 2019:5). For instance, a study by Adam *et al.* (2020) explored the critical influential factors of B2C e-commerce at a global level using the TOE model. The TOE framework was also applied by Ezzaouia and Bulchand-Gidumal (2020) to investigate the factors influencing the adoption of e-commerce within the hotel sector of Morocco. Furthermore, Ocloo *et al.* (2020) examined factors influencing e-commerce adoption within Ghana's manufacturing SMEs using the TOE fraework. The findings from the studies mentioned above reveal that factors influencing the adoption of e-commerce among SMEs range from managent support and customer pressures to government support and pandemics in general. However, the theories made vital contributions to understanding some of the factors that influence the adoption of e-commerce, and the unique characteristics of township SMEs have not been considered by the TOE framework (Eze *et al.,* 2019:572).

One of the limitations of TOE as it relates to SMEs, is that a few of its constructs in the adoption predictors are believed to apply to larger organisations because of their abundance in resources (Adam *et al.,* 2020;837). For this reason, TOE on its own does not adequately explain the adoption of e-commerce in the context of SMEs (Hassen *et al.,* 2019:74; Tongsuksai *et al.,* 2020:5). Abdulhakeem *et al.* (2017:4), Adam *et al.* (2020:846) and Hassen *et al.* (2019:74) suggest that combining TOE and TAM could provide a more comprehensive theoretical framework for comprehending the factors that influence the adoption of e-commerce among SMEs in townships.

2.5.3 Diffusion of innovation theory (DOI)

Rogers (1995) introduced the diffusion of innovation theory (DOI) to explain the rate and stages of innovation adoption (Burgess *et al.*, 2017:2; Pantano & Vannucci, 2019:298). The DOI framework is a process-oriented model that aims to elucidate how, why, and at what pace enterprises embrace new technologies (Amaglo, 2020:17; Chau *et al.,* 2020:6). DOI focuses on identifying the factors that facilitate technology adoption by examining the rate at which

technologies are diffused (Das, 2019:283). Moreover, DOI is utilised to appraise the innovation-decision processes, which classify the diverse stages of adoption, commencing with awareness of an innovation and extending to its evaluation and usage within SME business operations (Burgess *et al.,* 2017:3).

According to DOI, diffusion is how innovation is communicated through specific channels over a period of time and within a distinct social system (Mamun, 2018:115; Matyila, 2019:66). The DOI theory asserts that a user's decision regarding an innovation is not an immediate undertaking but a process comprising a series of actions that occurs over time (Pantano & Vannucci, 2019:298). As a result, DOI theory accounts for the heterogeneousness of individuals, suggesting that individuals adopt novel technologies at different rates because they behave differently when faced with adoption decisions due to different goals and abilities (Mamun, 2017:115; Schmidthuber *et al.,* 2020). The adoption process prescribes five stages: awareness (knowledge), interest (persuasion), evaluation (decision), trial (implementation), and adoption (confirmation) (Abdulhakeem *et al.,* 2017:3). Thus, the innovation needs to be mainly adopted for long-term sustainability, given the extensive thought process, analytics and effort that go into the course of action to finally diffuse an innovation (Amaglo, 2020:17; Pantano & Vannucci, 2019:298).

According to Das (2019:284), Pantano and Vannucci (2019:298) and Schmidthuber *et al.* (2020:3), the DOI model consists of the following techonology adopters:

(i) Innovators – those who are first to try out innovation and individuals who are technology enthusiasts who believe the new technology will result in significant benefits;
(ii) Early adopters – opinion leaders who believe that being among the early adopters of the new technology will lead to maximised benefits;
(iii) Early majority – people who rarely lead but will adopt the new technology since it is largely adopted already, thus signifying a particular status for having the new technology;
(iv) Late majority – those who are sceptical about adopting innovation and show a risk-averse attitude. This group of people is mainly influenced by social norms and reference groups to adopt novel technologies last; and

(v) Laggards – conservative people who are confined by their traditions and generally display a pessimistic mindset towards the adoption of new technology.

Alfahl, Houghton and Sanzogni (2017:37), Alkhalil, Sahandi and John (2017:8), Das (2019:283) and Schmidthuber *et al.* (2020:2) say the use of DOI also takes into consideration five factors comprising of relative advantage, compatibility, complexity, trialability and observability. The five factors are defined as follows:

- ***Relative advantage*** refers to the extent to which an innovation is comprehended as being superior to the idea it supersedes (Mamun, 2017:115). A study conducted by Mamun (2017) that focused on process and service innovation among manufacturing SMEs in Malaysia found that SMEs' perceptions were that innovation adoption decisions are influenced by the economic benefits derived from the innovation.
- ***Compatibility*** is the extent to which it is perceived that an innovation is constant with previously adopted innovations when compared to the SME owner's prevailing values and norms (Selase *et al.,* 2019:5). In addition, the focus for SMEs is on the alliance between innovation and current working practices (Mamun, 2017:115). Furthermore, Selase *et al.* (2019:5) posit that SMEs with an advanced degree of compatibility are expected to adopt innovations to a greater degree than those that start with a lower extent of compatibility.
- ***Complexity*** refers to the degree to which an innovation is perceived as challenging to understand and utilise, and as such, is anticipated to have an adverse effect on the adoption of innovations (Sanchez-Torres & Juarez- Acosta, 2019:138). SMEs are most likely to adopt an innovation that aligns with their absorptive capacity, representing employees' essential knowledge and skills for the successful adoption of the innovation (Schmidthuber *et al.,* 2020:2).
- ***Trialability*** pertains to the extent to which an innovation can be tested or experimented with on a restricted or limited basis (Sanchez-Torres & Juarez- Acosta, 2019:138). When innovation is trialable, it affords the adopters opportunities to remodel or redesign the innovation based on initial feedback, ultimately lowering the level of uncertainty for SMEs that are adopting (Mamun, 2017:115).
- ***Observability*** is the degree to which the results of the innovation are visible to others (Alfahl *et al.,* 2017:37). Observability denotes opportunities to enable SMEs to

witness the outcomes of potential adoption, which is expected to positively influence innovation adoption (Das, 2019:283). SMEs are more likely to adopt an innovation when they can visualise the potential benefits and risks from adopting the innovation (Mamun, 2017:115; Selase *et al.,* 2019:5). Mamun (2017:115) emphasises comprehending the economic benefits and being able to observe these benefits as influencers for the adoption of new technologies.

Despite DOI being one of the technology adoption theories that can facilitate the comprehension and prediction of change as well as the processes involved in the adoption of technologies, the theory has been criticised for its inability to address the dynamic social settings within SMEs (Chau *et al.,* 2020:6). Similarly, Matyila (2019:66) singles out that DOI is a variance model that cannot adequately explain the contextual issues that are associated with SMEs. In addition, DOI does not consider the environmental context (Alkhalil *et al.,* 2017:7). Therefore, DOI alone may not be sufficient to explain all contextual issues such as limited resources, customer readiness and other factors inherently synonymous with SMEs adopting e-commerce from developing countries and townships in particular (Abdulhakeem *et al.,* 2017:3; Selase *et al.,* 2019:5).

2.5.4 Theory of reasoned action (TRA)

As an extension of TAM, the theory of reasoned action (TRA) aims to predict an individual's behaviour towards the adoption of a new technology based on his/her behavioural intention and attitude (Das, 2019:283). In other words, the TRA could explain technology adoption based on the business owner's attitude concerning technology and their history regarding technology (Matyila, 2019:66). The TRA model consists of four primary concepts which are: intention to use, behavioural attitudes, actual use and subjective norms (Mpofu *et al.,* 2012:7). In other words, an individual's behavioural intentions are dictated by perceived behavioural control (Ajzen, 2002:666).

However, Das (2019:283) indicates that the TRA's predictive power is constrained and rigidly bounded by the associated traits. Furthermore, limitations of TRA are the supposition that when an individual forms an intent to act, they will be at liberty to act without restriction (Amaglo, 2020:14). As a result, the complexity of applying the TRA to the adoption of

technology among township SMEs has been noted as a shortcoming due to paucity in research regarding the adoption of e-commerce (Matyila, 2019:66).

2.5.5 Theory of planned behaviour (TPB)

Based on the Davis (1989) model, there are a variety of extensions of TAM, such as the theory of planned behaviour (TPB), as proposed by Ajzen (1991), which states that personal attitudes towards the business influence the intention to adopt an innovation and that further subjective norms such as social pressure, parental role modelling, support and other people's opinions play a role (Babić & Golob, 2018:1377; Das, 2019:283). The intention is further influenced by the SME owner's perceived sense of control and the ability to perform the activities that are of interest to them (Mwathi, 2018:11).

The TPB theory highlights the principal role of intention as a motivational factor in influencing behaviour and in determining the level of effort SME owners are prepared to commit in performing the desired behaviour (Ajzen, 1991; Babić & Golob, 2018:1377). Thus, the intention is highly influenced by an individual's beliefs, society's expectations, and the SME owner's attitude towards innovation adoption (Mwathi, 2018:11). The TPB extends the limitations of the TRA by adding belief as an attribute to the prediction of an individual's behaviour (Mpofu *et al.,* 2012:7). A significant limitation of TPB is that while the theory considers prescriptive influences, it does not consider environmental and economic factors that may influence SME owners' intention to adopt e-commerce as an innovation (Amaglo, 2020:14).

2.5.6 Unified theory of acceptance and use of technology (UTAUT)

The unified theory of acceptance and use of technology (UTAUT) was initiated by Venkatesh, Thong and Xu (2012) and is applied to study the behavioural intention to use new technology (Tongsuksai *et al.,* 2019:5). The UTAUT is a variation and extension of the TAM to combine an alternative view of users and their acceptance of innovation (Rokhim *et al.,* 2018:691; Sombultawee, 2020:257). The model suggests that there are four direct determinants of usage behaviour and user acceptance, namely; performance expectancy, facilitating conditions, effort expectancy and social influence as well as four moderating determinants of behavioural

intention, namely; age, gender, experience and voluntariness (Venkatesh, Croteau & Rabah 2014:112; Das, 2019:284).

The key determinants are the main factors that directly influence an SME owner's behavioural intention to use novel techniques (Hassen *et al.,* 2019:73; Tongsuksai *et al.,* 2019:5). Nonetheless, it is not clear whether UTAUT alone exemplifies the intricate factors associated with SMEs in townships, which is the relationship between SME owners, customers, employees and external contextual factors (Matyila, 2019:68; Rokhim *et al.,* 2018:691).

2.5.7 Integration of theoretical frameworks

To round up the criticisms regarding the theoretical frameworks discussed above, after reviewing literature pertaining to the adoption of e-commerce, it is clear that in most instances when theoretical models are used on their own, they do not provide an adequate lens to explain the contextual issues of SMEs in townships (Chau, *et al.,* 2020:5; Eze *et al.,* 2019:572). Moreover, it is apparent from the literature reviewed that no consensus exists on which theory or model best explains the adoption of e- commerce in townships (Hassen, *et al.,* 2019:75; Sanchez-Torres & Juarez-Acosta, 2019:138). This sentiment is echoed by Abdulhakeem *et al.* (2017:2) contending that none of the abovementioned theoretical models is individually sufficient to address the peculiarities and distinct characteristics of SMEs in townships.

Integrating several theories is commonly used to investigate the adoption of innovative technologies; for example, Chau *et al.* (2020) integrated DOI with TOE to investigate determinants of mobile commerce adoption among SMEs in Vietnam. Selase *et al.* (2019) combined TAM and DOI to identify factors that influence SMEs in Ghana to adopt technology usage. Another study to explore factors influencing the adoption of e-commerce among SMEs in Sri Lanka relied on a combination of TAM and TOE conceptual frameworks (Govinnage & Sachitra, 2019). Research by Matikiti *et al.* (2018) integrate TAM and TOE models to establish factors that influence attitudes amongst travel agencies and tour operators regarding the usage of social media marketing in South Africa.

Tongsuksai *et al.* (2019) propose an integrated model that combines TOE and UTAUT to assess the critical success factors for cloud ERP adoption among SMEs. Alkhalil, Sahandi, and John

(2017) combine TOE and DOI to explore the determinants for adopting cloud computing (CC) among SMEs in Saudi Arabia. Otieno (2015) integrated TOE and DOI to investigate the adoption of mobile payments by SMEs in Kenya, while Sanchez-Torres and Juarez-Acosta (2019) proposed a combined model comprising DOI, TAM and UTAUT to investigate the adoption of e-commerce among SMEs in Colombia. Furthermore, Alfahl *et al.* (2017) integrated TOE with TAM, DOI, TRA and TPB to explore e-commerce adoption in Saudi Arabia.

Owing to the unique context of developing countries and townships in particular as opposed SMEs in developed countries, the integration of theoretical frameworks would offer a more resonant understanding of the technological phenomenon at hand (Hassen, *et al.,* 2019:75). Combining multiple theoretical perspectives is argued to heighten the understanding of the adoption of novel technologies given the unique and complex peculiarities of SMEs that operate in developing countries, especially in townships (Alkhalil *et al.,* 2017:7). As a result, integrated theoretical frameworks have been successfully applied to several research studies related to the adoption of e- commerce among SMEs (Tongsuksai *et al.,* 2019:5).

Numerous empirical studies recommend combining TAM with other theories to address the rapid changes in technology and digital transformation to enhance its specificity and explanatory attributes (Adjin-Tettey, 2018:94). On the other hand, TOE and DOI frameworks have been broadly accepted and applied in adopting new innovations by SMEs (Alkhalil *et al.,* 2017:7). TOE and DOI share a few similarities; for instance, the consideration of technology and organisational context are fairly similar in TOE and DOI (Giotopuolus *et al.,* 2017:61; Riyadh *et al.,* 2019:2144).

However, there are some differences between the DOI and TOE theoretical frameworks. DOI does not consider the environmental context, whereas in TOE, the environmental context is considered part of organisational and technological context (Alkhalil *et al.,* 2017:7). In contrast, TOE does not consider technology and innovation characteristics comprehensively, while DOI includes a broader range of innovation characteristics and investigates the numerous and diverse stages of the diffusion process while considering the individual's perspective (Burgess *et al.,* 2017:3; Tongsuksai *et al.,* 2020:5).

Largely, the TOE framework helps in identifying categories that are relevant for determinants to adopt technology. In contrast, the DOI model aids in identifying particular variables within each category of the different stages of the diffusion process (Govinnage & Sachitra, 2019:4). Therefore, integrating the TOE framework and the DOI model with TAM will significantly enhance this study by providing a richer contextual understanding of the adoption of e-commerce among township SMEs (Alkhalil *et al.,* 2017:7; Adam *et al.,* 2020:847; Hassen *et al.,* 2019:74; Khoo, Ahmi & Saad, 2018:2). The rationale is that enhanced understanding of e-commerce adoption among township SMEs requires flexible theoretical frameworks that are adaptable enough to encapsulate the distinctiveness of townships and the experiences of the SME owners (Abdulhakeem, *et al.,* 2017:6; Sanchez-Torres & Juarez-Acosta, 2019:138).

The choice to integrate TAM, TOE and DOI frameworks for this study is supported by the fact that technology adoption is influenced at both the individual and organisational levels (Govinnage & Sachitra, 2019:4; Khoo *et al.,* 2018:2; Matikiti *et al.,* 2018; Taylor, 2019:675). However, when used individually, each theoretical model has been criticised for not being comprehensive enough to incorporate and provide the full scope of the technology adoption approach that is holistic to include both the enterprise from an organisational perspective and the experiences of the entrepreneur from an individual perspective (Adam *et al.,* 2020; Chau *et al.,* 2020:6; Maduku *et al.,* 2016:713).

Furthermore, given the characteristics of specific technologies and the complexities of the environment within which SMEs operate, the integration of several theories into a single framework offers a resonant theoretical basis for explaining the adoption of e- commerce by township SMEs (Eze *et al.,* 2019:572; Selase *et al.,* 2019:5; Tongsuksai *et al.,* 2019:4). Therefore, integrating theoretical models to understand e-commerce adoption among Soweto-based SMEs allows TAM to focus on individual technological attributes in exploring the adoption of a specific technology while acting as the overarching model (Harizi & Marhoon, 2019:87; Jan *et al.,* 2019:204; Rokhim *et al.,* 2018:691). TOE, on the other hand, acts as a lens for contextualising the various interactions from several perspectives that take place inside and outside SMEs, while the use of DOI focuses on technological and individual characteristics that facilitate the diffusion process of adopting technologies (Alfahl *et al.,* 2017:35; Alkhalil *et al.,* 2017:4; Chau *et al.,* 2020:7; Riyadh *et al.,* 2019:2144).

For the reasons mentioned above, this study integrated TAM, TOE and DOI to create a conceptual framework in Chapter 1 (Figure 1.1) that adequately explains the factors that influence the adoption of e-commerce among Soweto-based SMEs, including the processes involved in implementing and diffusion of technology within their business operations. As a result, integrating TAM, TOE and DOI provides a solid theoretical foundation for better understanding the adoption of e-commerce among township SMEs (Chau *et al.,* 2020:7; Khoo *et al.,* 2018:2). Table 2.3 contains previous research on the adoption of e-commerce by SMEs, the frameworks adopted, and the research methodologies used, and the findings of each study.

Table 2.3 Previous research on the adoption of e-commerce

Author	Aim	Findings and suggestions for future research
Adam *et al.,* 2020	This study delved into the determinants of global B2C e-commerce adoption, employing the TOE framework to analyse the factors impacting B2C e-commerce adoption across 135 countries using archival data.	Access to ICT, the political landscape, human resource development and regulatory environment collectively account for 70% of the variation in B2C e-commerce adoption.
Ajao *et al.,* 2018	Quantitative study that investigated the factors influencing e-commerce adoption in the Nigerian informal sector using TAM framework.	The factors that affect e-commerce adoption vary among the different categories of informal sector businesses. Nevertheless, technological factors had a more pronounced influence on the adoption of e-commerce.
Amornkitvikai & Lee, 2020	Investigated the factors and barriers which hindered e-commerce adoption by Thai SMEs.	Social media and smartphones were significant drivers for e-commerce adoption. Customers' lack of awareness and internet security were identified as barriers.
Barroso *et al.,* 2019	Quantitative study that analysed the determinants of e-commerce usage by SMEs using a cognition-driven model.	Lack of awareness and capabilities of SMEs resulted in aversion to e-commerce adoption whilst entrepreneur profile has a significant influence in its adoption.
Chau *et al.,* 2020	A quantitative research endeavour examining factors influencing the adoption of m-commerce among SMEs in Vietnam. This research employed an integrated framework that combined the DOI and TOE framework.	Key factors affecting m-commerce adoption include perceived advantages, compatibility, security, customer influences, governmental assistance, and the IT proficiency of entrepreneurs.
Ezzaouia *et al.,* 2020	A quantitative research study explored the elements affecting the adoption of IT within the hotel industry, with a particular focus on Morocco, which is a developing country. The study employed TOE framework.	External factors, such as competitive pressure, customer pressure, supplier pressure and government support exert the most significant influence on IT adoption. However, individual attributes and the perceived benefits derived from IT adoption also hold considerable importance.
Garg & Choeu, 2015	Quantitative study that determined the level of e-commerce adoption and factors that influence its adoption by SMEs in Pretoria East, South Africa using TOE framework.	Perceived benefits, relative advantage, competitive pressure and IT knowledge were significant factors influencing e-commerce adoption.
Govinnage & Sachitra, 2019	Quantitative research that explored the factors influencing the adoption of e-commerce amongst SMEs in Sri Lanka relying on TAM and TOE conceptual frameworks	E-commerce adoption was notably influenced by computer literacy, government backing and the quality of technological infrastructure
Hayati & Andrawina, 2019	Archival data review that determined the internal and external factors affecting e-commerce adoption using TOE framework.	Extending this study with more dimension and factors which have not been considered.

Iyamu, 2020	Case study that examined factors that influence the adoption of e-commerce by retail stores in South Africa using actor-network theory (ANT)	Entrepreneurs, IT specialists, networks, perceived benefits, training and awareness campaigns influence the adoption of e-commerce.
Maduku *et al.,* 2016	A quantitative study that scrutinised primary factors influencing the intention to adopt mobile marketing among SMEs in South Africa. This research employed a multi-perspective framework that integrated elements from the TOE contexts of the enterprises.	Factors such as the perceived relative advantage, perceived costs, top management support, employees' IT proficiency, and customer pressures are crucial in driving the intention to adopt mobile marketing. Among these, top management support stood out as the most pivotal driver of adoption intention.
Matikiti *et al.,* 2018	A quantitative research endeavour that aimed at identify factors that affect the disposition towards using social media marketing among travel agencies and tour operators in South Africa. This study applied both TAM and TOE framework.	Internal factors impacting the attitude towards the utilisation of social media marketing encompass managerial support and the educational level of managers. External factors influencing the use of social media marketing include competitive pressure, perceived benefits and the perceived ease of use. The connection between the attitude towards social media marketing and the extent of its usage was moderated by technical knowledge.
Ndayizigamiye et al., 2019	Quantitative research that investigated enablers that influence e-commerce adoption amongst SMEs in KwaZulu-Natal, South Africa	Having technology capabilities such as email and an e-commerce implementation strategy contributes to the adoption of e-commerce.
Ocloo et al., 2020	Quantitative study that examined factors that influence e-commerce adoption within manufacturing SMEs in Ghana using the TOE framework.	Perceived readiness, organisational readiness and competition influence the adoption of e-commerce. Top management support was also impactful.
Taylor, 2019	A desktop review that examined the role of leader factors, organisational factors and market environment factors to an enterprise's decision to adopt information and communication technologies (ICTs). TAM and TOE framework were used.	Organisational and environmental elements were influential in shaping the choices of SMEs in developing nations when it came to adopting ICTs. It was recommended that future research investigate the impact of EO on the adoption of ICTs.
Uneanya, 2018	Quantitative research to Investigate factors that affect e-commerce adoption in Nigeria.	The intention to adopt e-commerce by SMEs was influenced by factors such as cost, security, infrastructure, ease of use and perceived usefulness.

Source: Researcher's own compilation

From the literature review, findings from most of the studies conducted reveal that various factors influence the adoption of e-commerce. Upon closer inspection, the researcher identified several common factors that were frequently highlighted in each study from Table 2.3. For this study, the researcher decided to focus on ten of the most common factors frequently highlighted in each study based mainly on TAM and TOE. The ten factors identified by the researcher are the following: perceived benefits, perceived ease of use, perceived usefulness, entrepreneurial orientation, management support, organisation readiness, customer pressures, competitor pressures, government support and vis major. Furthermore, the researcher also considered the factors that characterise DOI regarding the implementation and diffusion of e-commerce amongst Soweto-based SMEs. Chapter 3 discusses all the combined factors that influence the adoption and diffusion of e-commerce from the context of the three theoretical frameworks.

2.6 THE ROLE OF E-COMMERCE ADOPTION AMONG SMEs

SMEs are recognised globally as an essential contributor to all economies (Govuzela, 2019:1; North *et al.,* 2019:2; Yunis *et al.,* 2018:344). SMEs constitute more than 90% of businesses and are anticipated to account for 80% of global economic growth (OECD, 2017:6; Pradhan *et al.,* 2019:1530; Xuhua *et al.,* 2019:81). Furthermore, SMEs are considered the backbone of economies in developed and developing countries (Ocloo *et al.,* 2020:192; Shemi & Procter, 2018:501; Widjaja *et al.,* 2020:164).

The adoption of e-commerce by SMEs can additionally facilitate economic growth for domestic and international trade globally (Dahbi & Benmoussa, 2019:811; Iyamu, 2020:2; Zhelyazkova, 2020:263). Thus, e-commerce has become a driving force in the advancement of modern trade (Kartiwi *at el.,* 2018:1; Ndayizigamiye *et al.,* 2019:262; Simakov, 2020:77). As a result, SMEs have been highly influenced by e-commerce which uses digital and multimedia business tools with respect to communications and operations to trade and compete globally (Nachit & Belhcen, 2020:1; Manala, 2018:2; Sanchez- Torres & Juarez-Acosta, 2019:137).

E-commerce is becoming one of the fastest-growing spheres of influence of technology adoption (Ocloo *et al.,* 2020:192; Nazir & Roomi, 2020:45; Xuhua, 2019:82). Furthermore, in

times of large-scale disasters such as the COVID-19 pandemic, the adoption of e-commerce has proven crucial for SMEs' survival (Kysh, 2020:14; Sardar, Jianqiu, Bilal & Syed, 2020:299; Zhelyazkova, 2020:262). The upsurge of e-commerce platforms offers SMEs a wide range of ways to reach their customer base, facilitate improved service and increase sales while offering flexibility in terms of cost reduction that is not available through traditional SME marketing tools (Babenko *et al*., 2019:346; Kartiwi *et al.,* 2018:1; Sombultawee, 2020:256). Similarly, Hayati and Andrawina (2019:1) concedes that the acceleration of e-commerce users is driven by the benefits that cannot be derived from conventional buying/selling transactions.

Olanrewaju *et al.* (2020:87), Hayati and Andrawina (2019:1) and Triandina *et al.* (2020:112) further posit that for consumers, e-commerce offers ease and convenience of shopping from anywhere and at any time by providing emotional satisfaction, and makes it easy to compare prices and features of multiple products and services. For SMEs, e-commerce makes it possible to reach a more comprehensive market range without the limitation of physical location and selling points (Johnson & Iyamu, 2019:1; Uneanya, 2018:2; Zoroja *et al.,* 2020:313). Similarly, Chosniel (2020:192) argues that the adoption of e-commerce presents an opportunity for increased competition and innovation among SMEs due to increased levels of transparency.

SMEs can compete with their larger counterparts due to e-commerce (Amaglo, 2020:20; Pantelomon, 2020:29; Babenko *et al.,* 2019:351). Previous research shows that customer demands and pressure from competitors are among the factors influencing the adoption of e-commerce by SMEs (Kartiwi *et al.,* 2018:1; Vakulenko, Shams, Hellström & Hjort, 2019:462). Moreover, e-commerce is recognised as the tool that addresses the needs and desires of consumers, businesses, suppliers and governments alike, and is seen as a key business strategy in developing economies (Khan & Uwemi, 2018:456; Niu, Deng & Hao, 2020:36; Triandina *et al.,* 2020:112).

The escalating use of e-commerce in SMEs' daily business operations has led to multiple innovative ways to conduct business (Manala, 2018:3; Saridakis, Idris, Hansen & Dana 2019:56). Yet, other studies have contrarily concluded that e-commerce marginalises developing countries while widening the digital divide between developed and developing

countries (Amaglo, 2020:2; Awiagah *et al.,* 2016:816). These assertions stem from a range of challenges experienced by developing countries, including infrastructural setbacks and the restricted diffusion of technological skills and paraphernalia (Awiagah *et al.,* 2016:816; Mendieta, 2018:20; Napitupulu *et al.,* 2018:2). Furthermore, SMEs with fewer resources are not keen to utilise electronic channels for their business transactions (Amaglo, 2020:2; OECD, 2017:13). The aversion of developing countries to contemporary business models results from their lack of knowledge and competencies regarding e-commerce (Babenko *et al.,* 2019:353; Mkansi *et al.,* 2019:29). To improve their businesses, Barroso *et al.* (2019:496) believe that a theoretical framework that advances a resonant understanding of determining factors of e-commerce could greatly benefit SME owners.

Echoing similar sentiments are Chau *et al.* (2020:2) and Wambugu and Ndiege (2018:1) who posit that SMEs from developing countries are unique, which explains why their adoption of e-commerce is different due to their lack of technical expertise and poor technological infrastructure. In addition, because of SMEs' inadequate capital and organisational planning, they usually rely on informal networks to gain competitive advantages while facing great uncertainty in the external context (Cenamor, Parida & Wincent, 2019:198; De Guinea & Raymond, 2020:247; Nantembelele & Gopal, 2018:440). Thus, the unique characteristics of SMEs lead to different behaviours in the adoption of e-commerce (Cenamor *et al.,* 2019:198; Chau *et al.,* 2020:2).

Barroso *et al.* (2019:497) recommend that ways to accelerate SMEs' adoption of e- commerce include clarifying how e-commerce is structured and how to understand the beliefs of entrepreneurs regarding the adoption of e-commerce. To achieve the goals mentioned above, it would be necessary to incorporate the perspectives of SME owners and their personal values, experiences, expectations and opinions to develop and apply robust theoretical models capable of dealing with the unique characteristics and uncertain contexts of township SMEs (Barroso *et al.,* 2019:497; Govinnage & Sachitra, 2019:4).

2.6.1 Benefits of the adoption of e-commerce by SMEs

Regarding the benefits, extensive attention in the literature was dedicated to identifying the benefits that can be derived by SMEs through the usage of e-commerce (Kartiwi, 2018:1; Triandini *et al.,* 2020:112). The benefits for SMEs that adopt e-commerce include easy access to markets, enhanced productivity due to process automation, a rise in creativity and innovation as well as reduction in input costs, which can advance an enterprise's competitive advantage (Awiagah *et al.,* 2016:815; Xuhua *et al.,* 2019:81). Additionally, SMEs that adopt e-commerce can develop collaborations and external linkages, improve operating systems, store and retrieve information efficiently (Mavimbela & Dube, 2016:121; Saridakis *et al.,* 2019:56; Zhelyazkova, 2020:263).

The advantages of e-commerce include global market reach, operational cost reductions, increased marketing time, the ability to operate the business 24/7, improved consumer service and retention, enhanced information quality, elimination of geographical boundaries, enablement of just-in-time business decisions, expansion of market penetration, operational optimisation and increased revenue (Helkkula, Kowalkowski & Tronvoll *al.,* 2018:284; Iyamu, 2020:2; Tseng, Wu, Chiu, Lim & Tan, 2019:60; Fitriasari, 2020:57). However, both theoretical and empirical studies find that the benefits of e- commerce are not automatic and that SME owners need to know how to make the technology work for them (Mbuyisa & Leonard, 2017:161; Worku & Muchie, 2019:352)

Simakov (2020:79) believes that an online store can be launched without incurring enormous overhead costs and does not require significant technical knowledge since setup costs have been reduced significantly. Furthermore, owing to CC usage, SMEs no longer need to purchase their own servers for computing services and to store information (Wambugu & Ndiege, 2018:1). CC provides on-demand computing services via the internet for SMEs (Ilyihamije 2019:15). In addition, e-commerce is used to improve Interactions and payment transactions between consumers and SMEs, as well as between SMEs and suppliers (Alazab *et al.,* 2020:2351; Olanrewaju *et al.,* 2020:87; Worku & Muchie, 2019:350). E-commerce transactions are considered more straightforward and faster and improve consumers'

satisfaction, ultimately improving consumers' loyalty and retention (Fitriasari, 2020:57; Ibam *et al.,* 2018:3; Vakulenko *et al.,* 2019:462).

Moreover, e-commerce brings about various benefits, including cost savings in administration and communication, enhanced precision and transformative advantages. These advantages extend to initiatives such as business process re-engineering, the integration of industry value chains, facilitating practices such as just-in-time inventory, continuous replenishment and quick response retailing (Babenko *et al.,* 346; Dahbi & Benmoussa, 2019:811; Hayati & Andrawina, 2019:1). Moreover, data acquisition, customer behaviour and analytics is one of the most commonly cited benefits businesses gain through e-commerce (Alazab *et al.,* 2020:2351; Kühn & Petzer, 2018:4; Zhelyazkova, 2020:263).

2.7 GLOBAL REVIEW OF THE ADOPTION OF E-COMMERCE AMONGST SMEs

Through the literature review, the researcher demonstrated how e-commerce is adopted and diffused by SMEs from developed and developing countries, including South Africa.

2.7.1 The adoption of e-commerce by SMEs in developed countries

Despite the global crisis in 2020, there has been a sharp increase in the use of online sales globally. The United States of America (USA) and European countries have generally been utilising and participating in digital activities during the last several years (Zoroja *et al.,* 2020:316). Developed countries have good infrastructure with good internet quality, resulting in high internet usage that enables consumers, government and SMEs to connect and improve productivity by running operations more efficiently (Khan & Uwemi, 2018:456).

Europe also has the Digital Economy and Society Index (DESI), which tracks the digital competitive advantage of countries within the European Union (EU). Among other indicators, the DESI examines digital technology integration in European countries, including business digitisation and e-commerce (DESI, 2020: 2-4). The e-commerce index investigates the rate at which SMEs conduct web sales, SME turnover through e-commerce and the rate at which SMEs utilise e-commerce globally (Zoroja *et al.*, 2020:316). Ireland, Belgium and Czechia

attained the highest web sales and turnover results through e-commerce in 2019 based on the e-commerce index (DESI, 2020:64). The DESI is indictive of the proactiveness and support that SMEs from developed countries receive from the government, which traces the progress of EU countries in digital competitiveness and provides data to help each member state identify areas that require priority investment and action (DESI, 2020:10).

Sombultawee (2020:257) claims that there has historically been limited external support to SMEs by the government to adopt e-commerce in the United Kingdom (UK), mainly due to the poor distribution of knowledge and policy planning affecting e-commerce adoption. Sombultawee (2020:257) used UTAUT to explore e-commerce adoption decisions and the subsequent financial outcomes of UK-based SMEs in greater detail. The results showed that the expected outcome of using the technology and the perceived learning curve contributed to the adoption of e-commerce. However, the implication of the results also pointed out that education about the benefits of e-commerce adoption, risks, and required resources could assist in the adoption of e-commerce among UK-based SMEs (Sombultawee, 2020:261).

Zoroja *et al.* (2020:323) conducted research to establish the usage and quality of e- commerce activities across European SMEs. Thus, Zoroja *et al.* (2020:323) found that e-commerce was adopted in European countries such as Belgium and Ireland, with a more established ICT infrastructure and sectors. Most of the e-commerce research within European countries such as Belgium and Ireland have focused on customer satisfaction, perceived risk, loyalty and value. In addition, Schmidthuber *et al.* (2020:1) apply the TAM theoretical framework to provide insights into the factors that sway European SMEs' intention to use mobile payment. The findings reveal that the intention to use mobile payments is fiercely driven by tech-specific attributes such as perceived usefulness and perceived compatibility.

Applying DOI theory, Burgess *et al.* (2017:3) explore how Australian SMEs interact with social media. They achieved this by pinpointing the specific stages of adoption the SMEs studied were in and by analysing factors influencing their decision to adopt or not adopt social media in their business operations. Burgess *et al.* (2017:3) contend that despite its potential as a valuable tool for comprehending the scope of innovation adoption, the DOI theoretical model has yet to be extensively utilised in in-depth studies of innovation adoption by SMEs. As a result, the

study offers further insights into the experiences of SMEs across different stages of the adoption process, going beyond the standard explanations for the occurrence or non-occurrence of adoption (Burgess *et al.,* 2017:3).

Since most developed countries are well established, with most SMEs already making use of e-commerce, there is limited recent research on the factors that influence the adoption of e-commerce (Amaglo, 2020:28; Kabanda & Brown, 2017:120). Most of the e-commerce literature in developed countries primarily focuses on the quality of e-commerce, perceived risks, service innovation, customer loyalty and satisfaction (Zoroja *et al.,* 2020:323). Owing to the significant disparity between developed and developing countries, prior research on e-commerce adoption, primarily carried out in developed nations, has faced criticism. This criticism is rooted in the challenge of extrapolating research findings from developed countries to their developing counterparts, given the notable distinctions in social, cultural, economic, legal, and political contexts (Agyapong, 2018:269; Chau *et al.,* 2020:2; Herzallah & Mukhtar, 2016:2; Sanchez-Torres & Juarez-Acosta, 2019:137).

2.7.2 The adoption of e-commerce by SMEs in developing countries

Researchers have a general consensus that the emergence of e-commerce and its subsequent adoption by businesses in developed countries has brought tremendous growth to the global economy (Amaglo, 2020:20; Kabanda & Brown, 2017:119; Khan & Uwemi, 2018:455). E-commerce has been successfully applied and used in developed countries with substantial social and economic benefits; however, the same cannot be said about developing countries (Dahdi & Benmoussa, 2019:811; Hassen *et al.,* 2019:72; Ndayizigamiye *et al.,* 2018:263; Sanchez-Torres & Juarez-Acosta, 2019:137).

In contrast, studies have found that e-commerce marginalises developing countries and broadens the digital divide between developed and developing countries (Awiagah, 2016:816; Herzallah & Mukhtar, 2016:2; Ibam *et al.,* 2018:2). The exponential growth of e-commerce in developed countries further expands the financial gap between developed and developing countries (Agyapong, 2018:269; Dahdi & Benmoussa, 2019:812; Nazir & Roomi, 2020:45). For instance, prevailing models do not capture critical circumstantial characteristics that impact

SMEs in developing countries such as lack of infrastructure, poor government policies and cultural issues (Abdulhakim *et al.,* 2017:1; Hassen *et al.,* 2019:73). The contextual factors further exacerbate the widening differences between developed and developing countries and unique characteristics of the economies of developing countries have been identified by researchers as contributing to the lack of the adoption of e-commerce by SMEs from developing countries (Hassen *et al.,* 2019:72; Khan & Uwemi, 2018:455; Nazir & Roomi, 2020:45).

Interestingly, Allen (2018:13), Chau *et al.* (2020:2) and Khan and Uwemi (2018:455) find that mobile technology penetration is very high in developing countries. For instance, M-Pesa is a mobile phone-based money transfer service introduced in Kenya in 2007, where an estimated 95% of Kenyan households and businesses use M-Pesa (Reed, Stefanov & Vural, 2020:1). According to Allen (2018:13), mobile phone-based technology is referred to as mobile commerce (m-commerce). However, the usage of e-commerce is considerably lower than that of mobile services and devices (Chau *et al.,* 2020:2; Ndayizigamiye *et al.,* 2018:263). It is believed that the shortfall in the adoption of e-commerce in developing countries could be attributed to various barriers such as lack of awareness, lack of understanding of ICT-related opportunities, lack of government support and inadequate infrastructure (Dahdi & Benmoussa, 2019:812; Giotopoulos *et al.,* 2017:61; Ibam *et al.,* 2018:2; Nantembelele & Gopal, 2018:45).

Agyapong (2018:269) and Uneanya (2018:2) believe that a general lack of awareness from both consumers and SME owners as well as the lack of physical infrastructure, financial and legal support to help advance the development, adoption and application of e-commerce is the source of the lack of adoption of e-commerce. Thus, to measure the adoption and utilisation of e-commerce in Nigeria, Khan and Uwemi (2018) conducted an assessment from both consumers and SMEs regarding the challenges and the impact of the adoption of e-commerce in Nigeria. Their findings reveal that although most SMEs are interested in adopting e-commerce, they cannot successfully implement and diffuse e-commerce into their business operations due to lack of trust and capabilities (Khan & Uwemi, 2018:472).

SMEs in developing countries face different socio-economic challenges than those in developed countries (Herzallah & Mukhtar, 2016:2; Molla & Licker 2005a:878; Nantembelele

& Gopal, 2018:44). Equally significant in understanding the phenomenon at hand is the substantial difference in cultural and business philosophies between developed and developing countries, such as the latter's preference to maintain traditional business activities (Nazir & Roomi, 2020:44). The different philosophies mentioned above make the transfer and applicability of prevailing e- commerce theoretical frameworks unsuitable in developing countries because one theory on its own is not adequate to address unique contextual environments (Agyapong, 2018:269; Molla & Licker 2005a:878; Nazir & Roomi, 2020:44). Understanding the challenges faced by developing countries is especially relevant because not all the socio-economic conditions for the adoption of e-commerce by SMEs are met (Herzallah & Mukhtar, 2016:2). For instance, there is high inequality in the distribution of income, lack of business law for e-commerce and weak technological and educational infrastructure (Chau *et al.,* 2020:2; Herzallah & Mukhtar, 2016:2; Mendieta, 2018:20).

Since just over 91% of businesses in developed countries have adopted e-commerce, while only 30% have adopted e-commerce in Africa and Latin America, the highly skewed adoption rate of e-commerce between developed and developing countries implies an unbalanced spread of economic benefits that can be derived from its adoption (Agyapong, 2018:269; Kamdjoug, Chengo & Gueyie, 2020:2). Other research studies investigating the influence of e-commerce on cumulative economic development have argued for the strategic operational and informational benefits of SMEs that adopt e-commerce in developing countries (Awiagah *et al.,* 2016:817; Kamdjoug *et al.,* 2020:4; Ibam *et al.,* 2018:2).

Abdulhakim *et al.* (2017:1) conducted research to assess the suitability of existing theoretical models for e-commerce adoption with a purpose of ascertaining their relevance in comprehending the adoption of e-commerce among SMEs in developing nations. Their study evaluated the following theories: TAM, TOE, UTAUT, DOI, TPB, and resource-based view theory (RBT). Their analysis revealed that none of the abovementioned theoretical models is individually sufficient in addressing the peculiarities and distinct characteristics of SMEs from developing countries. For this reason, Abdulhakim *et al.* (2017:2) suggest that the most effective approach involves integrating frameworks to gain a comprehensive understanding of the contextual factors linked to e-commerce adoption in developing countries. Furthermore, Molla and Licker (2005b:86) had previously developed the perceived e-readiness model

(PERM) and integrated it with TOE as a theoretical foundation for understanding the adoption of e-commerce among SMEs in developing countries.

Although less commonly used, PERM posits that a multi-perspective evaluation of organisational, managerial and external contextual matters could offer significant predictors for e-commerce adoption in developing countries (El Said, 2017:64; Hassen *et al.,* 2019:74; Molla & Licker, 2005b:88). PERM assumes that integrating all the perspectives mentioned earlier creates a more dynamic framework for understanding the particularities of the environments within which SMEs in developing countries operate (Abdulhakim *et al.,* 2017:5; El Said, 2017:64; Molla & Licker, 2005b:87).

Echoing similar sentiments is Agyapong (2018:269) who contends that developing countries require a tailor-made theoretical framework that is relevant to their needs and considers the unique peculiarities and characteristics of each country. Agyapong (2018:270) proposes using the structural equation model that applies mixed research methods (combines surveys and interviews). The findings from Agyapong (2018:273) indicate a need for legislation to introduce policies that can facilitate the fusion of e-commerce among SMEs in developing countries. Similarly, Awiagah *et al.* (2016:821) used the TOE framework and social constructivism paradigm to build a practical framework for understanding the adoption of e-commerce among SMEs in Ghana which links to this study given the unique qualities of Ghana when compared to townships. The study mentioned above conducted in Ghana shows that the integration of theoretical frameworks is significant to address the unique characteristics of each developing country. By the same token, this study implemented an integrated theoretical framework to consider the unique characteristics of the township environment in which SMEs operate in. The results from the study conducted by Awiagah *et al.* (2016:829) indicate that government support has a significant impact on the intention to adopt e-commerce by SMEs.

Furthermore, a number of SMEs in developing countries are inclined to have a highly centralised business structure, which suggests that the perception and attitudes of the owners regarding the enterprise, their environment and innovation are likely to be critical in adopting e-commerce (Alhassan, 2017:21; Mendieta, 2018:20; Molla & Licker, 2005a:878; Olanrewaju, 2020:92). In addition, trends in e-commerce differ among countries, and each developing

country faces different challenges because most have different levels of infrastructure and human resources to facilitate the adoption of e-commerce (Amaglo, 2020:20; Herzallah & Mukhtar, 2016:2; Koroja *et al.,* 2020:316; Nazir & Roomi, 2020:44).

A study conducted by Mamun (2018:115) to investigate the diffusion of innovation among Malaysian manufacturing SMEs applied the DOI theoretical framework. Mamun (2018:117) argues that because SMEs are mainly owner-managed, innovation at the SME level could mainly be categorised as dictatorial innovation behaviour in which a few individuals apply adoption decisions compared to larger organisations. Moreover, Mamun (2018:115) contends that the persuasion stage in the DOI model, which comprises the perceived characteristics of innovation (i.e., relative advantage, compatibility, complexity, trialability and observability), could be an essential contributing factor influencing the adoption and diffusion of e-commerce among SMEs from developing countries.

Studies on SMEs' adoption of e-commerce in developing countries lack complete analytical theoretical models; nonetheless, there are a few studies that integrate theoretical models to describe the phenomenon (Amaglo, 2020:28; Sanchez-Torres & Juarez-Acosta, 2019:137). Thus, due to the evolutionary nature of e-commerce, it is essential to develop a more comprehensive theoretical model that considers the various factors that are synonymous with the particularities associated with developing countries to facilitate the rate of e-commerce adoption among SMEs (Kabanda & Brown, 2017:120; Kamdjoug *et al.,* 2020:5).

Knowing the factors that encourage or inhibit the adoption of e-commerce is essential, but understanding how e-commerce is implemented and diffused by SMEs from developing countries is equally important (Mamun, 2018:115; Rahayu & Day, 2017:27; Selase *et al.,* 2019:5). Most previous studies have not taken matters a step further to explore the post-adoption phase to determine what comes after the decision to adopt the technology has been made (Giotopoulos *et al.,* 2017:61; Rahayu & Day, 2017:27; Sanchez-Torres & Juarez-Acosta, 2019:137).

Judging from the literature reviewed, minimal research has been conducted to establish how and at what rate the adoption of e-commerce occurs in developing countries (Matyila, 2019:66;

Selase *et al.,* 2019:5). Furthermore, there exists a gap to determine what the perceptions, experiences and opinions of SMEs from developing countries are, as well as how to better understand the processes being applied to implement e-commerce as part of their business operations (Mamun, 2018:115; Giotopoulos *et al.,* 2017:61; Matyila, 2019:66). Consequently, our comprehension of the elements that promote the sustainable adoption of e-commerce by SMEs in developing countries remains constrained. In this study, the researcher argues that this limitation stems from the absence of a theoretical framework capable of explaining the specific contextual attributes pertinent to SMEs in a particular region of the world.

2.7.3 The adoption of e-commerce by SMEs in South Africa

South Africa has similar socio-economic challenges and unique characteristics to other developing countries that create barriers to the adoption of e-commerce among SMEs as well as the generalisability of existing theoretical frameworks pertaining to the adoption of e-commerce (Bvuma & Marnewick 2020a:1; Iyamu & Johnson, 2020:3). However, South African businesses strive to use e-commerce as an essential developmental aid for bridging the digital divide between them and their business counterparts in developed countries (Bvuma & Marnewick, 2020b:2; Revinova, 2019:2; Worku & Muchie, 2019:351). Some business initiatives such as SME incubators and acceleration programmes, namely; the Alpha Code, SEDA, and Tshepo 1000, to name a few, have also been established to provide an enabling platform and environment to encourage the fast track of e-commerce adoption amongst South African SMEs as well as to facilitate funding, promote access to markets and provide mentorship to SMEs (Mavimbela & Dube, 2016:121; Moos & Sambo, 2018:5). Other efforts by the government to support SMEs include the establishment of the Innovation Hub, which is a business empowerment initiative by the Department of Economic Development designed to promote and support economic development and competitiveness in order to foster entrepreneurship, innovation and technology usage by SMEs (Kshetri, 2018:93; Revinova, 2019:2).

E-commerce in South Africa is increasing steadily as mobile penetration, internet speed and the capability to shop using mobile devices have increased (Goga, Paelo & Nyamena, 2019:2; Ndayizigamiye & Khoase*,* 2018:52; Worku & Muchie, 2019:352). E-commerce accounts for a

tiny proportion of total retail spending at an estimate of 1– 2% in South Africa (Goga *et al.*, 2019:2). Despite the developments mentioned above, South Africa still lags behind other developing economies such as Kenya (Kabanda, 2019:327; Kshetri, 2018:93; Ndayizigamiye & Khoase, 2018:52).

Furthermore, the South African SME sector seems to be unaware of the benefits of e-commerce, affirming the assertion by Khan and Uwemi (2018:455) who found that even though the permeation of mobile phones and other advanced electronic devices is very high in South Africa, the usage of e-commerce is considerably low compared to the usage of mobile devices (Allen 2018:13; Chimucheka *et al.,* 2018:2; Ibam *et al.,* 2018:2). Mobile technologies such as Yoco and Khokhela are referred to as m- payments, which are elements of m-commerce (Allen 2018:13; Kalan, 2016:6). For instance, Yoco and Khokhela are cashless payment points of sale mobile devices that have been successfully adopted by many informal and formal South African SMEs to allow customers to make credit and debit card payments (Kalan, 2016:6).

Oki, Uleanya, and Lukose (2021:1) contend that the low usage of e-commerce is that most South African SMEs still prefer conducting business utilising traditional methods. Although access to the internet is essential for launching e-commerce, Iyamu (2020:2) argues that access to the internet is not sufficient to adopt and implement e- commerce. There are other significant technical (computer literacy) and nontechnical (entrepreneurial orientation) factors that may not be empirically known that could impact the application of e-commerce (Worku & Muchie, 2019:352).

In South Africa, the most significant challenge is that e-commerce adoption factors are not known but have a negative impact on the adoption and usage of e-commerce by South African SMEs (Iyamu, 2020:2; Worku & Muchie, 2019:351). As a result, the causes of the limited adoption of e-commerce by South African SMEs are relatively unknown (Johnson & Iyamu, 2019:1). However, previous studies' main area of concern is the lack of detail on how e-commerce is implemented and diffused by SMEs as part of their operational business activities (Garg & Choeu, 2015:2; Ndayizigamiye *et al.,* 2019:253).

A few of the known factors that are challenging in the adoption and usage of e- commerce are high connectivity costs, poor quality of internet services, lack of legal and policy frameworks, inadequate ICT infrastructure, lack of payment facilities for non-credit card holders and lack of awareness (Goga *et al.,* 2019:2; Maduku *et al.,* 2016; Oki *et al.,* 2021:1; Worku & Muchie, 2019:351). South African SMEs that operate in cities and townships generally share the same challenges, such as expensive data and poor access to finance, yet they also have distinctive challenges that could be impacted by their unique environment and distinct historical background (Bvuma & Marnewick, 2020b:1; Oki *et al.,* 2021:1). Furthermore, the unbalanced distribution of ICT infrastructure, distinct products and services between urban and rural SMEs also accounts for disparities in how e-commerce is appreciated and adopted in South Africa (Garg & Choeu, 2015:2). Given the challenges mentioned above, researchers concur that a one-size-fits-all theoretical model for adopting e-commerce may not be attainable in South Africa, particularly in townships, given their unique contextual factors and socio-economic challenges (Matikiti *et al.,* 2018:1; Olanrewaju *et al.,* 2020:92).

Few studies have been conducted on the adoption of e-commerce from a country with similar socio-economic challenges as South Africa (Mavimbela & Dube, 2016:122; Ndayizigamiye *et al.,* 2019:253). In addition, there exists a gap in determining what the perceptions, experiences and opinions of township SMEs are which will enable a better understand the processes being applied to implement and diffuse e-commerce as part of their business operations (Bvuma & Marnewick 2020a:1; Giotopoulos *et al.,* 2017:61; Hayati & Andrawina, 2020:3; Matyila, 2019:66).

With the growing concern of the lack of e-commerce adoption by township SMEs, Bvuma and Marnewick (2020a:7) developed an ICT adoption theoretical model using the sustainability livelihood framework (SLF) to encourage e-commerce adoption among township SMEs. SLF is used to explore the broader socio-economic contexts of township SMEs by considering human, social, financial, physical and natural resource-based assets that enable SMEs to enhance their capabilities and gain competitive business advantages through the adoption of e-commerce (Bvuma & Marnewick 2020a:7). The results from the study found that due to the unique particularities of township SMEs, various interventions such as government support and improved ICT connectivity, are needed to adopt e-commerce and remain sustainable

(Bvuma & Marnewick 2020a:14). The development of the SLF framework demonstrates the need to construct a specific theory to incorporate the intricacies that are unique to the township environment.

Bvuma and Marnewick (2020b:4) argue that townships require a tailor-made theoretical framework that is relevant and considers the unique peculiarities and nuances synonymous with SMEs in townships. Maduku *et al.* (2016:713) conducted a study to examine the key drivers of the mobile marketing adoption intentions of South African SMEs using a multi-perspective framework that combines elements of the TOE contexts. Bvuma and Marnewick (2020b:5) developed another framework using actor network theory (ANT) and TAM to assess factors that influence e-commerce adoption among township SMEs. ANT enables the exploration of both human and nonhuman entities involved in the adoption of ICT (Bvuma & Marnewick, 2020b:6). Furthermore, research conducted by Iyamu and Johnson (2020:3) established that the successful adoption of e-commerce necessitates integration with various systems and technologies. This integration is essential for facilitating, supporting and enabling the operationalisation of the e-commerce concept. The interconnection between systems and processes must possess the capacity to link individuals, workflows and information, which will enable township SMEs to remain adaptable and responsive to changes in the business environment (Iyamu & Johnson, 2020:3). It is imperative to emphasise that all the studies mentioned above have used different theoretical frameworks to contextualise the complexities of the environments within which township SMEs operate. This factor advances the researcher's argument that existing theoretical models are not generalisable to township SMEs' adoption and diffusion of e-commerce.

Research by Bvuma and Marnewick (2020a:5) further reveal that the adoption of e- commerce by township SMEs is a complex and dynamic process that involves various factors, such as technical skills. In addition, a study by Mkansi *et al.* (2019:42) found that the slow transformation towards the adoption of technology is further exacerbated by underdeveloped infrastructure among township SMEs. From the literature reviewed, and from a theoretical perspective, the researcher has found no consensus on which theoretical framework is best suited to understand the adoption of e-commerce, particularly in the South African townships. Secondly, given the vast and different characteristics, challenges, and types of SMEs

operating in urban, rural, and townships areas in South Africa, researchers have had to use different theories to understand the phenomenon of the adoption and diffusion of e-commerce. Furthermore, in certain instances, theoretical frameworks have been combined, and in other circumstances, new conceptual models have been developed to gain deeper understanding of the phenomenon due to the complexities of the township environment.

In summary, one of the contributing factors to having a limited understanding of the factors that influence the adoption of e-commerce is the lack of integrated and comprehensive theoretical framework that may explain the contextual features of township SMEs to offer a more nuanced understanding of the technological phenomenon at hand (Goga *et al.,* 2019:2; Ndayizigamiye *et al.,* 2019:263). For instance, dominant theoretical frameworks and models do not consider some critical contextual characteristics that affect township SMEs, such as poor government support policies, lack of infrastructure and cultural and socio-economic issues (Hassen *et al.,* 2019:73; Moos & Sambo, 2018:6). In addition, previous studies in South Africa have not integrated TAM, TOE and DOI to understand the contextual issues that township SMEs are confronted with to gain an in-depth understanding of their adoption and diffusion of e-commerce. Therefore, the integration of several theories into a single framework offers a richer theoretical basis for explaining the adoption and diffusion of e-commerce among township SMEs given the unique and complex peculiarities of township SMEs (Alkhalil *et al.,* 2017:7; Eze *et al.,* 2019:572; Selase *et al.,* 2019:5). Thus, a gap exists to explore how the integration of the theoretical frameworks can enhance the understanding of this phenomenon.

2.8 CONCLUSION

The literature reviewed in Chapter 2 provides insights into a changing business environment that has driven innovation-related activities such as e-commerce to obtain better efficiency and higher business performance for SMEs. E-commerce is widely used as a means of integrating societies and countries into a global market economy. E-commerce is divided into categories that focus on four primary relationships, namely, B2C, B2B, C2C, and B2G. E-commerce platforms offer SMEs a wide range of ways to reach their customer base, improve services and increase sales while offering flexibility in terms of costs reduction and many other benefits.

The literature review discussed prominent theories used to understand the adoption of e-commerce at the individual level, including TAM, TRA, TPB and UTAUT. At the organisational level of adoption, DOI and TOE frameworks were reviewed. It is apparent from the literature review that no consensus exists on which theory or model best explains and contextualises the adoption and diffusion of e-commerce among township SMEs due to the socio-economic complexities of the environment in which township SMEs operate. Thus, for the purposes of this study, the integration of TAM, TOE, and DOI frameworks was used to address the research questions of this study.

The literature has shown that applying research findings on e-commerce adoption from developed nations to developing countries poses a considerable challenge due to disparities in social, cultural, economic, legal and political contexts. Furthermore, since most developed countries are well established, with most SMEs already making use of e-commerce, there is limited recent research on the factors that influence the adoption of e-commerce.

SMEs from developing countries are unique, and their adoption of e-commerce is different due to the nature of their contextual background, which is often plagued by poor technical infrastructure and lack of government support. Developing countries require a tailor-made theoretical framework that is relevant and considers the unique peculiarities and characteristics of each country. Studies on SME adoption of e- commerce in developing countries lack comprehensive theoretical models and require integrated theories to explain the phenomenon of e-commerce adoption.

It emerged from the literature that in South Africa, the usage of e-commerce is considerably low compared to mobile devices. Furthermore, evidence from theoretical and empirical studies has found that the benefits of e-commerce are also not automatic and that the role of e-commerce among South African SMEs is not clearly defined. The results from the research studies carried out in South Africa in order to understand the factors that influence the adoption of e-commerce and to determine how the adoption of e-commerce is implemented among township SMEs are minimal.

Based on the above literature review, the researcher concludes that factors that influence the adoption and diffusion of e-commerce among township SMEs are not empirically known. It is evident from the literature reviewed that very limited research has been conducted to determine how and at what rate the diffusion of e-commerce is taking place among SMEs in townships. Furthermore, there is a gap in determining SME oweners' perceptions, experiences and opinions to better understand the processes they apply and how they implement e-commerce as part of their business operations. Furthermore, an integrated theoretical framework is required to understand the nuances synonymous with SMEs in townships.

The following chapter explores a broad overview of the township economy and the identified factors that influence the adoption of e-commerce. Equally important, the next chapter discusses the various implementation and diffusion processes of e-commerce as well as the barriers to the adoption and diffusion of e-commerce.

CHAPTER 3
FACTORS THAT INFLUENCE THE ADOPTION AND DIFFUSION OF E-COMMERCE AMONG SOWETO-BASED SMEs

3.1 INTRODUCTION

This chapter provides a broad overview of literature review on township economy by exploring contextual background and characteristics of SMEs in the township of Soweto. It further examines ten of the identified critical factors that influence the adoption of e-commerce based on the literature review. This chapter further explores the post-implementation stages of e-commerce by investigating the processes and stages that facilitate the diffusion of e-commerce within the business operations of SMEs. This chapter concludes by determining the barriers to the adoption and diffusion of e-commerce by SMEs.

3.2 TOWNSHIP ECONOMY

This section briefly discusses the unique characteristics of townships, starting with the history of townships, what township economy entails, the types of enterprises found in townships and the adoption of e-commerce.

3.2.1 Concept of township

South Africa's townships are remnants of the apartheid government. The impact of townships being isolated from mainstream economy, lack of investment, overpopulation and general neglect is still evident today (Bvuma & Marnewick, 2020:3; Moos & Sambo, 2018:6; SME South Africa, 2017:1). The term "township" emerged during the apartheid era; a time when non-white individuals (black people, those of mixed race, Asians, and Indians) were prohibited from residing or working in areas exclusively designated for white communities (Mrasi, Mason & Jere, 2018:27). In the era of apartheid, individuals who were not classified as white were forcibly relocated from neighbourhoods designated "White Only" (Sonday, 2015:4). These relocations were facilitated through the implementation of the Group Areas Act of 1950 (Manyaka, 2010:80) which instituted a system of residential segregation in South Africa.

The apartheid government designed South African townships as establishments of dormitory towns with no foundation for economic activities and limited social services to house black people (used here as a collective term for Africans, mixed races, Indians and Asians) who worked mainly in mines and factories (Marnewick, 2014:3). Aside from labour, the townships generated minimal economic value, as most of the goods and services consumed were imported from commercial centres owned by white individuals. This situation led to low levels of economic activity and limited benefits for township residents (Manyaka-Boshielo, 2017:4; Zulu, 2018:5).

Many townships still exist in South Africa today (Dzimati, 2017:11; Kubone, 2019:20). Townships in South Africa are densely populated and underdeveloped urban settlements that are typically established at long distances from mainstream commercial and industrial activities, and are thus excluded from the economic hub of the city centre (Cant, 2017:108; Oluwayemisi, 2019:4). Townships usually lack adequate infrastructure and amenities and are characterised by high levels of unemployment, which means that most township residents must travel outside their residential areas for employment opportunities, resulting in a heavy reliance on exogenous sources of growth (Dzimati, 2017:11; Manyaka-Boshielo, 2017:3; Moos & Sambo, 2018:6).

South Africa's largest and most popular township, Soweto, is still the unfortunate epitome of economic marginalisation and poverty, reflecting the unrelenting effects of apartheid spatial planning and the exclusion of Soweto people from the mainstream economy (Masango, 2018:2; Msimango, 2018:23). The persistent poverty in most townships is primarily due to the absence of essential infrastructure, which has hindered their ability to achieve economic growth and development (SME South Africa, 2017:1). Townships have inherited infrastructural design characterised by lack of proper town planning design, inadequate road maintenance and poor electricity connections which deny people living in townships the opportunity to benefit economically in South Africa (Mkansi *et al.,* 2019:29; Dzimati, 2017:11). For instance, the township of Soweto is characterised by socioe-economic difficulties such as inadequate infrastructure and lack of amenities (Msimango, 2018:23; Oluwayemisi, 2019:10; Zulu 2018:5) which lead to the following challenges:

- High crime rate and an unsafe environment;
- High illiteracy rate;
- High unemployment rate;
- Informal settlements;
- Limited access to prerequisite amenities such as water and electricity;
- Limited access to well-resourced schools and quality education;
- Limited collateral to access finance;
- Skills shortage;
- Social exclusion and discrimination from mainstream economic activities; and
- Spatial town planning and poor roads.

Due to the challenges mentioned above, townships are not well positioned to take advantage of growth opportunities in the broader economy (Cilliers, 2018:2). Before 1994, township economy was excluded from government development policies; however, after the 1994 democratic election which led to a new government in South Africa, attempts were made to improve townships by building amenities and other infrastructure (Cant, 2017:108). However, more attention and resources are still needed to uplift the living conditions of people living in townships (Seseni & Mbohwa, 2017:882). Therefore, it is vital to have contextual background knowledge of township history to better understand the unique characteristics, peculiarities and challenges of the township economy as they relate to the adoption and diffusion of e-commerce (Moos & Sambo, 2018:6).

3.2.2 Concept of township economy

The township economy refers to enterprises and markets based in townships (Charman *et al.,* 2017:1). Kubone (2019:4) adds that township SMEs operate within the township to meet the primary needs of township consumers. Township SMEs are diverse, informal in nature and provide a range of goods and services to meet the needs of township consumers (Oluwayemisi, 2019:4). Kalitanyi (2019:1). Khubone (2019:19) indicates that most SMEs in townships are survivalists, meaning that they usually only earn enough income to sustain the entrepreneur's daily needs. Furthermore, township SMEs differ from SMEs in other parts of South Africa due

to their abnormal socio-economic divide and inadequate infrastructure and debilitating education and skills shortages (Zulu, 2018:5).

According to Mzileni (2017:1), part of the reasons the township economy is failing to prosper is due to lack of infrastructure, resource constraints, difficulty accessing products and services as well as lack of skills. While most township SMEs are necessity-based and micro, a few have gradually moved from exclusively serving township consumers to servicing other geographical areas (Makhitha, 2016:260). Moos and Sambo (2018:11) posit that access to adequate infrastructure is necessary for township SMEs to thrive. The advancement of infrastructure is closely intertwined with the nurturing of entrepreneurship needed to boost the growth potential of SMEs in townships (Oduwole, 2018:145, Zulu, 2018:12).

Moreover, the South African government has expressed interest in developing and growing townships into more sustainable economic communities (Cant, 2017:108). While limited research has been conducted on ways to develop the township economy, there are still many knowledge gaps relating to how township economies can leverage innovative technologies, mainly e-commerce, to counter the economic challenges that they are faced with (Bvuma & Marnewick, 2020b:2; Mkansi *et al.,* 2019:26; Moos & Sambo, 2018:10).

3.2.3 Township SMEs

South Africa’s townships are a hive for entrepreneurial activity, and the majority of SMEs are informal businesses that are not registered with relevant authorities in South Africa (Kalitanyi, 2019:57). Township SMEs are involved in vast and diverse economic activities that range from small convenience stores that provide necessities for local households in townships referred to as spaza shops (Hare & Walwyn, 2019:2), street vending, hair salons, taverns (informal liquor bars), mini-bus taxis, mechanical services, manufacturing, retail, burial societies, stokvels (informal saving schemes) and childcare services (Marnewick, 2014:7; Makhitha, 2016:259).

The challenge has been to unlock township SMEs' potential to generate broader economic benefits (Oduwole, 2018:145; SME South Africa, 2017:1). Furthermore, township SMEs

appear to be unaware of the benefits of e-commerce, thus giving credence to claim by Bvuma and Marnewick (2020b:2), who concluded that the reality of their day- to-day survival struggles could be advanced to limitless economic benefits through the adoption and diffusion of e-commerce.

3.2.4 Adoption of e-commerce among township SMEs

There are limited research studies on the sustainable livelihood of township SMEs and how the adoption of e-commerce can contribute to their growth and development (Bvuma & Marnewick, 2020a:5). Masango (2018:29) and Mkansi *et al.* (2019:26) point out that infrastructural design in townships, spatial town planning and the distribution of electricity as well as lack of technological foundation, play a differential, direct role in impacting the adoption of e-commerce by township SMEs. As a result, townships take different forms of designs, highlighting spatial variations where the adoption of digital technology such as e-commerce can help reduce the level of poverty by promoting economic opportunities and empowering the township economy (Mkansi *et al.,* 2019:26).

Furthermore, research conducted by Marnewick (2014:11) reveals that technology is used as a basic tool and is not integrated into business operations by township SMEs. Another study by Cant and Wiid (2016:1885) found that the perceived high costs of the adoption of e-commerce and lack of knowledge to use and maintain technology systems were typical barriers among township SMEs. Given the previously described townships' main critical factors and socio-economic conditions, integration of the theoretical frameworks would offer a more resonant contextual understanding of the research objectives and the technological phenomenon at hand (Charman *et al.,* 2017:38; Masango, 2017:29). In addition, given the unique complexities of the township environment, this research study explored and gained a better understanding of the views, opinions and experiences of township SMEs pertaining to the factors that influence the adoption of e-commerce and the subsequent diffusion of e-commerce within the business operations of township SMEs in Soweto.

3.3 IDENTIFIED FACTORS THAT INFLUENCE THE ADOPTION OF E-COMMERCE

Based on literature reviewed in chapter two, previous research findings highlighted ten critical factors as the most prominent factors that influence the adoption and diffusion of e-commerce among SMEs (Chandra & Kumar 2018:238; Ha, 2020:2822; Iyamu, 2020; Hu, Ocloo, Akaba & Worwui-Brown 2019). Nine of the frequently cited factors are drawn from the TAM and TOE frameworks, while the researcher incorporated "perceived benefits" as a tenth factor. This factor, although consistently emphasised in the literature, is not explicitly outlined within the TAM and TOE frameworks. Table 3.1 displays ten of the most cited factors that influence the adoption of e-commerce among SMEs (Chau, *et al.,* 2020; Ezzaouia & Bulchand-Gidumal, 2020). These factors will be discussed further.

Table 3.1 Factors that influence the adoption of e-commerce

1. Perceived benefits	6. Organisational readiness
2. Perceived ease of use	7. Customer pressures
3. Perceived usefulness	8. Competitor pressures
4. Entrepreneurial orientation	9. Government support
5. Management support	10. Vis major

Source: Researcher's own compilation

3.3.1 Perceived benefits

Perceived benefits are the anticipated advantages gained when technology is adopted (North *et al.,* 2019:2; Chege & Wang, 2020:257). Perceived benefits are defined as the degree to which a person or an enterprise believes that the use of a particular technology will accelerate the completion of work, facilitate work performance and improve work effectiveness (Das, 2019:280; Radadansyah & Taufik, 2017:232). The benefits are reflected in the degree to which a technology is expected to bring better business performance and efficiency (Matikiti, 2018:4; Nachit & Belhcen, 2020:1). The adoption of technologies such as e-commerce can lead to

various benefits, including reducing costs, access to customers, enhanced productivity, increased revenue, advancement in competitive advantages and expansion to new or global markets for township SMEs (Ezzaoula *et al.,* 2020:3; Susanty, Handoko, & Puspitasari*;* 2020:386).

The above-mentioned benefits are also considered as some of the prerequisites for the adoption of e-commerce among SMEs (Ait, 2020:3; Dahdi & Benmoussa, 2019:812). A study conducted by Ha (2020:2822) using TAM found that the awareness of the benefits that can be derived from e-commerce positively influences the adoption of e- commerce by SMEs. Thus, e-commerce is more likely to be adopted by township SMEs if the benefits are perceived to outweigh the risks (Chau *et al.,* 2020:8; Tang *et al.,* 2020:3). In accordance with TAM, the higher the perceived benefits are, the greater the intention to adopt e-commerce by SMEs (Iyamu, 2020:2; Schmidthuber *et al.,* 2020:8).

3.3.2 Perceived ease of use

Perceived ease of use (PEOU) is the degree to which technology would be free of physical and mental efforts (Jan *et al.*, 2019:203). Based on TAM, perceived ease of use refers to the 'user friendliness' of e-commerce, where the extent to which e-commerce is perceived as easy to use also impacts the behavioural intention towards its usage (Maduku *et al.,* 2016:713). Furthermore, mental effortlessness provided by e-commerce positively affects attitudes and attracts more adoption behaviours by SMEs (Effendi, Sugandini & Istanto, 2020:917; Salem & Nor, 2020:19). Therefore, less effort to use e-commerce results in a greater inclination to use e-commerce by township SMEs because it is easier and more user friendly (Vahdat, Alizadeh, Quach & Hamelin, 2020:2).

The enhanced functionality of e-commerce can presumably extend the scope of work for township SMEs (Jan *et al.,* 2019:204). New products with advanced technological features are perceived as easy to use and usually offer a pleasurable experience to users due to essential functions being accessible at the tap of a button (Selase, *et al.,* 2019:5). In addition, enjoyment is closely linked to whether SMEs deem their usage of e-commerce as exciting, satisfactory and pleasant (Chandra & Kumar, 2018:239)

For the reasons mentioned above, software developers include enjoyable design features in e-commerce systems to boost the perceived user friendliness of the technology (Rahmi, Birgoren & Aktepe, 2018:10; Effendi *et al.,* 2020:917).

Enhanced functional attributes can allow township SMEs to perceive e-commerce as easy to use and positively affect their attitude to adopt e-commerce (Jan *et al.,* 2019:204). Moreover, perceived ease of use encompasses and quantifies factors such as financial investments, employee training duration, obstacles associated with switching technologies and maintenance expenses involved in e-commerce utilisation (Igwe *et al.,* 2020:47). Vahdat *et al.* (2020:2) posit that individuals use new technologies due to perceived extrinsic benefits, perceived usefulness and perceived ease of use as well as intrinsic benefits such as playfulness and hedonic benefits. The literature review depicts positive attitudinal effects of digital convenience (Igwe *et al.,* 2020:47; Schmidthuber *et al.,* 2020:3). For example, an expansion of the TAM within the realms of mobile banking and information systems has revealed that the practicality of e-commerce exerts a noteworthy positive impact on the inclination towards its usage (Vahdat *et al.,* 2020:2).

According to Babic and Golob (2018:1377), barriers to the adoption of e-commerce revealed that perceived ease of use has a substantial and positive impact on the attitudes of users and is considered to be a critical factor for the adoption of e- commerce (Jan *et al.,* 2019:204; Cant & Wiid, 2016:1879). Furthermore, given the lack of skills in townships, perceived complexities of user interfaces and a steep learning curve could discourage, frustrate and impair the adoption of e-commerce by township SMEs (Salem & Nor, 2020:19; Schmidthuber *et al.,* 2020:3; Selase *et al.,* 2019:5). Perceived ease of use is an essential antecedent for the adoption of e-commerce; however, perceived usefulness also influences decisions on the usage of e-commerce by SMEs (Salem & Nor, 2020:19).

3.3.3 Perceived usefulness

Perceived usefulness (PU) is the degree to which a person believes that using a particular system would enhance their job performance, such as in informal businesses (Setiyani & Rostiani, 2021:1115; Pantano & Vannucci, 2019:298). TAM defines perceived usefulness as

the evaluation of how e-commerce compares to traditional technological alternatives in terms of efficiency, effectiveness, speed, reduced risk and reliability (Igwe, *et al.,* 2020:47). PU is a necessary antecedent of e- commerce adoption because e-commerce is instrumental in achieving tasks that are not inherent in the usual operations of SMEs (Salem & Nor, 2020:19). For instance, e- commerce can perform multiple electronic tasks such as marketing, customer care management and payment processing (Rahmi *et al.,* 2018:6). Moreover, when e-commerce applications have higher perceived usefulness, township SMEs believe that business performance will also be positively impacted by its adoption (Jan *et al.,* 2019:204).

Township SMEs can evaluate the outcomes of their adoption decisions by considering the sustained desirability of the benefits derived from using e-commerce (Setiyani & Rostiani, 2021:1115). Furthermore, Selase *et al.* (2019:5) believe that if a technology does not help individuals fulfil their job tasks, it is unlikely to be received favourably. Perceived usefulness is an essential precursor for the adoption of e-commerce, which is often influenced by the entrepreneurial orientation of the business owner.

3.3.4 Entrepreneurial orientation

Entrepreneurial orientation forms part of the organisational context of the TOE framework and comprises the processes, practices and decision-making styles of entrepreneurs that engage in entreprneurial activities (Zhai, Sun, Tsai, Wang, Zhao & Chen, 2018:3). Having identified the factors that influence the adoption of e- commerce among SMEs, it is essential to understand how e-commerce is practically implemented and diffused into business operations by business owners (Rahayu & Day, 2017:27; Kumar, Syed & Pandey, 2020:3394). Entrepreneurial orientation is the knowledge and expertise that enable the adoption of any innovation, followed by implementation of the adoption and confirmation of the entrepreneur's decision to adopt and implement it (Chandra & Kumar, 2018:240).

According to Fadda (2018:24), entrepreneurial orientation consists of five dimensions and names them as autonomy, innovativeness, risk-taking, proactiveness and competitive aggressiveness. Thus, Hussain, Shahzad and Hassan (2020:4) as well as Mohamad, Mohd and Ali (2017:35) contend that successful entrepreneurs are inclined to encourage creativity

and experimentation by maintaining a forward-looking perspective. They do so to surpass industry competitors by selecting the most suitable technology for the given task. Entrepreneurial orientation is an indication of a company's willingness to foster creativity in the development of novel products and services, its openness to embrace new technologies such as e-commerce and its propensity to engage in ventures that involve risk (Kumar *et al.,* 2020:3395; Mamun, 2018:115)

When entrepreneurs of SMEs decide to adopt an innovation, they may face uncertainty and high risks where several obstacles need to be overcome (Hoang, Nguyen & Nguyen, 2021:54). Since most township SMEs already face many adversities and challenges, such as a lack of infrastructure, high unemployment rates and limited skills force, they may be inclined to take risks to adopt technologies that they believe could help mitigate some of the adversities and challenges that they already face (Msimango, 2018:23; Oluwayemisi, 2019:10). As a result, entrepreneurial orientation can significantly increase the probability of adopting e-commerce by township SMEs (Diabate, Sibiri, Wang & Yu, 2019:21).

Furthermore, entrepreneurial orientation reflects the methods, practices and decision- making styles directed toward enterprises' propensity to exploit new opportunities (Hamad, Elbeltagi & El-Gohary, 2019:213). Research conducted by Babic and Golob (2018:1377) found that agility, entrepreneurial alertness and entrepreneurial characteristics influence the adoption of e-commerce by SMEs. Thus, understanding the characteristics of township entrepreneurs, their decision-making processes, communication channels and activities involved in the implementation and diffusion of e-commerce is crucial in addressing this study's research question (Mamun, 2018:115; Pantano & Vannucci, 2019:298; Zhai *et al.,* 2018:3). Equally important, entrepreneurs' characteristics such as age, education and technical skills, matter in the adoption and diffusion process of e-commerce (Kumar *et al.,* 2020:3395; Muathe & Muraguri-Makau, 2020:8). For instance, younger entrepreneurs with better technical education are well-versed in using technology than older entrepreneurs (Kumar *et al.,* 2020:3394).

Given the skills shortage in townships, entrepreneurial characteristics provide a robust comparative analysis to better understand the adoption of e-commerce among township SMEs (Fadda, 2018:24; Hussain *et al.,* 2020:4; Zulu, 2018:12). Thus, entrepreneurial orientation is a

significant factor in adopting e-commerce (Nazir & Roomi, 2020:3), yet senior management support is still important.

3.3.5 Management support

Management support guides the allocation of resources, integrating services and re-engineering processes (Alkhalil *et al.,* 2017:11; Chandra & Kumar, 2018:263; Costa & Castro, 2021:3045). Management support centres around the involvement, encouragement and motivation from management towards adopting technologies within the organisational context of TOE (Ezzaouia *et al.,* 2020:3). Management support is expressed in the objectives of the business enterprise, the provision of the necessary resources for the adoption and championing of the adoption of e-commerce (Adam *et al.,* 2020:847; Eze *et al.,* 2019:573).

Despite e-commerce being critical to enhancing productivity within SMEs, Hamad *et al.* (2019:213) indicate that employees frequently exhibit resistance to the adoption of new technologies, primarily due to inadequate communication from top management regarding the strategic advantages of these new tools. Top management can improve the communication process to endorse the adoption of e-commerce by supporting innovations that benefit the enterprise's business strategy (Chandra & Kumar, 2018:242).

Given the historical and abnormal socio-economic divide in townships due to the lack of economic opportunities, commitment from top management is required to support the cultural changes needed to enable the adoption and implementation of e-commerce (Oluwayemisi, 2019:4). Top management also needs to communicate the economic benefits vital for township SMEs to employees (Ramdansyah & Taufik, 2017:232; Zulu, 2018:5). If employees recognise the returns on e-commerce investment, the technology can be implemented successfully; thus, top management's knowledge, as it relates to the benefits of adoption, also creates substantial value (Hussain *et al.,* 2020:4). Management support is an essential factor in adopting e- commerce among SMEs (Maduku *et al.,* 2016:714); however, organisational readiness is just as imperative.

3.3.6 Organisational readiness

Organisational readiness represents the availability of financial resources, ICT resources and human resources including staff with relevant IT skills within enterprises to adopt new technology (Maduku *et al.,* 2016:714; Setiyani & Rostiani, 2021:1116). Organisational readiness is intended to assess the enterprise's overall preparedness for adopting and diffusing e-commerce within the TOE framework (Ramdansyah & Taufik, 2017:232). Furthermore, it refers to strategic orientation, which means that the adoption and diffusion of e-commerce needs to be applied to support the proposed strategic plans of the enterprise (Hoang *et al.,* 2021:52).

With the majority of township SMEs being informal and with most being survivalist businesses compounded by the socio-economic complexities experienced in townships, such as lack of infrastructure and basic services and limited skills, the business environment may not be conducive enough to facilitate the organisational readiness of township SMEs (Hare & Walwyn, 2019:2; Khubone, 2019:19; Oduwole, 2018:145). Additionally, Alkhalil *et al.* (2017:10) argue that SMEs have different business processes and interdependent criteria and constraints to consider when adopting e-commerce. The factors mentioned above are especially relevant to township SMEs because they are heterogeneous, employ different business practices yet still face diverse challenges such as infrastructural constraints, the absence of technical knowledge and lack of awareness (Bvuma & Marnewick, 2020b:4; Cilliers, 2018:2).

Furthermore, Babic and Golob (2018:1377) posit that the adoption of e-commerce by SMEs can be a complex process that may depend on several factors related to the strategic orientation of the enterprise, its resources and the business environment. This means that most of the difficulties in adopting e-commerce among township SMEs relate mainly to the lack of capacity required to handle complex processes such as lack of technological readiness, lack of skilled resources and lack of finance (Costa & Castro, 2021:3044). The challenges mentioned above may contribute to township SMEs' inability to plan and develop business strategies to promote the adoption of e- commerce and to improve efficacies within their business operations (Cilliers, 2018:2; Mkansi *et al.*, 2019:26).

According to Ha (2020:2822), SMEs with available financial resources, good infrastructure and a skilled labour force readily adopt e-commerce to their operational business processes. Thus, the human capital embedded in the enterprise workforce plays a significant role in promoting organisational readiness and in encouraging SMEs to assimilate new technologies (Giotopoulus, Kontolaimou & Korra 2017:61; Hoang *et al.,* 2021:52). Therefore, a higher level of organisational readiness is a predictor of SMEs' successful adoption of e-commerce (Chau *et al.,* 2020:10). However, it is also essential to examine the factors within the environmental context, such as customer and competitive pressures (Chandra & Kumar, 2018:238).

3.3.7 Customer pressures

A business's main objective is to understand customer requirements and cater to the needs that increase customer satisfaction, rather than just rendering goods and services (Rahmi *et al.,* 2018:12). Customer pressures refer to the environmental context of TOE, where SMEs are expected to meet evolving and growing customer demands (Ezzaouia *et al.,* 2020:4). To achieve a competitive advantage, SMEs increasingly strive to be perceived as customer centric. Customer centricity means placing customers' interests at the centre of an enterprise's activities, sometimes making SMEs feel pressured to meet customer expectations (Habel, Kassemeier, Alavi, Haaf, Schmitz & Wieseke, 2020:25).

Adapting e-commerce channels can improve township SMEs' communication and response rate to customers online at any given time (Busalim & Ghabban, 2021). Satisfying customers' diverse needs and expectations through e-commerce can facilitate better interactive communication with customers and allow township SMEs to meet the growing demands in the market (Abed, 2020:4; Dirgantari, Hidayat, Mahphoth & Nugraheni, 2020:263). Furthermore, customers also want goods and services to be customised; thus, township SMEs are expected to reinvent themselves and satisfy customer needs through e-commerce usage (Kumar & Ayedee, 2021:3).

Given the socio-economic constraints that are prevalent in townships, such as poor access to quality education, high rate of illiteracy and high rate of unemployment, it would be essential to consider whether customers are ready and able to engage with new technology (Dirgantari *et*

al., 2020:263; Habel *et al.,* 2020:25; Oluwayemisi, 2019:10). Consumer readiness is a blend of the willingness of consumers to embrace new technologies and the preparedness of technology support for customers. (Chandra & Kumar, 2018:244). Therefore, township SMEs should also be able to educate, encourage and offer support to customers who want to use e-commerce (Chandra & Kumar, 2018:244; Moslehpour, Pham, Wong & Bilgiçli, 2018:3).

Customer pressures offer differentiation and growth opportunities to SMEs through e-commerce to co-produce innovative solutions and services aligned with customer needs (Osakwe, 2020:455). Furthermore, e-commerce enables SMEs to initiate repetitive purchases and create intimacy and trust with their customers (Effendi *et al.,* 2020:916; Tzavlopoulos, Gotzamani, Andronikidis & Vassiliadis, 2019:578). It is worth noting that we currently live in a society that values instant gratification, with customers expecting prompt delivery of goods and services (Costa & Castro, 2021:3045). Therefore, essential customer feedback, enabled by automated e-commerce capabilities can help township SMEs pivot speedily in response to changes and pressures in the external business environment to improve business efficiency and meet customer needs at a faster rate (Triandini *et al.,* 2020:112; Zhelyazkova, 2020:263).

The adoption of e-commerce can offer viable and practical solutions for township SMEs to meet the challenges of rapid changes in the environment by creating new opportunities to meet new customer demands (Ait, 2020:3; Helkkula *et al.,* 2018:284; Mendieta, 2018:19; Tseng *et al.,* 2019:160; Tzavlopoulos *et al.,* 2019:578). Therefore, pressures from customers facilitate the adoption of e-commerce among SMEs (Igwe *et al.,* 2020:48); however, competitor pressures can also influence the process.

3.3.8 Competitor pressures

Competitor pressures are the degree to which competitors impact an SME in the market (Chandra & Kumar, 2018:263; Hamad *et al.,* 2019:214). Competitor pressures form part of the TOE theoretical framework (Hamad *et al.,* 2019: 214; Maduku *et al.,* 2016:714). Rahmi *et al.* (2018:10) found that when SMEs interact with each other (sometimes referred to as SME peer-to-peer interactions) within the business environment, referent power has the most significant influence on competitor pressures. The underlying logic is that if SME competitors adopt e-

commerce, competitor pressures to do the same among other SMEs will increase (Vahdat *et al.,* 2020:3).

The interactions and methods of sharing information among competitors in township SMEs might result in peer influence and competitive pressures, motivating them to adopt and integrate e-commerce into their business operations (Vahdat *et al.,* 2020:3). Moreover, competitor pressures are influenced when favourable perceptions of the value derived from the adoption of e-commerce are formed among SMEs (Chandra & Kumar, 2018:263; Muathe & Muraguri-Makau, 2020:8). For instance, if a township SME becomes aware that other SMEs have adopted e-commerce to counter the infrastructural inadequacies and economic challenges faced in townships, they may feel compelled to follow suit and adopt e-commerce (Setiyani & Rostiani, 2021:1117; Hoang *et al.,* 2021:53).

Township SMEs may feel pressured when more competitors in the township have adopted e-commerce, which may also lead to enhanced competitiveness for township SMEs (Ajao *et al.,* 2018:840). Furthermore, the level of SME concentration in townships can be heightened by a competitive environment and competition intensity that can be positively influenced by the degree of e-commerce adoption among township SMEs (Hussain *et al.,* 2020:4; Muathe & Muraguri-Makau, 2020:8).

Competitor pressures significantly impact the adoption of e-commerce by SMEs; however, township SMEs also require support from the government (Abed, 2020:4).

3.3.9 Government support

Government support refers to the provision of assistance, incentives and access to initiatives that encourage the adoption of technologies among township SMEs by the state (Adam *et al.,* 2020:846; Kubone, 2019:29). In this study, government support denotes the assistance provided by the state to encourage the adoption of e- commerce (Salem & Nor, 2020:19). Government support is one environmental factor that influences technology adoption in the TOE framework (Effendi *et al.,* 2020:919; Setiyani & Rostiani, 2021:1117). Support from the

government can be granted in four different aspects: ICT infrastructure, regulations, policies, funding and support programmes (Chau *et al.,* 2020:12; Kshetri, 2018:93; Revinova, 2019:2).

ICT infrastructure is crucial because it connects people and provides township residents access to essential amenities such as healthcare, education, electricity and proper housing (Ajao *et al.,* 2018:480; Dzimati, 2017:11). Additionally, good ICT infrastructure can facilitate the adoption of e-commerce, resulting in business transactions that promote entrepreneurial activities and employment opportunities for people living in townships (Zhang, Mao, Jiao, Shuai & Zhang, 2021. Seseni & Mbohwa, 2017:882). E-commerce adoption through government support can improve the social and economic conditions in townships (Hamad *et al.,* 2019:214; Moos & Sambo, 2018:11).

As noted by Billal, Shin and Sim (2019:56), in every emerging economy, the government has a crucial role in facilitating the necessary conditions for SMEs to adopt e-commerce and in establishing the appropriate legal framework to facilitate e-commerce adoption. Regulations established by the government such as reduced data tariffs, lower cost of using the internet and tax breaks can motivate SMEs to adopt e-commerce (Effendi *et al.,* 2020:919). There is currently government support in the form of incubators and acceleration programmes in South Africa to encourage the fast tracking of e-commerce adoption as well as to facilitate funding, promote access to markets and provide mentorship amongst township SMEs (Mavimbela & Dube, 2016:121; Moos & Sambo, 2018:5).

Other efforts by the government to support SMEs include the establishment of the Innovation Hub which is a business initiative through the Department of Economic Development to promote and support economic development and competitiveness to foster entrepreneurship, innovation and technology usage by township SMEs (Kshetri, 2018:93; Revinova, 2019:2). Therefore, the greater the level of government support perceived by township SMEs, the more likely township SMEs are to adopt and diffuse e-commerce within their business operations (Hamad *et al.,* 2019:214; Salem & Nor, 2020:20).

3.3.10 Vis major

"Vis major" is a Latin expression signifying 'superior force.' It characterises an overwhelming natural event that leads to harm and disturbance and is beyond human causation or prevention, even when all possible caution, diligence, expertise, and care are exercised (Guthrie, Fosso-Wamba & Arnaud, 2021:102600; Joshi, 2021:1; Vurgarellis & Zim, 2020:14). The circumstances of vis major may include events such as a plague, pandemic, war, strike, riot or natural disasters such as earthquakes, floods and hurricanes (Joshi, 2021:1; Salem & Nor, 2020:15; Ward, 2020:2). Global apprehension has arisen in response to the emergence of epidemics, with notable instances such as SARS (severe acute respiratory syndrome) in the early 2000s, Ebola in the early to mid-2010s and Zika virus in the mid-2000s (Gao, Shi, Guo & Liu, 2020:1597). The recent vis major in 2019 was marked by a new viral respiratory pandemic in the form of COVID-19 (Costa & Castro, 2021:3046; Guthrie *et al.,* 2021:2). A pandemic is defined as an epidemic (large outbreak of disease) occurring worldwide and usually affects many people globally (Fitriasari, 2020:53).

A pandemic falls within the environmental context of the TOE theoretical framework (Ait, 2020:3; Pantelimon *et al.,* 2020:39). E-commerce was already multiplying before the COVID-19 pandemic in places such as Asia, Latin America and other emerging markets; however, the outbreak of the COVID-19 pandemic accelerated the growth of e-commerce adoption globally (Reardon, Belton, Liverpool, Tasie, Lu, Nathulapati, & Zilberman 2021:7; Sahetapy, 2021:10584). Conversely, during the COVID-19 pandemic, township SMEs were some of the most vulnerable sectors of the economic crisis (Mekdessi, Makdissi & Jazzar, 2021:8). E-commerce can play a significant role in reducing the disruption caused by the COVID-19 pandemic on business activities amongst township SMEs, ensuring that businesses continue to operate and provide goods and services to their customers (Kuckertz *et al.,* 2020:2; Pantelimon *et al.,* 2020:38).

Alfonso, Boar, Frost, Gambacorta and Liu (2021:2) found that during the pandemic, the adoption of e-commerce among SMEs was rapid owing to the strict measures to contain the pandemic. Therefore, e-commerce has demonstrated its effectiveness as a strategy for mitigating business interruptions during the COVID-19 pandemic (Bhatti, Akram, Basit, Khan

& Raza, 2020:1451; Hoang *et al.,* 2021:48). For the above reasons, township SMEs are compelled to embrace e-commerce as an essential function within their business operations for continuity during vis major (Ilyihamije, 2019:2; Kartiwi *et al.,* 2018:1; Mekdessi *et al.,* 2021:8). Therefore, vis major is an essential precursor for the adoption of e-commerce and influences decisions on its adoption by township SMEs (Gao *et al.,* 2020:2; Sahetapy, 2021:10584).

3.4 DIFFUSION PROCESS OF E-COMMERCE AFTER ADOPTION

Diffusion is the process through which certain channels are used to communicate an innovation (Pantano & Vannucci, 2019:298). Mainstream previous studies focused predominantly on pre-implementation stages of e-commerce, such as the factors or barriers that influence the adoption of e-commerce, rather than the post- implementation stage of e-commerce and the diffusion processes that facilitate the adoption of e-commerce (Rahayu & Day, 2017:27). The same sentiments were echoed by Khoo *et al.* (2018:6) who argues that while many studies in developing countries still focus on the pre-implementation stages of e-commerce adoption, developed countries pay more attention to the post-implementation stages of e-commerce adoption such as the quality of e-commerce and customer satisfaction.

Knowing the factors that influence or inhibit the adoption of e-commerce by SMEs is important; however, understanding how the adoption of e-commerce is applied and diffused into business operations is equally important for SMEs in developing countries (Rahayu & Day, 2017:27). According to Reardon, Belton, Liverpool, Tasie, Lu, Nuthalapati, Tasie and Zilberman (2021:2), based on various factors such as government support, customer pressures and entrepreneurial orientation, the rate of diffusion of e-commerce is steadily increasing in certain developing regions in Asia and Latin America, allowing them to “leap-frog” to advanced techniques. Diffusion takes place at varying speeds across heterogeneous regions. Early adoption rates are observed in regions like Asia and Latin America due to more favorable demand and supply conditions (Reardon, *et al.,* 2021:2). However, there has been a reported lag in the adoption of e-commerce in Africa (Reardon, *et al.,* 2021:2).

3.4.1 Understanding the diffusion of e-commerce among SMEs using the DOI framework

DOI is a process-based framework for explaining how, why and at what rate e- commerce is diffused among SMEs (Ndayizigamiye *et al.,* 2019:264). Diffusion is a process where new technology or innovation is promoted over a period of time among users in a particular social system, consisting of an adaptive process where individual choices may change over time depending on various factors such as resource allocation and perceived benefits (Pantano & Vannucci, 2019:298). DOI further identifies the factors facilitating the adoption process by assessing the rate of diffusion of e-commerce (Chau *et al.,* 2020:6). DOI is mainly concerned with how e-commerce progresses from adoption to implementation and diffusion thereof (Mamun, 2017:115). The application of DOI could be more appealing and practical for township SMEs because it is implemented over a period of time thus affording township SMEs an opportunity to apply a learning curve towards the diffusion process of e-commerce (Susanty *et al.*, 2020:384).

The dissemination of new technology within the market plays a pivotal role in the gradual diffusion of innovation over a period of time and serves as an indicator of consumers' innovativeness in their readiness to embrace a novel innovation (Schmidthuber *et al.,* 2020:2). In contrast to TAM, DOI can assess the real and successful adoption of technology within a particular market, providing a comprehensive and up-to-date overview of the number of e-commerce adopters in that market. It also delineates the features of each adopter according to distinct categories (Pantano & Vannucci,2019:298). The DOI model describes the patterns of implementation and the mechanisms for the diffusion of e-commerce and assists in predicting whether e-commerce will be successfully implemented by township SMEs (Alkhalil *et al.,* 2017:4; Chandra & Kumar, 2018:329).

DOI theory further explains how the characteristics of individual decision-making processes shape e-commerce diffusion, the communication channels involved and the characteristics of the technology being considered for adoption (Giotopoulus, 2017:61; Mamun, 2017:115; Ndayizigamiye *et al.,* 2019:264). Schmidthuber *et al.* (2020:2) suggest that characteristics of the entrepreneur such as age, level of education, income and technological characteristics

such as relative advantage, compatibility, and complexity, are some of the influencing factors in the diffusion process of new technologies. Therefore, township SMEs' perceptions, experiences and opinions play a pertinent role in the diffusion process of e-commerce within their business operations (Matyila, 2019:66).

3.4.2 Stages in diffusion theory

The literature on the diffusion of e-commerce suggests that the adoption of e- commerce by SMEs should be viewed as a process involving various stages rather than a simple “use” or “not use” decision (Rahayu & Day, 2017:29; Reardon *et al.,* 2021:6; Susanty *et al.,* 2020:384). Burgess *et al.* (2017:6) suggest that several stages exist within the diffusion lifecycle of e-commerce involving three stages: planning, implementation and evaluation phases. However, according to Rogers (2003:168), the diffusion process focuses on the stages that occur when "an individual progresses from gaining initial knowledge of an innovation to forming an attitude towards the innovation”. In addition, says Rogers (2003:168), the diffusion process also focuses on the decision to adopt or reject the adoption of the innovation, to the implementation of the innovation and further on to confirmation of this decision. The diffusion process occurs over a period of time, involving a series of stages which Rogers (2003:163) describes as follows:

- *Knowledge* – when a decision maker is first made aware about a technology.
- *Persuasion* – when a decision maker forms an attitude regarding a technology. The perceived features of the technology may be either favourable or unfavourable, which may thereafter influence the decision about the technology. Persuasion stands as a vital stage in the diffusion process, and it is shaped by the perceived benefits and value that stem from using the technology. Persuasion plays a role in shaping the SME owner's attitude towards the technology, ultimately influencing the decision to either “adopt” or “not adopt” it. Key factors that wield influence during the persuasion phase encompass the technology's compatibility with existing systems, its complexity of use, the relative advantage it offers over existing practices, opportunities for trials and observation of its benefits (as illustrated in Figure 1.1 of chapter 1).
- *Decision* – when a decision maker participates in undertakings that lead to either adopting or rejecting the technology. The decision stage refers to when the adoption

choice is made.

- *Implementation* – when a decision maker implements the technology in operational processes. The process may include how the innovation is implemented, who implements it and what barriers are faced during the implementation phase.
- *Confirmation* – When a decision maker seeks validation for the choice to employ a technology and reviews the decision to persist or cease its usage, the accrued benefits influence the continuation of technology use. Conversely, any encountered issues have the potential to result in the discontinuation of the technology.

Burgess and Paguio (2016:277) conducted a study to examine the adoption of social media by SMEs to market their products using the five stages in the diffusion process described above. Burgess and Paguio (2016:282) found that exploring the adoption of social media by SMEs to market their products using the five-stage diffusion process provides insights into the issues that SMEs consider across all stages of the adoption and diffusion process, rather than confining the focus solely to the decision phase. The five-stage diffusion process can provide a greater contextual understanding of the issues and experiences faced by township SMEs throughout the entire implementation and diffusion lifecycle of e-commerce (Burgess *et al.,* 2017:8).

On the other hand, Ndayizigamiye *et al.* (2019:263) argue that the diffusion process of e-commerce spans from entry-level activities (websites and e-mails) to more advanced and sophisticated activities (online payments, online purchasing, and customer services). In view of the socio-economic challenges, inadequate infrastructure and lack of amenities in townships, having the opportunity to advance through entry-level e-commerce activities gradually may boost the confidence of township SMEs to steadily progress to advanced e-commerce activities over a priod of time (Susanty *et al.,* 2020:382). Entry-level activities also allow township SMEs the opportunity to test and learn about e-commerce activities while managing the financial constraints of the capital outlay required for a fully-fledged e-commerce platform (Busaidi *et al.,* 2019:36; Cant & Wiid, 2016:1879). Moreover, the revenue and profitability of township SMEs can be enhanced by entry-level e-commerce activities (Charman *et al.,* 2017:38).

Since DOI theory emphasises that the entrepreneur's individual characteristics and the technology's characteristics are highly influential in the diffusion process, a one- size-fits-all approach cannot be applied by SMEs (Hussain *et al.,* 2020:4; Schmidthuber *et al.,* 2020:2). As a result, Ndayizigamiye (2019:263) proposes three stages involved in the adoption and diffusion process of e-commerce by SMEs from a marketing and business operations perspective. According to Ndayizigamiye (2019:263), the first stage involves setting up static advertising pages and e-mails for communicating with customers. In contrast, the second stage refers to database integration that involves an interactive web catalogue. The second stage also involves transaction processing through a shopping cart technology and secure payments through a website. The third stage is fully fledged e-commerce that includes all the information processing capabilities of the first two stages with additional features such as "interactive features, personalisation and customer relationship management." The findings from a study conducted by Ndayizigamiye (2019:263) found that SMEs started by proportionately aligning e-commerce to their business strategy by introducing simple incremental technology-related enablers in the initial stages such as email, a static website and then gradually progressed to more advanced e- commerce systems over a period of time. Considering the socio-economic context within townships, with most SMEs being informal and having limited resources, township SMEs may feel inclined to implement an incremental approach in the diffusion process of e-commerce (Hoang *et al.,* 2021:52; Msimango, 2018:23).

Similarly, Rahayu and Day (2017:28) maintain that the diffusion of e-commerce by SMEs is variable and can take on different approaches. Rahuyu and Day (2017:28) observed that SMEs use simple technology systems such as e-mail and intranet applications for internal communication. Whereas moderate to advanced websites were used for advertising goods and services offered, taking and placing orders, receiving payments, delivering goods and services, as well as for after-sales customer service. The breadth of e-commerce usage in business operational activities of township SMEs would be reflective of the level of e-commerce diffusion within business operations (Effendi *et al.,* 2020:917; Hussain *et al.,* 2020:4). The broader the usage of e- commerce across business operations is, the higher the level of advanced activities of e-commerce diffusion among township SMEs (Hamad *et al.,* 2019:210; Susanty *et al.,* 2020:382).

Rahayu and Day (2017:38) found that most SMEs in Indonesia, which have similar characteristics to township SMEs, are still at the lower level of the e-commerce diffusion process. They discovered that the majority of SMEs adopt and utilise simple static websites, with fewer SMEs making use of interactive websites for marketing purposes only. Most of the SMEs in Indonesia made use of emails only. Given the varied stages in the diffusion process and the flexibility at which e-commerce can be implemented and diffused, township SMEs are at liberty to choose any number of stages and the sequence to be applied during the diffusion process of e-commerce depending on the breadth of e-commerce usage in business operational activities (Rahmi *et al.,* 2018:6; Hamad *et al.,* 2019:212)

Figure 3.1 illustrates stages in the diffusion process of e-commerce, which indicates the gradual progression towards the diffusion of e-commerce with the business operations of SMEs (Rahayu & Day, 2017:28). Initially, township SMEs would start with no technology presence and then adopt a static website presence for information and advertising purposes. Township SMEs could later incorporate interactive online systems and electronic commerce with buying and selling features for communicating and transacting with their customers. Thereafter, township SMEs could gradually advance to more complex systems such as internal and external integration that enable personal or customised customer relationships (Busaidi *et al.,* 2019:35; Ndayizigamiye, 2019:263; Rahayu & Day, 2017:30).

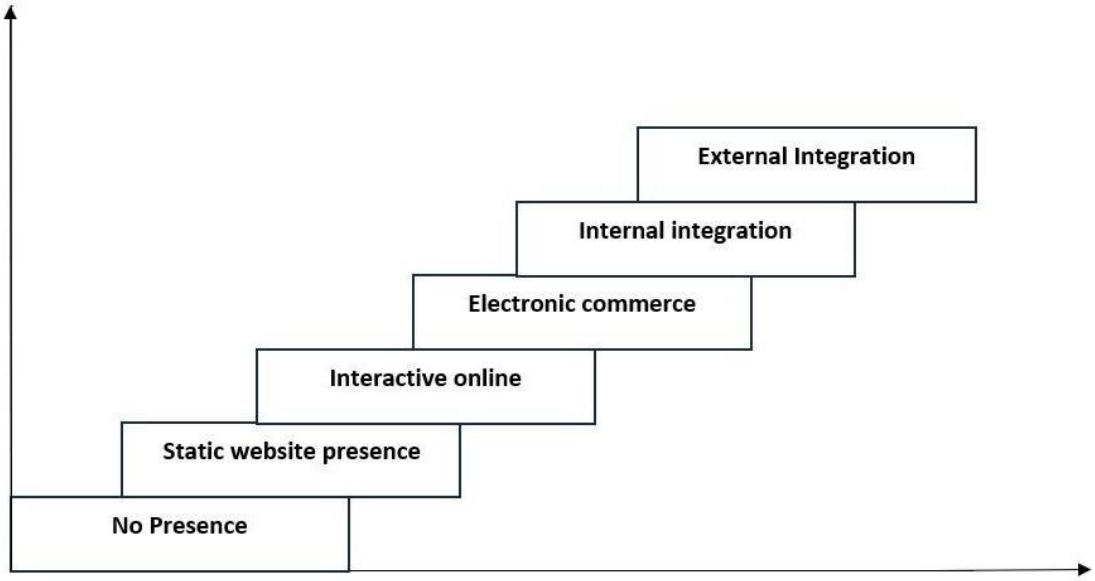

Figure 3.1 Stages in the diffusion process of e-commerce

Source: Rahayu and Day (2017:30)

3.4.3 Growth and stage models

To explain the diffusion process of e-commerce adoption, various growth and stage models have been introduced in previous studies as discussed earlier (Burgess *et al.,* 2017:7; Ndayizigamiye, 2019:264; Rahayu & Day, 2017:29; Rogers, 2003:163). The diffusion process ties in with the pragmatic philosophical worldview proposed in this study (refer to 4.2 of chapter 4) which recognises that the diffusion of e-commerce adoption by SMEs arises from different actions, situations and consequences and that SMEs experience several and various levels of development during the diffusion process (Creswell & Creswell 2018:10; Maree, 2020:333; Setiyani & Rostiani, 2021:1116).

In addition, the DOI model is grounded in the concept that entrepreneurs behave differently based on age, level of education and technology characteristics when faced with an adoption decision in the organisational context (Rahmi *et al.,* 2018:11; Mamun, 2017:115). Hussain *et al.* (2020:4) opined that several diffusion processes and growth stages are being adopted by various SMEs depending on SME owners' perceptions, experiences and opinions. Furthermore, the different growth stages are influenced by SME owners' characteristics, such as age and education, available resources, communication channels used and environmental factors (Muathe & Muraguri-Makau, 2020:8; Schmidthuber *et al.,* 2020:2). As a result, the diffusion processes are not always formal, but rather, a natural progression that happens over time and takes on various forms and follows different stages among township SMEs (Chandra & Kumar, 2018:239).

Richard L. Nolan developed the first diffusion process during the 1970s, known as "Nolan's stages of growth model". The model comprises six stages that SMEs can follow regarding technology diffusion: initiation, contagion, control, integration, data administration and maturity (Rahayu & Day, 2017:29). Considering the pragmatic philosophical perspective and the adaptability inherent to DOI, the diverse growth and stage models put forth by different authors are deemed acceptable, contingent upon the diffusion process selected by an SME, with no model being given precedence or subject to criticism over another.

Rao, Metts and Monge (2003:15) delineates a comprehensive framework comprising four distinct stages that elucidate the trajectory of technology diffusion, particularly focusing on the context of e-commerce adoption within SMEs. The initial stage, "presence," suggests the establishment of a static basic online presence, indicating the organisation's entry into the digital sphere. Subsequently, the "portals" stage underscores the development of more interactive and sophisticated online platforms, involving two-way communication and specialised interfaces to enhance user engagement. Moving forward, the third stage, "transaction integration", signifies a deeper level of integration where e-commerce activities become intricately woven into the operational fabric of the SME. This stage involves the seamless integration of online transactions and an e-marketplace, pointing towards a more mature and sophisticated e-commerce infrastructure. Finally, the "enterprise integration" stage represents the pinnacle of e-commerce diffusion, suggesting a holistic assimilation of digital technologies into the entire enterprise ecosystem. This phase encompasses a comprehensive integration of e-commerce with various business functions, potentially leading to a transformative impact on the overall business operations and strategy (Rahayu & Day, 2017:29). Figure 3.2 illustrates the four stages of the evolution model leading to the diffusion of e-commerce as proposed by Rao *et al.* (2003:15).

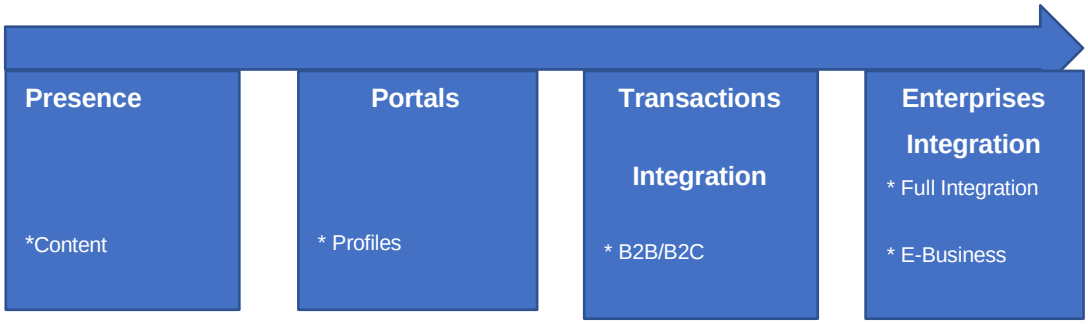

Figure 3.2: **Evolution Model**

Source: Rahayu and Day (2017:29) (adapted from Rao *et al*., 2003)

3.5 BARRIERS TO THE ADOPTION OF E-COMMERCE BY SMES

In the realm of SMEs, the adoption of e-commerce presents numerous opportunities and challenges. As we delve into the topic of barriers to the adoption of e-commerce by SMEs, we will explore the hurdles and impediments that SMEs encounter when venturing into the digital marketplace.

3.5.1 Factors impeding e-commerce adoption in SMEs

Many factors that hinder the adoption of e-commerce by SMEs, especially in developing nations, have been identified by researchers (Busaidi, 2019:37; Hussain *et al.,* 2020:2; Rahayu & Day, 2017:26). Furthermore, many researchers have concluded that the accessibility of e-commerce resources (human, financial, technically skilled staff) in developed countries has significantly promoted the adoption of e-commerce and its integration as an innovation in the business processes of those enterprises (Moslehpour *et al.,* 2018:3; Nazir & Roomi, 2020:2; Zoroja *et al.,* 2020:313).

Nevertheless, the barriers encountered by SMEs in developing countries frequently pertain to resource poverty. Resource poverty encompasses various factors such as deficiency in understanding how to utilise technology proficiently, insufficient time to dedicate to effective technology utilisation and limited financial means to sufficiently explore innovative technology (Burgess *et al.,* 2017:4). In addition, researchers have found that the failure of SMEs from developing countries to adopt e-commerce technologies is attributed to a poor understanding of how technologies can be used to benefit business growth, access new markets and enhance business process efficiencies. (Kumar & Ayedee, 2021;1; Rahayu, 2017:26).

Nazir and Roomi (2020:2) contend that whereas developed nations typically exhibit homogeneity characterised by shared cultural values, language, ethnicity and religious systems, developing countries are marked by pronounced heterogeneity, encompassing diverse political systems, economies, ideologies, demographics, cultures and races. Furthermore, diversity aspects such as the characteristics of the SME business owner, including age, level of education and technological characteristics such as relative advantage,

compatibility and complexity further add to the complexity on a micro-level (Rahmi *et al.,* 2018:11; Hoang *et al.,* 2021:53; Muathe & Muraguri-Makau, 2020:8).

SMEs in townships face distinctive socio-economic challenges, including insufficient infrastructure, lack of essential amenities, exclusion from mainstream economic activities, high rates of illiteracy and skills shortage (Oluwayemisi,2019:10; Zulu 2018:5). Therefore, the barriers to the adoption of e-commerce among township SMEs cannot be dealt with at a macro level because they require appropriate adoption strategies tailored to the unique context of township SMEs (Abdulhakim *et al.,* 2017:1; Hassen *et al.,* 2019:73). Examining the barriers to the adoption of e-commerce by SMEs in developing countries also depends on the socio-technical context (Hassen *et al.,* 2019:75; Ibam *et al.,* 2018:2).

E-commerce is frequently characterised as a technology that is easily accessible, user-friendly, cost-effective and more adaptable than many traditional ICTs. Nevertheless, numerous SMEs face challenges in formulating strategies to facilitate the adoption and integration of e-commerce into their operational business activities (Costa & Castro, 2021:3044; Ramdansyah & Taufik, 2017:232). The rate of e-commerce adoption is still low in South Africa, with key obstacles being lack of awareness of the vast benefits that can be derived from the adoption of e-commerce, poor infrastructural development and expensive data costs (Awiagah *et al.,* 2016:816; Worku & Muchie, 2019:351).

SMEs frequently depend on business owners to formulate and execute their ICT strategies, which include making decisions regarding technology adoption, therefore sometimes underestimating the complexity of the technology and the amount of time required to implement e-commerce (Burgess *et al.,* 2017:4). Moos and Sambo (2018:10) as well as Sombultawee (2020:256) echo similar sentiments that lack of institutional knowledge related to ICT also serves as a barrier to the adoption of e- commerce by SMEs. Moreover, organisational readiness is an important factor for SMEs that want to implement and sustain the diffusion of e-commerce in their business operations (Zoroja *et al.,* 2020:313).

Researchers have identified that SMEs' barriers to the adoption of e-commerce, especially those in developing countries, can be broadly categorised as internal or external (Costa &

Castro, 2021:3043; Nazir & Roomi, 2020:45; Verdugo, 2019:303). Internal barriers are present within an organisation and are within its authority to address as they can also extend to its external environment (Alhassan, 2017:21; Mendieta, 2018:20). Internal barriers are typically organisational and financial, often include organisational culture, lack of resources, attitude towards e-commerce and level of employee training (Dahbi & Benmoussa, 2019:813; Oki *et al.,* 2021:1; Sombultawee, 2020:256).

Babic and Golob (2018:1377) discovered that employees within SMEs exhibit a pronounced reluctance to embrace digital transformation process, highlighting the detrimental influence of their involvement in the adoption process. Giotopoulus (2017:61) and Ha (2020:2823) found that the negative perception of technological complexity discourages the adoption of e-commerce because the application process is109egimes109ed as being complicated and sophisticated; thus, organisation readiness may help in addressing this barrier.

External barriers are typically technological and socio-cultural because they are beyond the immediate control of the organisation as they may include lack of ICT infrastructure, poor internet connectivity and lack of government support (Chau *et al.,* 2020:2; Zoroja *et al.,* 2020:323). Such challenges are significant barriers to SMEs' adoption of e-commerce. However, Nazir and Roomi (2020:3) investigated the barriers to the adoption of e-commerce by SMEs from emerging economies by extending the original three phases of the TOE framework to add a fourth phase that includes the role of SME owner decisions.

An investigation conducted by Dahbi and Benmoussa (2019:812) reveal that obstacles to e-commerce adoption among SMEs are primarily linked to technological, financial, cultural and organisational factors, with technological and financial factors emerging as the most pivotal. Table 3.2 below shows the barriers to the adoption of e-commerce among SMEs that were highlighted by various studies.

Table 3.2 Barriers to the adoption of e-commerce amongst SMEs

Category	Barriers	Source
Organisational	SME owner attitude Organisational culture Lack of top management support Lack of perceived need for e-commerce	Alhassan, 2018 :21; Nazir & Roomi, 2020 :44 Oki *et al.,* 2021 :1 Mendieta, 2018:20; Giotopoulos, 2017:61
	Lack of e-commerce perceived benefits Reluctance to change business processes Lack of institutional knowledge	Awiagah *et al.,* 2016:816 Nazir & Roomi, 2020:45 Sombultawee, 2020:256
Technological	Lack of ICT/e-commerce infrastructure Lack of Internet security Lack of IT skills	Agyapong, 2018:269; Uneanya, 2018:2 Zoroja *et* *al.,* 2020:323 Verdugo, 2019:303
Financial	Lack secure payment infrastructure Poor access to finance High investment costs High data costs Training costs	Amaglo, 2020:20 Worku & Muchie, 2019:351 Bvuma & Marnewick 2020:1 Oki *et al.,* 2021 :1 Burgess *et al.,* 2017 :4
Socio-cultural	Language/content barriers Lack of trust in technology Lack of awareness Cultural	Dahbi & Benmoussa, 2019:813 Zoroja, *et al.,* 2020:313 Nantembelele & Gopal, 2018:45 Nazir & Roomi, 2020:2
External	Lack of government support Lack of business law on e-commerce	Ibam *et al.,* 2018 :2; Houache *et al.,* 2019 :73 Chau *et al.,* 2020:2

Source: Researcher's own compilation

Most of the studies mentioned above have used different theoretical frameworks, growth and stage models to contextualise the intricacies involved in the adoption and diffusion of e-commerce among township SMEs, given their socio-economic environment. Various factors, including technological, organisational and environmental contexts based on the TOE

theoretical framework, need to be considered in the process of adopting e-commerce (Setiyani & Rostiani, 2021:1117). Additionally, implementing and diffusing e-commerce into the operational activities of township SMEs can take on various stages and growth processes depending on the resources available and the characteristics of the business owner as well as the technology used.

The factors mentioned above advance the researcher's argument that the adoption and diffusion of e-commerce is not a simple and straightforward process that is generalisable to township SMEs considering the vast and different characteristics of township SMEs and the barriers they face (Setiyani & Rostiani, 2021:1117). This study is focused on obtaining a better understanding of the factors that influence the adoption of e-commerce. Furthermore, the researcher aims to determine the activities, processes, perceptions, experiences and opinions of township SMEs in diffusing e-commerce into the operational activities of their businesses. Moreover, the researcher intends to ascertain the barriers impacting the adoption and diffusion of e-commerce.

3.6 CONCLUSION

The literature reviewed in chapter 3 discussed the unique characteristics of townships, starting with the history of townships, what the township economy entails, the types of enterprises found in townships and the adoption of e-commerce. Infrastructural design in townships and the lack of basic amenities play a significant role as it impacts the adoption of e- commerce by township SMEs. The socio-economic conditions in townships and township SMEs are characterised by distinct and unique complexities that influence the adoption of e-commerce and the subsequent diffusion of e-commerce in business operational activities.

Moreover, this literature review also discussed the ten prominent factors that influence the adoption of e-commerce among SMEs. Most of the research conducted, as shown in this literature review, were quantitative and deployed the TAM or TOE theoretical frameworks, and in certain instances, a combination of both theories was used. Based on TAM, perceived benefits, perceived usefulness and perceived ease of use are the factors that influence the adoption of e-commerce among SMEs. Factors that influence the adoption of e-commerce

from the TOE framework include entrepreneurship orientation, management support, organisational support, customer pressures, competitor pressures, government support and vis major.

Furthermore, the literature review explained that DOI is a process where new technology or innovation is diffused over time and consists of an adaptive process where the SMEs choices change over time according to the characteristics of the business owner and the technological characteristics used in the adoption process. The literature on the diffusion of e-commerce suggests that the adoption of e-commerce by SMEs should be viewed as a process involving several different stages that provide a greater contextual understanding of the issues SMEs face throughout the entire implementation and diffusion lifecycle of e-commerce. Furthermore, SMEs tend to follow an incremental diffusion process where entry level e-commerce activities are introduced and gradually progress to more advanced e-commerce activities.

Developing countries are highly heterogeneous, with highly diverse political systems, economies, ideologies and cultures. Barriers hindering the adoption of e-commerce by SMEs in developing nations can be generally classified as either internal or external. Internal barriers are those that exist within the organisation and can be addressed within the organisation's environment, encompassing aspects such as financial resources and organisational culture. On the other hand, external barriers lie outside the immediate control of the organisation and may involve factors such as inadequate ICT infrastructure and lack of government support.

Based on the literature review, the researcher can conclude that the degree of complexity of adopting e-commerce among township SMEs depends on various factors influenced by both the TAM and TOE theoretical frameworks. Moreover, several diffusion processes and activities and different growth stages are being adopted by township SMEs to reflect their different perceptions and experiences. The above notion ties in with the pragmatic philosophical worldview, which states multiple realities to a phenomenon exist (Creswell, 2014; Morgan, 2007). In chapter four, the researcher provides a detailed presentation of research methodology, research design, data collection and analysis methods deployed in this study. In addition, discussions on validity, credibility and ethical considerations relevant to this study are reflected upon.

CHAPTER 4
RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

Research methodology enables a research problem to be addressed systematically to provide the researcher with a general strategy to answer research questions (Creswell & Creswell, 2018:3).

4.2 RESEARCH OBJECTIVES

4.2.1 Primary research objective

To investigate whether the identified factors from literature review influence the adoption and diffusion of e-commerce amongst Soweto township SMEs.

4.2.2 Secondary research objectives

1. To explore the relationship between the identified factors from the reviewed literature and the adoption of e-commerce amongst Soweto township SMEs.
2. To determine how the adoption of e-commerce is implemented and diffused amongst Soweto township SMEs.
3. To explore what barriers hinder the adoption of e-commerce amongst Soweto township SMEs.

4.2.3 Primary Question

Do the identified factors from the literature review influence the adoption and diffusion of e-commerce amongst Soweto township SMEs?

4.2.4 Secondary Research Questions

1. What is the relationship between the identified factors from the literature review and the adoption of e-commerce amongst Soweto township SMEs?
2. How is the adoption of e-commerce implemented and diffused amongst Soweto township SMEs?
3. What are the barriers that hinder the adoption of e-commerce amongst Soweto township SMEs?

This chapter aims to provide a roadmap that outlines how the study proceeded to investigate the research problem. The chapter explains in detail the question of how the variables under investigation were addressed. Furthermore, it describes and justifies the methods that were used to investigate the research problem.

The research onion presented in Figure 4.1. is a metaphor that describes the research methodology layers, which include research methodologies, philosophies, designs, strategies and time horizons (Saunders, Lewis & Thornhill, 2019:130). The objective of this research study is to investigate the factors that influence the adoption of e- commerce and to determine how e-commerce is implemented and diffused among Soweto township SMEs. Figure 4.1 is an illustration of the research onion that describes the stages a researcher must pass to develop an effective methodology.

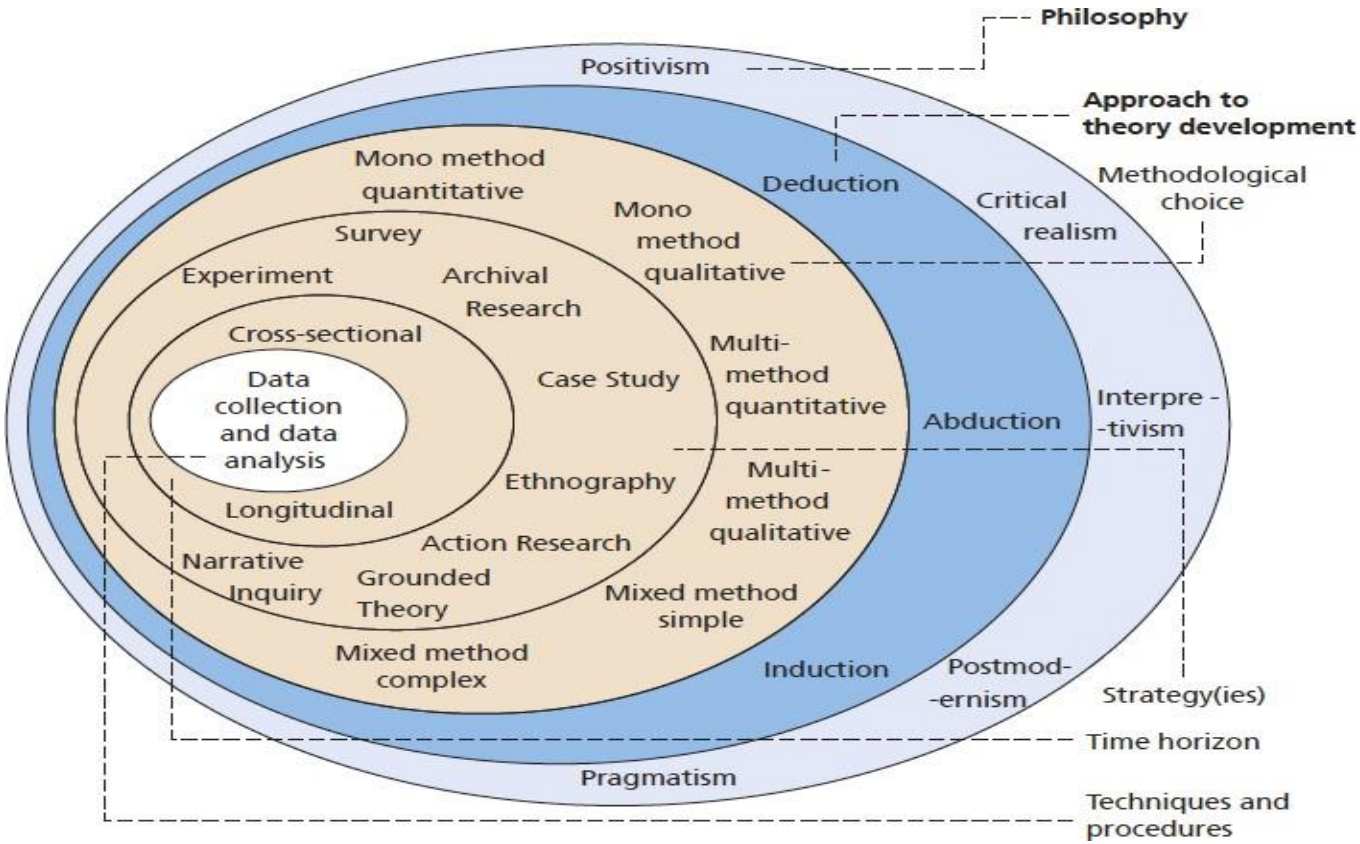

Figure 4.1 The research onion

Source: Saunders *et al.* (2019:130)

4.3 RESEARCH PARADIGM

The research paradigm is characterised as ideological standpoint from which a researcher approaches a research problem (Cartwright & Montuschi, 2014:11). Another term for research paradigm is the philosophical worldview (Maree, 2020:58). The term worldview means “a basic set of beliefs that guide action” (Guba, 1990:17). According to Creswell and Creswell (2018:5), a worldview is a general philosophical outlook about the world and the type of research that a researcher adds to a study, ultimately deciding which research methodology and research design will be used.

The philosophical foundation is essential, particularly in higher-degree research, because the specific philosophy informs the research paradigm that needs to be adopted for the study (Kivunja, 2016:165). The various research paradigms in social science include positivism, constructivism, transformative theory, critical theory, feminism and pragmatism (Kommey, 2020:112). The most commonly used paradigms are positivism, constructivism and pragmatism (Cartwright & Montuschi, 2014:11; Tashakkori & Teddlie, 20010:29).

Each of the paradigms mentioned above possesses its own unique perspectives on reality and knowledge construction, thus influencing the methodological choices made in a research study, as indicated by Kommey (2020:112) and Patten and Newhart (2017:32). Furthermore, these paradigms are rooted in distinct philosophical foundations that dictate their views on what constitutes reality (ontology), how reality should be investigated (epistemology) and the most suitable approach to studying that reality (methodology), as stated by Maree (2020:57), Saunders *et al*. (2019:133), Tashakkori and Teddlie (2010:29). In the subsequent sections, the ontology, epistemology, and methodology associated with each paradigm will be explored.

Positivism relies on the ontological premise that reality is stable and can be objectively understood (Creswell & Poth, 2018:23). Positivism advocates for a systematic approach wherein methodological frameworks remain independent of the context and content (Kula, 2018:62; Phillips & Burbules, 2000:10). Positivism embodies characteristics such as logic, reductionism, empiricism and a focus on cause-and-effect relationships. In addition, it tends to be deterministic due to reliance on preceding theories (Creswell & Poth, 2018:23). Within the positivistic paradigm, the phenomenon being studied is isolated from the researcher, and other

similar studies are expected to yield the same results should the same processes be repeated to facilitate replication (Kaboub, 2008:343; Saunders *et al.,* 2019:147). Positivists posit that there is only one reality, and that the researcher can study a phenomenon independently of its environment (Maree, 2020:66).

The ***constructivism*** ontological assumption is that people pursue an understanding of the world in which they live and work (Creswell & Poth, 2018:24). Constructivism emphasises the subjective understanding and experience accumulation of learning, where knowledge is gained through individual experiences (Burr, 2003:4; Crotty, 1998:54). Constructivism holds that subjective meanings of people's specific experiences are developed by the same people (Creswell & Poth, 2018:24). The subjective meanings are multiple and varied, resulting in the researcher looking at the intricacy of the views rather than constricting the meanings into limited ideas or categories (Lincoln & Guba, 2000:179; Mertens, 2015:78). Moreover, the objective of the researcher is to depend as much as possible on the views of the participants regarding the phenomenon being studied (Creswell & Creswell, 2018:8; Mertens, 2015:78).

Pragmatism is the research paradigm adopted for this study because its primary focus is the research problem rather than the method used in the study (Biesta, 2015:2; Cherryholmes, 1992:13). Moreover, the pragmatists' worldview is concerned with the application of multiple data collection methods to inform the research problems of the study (Maree, 2020:333; Creswell & Tashakkori, 2007:305). Taking an ontological standpoint, pragmatists contend that reality is subject to diverse interpretations among individuals (Edoru, 2018:90; Zamora-Bonilla & Jarvie, 2011:213). Pragmatism is a research philosophy established on epistemology (how knowledge is gathered and interpreted by the researcher) in which there is no specific way to learn but many numerous ways of understanding because there are multiple realities (Cherryholmes, 1992:14; Corbin & Strauss, 2015:19-20). Therefore, integrating various research methods that encompass both qualitative and quantitative research methods allow the researcher to gain knowledge of numerous realities (Greene, 2007:20).

The pragmatic perspective emerges from actions, situations and the outcomes of actions rather than preceding conditions (Creswell & Creswell 2018:10). Consequently, as per Edoru (2018:90) and Kommey (2020:114), the pragmatic paradigm employed in this study

contributes methodologically by introducing diverse ontological, epistemological, and methodological viewpoints for the examination of the factors impacting the adoption of e-commerce among township SMEs. By applying both qualitative and quantitative research methods, the researcher gains an enhanced understanding of the factors that influence the adoption of e-commerce from the perceptions, experiences and opinions among township SMEs as well as from scientific modelling and testing of variables (Biesta, 2015:2; Morgan, 2014:1051). This also signifies that the specific contextual factors of township SMEs are acknowledged during the process of knowledge generation while also permitting a comparison and contrast of their circumstances with the findings from previous research in different countries (Cartwright & Montuschi, 2014:9; Davies & Fisher, 2018:22). Table 4.1 presents different philosophical foundations of pragmatism and the underlying assumptions.

Table 4.1 Pragmatism and its underlying assumptions

Pragmatism	Underlying assumptions
Ontology	Symbolic Realism
Epistemology	Possible knowledge
Empirical focus	Actions and Changes
Type of knowledge	Constructive Knowledge
Type of investigation	Useful for action
Data generation	Data through assessment and intervention
Role of researcher	Engaged in change

Source: Adapted from Edoru (2018:90)

In summary, the paradigms exist on a continuum, positioning positivism and constructivism at the opposite ends of the spectrum, as highlighted by Plonsky (2017:32). Positivism asserts that all aspects of reality are constant and should therefore be approached with objectivity by employing a quantitative methodology. In contrast, constructivism posits that reality is socially constructed and should be studied through a qualitative methodology (Cartwright & Montuschi, 2014:5). The central argument of pragmatism is that both quantitative and qualitative methodologies are compatible, as a result, both methodologies have enough commonalities in fundamental values to be combined within a single study (Reichardt & Rallis, 1994:11).

Factors that influence the adoption of e-commerce and how e-commerce is diffused among Soweto township SMEs remain unknown. Thus, the pragmatic worldview adds to a balanced understanding of how the adoption of e-commerce is applied and implemented among Soweto township SMEs through the various perspectives, experiences and opinions of SME owners (Morgan, 2014:1051; Teddlie & Tashakkori, 2012:779). Furthermore, Rezaee (2017:9) opined that pragmatism supports the integration of several theoretical frameworks to offer a more resonant understanding of the technological phenomenon at hand from various perspectives, given the complex peculiarities of SMEs that operate in townships.

The research philosophy of the researcher is based on humanistic naturalism. Humanistic naturalism is the offshoot of philosophical naturalism that posits that human beings are best able to understand and control the world using methods that are scientific, combined with the ethical and social values of humanism. From an ontological perspective, science and reason are extremely and significantly valuable. Exclusive reliance is placed on nature and its laws, including human nature as well as regulations and forces that govern our societies.

In terms of epistemology, the researcher is of the view that hypothesis, rationality and reasoning are invented by the humanities. Scientific methods and empirical techniques of data gathering, testing hypotheses and running experiments are seen as problem-solving technologies. The humanistic naturalism axiology assumption is that moral values are driven by humans. In other words, our thoughts, character, actions and behaviours are controlled by us. The researcher is receptive to community building and, most importantly, holds in high regard the dignity of all humans.

4.4 RESEARCH METHODOLOGY

Research methodology is delineated as the array of methodological procedures employed to collect data for a study, as stated by Patten and Newhart (2017:21). Consequently, research methodology encompasses the comprehensive strategy chosen to cohesively integrate various facets of a study to address a research question in line with Plonsky (2017:21). It outlines the methods and techniques utilised for data collection and analysis, following Creswell and Creswell (2017:18). In the realm of social sciences, the three primary research

methodologies predominantly utilised are the quantitative approach, qualitative approach and mixed-methods approach (Creswell & Creswell, 2017:34; Kommey, 2020:115).

4.4.1 Quantitative methodology

The quantitative methodology is described as a research strategy that emphasises quantifying the data collected (Bryman, 2012:35). It seeks to examine the answers to the questions starting with “how much”, “how many”, and “to what extent” (Rahman, 2020:105). In other words, it is a systematic and objective process which places significant emphasis on measuring variables whose findings can be generalised to the population that is being studied (Maree, 2020:184). Payne and Payne (2004:180) assert that the quantitative methodology uses deductive logic that seeks out uniformities in peoples’ lives by dividing the social world into empirical components, which are referred to as variables that are represented numerically as rates or frequencies, and whose connection with each other can be assessed through statistical techniques and systematic measurement.

4.4.2 Qualitative methodology

The qualitative research methodology, in contrast, is described as any kind of research whose findings are not reached by means of statistical procedures or any other means of quantification (Hamilton & Finley, 2020:1). The qualitative methodology can refer to research about peoples’ lives, lived experiences, feelings and behaviours as well as about social movement and cultural phenomena (Patton, 2002:262; Rahman, 2020:103). Flick (2014:1067) affrirms that qualitative research is about assessing subjective connotations or social events, issues or practices through the collection of non-standardised data and analysing texts or images as opposed to the analysis of numbers and statistics.

Thus, the qualitative methodology relates to the way individuals make sense of things or occurrences with multiple facets in the world (Creswell & Poth, 2018:7; Denzin & Lincoln, 2011:3). Denzin and Lincoln (2011:89) suggest that qualitative research focuses on multiple methods that involve an interpretive, naturalistic approach to a research problem through multiple perspectives. Rahman (2020:103) further describes the qualitative approach as a

collective term that includes a range of interpretive techniques that strive to decode describe, and translate occurring phenomena in the world.

4.4.3 Mixed-methods methodology

In certain instances, both quantitative and qualitative methodologies are combined to form a mixed-methods methodology for gathering research data for the purposes of extensiveness, in-depth understanding and corroboration of data (Thierbach, Hergesell & Baur 2020:2; Plano Clark & Ivankovi, 2016:6). The mixed-methods methodology combines both quantitative and qualitative research strands contained in a single study, where both numeric (numbers) data and text (word) data are collected simultaneously or sequentially to address the study's research purpose (Creswell & Plano Clark, 2018:3; Maree, 2020:331). Therefore, mixed methods assume that both quantitative and qualitative methodologies have specific limitations that make combining the two perspectives almost mandatory to compensate for the shortcomings of either approach (Bowen, Rose & Pilkington, 2017:11; Creswell & Creswell, 2018:14; Reichardt & Rallis, 1994:10).

The mixed-methods approach is more appropriate for research studies that align with pragmatic philosophical paradigms (Cartwright & Montuschi, 2014:10; Davies & Fisher, 2018:22; Mabila, 2017:136). The selection of the methodology to be employed hinges on a range of factors, including the chosen research paradigm and the specific research question being explored (Kommey, 2020:117; Plonsky, 2017:18). This study adopted a mixed methods methodology to gain an in-depth understanding of the research problem.

Mixed methods combine quantitative and qualitative research methodologies (data collection, analysis and integration) to stress the intent of the research study and to mitigate the weakness associated with a single method methodology (Bowen, *et al.,* 2017:11; Creswell & Creswell, 2018:14; Johnson & Onwuegbuzie, 2004:15; Morse & Niehaus, 2016:15). Qualitative research methodology is usually open-ended without predetermined responses such as interviews, whereas quantitative research methodology tends to include closed-ended responses, for example, surveys and questionnaires (Bowen *et al.,* 2017:16).

Mixed methods are regarded as an appropriate methodology in cases where researchers encounter insufficient data to address particular research questions or when the objectives and justifications cannot be fulfilled through single-method research methodologies due to the nature of the research question or the phenomenon being analysed (Thierbach *et al*., 2020:2). One of the notable advantages of the mixed methods methodology is that it provides numerous possibilities for customising a research design that precisely aligns with a specific research question (Reichardt & Rallis, 1994:11; Thierbach *et al.,* 2020:3).

Therefore, in this study, the mixed methods methodology enables the quantitative methodology to focus on the factors that influence the adoption of e-commerce among township SMEs. The qualitative approach, on the other hand, provides a contextual understanding of how e-commerce is implemented and diffused among township SMEs.

4.4.4 Justification for the use of mixed-methods research methodology

The selection of the mixed-methods research methodology was primarily driven by the research question and the research paradigm (Mabila, 2017:138). By integrating both quantitative and qualitative methodologies in data collection, it exposes the intricacies and subtleties within the social reality being examined (Davies & Fisher, 2018:22; Zamora-Bonilla & Jarvie, 2011:18). Furthermore, the rationale for choosing mixed methods is that limited empirical studies are exploring the factors that influence the adoption of e-commerce among township SMEs to expand on the extensiveness and depth of understanding and corroboration of the data to fully understand the research problem (Davies & Fisher, 2018:22; Johnson *et al.*, 2007:123).

Therefore, leveraging the strengths of both research methodologies can yield additional insights and enhance interpretations of results into identified factors that influence the adoption of e-commerce and subsequently determine how the adoption of e-commerce is applied and implemented among township SMEs. (Creswell & Plano Clark, 2018:3; Ivankova, Creswell & Stick, 2006:3). However, Nagitta and Mkansi (2020:55) argue that the two methodologies are incompatible since each has its own unique procedures for data collection and analysis, irrespective of the fact that each method has different strengths and logic.

In contrast, Johnson *et al.* (2007:114) contend that mixed-methods triangulation, which involves the deployment of quantitative and qualitative methodologies, works well and that any inherent bias in the data source, investigation or specific method will be mitigated when mixed methods are applied. Furthermore, Plano Clark and Ivankova (2016:10) add that a dynamic approach to designing a mixed methods study emphasises the interrelationship of all design components during a study process.

Thus, the quantitative methodology is appropriate when the research problem is geared towards identifying factors that influence the adoption of e-commerce (Bryman, 2012:34). Moreover, the technology acceptance model (TAM) and the technology-organisation-environment (TOE) theoretical frameworks previously discussed in Chapter 2 were integrated and applied during the quantitative methodology to address the peculiarities and distinct characteristics of SMEs from townships in order to gain an enhanced understanding of the factors influencing the adoption of e-commerce among township SMEs (Govinnage & Sachitra, 2019:4; Matikiti *et al.,* 2018).

On the other hand, the qualitative methodology is appropriate when there is a need to understand a phenomenon based on the experience and perspective of the participants (Masombuka, 2020:113; Patton*,* 2002:67). The diffusion of innovation theory (DOI) theoretical framework was utilised to determine how, why and at what rate the adoption of e-commerce was implemented and diffused amongst township SMEs (Giotopoulus, 2017:61). The DOI framework helps in identifying specific variables within each category since diffusion occurs at different rates of the different SMEs based on the characteristics of individual decision-making processes of the business owners (Govinnage & Sachitra, 2019:4; Mamun, 2017:115; Ndayizigamiye *et al.,* 2019:264). When both research methodologies are mixed and used in conjunction with an integrated theoretical framework, the results will provide a richer contextual understanding of the adoption of e-commerce among township SMEs (Alkhalil *et al.,* 2017:7; Johnson *et al.*, 2007:115)

Based on the socio-economic and cultural differences between township, rural and urban SMEs, the unique characteristics and particularities of township SMEs were compelling for a more in-depth understanding of their perspective on the diffusion processes and barriers experienced regarding the adoption and diffusion of e- commerce (Morse & Niehaus, 2016:15).

Therefore, there is a need to use research methodologies that unearthed the peculiar socio-economic norms, beliefs, and experiences of township SMEs (Thierbach *et al.,* 2020:5). The mixed-method research approach in conjunction with an integrated theoretical framework was better suited for investigating the research question of this study (Kommey, 2020:118; Reichardt & Rallis, 1994:11).

4.5 RESEARCH DESIGN

Research design is defined as particular method deployed in collecting and analysing data based on the underlying philosophical assumptions of the researcher (Dawson, Ginesti, & Sciascia 2020:23; Maree, 2020:80). In other words, research designs are types of inquiries within qualitative, quantitative and mixed-methods methodologies that provide specific direction for methods and techniques used in a research study (Creswell & Creswell 2018:11; Schutte, 2018:12). Within mixed-method methodologies, there are two main research designs, namely, convergent, and sequential mixed-method designs with each comprising three dimensions (Dawson et al, 2020:27; Kommey, 2020:118).

The convergent mixed-methods design is a one-phase design where both quantitative and qualitative data are collected and analysed simultaneously (Kommey, 2020:119; Tashakkori &Teddlie, 2008:35). The convergent mixed-methods design also has three prototypes (Creswell & Clark, 2017:8; Creswell & Creswell, 2017:12; Saunders & Townsend, 2018:34; Tashakkori & Teddlie, 2008:35):

(1) A triangulation convergent design (where both the qualitative and quantitative data are collected and analysed concurrently and then compared or combined);
(2) A nested convergent design (where both qualitative and quantitative data are collected and analysed concurrently but one is given priority over the other); and
(3) A transformative convergent design (concurrent data collection and analysis of both qualitative and quantitative data, guided by a theoretical perspective in the purpose or research questions of the study).

The sequential mixed-method design, on the other hand, is a two-phase data collection project, where two different sets of data are collected with the intent of using the second database to

help explain the first database (Creswell & Plano Clark, 2018:77; Maleku, Kim, Kagotho & Lim, 2020:225). There are three prototypes of sequential mixed methods designs, depending on which data are collected first (Kommey, 2020:118; Plano Clark & Ivankova, 2016). According to Creswell and Clark (2017:8), Creswell and Creswell (2017:12), Saunders and Townsend (2018:34), Tashakkori and Teddlie (2008:35), Morse and Niehaus (2016:17), they are:

(1) Explanatory sequential design (where quantitative data are gathered and analysed first, followed by qualitative data collection to explain the first phase);
(2) Exploratory sequential design (where qualitative data are collected and analysed first, thereafter the quantitative data collected to explain the first phase); and
(3) transformative design (where the order of the data collection is determined by the researcher's theoretical perspective).

Table 4.2 depicts the sequential and convergent mixed methods typology.

Table 4.2 Mixed-method typology

Research Design	Dimensions	Timing	Mix	Weighting/Notation
Sequential	Explanatory	QUAN followed by QUAL	Connect data between the two phases	QUAN ⟹ QUAL
Sequential	Exploratory	QUAL followed by QUAN	Connect data between the two phases	QUAL ⟹ QUAN
Sequential	Transformative	QUAL or QUAN	One data type is converted into the other during data analysis	QUAL or QUAN
Convergent	Triangulation	QUAN and QUAL at the same time	Merge data during interpretation or analysis	QUAN + QUAL
Convergent	Nested	QUAL integration followed by QUAN	Connect data between the two phases	QUAL integration QUAN
Convergent	Transformative	QUAL or QUAN	One data type is converted into the other during data analysis	QUAL or QUAN

Source: Negash (2020:63)

Key: QUAN = quantitative; QUAL = qualitative

The triangulation convergent design is used when the researcher intends to acquire diverse but complementary data on the same topic and to gain an in-depth understanding of the research problem (Morse, 1991:122; Creswell & Plano Clark, 2018:68). This study deployed a triangulation convergent design to obtain an enhanced contextual understanding of the adoption and diffusion of e-commerce among township SMEs (Kommey, 2020:119; Saunders & Townsend, 2018:34; Teddlie & Tashakkori, 2011:35). The triangulation convergent design comprises collecting, analysing and merging quantitative and qualitative data results simultaneously (Creswell & Plano Clark, 2018:69; Moseholm & Fetters, 2017:2).

Furthermore, the objective of the convergent mixed-method design is to amalgamate the advantages and limitations of both quantitative and qualitative methods, enabling the assessment of quantitative statistical outcomes alongside qualitative findings to achieve a comprehensive grasp of the research problem (Creswell & Plano Clark, 2018:68; Doyle *et al.*, 2017:4; Maleku *et al.,* 2020:4). Quantitatively, the triangulation convergent design involves a large sample size, trends, objective measures and generalisation combined with a small qualitative sample that entails subjective interpretation, details and comprehensiveness in order to corroborate and validate the quantitative results with qualitative findings (Creswell & Plano Clark, 2018:68; Kommey, 2020:118). The key assumption of the triangulation convergent design is that both qualitative and quantitative data provide diverse information made up of detailed subjective views by the participants from a qualitative perspective and scores on instruments quantitatively, where collective results that are more pronounced can be obtained (Creswell & Creswell, 2018:217; Nunfam, 2021:3).

The overall intent of this design is to look for convergence, divergence, contradictions or relationships between the two databases to produce well-validated conclusions (Plano Clark & Ivankova, 2018:74; Plonsky, 2017:33). Thus, Figure 4.2 illustrates the single-phase approach where both quantitative and qualitative data are collected simultaneously and analysed separately. Thereafter, the data are merged, analysed and interpreted concurrently to compare the results and to ascertain whether the findings corroborate or contradict each other (Creswell & Creswell, 2018:217).

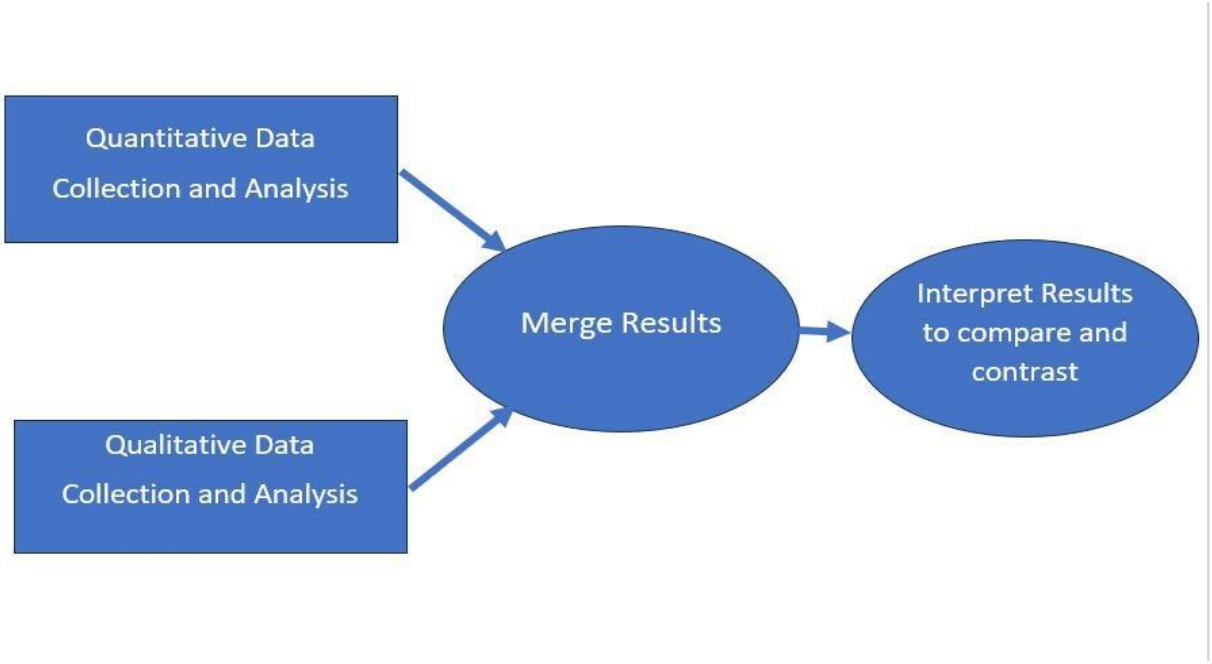

Figure 4.2 Triangulation Convergent Design (One-Phase Design)
Source: Creswell and Creswell (2018:218)

4.5.1 Benefits and challenges of triangulation convergent design

Creswell and Plano Clack (2018:71) as well as DeCuir-Gunby and Schutz (2018:89) propose several benefits and challenges of using a triangulation convergent design:

Benefits of the triangulation convergent design

- The design is efficient since both kinds of data are collected simultaneously during a single phase.
- The design is relatively easy to implement and requires less time to complete as opposed to sequential design.
- Each type of data can be collected and analysed separately and independently using the techniques traditionally associated with each research methodology.
- The design enables the comparison of different perspectives collected from participants through an open-ended questioning format (e.g, semi-structured interviews) with the viewpoints derived from the researchers' perspective (e.g, a questionnaire selected by the researcher) in close-ended questioning.

- Researchers are also able to report statistical trends and reveal participants' voices, opinions and perspectives.

Challenges of the triangulation convergent design

- Like most mixed methods designs, this design can be time-consuming. It is time-consuming and demanding to gather and analyse two complete but separate sets of data simultaneously.
- Issues of dissimilar sample sizes may occur since the quantitative and qualitative data are gathered for different purposes (i.e, quantitative generalisation versus qualitative comprehensive description). The researcher needs to meticulously plan how the dissimilar data sets will be merged.
- It can be a challenge to merge text and numeric data sets and their findings in a meaningful way.
- What to do to explain divergence when comparing the quantitative and qualitative results. Although contradictions may produce novel insights regarding the research topic, the differences can be challenging to solve and may need additional data to be collected.

4.6 POPULATION

A population is the total of all units or defined sets of people or collections of analysis items that the researcher endeavours to investigate (Salkind, 2012:396). Data from Stats SA (2018) estimate the number of SMEs in South Africa to be 2,8 million and that 46% of these SMEs are based in the Gauteng province, where Soweto is located (Cilliers, 2018:2; Kalitanyi, 2019:57). Based on the above-mentioned data, Gauteng has approximately 1,3 million SMEs (46% of 2,8 million). However, no data are available regarding the official number of SMEs operating in the township of Soweto (SEDA, 2019:20).

The criteria for the population are business owners and managers of formal and informal SMEs that employ zero or more employees from the township of Soweto. The SMEs must be interested in acquiring or must already use e-commerce in their businesses. These above-mentioned criteria further narrowed down the number of

the population, which made it even more difficult to identify the number of SMEs. Information on the number of SMEs operating in Soweto is not recorded in any public database that the researcher could identify.

4.6.1 Research setting

Moges (2020:63) defines the research setting as a specific location where a study is carried out, encompassing geographic, socio-economic, cultural and political aspects of the area where data are gathered. The research setting brings into focus various significant attributes of the location, the study's participants and any pertinent information relevant to the research (Kumar, 2011:230). Lune and Berg (2017:209) underscore that offering a context for the research setting is a crucial component of any research investigation. Once the research site has been chosen, it becomes imperative to secure the necessary permissions to access the sites and conduct research involving the respondents or participants (Maree, 2020:39). The research for this study took place amongst township SMEs that operate their businesses in Soweto and are registered with eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka.

4.6.2 The township of Soweto

This research was limited to the SME community within the township of Soweto. The name Soweto is an acronym derived from the term South Western Township (Kubone, 2019:6). Soweto is situated southwest of Johannesburg; a city in Gauteng province (Suchá, Schlossarek, Dušková, Malan & Šarapatka 2020:4). Soweto is the largest township in South Africa (Suchá *et al.,* 2020:4). Soweto comprises 34 suburbs and spans an area estimated to be 9 640 hectares with a population estimated at 4.44 million from the census conducted in 2019 (StatsSA, 2019; Kubone, 2019:6). Figure 4.3 below presents a map of Soweto township.

Figure 4.3 Map of Soweto township

Source: Ramchander (2004:27)

4.7 RESEARCH METHODS

Research methods involve the types of data collection, analysis and interpretation that are proposed for the study (Maree, 2020:31). As previously mentioned above, a triangulation convergent design was adopted for this study where both the quantitative data and qualitative data are collected and analysed concurrently, yet through separate research methodologies – in other words, one research methodology is not dependent on the results of the other research methodology (Creswell & Plano Clark, 2018:69; Doyle, Brady & Byrne, 2017:4). Moreover, both quantitative data and qualitative data have equivalent significance for addressing the study's research questions (Ivankova *et al.,* 2006:5; Usher, 2019:35). The triangulation convergent design has four procedural steps that were used to implement the single-phase triangulation convergent design (Bowen *et al.,* 2017:12; Nunfam, 2020:3). The four procedural steps are discussed below.

During the first step, the researcher collected both quantitative data and qualitative data regarding the adoption and diffusion of e-commerce among township SMEs concurrently through separate research methodologies (Nanfam, 2021:3). In the second step, the researcher analysed the two data sets separately using quantitative and qualitative analytical procedures independently (Moseholm. & Fetters, 2017:2). After obtaining the initial results from both sets of data, the researcher arrived at the point of convergence and proceeded to combine the findings from the two data sets in the third step (Plano Clark & Ivankova, 2016:9).

The third step included the researcher directly comparing the different results in a table and discussion (Moseholm & Fetters, 2017:2). During the fourth step, the researcher analysed the degree to which the results from the two data sets converged or deviated from each other, their interrelationships and how they consolidated to create a more profound understanding in line with the overarching aim of the study (Doyle *et al.,* 2017:4). In cases where the results exhibit disparities, the researcher pursued additional measures to explain these variations, which could involve re-evaluating the findings, collecting supplementary data, or scrutinising the data sources' reliability and quality (Creswell & Creswell, 2018:220).

Based on the above underlying principle, the triangulation convergent design was chosen to explore whether the identified factors from the reviewed literature influence the adoption and diffusion of e-commerce among Soweto-based SMEs and subsequently to determine how the adoption of e-commerce is diffused among township SMEs in Soweto. Figure 4.4 presents an overview of the procedural steps that were applied in the triangulation convergent design. During the first step, both quantitative data and qualitative data are collected concurrently. In step 2, both sets of data are analysed, and in step 3, the quantitative and qualitative results are integrated. Step 4 provides an interpretation of the merged results.

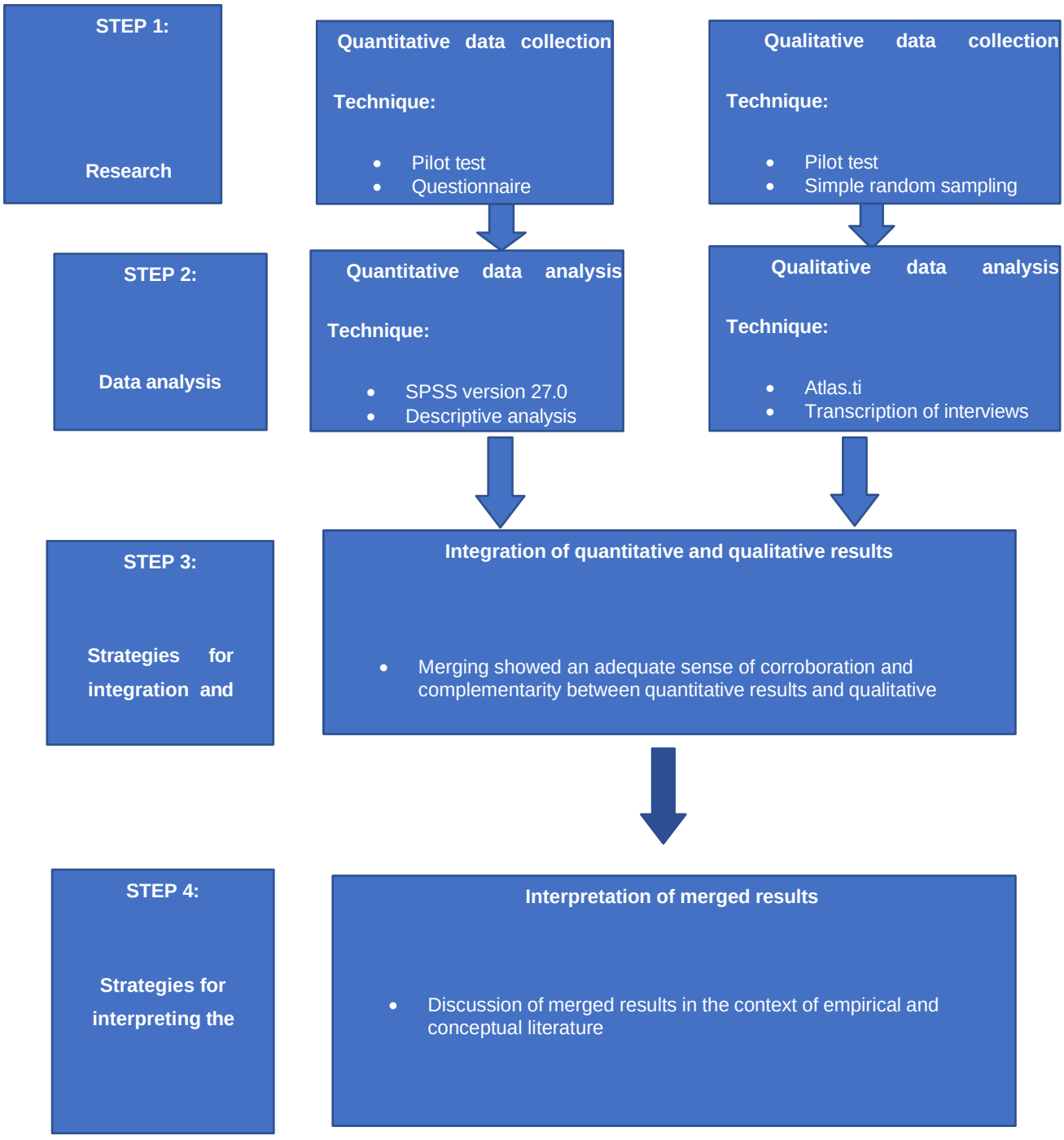

Figure 4.4: Four procedural steps to implement the triangulation convergent design

Source: Researcher's compilation

4.7.1 Sample selection

Selecting relevant participants for a study is called sampling (Saunders & Lewis, 2012:133). A sample is a subset of a population set to represent the characteristics of the entire population (Abt, Boreham, Davison, Jackson, Nevill, Wallace & Williams, 2020:1933). In other words, sampling means selecting a small portion from a defined population for generalisability to a specific population (Neuman, 2011:241). The researcher employed a sampling technique that encompassed the selection of the research location, the criteria for choosing participants for the study, the methodology for participant selection and the determination of the required number of participants to address the research inquiries (Creswell & Plano Clark, 2018:175). Different samples were used for the two data collection phases (Abt *et al.,* 2020:1933).

4.7.2 Pilot study

Saunders and Lewis (2012:149) describe a pilot study as a small study aimed at trying out a data collection instrument with a small group to ascertain the appropriateness and sufficiency of a research methodology, its measurement instruments and analysis preceding the main research study. The pilot study is a test to ascertain the content validity of scores on an instrument and to offer a preliminary evaluation of the internal consistency of the study (Creswell & Creswell, 2018:154).

A quantitative pilot study was conducted to detect unclear or unambiguous formatted items or instructions in the questionnaire (Ivankova *et al.,* 2006:6). The developed questionnaire was distributed online to 10 SMEs from Soweto that are known to the researcher to indicate how they interpret the formulated quantitative questions to ensure they had no content that promoted bias (Leedy & Ormrod, 2010:223; Rubin & Babbie, 2011:404). The pilot study process identified the flaws in the measurement instrument and established clarity by providing useful feedback on the structure and flow of the questionnaire (De Vos, Strydom, Fouche & Delport, 2011:237).

Furthermore, the researcher selected two SMEs from the same group of Soweto-based SMEs to participate in the qualitative pilot study using online MS Teams or Zoom, which are

Voice Over Internet Protocol (VoIP) systems to test the interview questions, provide feedback to the researcher and to make any necessary adjustments before the ultimate interviews were conducted with the research participants (Magnusson & Maracek 2015). Pilot interviews are a good method to fine-tune the content, process and duration of the interviews (Bowen *et al.,* 2017:16). The pilot studies for both quantitative and qualitative methodologies indicated that certain questions on the research instruments required clarification in terms of their instructions. The researcher adjusted the questions accordingly to accommodate recommendations and remove ambiguity, confusion and to also help validate the reliability and validity of the research instrument.

4.8 QUANTITATIVE METHODOLOGY

Creswell and Creswell (2018:19) assert that quantitative research allows the researcher to generalise the findings to a population. The purpose of the quantitative methodology in this study is to investigate whether the factors identified from the literature review influence adoption and to explore the relationship between the factors identified from the literature review and the adoption of e-commerce among Soweto-based township SMEs (Usher, 2019:36). Nayak and Singh (2015:87), as well as Moges (2020:78) add that surveys and questionnaires are essential instruments used in collecting quantitative data to support or refute hypotheses. In addition, quantitative data are collected through instruments to analyse and examine the measurement of and structural relationships between the hypothesised factors identified from previous studies (independent variables) and the adoption of e-commerce (dependent variable) using statistical procedures and hypothesis testing (Bowen *et al.,* 2017:15; Usher, 2019:35).

4.8.1 Sample and sampling technique

A preferred sampling technique in quantitative research is referred to as random sampling and aims to choose a substantial number of participants that accurately represent the entire population (Maree, 2020:215). However, due to no data being available regarding the number of SMEs operating in Soweto, the researcher was unable to implement a simple random sampling technique. Simple random sampling entails the random selection of participants using a systematic method, which may involve techniques such as employing a random

numbers table. This process ensures that every individual within the specified population has a well-defined probability of being chosen (Creswell & Plano Clark, 2018:176; Saunders & Lewis, 2012:135). Furthermore, the researcher selected respondents who were best suited to assist in answering the research questions and to achieve the objectives of this study (Neuman, 2011:241).

In selecting respondents to help answer the research questions of this study, the researcher identified three organisations that are involved in small business enterprise development initiatives with township SMEs to facilitate the data collection process. The organisations selected were eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka because they work with Soweto-based SMEs that most likely would be influenced to consider the adoption of e-commerce activities in their businesses (Sharma, 2017:752). This means that the researcher selected the three organisations mentioned above since the adoption and diffusion of e-commerce is most likely to occur amongst Soweto-based SMEs in their database (Palinkas, Horwitz, Green, Wisdom, Duan & Hoagwood, 2016:4).

The researcher further employed purposeful sampling intentionally in order to select SMEs that are able to provide comprehenvise insights into the phenomenon under investigation in this study (McCrudden & Sparks, 2018:8). Thus, purposeful sampling was used to identify the three organisations from which the SMEs were sampled. An essential aspect of purposeful sampling concerns the criteria applied as a basis for sampling; in this case, the criteria were Soweto-based SMEs affiliated with eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka (Maree, 2020:93). Additionally, the business owners and managers should be from formal and informal SMEs that employ zero or more employees from the township of Soweto. Moreover, the three organisations were selected because they work with Soweto-based SMEs that are most likely to consider the adoption of e-commerce activities in their businesses (McCrudden & Sparks, 2018:8).

When conducting research, it is important to ensure that an adequate representation of the population being studied is attained (Abt *et al.,* 2020:1933). Therefore, participants for this study were sourced from three distinct samples, namely, the eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka. Selecting the sample from the three organisations allowed the researcher to answer the research question fully and to ensure

adequate generalisation from the samples to the population (McCrudden & Sparks, 2018:8; Sharma, 2017:752).

The online questionnaire was assigned a unique code for each organisation for the researcher to identify the responses from each organisation. Furthermore, a comparative analysis of the different data sets of the Soweto-based SMEs affiliated with the three different organisations was conducted to contrast the findings and any obvious differences used to help understand the impact of the phenomenon on Soweto-based SMEs (Palinkas *et al.,* 2016:4). Moreover, convergence of results from the three different organisations while answering related questions in a complimentary manner provided more depth and made the information rich.

Based on the guidelines of the Protection of Personal Information (POPI) Act of 2017 to preserve the privacy of individuals and protect the personal information of all individuals in South Africa (Chetty, 2020:2), the eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka were unable to provide the researcher with a list of all Soweto-based SMEs from their databases to contact directly. In compliance with the POPI Act, a link containing the questionnaire developed by the researcher was given to organisations to distribute electronically amongst all the Soweto-based SMEs registered on their databases for completion via SurveyMonkey.

To conduct a robust quantitative study, the sample size must be sufficiently large to fulfil the prerequisites for statistical tests and offer an accurate estimation of the population parameters (Creswell & Plano Clark, 2018:177; Abt *et al.,* 2020:1933). For the quantitative sample size, the historical reference technique was used based on previous studies. Previous studies (Govuzela, 2018:128; Marnewick, 2014:5; Mathu & Tlare, 2017:66) that focused on the adoption of technology among township SMEs used sample sizes ranging between 100 and 500 respondents. The quantitative survey comprises 32 questions, of which 19 are 5-point Likert scale questions. According to Fowler (2014:93), the minimum number of respondents needs to equal the number of questions multiplied by the 5-point Likert scale.

According to Fowler (2014:93), the minimum number of respondents needs to equal the number of questions multiplied by the 5-point Likert scale. Therefore, 19 questions x 5 options

= 95 respondents were required for this research. The sampling frame for this study comprised a total of *n* = 309 respondents. Because of this, a total of *n* = 309 respondents was considered to be sufficient for this study from the target population of Soweto-based SMEs affiliated with eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka as well as to mitigate against the risk of any incomplete or invalid questionnaires received back from the target sampling frame (Abt *et al.,* 2020:1933). Incomplete questionnaires are minimised as the design was such that respondents had to complete the questions before being able to move onto the next set of questions.

4.8.2 Data collection method for quantitative methodology

The researcher applied the principle of deductivism in developing the standardised survey questionnaire instrument to collect data (Folwer, 2014:87; Saunders *et al.,* 2019:153). Deductivism allows referring to hypotheses and ideas inferred from a theoretical proposition to explain causal relationships between variables (Saunders *et al.,* 2019:153). The assumption is that the hypotheses are testable explanations of hypothesised relationships (Bryman, 2008:13). The information about the township SMEs, reviewed literature, theoretical framework and the research informed the development of the survey questionnaire instrument (Folwer, 2014:89). Quantitative data were collected using a web-based standardised questionnaire with closed-ended questions that were easier to analyse than data obtained from open-ended questions (Ivankova *et al.,* 2006:10; Maree, 2020:203).

4.8.3 Data collection rationale for quantitative methodology

The standardised questionnaire instrument was used to answer the “what” questions (Fowler, 2014:91; Cohen, Manion & Morrison, 2007:169). According to Lewis-Beck, Bryman and Liao (2004:966), “what” questions aim to discover and describe characteristics that are related to a social phenomenon. Thus, the “what” questions for this study relate to the identified factors that influence the adoption of e-commerce among Soweto-based SMEs. This study aimed to investigate whether the identified factors from literature review influence the adoption and diffusion of e-commerce among township SMEs in Soweto.

From a theoretical perspective, TAM, TOE and DOI frameworks were applied during the quantitative methodology to investigate whether the identified factors from previous studies influence the adoption and diffusion of e-commerce among township SMEs in Soweto. Due to time constraints and lack of financial resources, this study employed cross-sectional research (Saunders & Lewis, 2012:124). Cross-sectional research implies that the study was performed at one particular point in time, often termed a 'snapshot' (Saunders & Lewis, 2012: 123; Quinlan, 2011:180). As a result, the survey questionnaire instrument permitted the collection of large amounts of data from the population in a limited space of time and in a cost-effective manner (Muijis, 2011:38-39; Best & Kahn, 2006:313).

4.8.4 Technique for quantitative data collection

An empirical questionnaire was used to obtain data regarding the identified factors that influence the adoption and diffusion of e-commerce among township SMEs in Soweto (Maree, 2020:196). A questionnaire is a research instrument comprising a series of questions or items that respondents are needed to answer (Nayak & Singh, 2015:87; Moges, 2020:78). Respondents can either fill out questionnaires themselves or have them administered by the researcher (Maree, 2020:198). This study used a simple standardised questionnaire where clear and consistent instructions were administered to respondents using an online link through eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka for the completion of the questionnaires. The online questionnaire with a unique code for each organisation was completed via a hyperlink on SurveyMonkey.

Reference to literature review and the objectives for this study were used to compile the questions for the questionnaire. The questionnaire had thirty-two questions. The research looks at factors that may influence the decision to either adopt e-commerce technologies or not. As a result, the questionnaires contained four demographic items related to the SMEs, namely; number of employees, location of SME and age group category. Only business owners and managers participated in this research. Research participants were therefore required to share this information as they are pertinent to the research and the application of e-commerce diffusion. A five-point Likert scale that ranges from (1) strongly agree to (5) strongly disagree was used for the rest of the variables (Fowler, 2014:93). Cavana, Delahaye

and Sekaran (2001:206) caution that measuring beyond a five-point scale does not improve the reliability of the ratings and that a five-point scale is sufficient.

After the hyperlink web-based questionnaire was sent to Soweto township SMEs affiliated with eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka databases, it was originally planned for the questionnaire to remain open for a period of three weeks. However, based on assessments of responses, the researcher decided to keep the survey open for a total of five weeks.

The questionnaire included a question asking the respondents to confirm that they were SMEs from the township of Soweto. Furthermore, the researcher made it clear at the beginning of the survey that the interview questions are tailored for SMEs that have adopted e-commerce strategies or to those with interest in adopting e-commerce for their businesses. Therefore, SMEs that have not adopted e-commerce strategies or are not interested in adopting e-commerce strategies did not qualify to participate in this study. Participation was voluntary and every respondent had the choice to decide whether or not to participate in the research study (Tiidenberg, 2018:470). The returned questionnaires were checked by the researcher for any omissions and inconsistencies before capturing the data. Incomplete questionnaires were discarded by the researcher. All fully completed questionnaires were used for the quantitative phase of this study.

Threats to validity could occur, and this study included examples such as attrition in the number of respondents who completed the questionnaire versus the number of respondents who received the questionnaire (Creswell & Creswell, 2018:169). Validity tests were carried out using EFA and confirmatory factor analysis. Through the eKasi Movement, Transformation Legacy and Vuleka, a link to the questionnaire was distributed to Soweto township SME respondents, of which a total of 309 participated. The survey contains a section where respondents may elect to also participate in the qualitative interviews and consenting SMEs provided their contact information for the researcher to directly contact them. In addition, the three organisations emailed a link to an online consent form to the Soweto-based SMEs on their databases to elicit more participants for the qualitative data collection phase.

4.8.5 Quantitative data analysis

Analysing the quantitative data emphasised figures and numbers (Bryman, 2001:20). The researcher converted the raw data by assigning numeric data values to each response by using the Statistical Programme for the Social Sciences (SPSS version 27.0), cleaning the database by checking for data entry errors and recoding items on instruments with inverted scores (Field, 2013:113; Green & Salkin 2012:57). A codebook was created to outline the variables, provide their definitions, assign numerical values to the responses and the data were inspected to identify trends including checking whether data are normally distributed using skewness and kurtosis (MacQueen, McLellan, Kay & Milstein, 1998:31).

Descriptive analysis was conducted for each major variable such as the independent and dependent variables (Creswell & Plano Clark, 2018:212). Reliability was assessed by examining the quality of the scores from the questionnaire. Tests were subsequently conducted using reliability of scales to help identify any random errors in the sample (Maree, 202:14). Type 1 and type 2 errors were evaluated to assess whether there were variances between groups (Bowen *et al.,* 2017:15; Field, 2013:52). According to Henson (2001:178), reliability signifies the degree of accuracy in measurement (precision of an instrument).

Creswell and Creswell (2018:154) suggest that three questions are connected with reliability and name them as follows:

(1) Will measures give similar results at other occasions and times?
(2) Can the same observations be achieved by others?
(3) Is there clarity on how conclusions were derived from the original data?

In this study, a Cronbach's alpha value above 0.7 was used as proposed by Pallant (2013:101). Cronbach's alpha coefficient (Cronbach's alpha) was applied to measure the reliability of the measurement instrument (questionnaire), and themes were used for the qualitative questionnaire. The Cronbach's alpha value of 0.7 above was considered for scale reliability for internal consistency in this study.

Validity, on the other hand, pertains to the degree of accuracy with which a method measures its intended target. High validity in research signifies that the method yields results that align closely with actual attributes and variations in the physical or social realm. To assess the validity of the collected data, exploratory factor analysis (EFA) was employed. Correlation, on the other hand, is employed to ascertain if there are any statistical distinctions among the means of three or more independent criterion groups. In conducting correlation analysis, one-way analysis of variance (ANOVA) was utilised to ascertain the presence of criterion-related validity. The estimation of the relationship between two or more independent variables and a single dependent variable was accomplished through multiple linear regression modelling. This method enables the comparison of means across various populations and/or treatment conditions.

SPSS was used to analyse the data to answer the quantitative research questions and test hypotheses. Inferential tests were conducted, and effect sizes and confidence intervals were calculated. The researcher represented the results of the analysis in statements, tables and figures, and summarised the statistical evidence for the quantitative results (Creswell & Plano Clark, 2018:215). An in-depth description of the data analysis procedure is provided in Chapter 5.

4.9 QUALITATIVE METHODOLOGY

Denzin and Lincoln (2011:3) assert that qualitative research enables the researcher to probe deeper into investigating what people think and feel, including how people perceive certain experiences. The purpose of the qualitative phase in this study was to derive interpretations that explain the processes involved in the implementation and diffusion of e-commerce among township SMEs (Masombuka, 2020:111). Bowen *et al.* (2017:16) and Brinkmann and Kvale (2015:150) add that interviews are an essential tool in obtaining knowledge since they attempt to understand the words from the participants' perspective, to explain the meaning of their experiences and to reveal their lived experiences. In this study, qualitative research is also used to attain different yet complementary data on the same topic to enhance the understanding and contextualise the adoption and diffusion of e-commerce among township SMEs (Maree, 2020:338; Nunfam, 2021:3).

4.9.1 Sample and sampling technique – qualitative methodology

To help select participants who can best answer the research questions of this study, the researcher selected Soweto-based SMEs that are interested in the adoption of e-commerce and keen to participate in the qualitative interviews from the databases of eKasi Entrepreneurship Movement, Transformation Legacy and Vuleka. In complying with the POPI legislation which seeks to preserve the privacy of individuals and protect the personal information of all individuals in South Africa (Chetty, 2020:2), the contact information of the consenting SMEs will go directly to the researcher and not to any of the three organisations.

An online participation consent form was loaded on SurveyMonkey, and the three organisations emailed the consent form to the Soweto-based SMEs to request their consent for the qualitative phase of this research. All completed consent forms went to a database that only the researcher had access to. In addition, the questionnaire contained a section where respondents may elect to also participate in the qualitative interviews, and consenting SMEs could provide their contact information for the researcher to directly contact them.

The researcher contacted each participant and conducted all the interviews herself. The SMEs were selected randomly from the list of SMEs that provided their contact details to participate in the qualitative research. Random selection was conducted by the researcher for the interviews and continued until data saturation was reached (Creswell & Creswell, 2018:222). Simple random sampling involves the systematic selection of participants through methods such as utilising a random numbers table. The researcher had intended interviewing four SMEs from each organisation, however, respondents from the quantitative data collection elected to participate in the study and made their information available to the researcher via the completed questionnaire. As such, the researcher had no control over the process and could only work with the participants who had made themselves available.

The three organisations distributed the questionnaires on the researcher's behalf and the researcher had no other way of identifying people to participate in the study as the POPI Act could not be contravened for the researcher to gain access to personal information of those associated with the three elected organisations. The researcher therefore applied the sampling to the organisations and not the respondents and participants who formed part of

the data collection process. Given that the participants who expressed interest to be interviewed for the qualitative phase where selected from the purposeful sample of the quantitative strand, the simple random selection method guarantees that everyone within the identified population of respondence that expressed interest to be interviewed has an equal and clearly defined chance of being chosen (Abt *et al.,* 2020:1933; Sanders & Lewis*.,* 2012:138). A total of fourteen Soweto-based SMEs were selected to participate in the qualitative interviews.

However, the significant consideration lies in collecting sufficient qualitative information, referred to as data saturation to ensure meaningful themes can be developed to provide explanations for selected qualitative results (Hamilton & Finley, 2020:3). According to Hamilton and Finley (2020:3), for the qualitative sample, a minimum of five to fifteen interviews are generally sufficient to achieve data saturation. Data saturation is the point in data collection where no new insights or information are being obtained from interviews. In other words, data saturation signifies that the data collection process can be concluded as no additional information emerging during data analysis (Creswell & Poth, 2018:160; McCrudden & Sparks, 2018:7). For this study, eight out of the fourteen Soweto-based SMEs were interviewed as supported by Cooper and Schindler (2011:147). Some of the SMEs from the list were not reachable due to incorrect contact details that were supplied to the researcher. The researcher achieved a state of data saturation by the eighth interview. Data saturation refers to the point in qualitative research where new data no longer provide additional insights or perspectives beyond what has already been gathered.

4.9.2 Data collection technique – qualitative methodology

The qualitative phase is inductive in nature and allows the researcher to contextualise and advance an enhanced understanding of the meanings that humans attach to lived experiences (Creswell & Poth, 2018:7; Denzin & Lincoln, 2011:3). The qualitative phase explored the "how, why, and at what rate" e-commerce is diffused amongst township SMEs in Soweto (Maree, 2020:109). The qualitative phase further helped to identify the factors facilitating the adoption and diffusion process by assessing the rate of diffusion of e-commerce. The qualitative phase was mainly concerned with the way that e-commerce progresses from adoption to implementation and then diffusion by Soweto-based SMEs within their business

operations. During the qualitative phase, data regarding the lived experiences, reasoning, thoughts and opinions of Soweto-based SMEs in real-life situations were gathered from the interviews to better understand the diffusion process of e-commerce (Babbie & Mouton, 2012:279; Daniel, 2016:93; Leedy & Ormrod, 2014:141).

4.9.3 Data collection method – qualitative methodology

Qualitative data were collected by conducting semi-structured, open-ended question interviews. These type of interviews are considered appropriate because in-depth information is required to answer the "how and why" questions as mentioned above (Maree, 2020:109; Hamilton & Finley, 2020:3). Furthermore, the interview questions provided the researcher with flexibility to follow up with probes in response to participants' answers (Sutton & Austin, 2015:227). The interviews were concerned with understanding or explaining the qualitative phase pertaining to how e-commerce was diffused into business operations of Soweto-based SMEs (DeCuir-Gunby & Schutz, 2018:99). The qualitative phase as it relates to this study was to explore and gain a better understanding based on the views, opinions, perceptions and experiences of township SMEs from Soweto (Bowen *et al.,* 2017:16). Denzin and Lincoln (2011:43) assert that interviews may be conducted to study factors in their natural settings in an attempt to make sense of, or construe the phenomena based on the meanings that individuals ascribe to them; however, the researcher's role is to analyse the events without interfering with the study.

From a theoretical perspective, the Technology-organisation-environment (TOE) and the Diffusion of Innovation Theory (DOI) frameworks were applied during the qualitative methodology to determine how e-commerce was implemented and diffused into SME business processes as well as to ascertain what steps and processes were being used to implement and facilitate the diffusion process of e-commerce in the business operations of the Soweto-based SMEs. In addition, since diffusion occurs at different rates due to the heterogeneous nature of Soweto-based SMEs, DOI theory further explains and helps researchers understand the rate of diffusion of e-commerce since it is shaped by the characteristics of SME business owners or managers, among other factors (Giotopoulus, 2017:61; Mamun, 2017:115; Ndayizigamiye *et al.,* 2019:264).

4.9.4 Technique for qualitative data collection

For the qualitative sample, Hamilton and Finley (2020:3) and Saunders *et al.* (2012:283) propose that a minimum sample of between five and fifteen interviews is typically sufficient to arrive at saturation, which is the data collection juncture where new insights are no longer garnered from interviews. For this study, eight Soweto-based SMEs were interviewed (Cooper & Schindler, 2011:147).

Owing to the COVID-19 pandemic and lockdown restrictions, semi-structured open-ended telephone and online interviews were conducted through Voice Over Internet Protocol (VoIP) systems such as MS Teams or Zoom, which enable users to transmit voice and video over the internet in a synchronous, real-time connection and were deemed to be the most appropriate data collection technique (Tiidenberg, 2018:469). Furthermore, the use of contemporary technology facilitated digital interviews, eliminating the necessity for the researcher to travel between participant locations (Masombuka, 2020:112). Moreover, given the absence of financial sponsorship for this study, this approach eliminated travel expenses without compromising the quality of the research (Tiidenberg, 2018:469). Lastly, conducting interviews via technology, resulted in effective time management by eliminating the need for travel to the participants' various locations (Masombuka, 2020:112).

The interviews were conducted by the researcher and lasted between forty-five minutes and one hour. The interviews were scheduled at a time convenient for the participants. Permission was requested from participants to record the sessions for accuracy, credibility and validity purposes (Bowen *et al.,* 2017:17). The researcher provided participants with the assurance that no sources, individuals or institutions would be disclosed or reported without their explicit, written permission (Corneli & Borasky, 2015:3). In terms of confidentiality, pseudonyms were used to protect participants from all forms of identification at both personal and business levels. Participants were allowed to ask questions and seek explanations.

Seven interview questions were designed to probe township SMEs' perspectives and experiences regarding the adoption and diffusion process of e-commerce into their business operations. The online interviews were digitally recorded using MS Teams or Zoom. All the interview recordings were transcribed verbatim into word processing files for analysis and

reviewed for accuracy (Edmonds & Kennedy, 2019:4). The interviews were conducted over four weeks. The signed consent forms and recordings from the qualitative interviews will be disposed of after 5 years of the study to protect against misuse or unauthorised use of the data (Haricharan & Heap, 2020:11). Thick descriptions are detailed, elaborate narratives of events. They include interview notes and a thorough examination of all materials relevant to the research process, including personal notes taken during the research (Connelly, 2016:436). The purpose of a thick description is to establish credibility by providing as much detail as possible by transporting readers into a setting and helping readers decide the applicability of the findings to similar contexts or other settings (Creswell & Miller, 2000:129).

4.9.5 Qualitative data analysis

Qualitative data analysis is usually based on an interpretative philosophy that is intended to investigate the symbolic and meaningful content of qualitative data (Numfam, 2021:5). This is most effectively accomplished by employing an inductive analysis of qualitative data, aiming to facilitate the emergence of research findings from the prevalent, dominant or significant themes present in the raw data (Maree, 2020:123). For qualitative data analysis, the audio was transcribed verbatim from interviews into word processing files for analysis. The transcripts were checked for accuracy and the data were organised into themes using a qualitative data analysis software program called Atlas.ti (Creswell & Plano Clark, 2018:213). Atlas.ti was used to analyse transcribed data from the interviews to identify critical key dimensions. Atlas.ti is appropriate for qualitative data analysis that involves interviews.

The researcher perused through the data to obtain its logic and wrote memos about initial thoughts. Thereafter, initial themes were developed and a theme book was created, which is the statement of the themes for a database that helps organise the data. Furthermore, the theme book facilitates agreement on the analysis of the transcripts as new themes are added during the coding process (Bowen *et al.,* 2017:18). The data were coded and grouped into concepts to identify key themes that enabled the researcher to draw interpretations about the data (Quinlan, 2011:425). An in-depth description of the data analysis procedure is provided in Chapter 5.

4.9.6 Integration and merging of results

Integration in a triangulation convergent design involves merging the quantitative results with the qualitative results (Doyle *et al*., 2017:9; Moseholm. & Fetters, 2017:2). The comparison of both results is presented in Chapter 5. The presentation mentioned above involved the study results being presented in passages organised by major topics (Creswell & Plano Clark, 2018:222; Nunfam, 2021:6, Usher, 2019:38). Paragraphs describing the results for answering the research questions were organised by presenting the quantitative results and the qualitative results simultaneously (Creswell & Creswell, 2018:220). One of the significant concerns for researchers engaged in mixed methods research is determining the extent of integration between the quantitative and qualitative components of their studies (Bryman 2006:97; Negash, 2020:90). The key emphasis lies on how mixed methods approaches typically enhance results compared to relying solely on quantitative or qualitative methodologies (Bryman 2007:8; Negash, 2020:90).

Integration in a convergent design aims to cultivate interpretations and results that enhance a more comprehensive understanding and are confidently validated (Moseholm. & Fetters, 2017:2). To achieve this objective, the researcher combined the results to address the mixed methods research question through a comparison of the two data sets (Creswell & Plano Clark, 2018:221; Usher, 2019:38). Furthermore, the researcher analysed the findings by examining areas of consensus and divergence among participants and respondents. Literature sources were used to compare and contrast the primary data. The integrated view was used as a measure of triangulation on which findings and conclusions of the study are based.

Given that the triangulation convergent design was deployed for this study, the postulations of pragmatism are appropriately suited for guiding the consolidation and merger of the two research methodologies into an umbrella worldview and to provide a larger and more contextualised understanding of the factors that influence the adoption and diffusion of e-commerce amongst Soweto-based SMEs. Moreover, the integrated theoretical frameworks, consisting of TAM, TOE and DOI were utilised in the triangulation convergent design of this study to offer a comprehensive theoretical and conceptual model that guides both the quantitative and qualitative data collection and analysis as well as the researcher's strategy for

integrating the two sets of results. An in-depth description of the integration and merging of results is discussed in Chapter 5.

4.10 VALIDITY AND CREDIBILITY

Validity and credibility are essential concepts in research and information evaluation. They both relate to the quality and trustworthiness of data, findings, and sources, but they are applied in slightly different contexts for the two different methodologies. Validity represents the reliability of the quantitative research methodology. The trustworthiness and credibility represent the dependability, transferability, confirmability and completeness of the qualitative research methodology.

4.10.1 Validity and reliability of quantitative research

Quantitative research validity and reliability are viewed as the reproduction of findings from a study using standardised measuring instruments (Maree, 2020:260). Saunders and Lewis (2012:127) point out that the critical concept in designing a research strategy is highly reliant on the validity and reliability of the research methods deployed. Additionally, generalisability in quantitative research refers to how the results from a sample can be generalised to an entire population on the condition that the sample is illustrative of the population, irrespective of context (Neuman, 2011:241). For this study, an investigation was carried out using three separate samples sourced from the databases of eKasi Entrepreneurship Movement, Transformation Legacy, and Vuleka, to obtain a fair and representative cross-section of the population (Abt *et al.,* 2020:1933).

Validity means that the scores provided by the respondents are significant indicators of the construct being measured by the study (Creswell & Plano Clark, 2018:217). According to Saunders and Lewis (2012:127), validity is the extent to which methods used for data collection accurately measure what they were intended to measure and that findings genuinely reflect what they acknowledge to be. Creswell and Creswell (2018:169) suggest that threats to internal validity (the extent to which cause-and-effect claims can be made) and to external validity (the extent to which the conclusions are generalisable to other persons, settings or time) can be reduced through the usage of procedures throughout the study. This

study employed factor analysis, Kaisers' measure of sample accuracy (MSA) to measure construct validity of the questionnaires to reduce threats to internal and external validity. The researcher further used the same instrument for the pilot study and the main study. Exploratory factor analysis was conducted. The measurements used comprised KMO, communities, total variance explained and rotated component matrix.

According to Cooper and Schindler (2011:282), to ensure validity, the use of numerous sources of data was considered to determine consensus on various parameters to be measured (convergent validity) or lack of relationship (discriminate validity). Content validity was determined by carefully defining the topic, determining the items to be scaled and the scales to be used and finally pretesting the instruments on 10 township SMEs known to the researcher. The findings were used to judge and evaluate the relevance of each question regarding the research objectives. A content validity index (CVI) of 0.7 and above was considered valid (Amin, 2005:94). The purpose was to assess the relevance of the items and potentially revise grammar and wording of the items in the survey. To enhance external validity (the generalisability of the study) to similar situations, the study was conducted from three different samples to reasonably represent the population and to generalise to a wider population (Onwuegbuzie & Johnson, 2006:49-50).

Reliability means that scores provided by the respondents are consistent and steady over time (Creswell & Plano Clark, 2018:217). According to Saunders and Lewis (2012:127), methods of data collection and procedures of analysis that produce constant findings are factors that render research reliable. Threats to the reliability of the study may include subject errors that occur when a measurement is taken at different times, producing significantly different results and subject bias where participants provide unreliable information based on fear (Maree, 2020:263). To achieve credibility for this study, a pilot test and Cronbach alpha coefficient techniques were used to mitigate reliability threats. Brown (2002:17) describes a pilot test as a minor study aimed at establishing the suitability and adequacy of a research methodology, the instruments to be used and the analysis preceding the main research study. The Cronbach alpha coefficient is used to measure the internal reliability of an instrument such as the five-point Likert scale in the questionnaires to eliminate any bias (Henson, 2001:177; Maree, 2020:261). The Cronbach's alpha-threshold value of 0.7 and above measured the scale reliability for internal consistency or homogeneity of the items in

this study. Where necessary, adjustments were made before the actual research process could begin.

4.10.2 Credibility and trustworthiness (dependability, transferability, Confirmability and completeness) of qualitative research

This credibility and trustworthiness are pivotal in determining the quality and reliability of data, research outcomes, and information sources for qualitative research.

Credibility pertains to the level of confidence various stakeholders have in a researcher's findings and the alignment of the findings with reality (Maree, 2020:144). While the responsibility for data collection rested solely with the researcher, a robust system of comprehensive documentation was rigorously maintained to mitigate potential biases. In addition, the credibility of this study was reinforced by employing data saturation, with the researcher staying engaged in the research field until data saturation was achieved.

A study's credibility is contingent on three fundamental elements: the researcher's credibility, the adoption of rigorous methods to generate high-quality data and the philosophical foundations shaping the study, as outlined by Patton (2002:552). To enhance this study's credibility, a triangulation of sources was conducted, involving interviews with different Soweto-based SMEs at various times and comparing the Soweto-based SMEs with diverse perspectives on the adoption and diffusion of e- commerce. This approach merged multiple data sources, including quantitative data, qualitative data and literature through interviews and questionnaires to gain a comprehensive understanding of the research problem (Bryman, 2015:465).

Furthermore, this study's credibility was strengthened through member-checking, where participants were provided with the data, interpretations and conclusions, thus allowing them to clarify meanings, correct any errors and offer additional insights. This approach aligns with the pragmatist paradigm adopted for this study (Connelly, 2016:435). Ensuring data credibility necessitates efficient notetaking and transcription, as highlighted by Creswell and Miller (2000). It is essential to employ skilled interviewing techniques to avoid potential data bias arising from participants' misinterpretation of questions. To give effect to this, the researcher

meticulously prepared the interview guide (see Appendix 3) and conducted interview dry runs to thoroughly prepare for the interviews and ensure data credibility (Connelly, 2016:435). Follow-up questions were posed during the interviews to confirm the researcher's understanding of the context and meaning of participants' responses. Creswell and Poth (2018:256) recommend prolonged engagement in the field and the triangulation of data sources, research methods and examiners as means to establish credibility.

Trustworthiness refers to the degree of confidence in data, interpretation and methods applied to provide assurance pertaining to the quality of a study (Connelly, 2016:435). Trustworthiness is a concept that encompasses several dimensions and is enhanced through the following four elements: dependability, transferability, conformability and dependability (Lincoln & Guba, 1985:290). The four elements that constitute trustworthiness and enhance trustworthiness are discussed below:

Dependability refers to whether utilising the same design (instruments and techniques) by another researcher would produce the same results in a population that is similar (Lincoln & Guba, 1985:290). The dependability of this study was enhanced by constantly reviewing the research design, process and justification for the chosen design and methodology. In addition, the research ensured triangulation by peer examination and code-recoding procedures as a measure to ensure consistency (Creswell & Poth, 2018:256). Furthermore, the researcher examined and evaluated the research process and the data analysis to ensure that the findings were consistant and could be repeated.

The researcher further enhanced dependability by recording the interviews and keeping the records of the research data collected for a period of five years. The research methodology and processes used by the researcher were accurately explained to ensure that the same processes repeated by other researchers would yield the same or similar results. These records are detailed in an audit trail that forms part of this study’s documents. The meticulous records enable replicability by other researchers. The dependability of this study was further enhanced by ensuring that appropriate research practices are followed for each of the research phases.

Transferability refers to whether the findings in a study can be generalised in another setting (Connelly, 2016:435). According to Patton (2002:438) and Creswell as well as Poth (2018:256), to facilitate transferability, thick descriptions of sample size, selection analysis and findings of the study need to be preserved to ensure the transferability of the findings between the researcher and participants being studied. Thick descriptions encompass documentation from participant interviews and an evaluation of all pertinent materials related to the research process which may include personal notes created during the research (Connelly, 2016:436).

Confirmability is instituted when the data collected and the findings can be traced back to the participants (Maree, 2020:145). Throughout the study, this researcher diligently preserved detailed notes and records by establishing a clear and traceable audit trail for the interview transcripts and the coding guide at various stages of the data analysis process (Connelly, 2016:435). These processes ensured that the perceptions, experiences and voices of the Soweto-based SMEs are reflected and that the findings accurately represent their perspective to ensure trustworthiness. The same research instrument was applied to all the research participants, and as such, all of them were subjected to the same questions (see Appendix 4). Furthermore, there is an audit trail of the recorded and transcribed interviews and the field notes (Babbie & Mouton, 2012).

To test for *completeness*, the researcher employed the 'application validation' method as outlined by Moustakas to ensure that the themes identified during data analysis were explicitly reflected in the transcripts (Acevedo-Berry, 2020:64; Moustakas, 1994:121; Shufutinsky, 2020:52). The themes not explicitly mentioned in the transcripts were compared with the research questions to evaluate their significance. Any themes deemed unrelated to the research questions were then excluded from the report (Gummer, Blumenberg & Rob Roßmann 2019:141: MacQueen *et al.,* 1998:36).

4.11 ETHICAL CONSIDERATIONS

Research ethics are defined as moral principles and behaviours that guide acceptable research activities (Gray, 2013:73). During the research process, it is crucial to pay attention to ethical and data protection considerations. Ethical guidelines are established with the

primary objective of protecting the welfare of research participants, communities and the research environment, thus ensuring they are shielded from any harm, manipulation or unethical conduct (Guillemin *et al.,* 2016:2).

The researcher upheld the ethical principles and regulations set forth by the University of South Africa (UNISA) by diligently adhering to UNISA's ethics policies. Since the study encompassed human participants, UNISA's guidelines regarding the involvement of human participants were adopted as a guiding framework. This policy is designed to ensure the protection of the rights and welfare of human participants by implementing established ethical standards in research that involves them. This study considered and adhered to the following ethical matters:

Ethical clearance - approval for the study was obtained from the College of Economic and Management Studies' Research Ethics Committee in fulfilling procedural ethics before the fieldwork was conducted (see Appendix 1). Confidentiality agreements, including the transcription confidentiality agreement were mutually signed by the researcher and the statistician.

Confidentiality and privacy - was guaranteed for all participants and their respective enterprises. Furthermore, each participant was assured that their responses would not be linked to their names and that real identities as well as personal information would be anonymised (Corneli & Borasky, 2015:3).

Informed Consent – informed consent was obtained from all research participants before participation in this study could begin. Permission was also sought from the Ekasi Entrepreneurship Movement, Transformation Legacy and Vuleka to distribute a link to the online questionnaire to all the Soweto-based SMEs in their databases (see Appendix 2). There is no dependent relationship that exists between anyone involved in recruitment and the participants. In addition, during the interviews, the participants' consent was sought not only for research but also for the interviews to be recorded.

Autonomy and respect of participants – Participants in this research were explicitly informed that their involvement in this study was entirely voluntary, and they had the

autonomy to decide not to participate or to withdraw from the study at any stage. (Saunders & Lewis, 2012:81; Tiidenberg, 2018:470). Regarding treating participants with respect, as highlighted by Babbie (2016:33), it is essential that research participants engage voluntarily and with a full comprehension of the researcher's objectives. The researcher maintained a non-discriminatory and impartial approach to all participants, irrespective of their gender or ethnic backgrounds by ensuring that they were all treated with dignity and integrity.

Risk assessment and mitigation strategies – Guided by UNISA's standard operating procedure for Research Ethics Assessment, the various checklists were completed and submitted to the Ethics Committee. In the event of certain risks emerging, the researcher proactively applied and implemented the risk mitigation strategy. Due to the COVID-19 pandemic, precaution was taken not to expose the participats to the spread of the pandemic. This was achieved by collecting data using telephone and online platforms. The results from the data collected were interpreted without bias. At the core of the ethics discourse is the quest to maintain beneficence (minimisation of harm and maximisation of benefits), respect and justice for the people involved (Maree, 2020:99).

The researcher complied with the research ethics highlighted by Guillemin *et al.* (2016:2) which indicate that participants should not be exploited, coerced, or paid to participate in the study and that each participant signed a consent form to participate in the research study.

In the application for ethical clearance, the researcher addressed the risks associated with the study as follows:

- Risk of discomfort and direct participation
- Risk of feeling obligated to participate in the research
- Risk of insufficient data
- Risk of collecting irrelevant information
- Risk of COVID-19 transmission

Moreover, the researcher advised all participants that their responses would only be strictly used for academic purposes.

4.12 CONCLUSION

This chapter describes the research paradigm and the research methodology. Justification was provided for choosing the mixed-methods methodology for this study. Thereafter, the research design was discussed, including highlighting the benefits and challenges of applying the triangulation convergent design for this study. This chapter described the demographics of the population and included information about the research setting and Soweto township. The research methods selected, sample selection and the pilot study also formed part of the deliberations in this chapter.

Since the research design selected was a triangulation convergent design, it comprised a single phase in which quantitative and qualitative data were collected concurrently, analysed separately and then merged. Under the headings of both the quantitative and qualitative phases, this chapter further discussed in great detail, the respective sample and sampling procedures, data collection techniques, data collection rationale and procedures for data collection. Thereafter, data analysis and merging of the results were deliberated. The validity and credibility of the quantitative methodology were considered and the trustworthiness of the qualitative methodology was deliberated. Finally, the ethical considerations adhered to were discussed.

The next chapter provides data analysis, presentation and discussion of the results for the mixed methods methodology deployed in this study.

CHAPTER 5
QUANTITATIVE AND QUALITATIVE DATA ANALYSIS AND INTERPRETATION OF RESULTS

5.1 INTRODUCTION

Chapter 4 stated that a pragmatism research philosophical worldview was adopted for this study where different ontological, epistemological and methodological perspectives were considered to investigate the factors that influence the adoption and diffusion of e-commerce among Soweto-based SMEs. Thus, both qualitative and quantitative research methods have been utilised in this research to elevate the comprehension of the research questions and to reveal the complexities and nuances in the social reality under investigation. This chapter outlines data analysis, interpretation and evaluation of the quantitative and qualitative research results.

The quantitative data were analysed using IBM SPSS Statistics version 28. Descriptive statistics were run to present the response rate, the study respondents' demographic and business profiles of the participating Soweto SMEs in the form of frequencies and corresponding percentages. For the qualitative data, interviews were conducted to obtain an in-depth understanding of the perceptions and experiences of the participants regarding the adoption and diffusion of e-commerce into their business operations. Atlas.ti was used to analyse the qualitative data transcribed from the interviews to identify critical key dimensions. This chapter also addressed the findings in terms of this study’s research objectives.

5.2 RESPONSE RATE AND DATA SCREENING

This section looks at the response rate and data screening of the respondents who completed the survey and the participants who agreed to be interviewed.

Attention is given to analysing two main aspects: the rate at which individuals responded to the survey, and the procedures employed to screen and validate the data provided by these respondents. Specifically, it focuses on comparing the responses received from individuals who completed the survey with those who also agreed to participate in interviews, thereby providing insights into the reliability and quality of the collected data.

5.2.1 Quantitative response rate and data screening

A total of 309 online surveys were administered among Soweto SMEs through three SME incubators that facilitated the data collection process. However, only 267 surveys were fully completed and usable. The highest number of responses was from the eKasi Entrepreneurship Movement at a 90% response rate, followed by a response rate of 63% from Vuleka and a response rate of 42.8% from the Transformation Legacy. The total of 267 completed and valid surveys represents an overall response rate of 86.4%, which is high enough to warrant validity and accuracy of the survey results (Evans & Mathur, 2018:858; Strohacker, Zakrajsek, Schaltegger & Springer, 2019:621). Table 5.1 displays the total number of survey responses received through the Soweto-based SME incubator organisations that facilitated the data collection process.

Table 5.1 Response rate of the research questionnaire

Organisation	Total number surveys started	Total number surveys completed	Valid surveys retained	Percentage of response rate per organisation
eKasi Entrepreneurship Movement	272	245	245	90%
Vuleka	30	19	19	63%
Transformation Legacy	7	3	3	42.8%
Total	**309**	**267**	**267**	**86.4%**

5.2.2 Qualitative response rate and data screening

Respondents from the quantitative phase of the research study were invited thorugh the survey, to also participate in the qualitative phase of this research. A total of 34 participants volunteered to be interviewed by providing their contact details on the online survey. However, only fourteen prospective participants' contact details were valid. The number reduced further when only eight participants honoured the invitation to be interviewed. Data saturation was achieved following interviews with the eight participants, aligning with

Hamilton and Finley's (2019:3) suggestion that this sample size is sufficient for meaningful theme development to elucidate the qualitative findings.

5.2.3 The Pilot Study

A quantitative pilot study was conducted to identify potential issues or ambiguities in the questionnaire's items or instructions. Ten SMEs in Soweto, known to the researcher were administered the questionnaire to ensure clarity and impartiality in the questions. Additionally, two SMEs from the same Soweto group participated in a qualitative pilot study via online platforms such as MS Teams or Zoom. This qualitative pilot study aimed to test interview questions and collect participants' feedback, thus enabling the researcher to make necessary adjustments before conducting final interviews with research participants. The researcher fixed all discrepancies and errors that were found in the pilot study.

5.3 DEMOGRAPHIC INFORMATION

Demographic information pertaining to the participants in the study is essential because it provides the researcher with a better understanding of the population of interest to their research study by moderating the error of absolutism (Oyebiyi, 2019:6; Renault,Yembi & Ansary, 2021:1511). Furthermore, in social sciences, the importance of understanding participants' demographics helps to reduce the error and risks of assuming the stance of "absolutism" where researchers assume that the phenomena being studied have similar characteristics irrespective of the variations in the data structure (Soomro, Memon & Shah, 2021:11).

5.3.1 Quantitative demographic information

The aim of questions 1 to 13 of the quantitative online survey was to establish the demographics and to describe the characteristics of the Soweto-based SMEs. The demographic characteristics of Soweto-based SMEs were obtained using several variables that included the age of the business, the age of the business owner, the job category of the business owner, the industry of the business, the status of the business, the number of

employees of the SME, the customer base of the SME and the SME's level of e-commerce adoption, among others.

Furthermore, the practice of understanding demographics reduces the risk of researchers that assume that phenomena of interest have similar characteristics, despite the variations in the data structure (Nagitta & Mkansi, 2020:121). Moreover, the demographics are presented first to provide an overview of the differences, variations and similarities among Soweto-based SMEs (Kusuma, Muafi & Pamungkas, 2020:970). Table 5.2 displays the demographic profile of the SMEs that responded to the qualitative questionnaire.

Table 5.2 Demographic profile of SME businesses

Characteristics of Business' Profiles	Frequency	Percent
How old is the business?		
0–1 year	18	6.7
2–3 years	87	32.6
4–5 years	94	35.2
6–10 years	52	19.5
11–15 years	10	3.7
16 years and older	6	2.2
Total		**100**
What is the age of the business owner?		
18–24 years old	4	1.5
25–34 years old	82	30.7
35–44 years old	100	37.5
45–54 years old	67	25.1
55–65 years old	14	5.2

Characteristics of Business' Profiles	Frequency	Percent
Total		**100**
How do you categorise your job level?		
Owner	103	38.6
Manager	138	51.7
Owner and Manager	26	9.7
Total		**100**
How do you categorise your job?		
Other	1	0.4
Management	116	43.4
Professional	25	9.4
Technical Specialist	14	5.2
Administrative	57	21.3
Sales and Marketing	36	13.5
Finance	18	6.7
Total		**100**
What industry is your business in?		
Other	4	1.5
Hospitality/restaurant	65	24.3
Retail/wholesale	55	20.6
Services	101	37.8
Property	11	4.1
Manufacturing	18	6.7
Construction	5	1.9

Characteristics of Business' Profiles	Frequency	Percent
Agriculture	3	1.1
Technology	5	1.9
Total		**100**
What is the status of your business?		
Registered with CIPRO - Formal	204	76.4
Unregistered – Informal	63	23.6
Total		**100**
Where do you operate your business?		
At home	50	18.7
Specific business premises	217	81.3
Total		**100**
How many people does the business employ?		
No employees	8	3.0
1-10 employees	159	59.6
11-20 employees	64	24.0
21-30 employees	26	9.7
31-40 employees	7	2.6
41 and above	3	1.1
Total		**100**
Who are your customers?		
Individuals	149	55.8
Other companies and businesses	20	7.5
Both	98	36.7

Characteristics of Business' Profiles	Frequency	Percent
Total		**100**
Where are your customers based?		
Only in Soweto	201	75.3
In Soweto and other provinces	59	22.1
In South Africa and globally	7	2.6
Total		**100**
What is the level of e-commerce adoption within the business?		
Nonadopters – No use of technology	4	1.5
Internet connection with emails, but no website	23	8.6
Basic company information available on the internet, but no customer interaction	40	15.0
It is possible to make requests online, send emails and fill in online forms	48	18.0
It is possible to buy and sell products and services online	76	28.5
It is possible to buy and sell products and services online, as well as online customer service and social media	59	22.1
An advanced e-commerce platform that also connects suppliers and customers to do online transactions.	17	6.4
Total		**100**
How long has the business made use of e-commerce?		
No e-commerce	8	3.0
In the last 12 months	39	14.6
Between 1-3 years	82	30.7
More than 3 years	138	51.7

Characteristics of Business' Profiles	Frequency	Percent
Total		**100**
What is e-commerce used for in the business?		
Logistic and distribution activities	93	34.8
Financial activities	117	43.8
Purchasing and procurement activities	134	50.2
Operational and Processing activities	144	53.9
Marketing activities	160	59.9
After sales services activities	57	21.3
Not applicable	4	1.5
Other	1	0.4
Total		**100**

The demographic characteristics of SMEs based in Soweto, including variables such as the business's age, owner's age, owner's job category, business industry, business status, SME's employee count, customer base and level of e-commerce adoption are outlined in Table 5.2.

5.3.2 Qualitative demographic information

For the qualitative data, a detailed description of the respondents grants the researcher scope to determine the generalisability of research findings and allows for comparisons to be made across similar studies (Renault *et al.,* 2021:1511). The qualitative study participants were business owners from a variety of industry sectors, namely, electronic engineering, cake baking, tavern and kiosk, online maternity classes, farming, graphic design, liquor outlets and car parts retailing.

5.4 THEMES IDENTIFIED IN THE STUDY

This section presents the main issues and arguments that the researcher discovered from the analysis of the quantitative and qualitative results. There were three main elements emanating from the quantitative data:

(1) Factors influencing e-commerce adoption and diffusion;
(2) The implementation and diffusion of e-commerce, which looked at the level of e-commerce adoption, the number of years of e-commerce usage and the uses of e-commerce in the business; and
(3) Barriers to the adoption of e-commerce.

From the qualitative data, six main themes emerged that provided detailed insights. Regarding factors that influence the adoption of e-commerce, the types of ICT resources available to the Soweto-based SME owners' disposal and how the impact of COVID-19 impacted the adoption of e-commerce. In addition, themes revealed the perceived usefulness of e-commerce, the e-commerce implementation processes and phases as well as the barriers to the adoption and diffusion of e-commerce. Figure 5.1 displays the main themes and subthemes derived from the qualitative results after analysing the data.

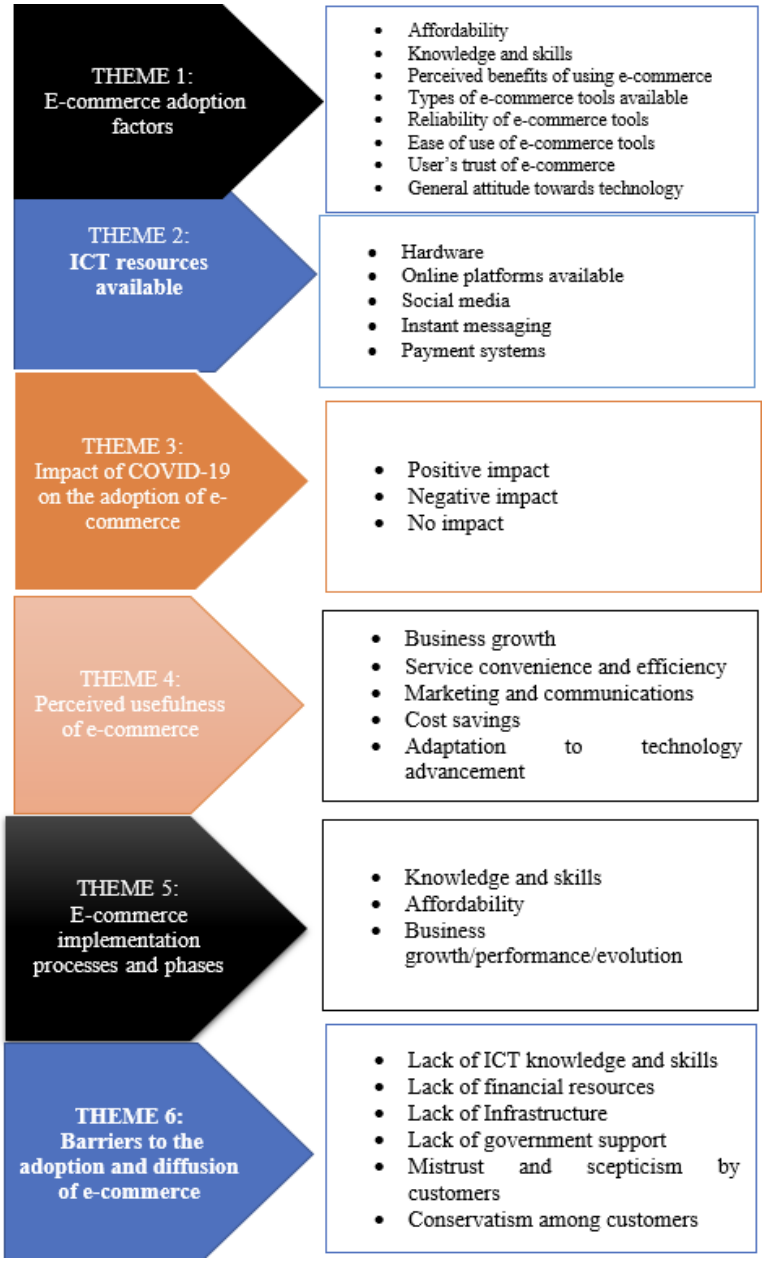

Figure 5.1 Qualitative themes and sub-themes

Source: Researcher's own compilation

The researcher will now proceed to discuss the integrated view of the quantitative and qualitative data by triangulating and synthesising the data with the literature review and the theoretical frameworks for the rest of the chapter. The topics that will be covered in discussing this integrated view are structured as follows:

- E-commerce adoption factors that apply to Soweto-based SMEs;
- How e-commerce is adopted and implemented by Soweto-based SMEs;

- Barriers to the adoption and diffusion of e-commerce amongst Soweto-based SMEs;
- Inferential statistical analysis; and
- Validity and credibility of the research.

5.5 E-COMMERCE ADOPTION FACTORS THAT APPLY TO SOWETO-BASED SMEs

To understand the overall scenario regarding the factors that influence the adoption and diffusion of e-commerce among the Soweto-based SMEs in this study, the researcher performed a descriptive quantitative analysis. For the quantitative strand, a questionnaire that had a total of 32 questions was administered. A five-point Likert scale ranging from (1) strongly agree to (5) strongly disagree (Fowler, 2014:93) was used in the survey for the respondents to provide answers that were pertinent to answering the research questions pertaining to the factors that influence the adoption and diffusion of e-commerce within their business operations.

The extent to which respondents agreed or disagreed with each of the statements/propositions was computed as an average (i.e., mean [M] with standard deviation [SD] out of 5). The total mean scores for each of the 19 main themes were also computed, as shown in Table 5.3 below. The mean scores were interpreted as follows:

- 0–1.5 means that respondents strongly disagreed;
- Between 1.50 and 2.50 means they disagreed;
- Between 2.50 and 3.50 means they are neutral or not sure;
- Between 3.50 and 4.50 means that they

This means that the higher the mean score for a given proposition, the more the respondents agreed with or held more positive perceptions concerning that proposition.
SD on the other hand, is a statistical measure that quantifies the amount of variation or dispersion in a set of data points. It provides information about how spread out the values in a data set are from the mean (average) of the data. In other words, it tells you how much individual data points deviate from the average. A low standard deviation indicates that the

data points tend to be close to the mean, suggesting that there is little variation or dispersion. On the other hand, a high standard deviation indicates that the data points are more spread out from the mean, indicating greater variability or dispersion in the data set.

The normality of distribution was tested using the Kolmogorov–Smirnov and Shapiro– Wilk tests (p-value), which showed that the data on the various independent and dependent variables deviated from a normal distribution ($p<0.05$). The tests are used to test the null hypothesis that a set of data comes from a normal distribution. In simple terms, when the results display $p<0.05$, it signifies a significant association between variables, while results with $p>0.05$ suggest an insignificant association between variables.

The mean, standard deviation, minimum and maximum scores of each construct are listed in Table 5.3. Based on the value of the mean score, the level of consideration of each variable in the adoption and diffusion of e-commerce is labelled as either high or low. The results show that the mean score of perceived benefits was (M=4.39, SD=0.45) and had the highest consideration in the adoption and diffusion of e-commerce among township SMEs. This implies that SMEs have a better understanding of the enormous benefits that come with the adoption of e-commerce in their businesses.

Perceived usefulness was the second highest consideration, with a mean score of (M=4.35, SD=0.47), which suggests that perceived usefulness has a substantial influence on the adoption and diffusion of e-commerce among township SMEs. Perceived ease of use and the intention to adopt e-commerce follow suit as considerable attributes to the adoption and diffusion of e-commerce among Soweto-based SMEs.

On the contrary, the mean value of government support (M=4.04, SD=0.69) has the lowest consideration in the adoption and diffusion of e-commerce among township SMEs, as shown. This may suggest that government support does not have a major bearing towards influencing the adoption and diffusion of e-commerce among Soweto-based SMEs. This is followed by a trial period with a low degree mean value of (M=4.09, SD=70), which could imply that most township SMEs are not predisposed to a trial period before considering the adoption and diffusion of e-commerce in their businesses.The extent to which respondents agreed or disagreed with each of the statements was computed as an average (i.e, mean with

standard deviation) out of 5. The total mean scores for each of the 19 main themes were also computed, as shown in Table 5.3.

Table 5.3 Descriptive statistics of the main factors

	N	Mean	Standard Deviation	95% CI for the Mean	
				Lower	Upper
Perceived Usefulness	267	4.35	0.47	4.30	4.40
Perceived Ease of Use	267	4.34	0.50	4.28	4.39
Perceived Benefits	267	4.39	0.45	4.33	4.44
Intention to Adopt E-commerce	267	4.34	0.52	4.27	4.40
Technology Adoption	267	4.25	0.62	4.17	4.32
Technology Affordability	267	4.28	0.57	4.21	4.35
Entrepreneurial Orientation	267	4.27	0.52	4.20	4.33
Organisational Readiness	267	4.28	0.51	4.22	4.34
Management Support	267	4.30	0.50	4.24	4.35
Customer Pressures	267	4.25	0.55	4.18	4.31
Competitor Pressures	267	4.26	0.53	4.19	4.32
Government Support	267	4.04	0.69	3.96	4.12
Impact of Pandemic	267	4.19	0.57	4.11	4.25
Relative Advantage	267	4.28	0.54	4.21	4.34
Compatibility	267	4.28	0.50	4.21	4.34
Trial Period	267	4.09	0.70	4.00	4.18
Complexity	267	4.30	0.49	4.24	4.36
Observability	267	4.26	0.52	4.20	4.32
Barriers	267	1.71	0.46	4.23	4.34

The rest of section 5.5 presents the detailed results for those factors with a significantly strong influence on the adoption and diffusion of e-commerce among Soweto-based SMEs based on the descriptive statistics of the main factors in Table 5.3.

5.5.1 Perceived usefulness as a factor for e-commerce adoption

In Chapter 3 of this thesis, perceived usefulness was explained as the degree to which a person believes that using e-commerce would enhance their job performance. Table 5.4 displays six (6) statements as quantitatively evaluated by respondents that relate to the examination of the level of influence of perceived usefulness of e-commerce as it relates to the adoption of technology. The responses to the six statements were ranked according to mean (M) and (SD).

The highest mean score obtained (M=4.43, SD=0.64) was regarding the enhancement of efficacy and productivity of using e-commerce compared to traditional business processes, which was followed by (M=4.39, SD=0.64), which looked at how e-commerce makes it easier to do one's job. Third and fourth place (M=4.36, SD=0.62) assessed how e-commerce will improve the effectiveness of the job and its usefulness in the business, while in fifth place, e-commerce enables one to accomplish tasks quicker (M=4.33, SD=0.60) and last, whether e-commerce will enhance one's job performance (M=4.25, SD=0.67). The sub-constructs of perceived usefulness were all rated highly (i.e., all at least M=4 out of 5). The high mean score is an indication that most of the Soweto-based SMEs' perceived usefulness of e-commerce has a strong influence on their decision to adopt e-commerce.

Table 5.4 Perceived usefulness

N=267	Mean	SD
I believe that the adoption of e-commerce enables me to accomplish tasks quicker	4.33	0.60
I believe that the adoption of e-commerce will enhance my job performance	4.25	0.67
I believe that the adoption of e-commerce will provide more efficacy and productivity as compared to traditional business processes	4.43	0.64
I believe that the adoption of e-commerce will improve my effectiveness on the job	4.36	0.62
I believe that the adoption of e-commerce makes it easier to do my job	4.39	0.64
I believe that the adoption of e-commerce is useful for my business	4.36	0.62
Perceived Usefulness (Overall)	4.35	0.47

The perceived usefulness of e-commerce was further analysed by the owners' and business profiles, as shown in the demographic comparative analysis (see Appendix 5). The comparative analysis shows that although SMEs whose customers were only from Soweto perceived the usefulness of e-commerce highly (M=4.30, SD=0.48), this perception was significantly stronger among SMEs with customers nationally (including Soweto) in South Africa and globally (M=4.57, SD=0.42), p=0.01. The results also show that SMEs that did not use e-commerce perceived its usefulness significantly less (M=3.39, SD=1.07) when compared to those who had been using e- commerce over the last 12 months (M=4.39, SD=0.44), between 1-3 years (M=4.36, SD=0.42), and more than 3 years (M=4.39, SD=0.40), $p<0.001$. There were, however, no significant differences on how the SMEs perceived usefulness of e-commerce by any of the other demographic and business profile factors ($p>0.05$).

Synthesis of the Soweto-based SME owners' perceptions of e-commerce from the qualitative interviews was categorised as theme four, which looked at the perceived usefulness of e-commerce holistically by including a few subcategories (Figure 5.2). Two sub-themes were grouped under perceived usefulness of e-commerce, namely,

(1) service convenience and efficiency; and
(2) marketing and communications.

According to Rahmi *et al.* (2018:6), perceived usefulness refers to the extent to which an individual thinks that utilising a specific system would improve their capacity to serve customers more efficiently and conveniently. In this context, it also considers the capability of e-commerce to execute various electronic functions, including marketing, communication and customer care management.

5.5.1.1 Service convenience and efficiency

The ability to service their clients more conveniently with added efficiency through reaching a wider customer audience facilitates business growth for Soweto-based SMEs. Upon closer investigation during the interviews, it appeared that business owners have experienced considerable usefulness in the adoption of e-commerce, which enabled them to advertise online and perform electronic transactions that were perceived as being more convenient and efficient than physical transactions. As per the Technology Acceptance Model (TAM), Igwe *et al.* (2020:47) explain that perceived usefulness evaluates the speed, effectiveness and efficiency of e-commerce compared to other technology alternatives, resulting in time saved for both the business and its customers. Some of the participants point out:

> *I think it's [e-commerce] useful because it saves time for me and for my customers as well…instead of a person coming to me and saying I need a cake …then there's a whole process of me sending all the cakes I've done before, instead they can just go to one of my social media pages and check out all the cakes, pricing and everything there - Participant (6)*

> *I looked at how fast the ordering process would be and whether it would be easier for my clients because my clients reach me through phone or emails or WhatsApp so if I were to do it through an online store, would it be faster for them to contact me compared to the other platforms - Participant (6)*

I find it so useful considering the fact that it's less time consuming. Let's say for example compared to having to maybe travel to the clinic or around and spend time there, I can just use my social media handle to post whatever advert or poster that I have and I just keep on checking those posters for the client, so I find it very useful - Participant (8).

With regards to the time you know you are able to do other things you know you're not spending your time on the road driving to wherever that you need…you can be able to be in a meeting when you're done in a meeting you don't need to drive and you just go wherever you want to go and there's no time wasting - Participant (7)

Everything is about convenience, you don't actually need to drive off from wherever you are for you to come through to me. Look at this platform as we speaking righ now, you didn't have to waste your petrol to come where we are to discuss this. So we can have a chat to discuss whatever is remotely with clients. So it had quite a positive impact - Participant (4)

Participants 6 and 8 above acknowledge that the convenience and efficiency of technology is very beneficial, since technology allows for flexibility, time and cost savings through remote and online interactions as opposed to in-person interactive site visits. Pricing, samples and products are remotely available, which provides additional value for customers.

Chandra and Kumar (2018:244) explain that consumer readiness is a combination of the willingness of consumers to adopt new technologies and the readiness of support technology for customers. Despite prevalent socio-economic challenges such as high illiteracy rates, limited access to quality education and high levels of unemployment in townships, it is essential to assess whether customers are prepared and capable of engaging with e-commerce (Dirgantari *et al.,* 2020:263; Habel *et al.,* 2020:25; Oluwayemisi, 2019:10).

Throughout the interviews, participants also reflected on and emphasised the perceived increase in efficiency resulting from the adoption of e-commerce. Moreover, participant 3

highlighted that customers who utilise technology are content with interacting with machines and robots, and do not need to specifically interact with the SME owner.

> *It has been very beneficial Ie remember that we are dealing with technology, so most people prefer working with people they can't see. As long as you are efficient, customers just want to place an order and you deliver, they don't care who is on the other end, you could even be a robot…I wanted my business to be very competitive and efficient, so imagin' if I'm in Cape Town and you need business cards then you order and pay and then in three days I notify you that the cards are ready and then we send them to you. It really improved the aspect of efficency - Participant (3)*

According to the participants, e-commerce simplifies certain business logistics and saves time. Furthermore, e-commerce can offer a wide range of transformative benefits such as business process re-engineering and value chain integration, supporting initiatives such as just-in-time inventory, continuous replenishment and quick delivery response (Babenko *et al.,* 2019:346; Dahbi & Benmoussa, 2019:811; Hayati & Andrawina 2019:1).

5.5.1.2 Marketing and communication

Participants identified that remote and instant access to the business and its products provide continuous marketing services to a wider audience. Through improved interactive communication channels, e-commerce can help meet diverse needs and expectations of customers, thereby assisting Soweto-based SMEs in meeting increasing demands of the market (Abed, 2020:4; Dirgantari *et al.,* 2020:263), while allowing owners more time to dedicate to other business functions.

> *You actually reach more… so if I send it on WhatsApp and I send it on Facebook I get a lot there rather than me trying to go meet people face to face - Participant (7)*

> *"I think it was the marketing, being consistent every day in terms of marketing, promoting my business every day - Participant (6)*

It's even efficient looking at the rate, especially as you see nowadays most people are on social media. So if everyone would just be on social media, WhatsApp and Facebook, so it's very efficient. I think it's really quicker to advertise online - Participant (8).

I can say it (business website) is interactive because at the end of the day the moment you punch or whatever it is then I can be able to respond to you - Participant (4).

These findings align with the quantitative data where perceived usefulness achieved a high mean score as an indication that Soweto-based SMEs' perceived usefulness of e-commerce has a strong influence on their decision to adopt e-commerce. The results of the interviews conducted in this study align with the discussion on the TAM theoretical model presented in Chapters 2 and 3. The perceived usefulness and potential benefits of e-commerce have made it one of the fastest-growing domains for SMEs globally, as highlighted by several scholars (Iyamu, 2020:2; Johnson & Iyamu,2019:1; Mendieta, 2018:19; Ocloo *et al.,* 2020:191; Xuhua *et al.,* 2019:81). Similarly, Soweto-based SMEs have demonstrated their adoption of e-commerce due to its perceived usefulness in improving operational efficiency and innovation, enhancing customer or supplier relationships, reducing costs, increasing market reach and improving business performance, among other benefits.

Moreover, this study's findings indicate that the adoption of technology advancements is crucial for Soweto-based SMEs to obtain customer feedback through automated e-commerce capabilities. These findings align with the conclusions drawn by Triandini *et al.* (2020:112) and Zhelyazkova (2020:263) regarding the ability of e-commerce adoption to enable SMEs to pivot quickly in response to external business environment changes and improve business efficiency.

The quantitative and qualitative study results align with previous research conducted by Kimana (2020:27), Hoang, Nguyen and Nguyen (2022:50) as well as Yusoff, Zainol, Hafifi Ridzuan, Ismail and Afthanorhan (2021:1839), which indicate that a higher perceived usefulness of e-commerce applications positively impacts business performance. The

participants in this study perceived e-commerce as significantly supporting business operations and enhancing the efficiency of business processes. This finding is consistent with Salem and Nor (2020:19) who emphasise that e-commerce is instrumental in accomplishing tasks that are not inherent in traditional SME operations. The perceived usefulness of e-commerce is viewed favourably, in accordance with TAM, compared to other traditional technological alternatives (Igwe, *et al.,* 2020:47).

Finding 1: E-commerce provides SMEs instant access to the market and instant interactions online with potential customers that may otherwise not be reachable using other traditional methods.

5.5.2 Perceived ease of use as a factor for e-commerce adoption

In chapter 3 of this thesis, perceived ease of use assessed the degree to which e-commerce is user-friendly and would be free of physical and mental effort. Table 5.5 shows six (6) assertions that respondents had to consider and rate as they relate to ease of use of e-commerce. This analysis was meant to examine the level of influence of perceived ease of use of e-commerce as it relates to its adoption. The responses to the six statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.42, SD=0.62) was regarding the ease of becoming skilful at using e-commerce, which was followed by (M=4.38, SD=0.65), which looked at the flexibility of e-commerce to use for interaction. The third and fourth place (M=4.34, SD=0.66) were about e-commerce being clear, understandable and easy to use, while in fifth place, looked at how easy it is to use e-commerce to do what one wants it to do was ranked (M=4.30, SD=0.62) and, last, whether learning how to use e-commerce in the business is easy (M=4.27, SD=0.60). The sub-constructs of perceived ease of use were all rated highly (i.e., all at least M=4 out of 5). The high mean score is an indication that most of the Soweto-based SMEs' perceived ease of use of e-commerce has a strong influence on their decision to adopt e-commerce.

Table 5.5 Perceived ease of use

N=267	Mean	SD
I believe that learning to use e-commerce in the business is easy for me.	4.27	0.60
I believe that it is easy to use e-commerce to do what I want it to do.	4.30	0.62
My interaction with e-commerce is clear and understandable.	4.34	0.66
I believe that e-commerce is flexible to use for interaction.	4.38	0.65
I believe it is easy for me to become skilful at using e-commerce.	4.42	0.62
I believe that e-commerce is easy to use.	4.34	0.66
Perceived Ease of Use (Overall)	**4.34**	**0.50**

Considering the role of perceived ease of use based on the owners' and business profiles was further analysed, as shown in Appendix 5. The comparative analysis shows that SMEs that are formally registered with CIPRO perceived ease of use of e-commerce to be significantly higher (M=4.39, SD=0.44) as compared to unregistered SMEs that are trading informally with a rating of (M=4.20, SD=0.65), p=0.01. The results further indicate that SMEs that have 41 or more employees perceived the ease of use of e-commerce to be lower (M=3.30, SD=0.66) than SMEs employing fewer employees (p=0.01). As anticipated, the results show that SMEs that did not use e-commerce perceived ease of use of e-commerce to be significantly less (M=3.89, SD=0.75) than those using e-commerce (p=0.03). There were, however, no significant differences in how the SMEs perceived ease of use of ecommerce by any of the other demographic and business profile factors (p>0.05).

The extent to which a given technology was perceived to be easy to use by both the SME owners and the customers was an important factor as well. Based on TAM, perceived ease of use refers to the 'user-friendliness' of e-commerce, where the extent to which e-commerce is perceived as easy to use also influences the behavioural intention towards its usage (Maduku *et al.,* 2016:713). Participants expressed the importance of user-friendliness of e-commerce to advance its adoption by both the business owner and customers during the interviews. Once it becomes easy to use, the benefits of using e-commerce become more evident:

I had to learn but the e-commerce is generally quite user friendly because I am operating it from the back-end because orders are made in the front-end. So I noticed that it's user-friendly. If anything I would say it's easy because once you put in an order it comes like an invoice that is populated; you see what the client wants and when they need the item – Participant (3)

It's basically just a QR code that one can scan and get the amount. You can customise the QR code with the amount a client has to pay, and then when they scan it, they can automatically make payment through that – Participant (6)

When SME owners start using new technology, its perceived ease of use plays a vital role in deciding whether to adopt e-commerce or not. Additionally, enjoyment is closely linked to whether SMEs deem their usage of e-commerce as a pleasant and exciting experience (Chandra & Kumar, 2018:239). In contrast, if the technology is perceived to be difficult to use, SME owners will feel discouraged and not have the confidence to try and use it, as explained by Participant 4:

It's not user friendly and secondly, I feel that I do know how to get to the product market. It's basically your friends but the business side of it I am not really clued up on social media. I do not know how to basically engage the clientele on social media except for the ones that I have as friends – Participant (4)

The findings from both the quantitative and qualitative data support previous research by Elimelech, Ferrante, Josman, Meyer, Lunardini, Gómez-Raja, Galán, Cáceres, Sciama, Gros and Vurro (2022:102080), Lee and Coughlin (2015:751), as well as Puiu, Demyen, Tănase, Vărzaru and Bocean (2022:14) that indicates that SMEs are more likely to adopt e-commerce when they perceive it as effortless and user-friendly. Moreover, Igwe *et al.* (2020:47) suggest that the perceived ease of use of e-commerce is an indicator of the monetary investment,

switching barriers associated with technology and time required for employee training, including maintenance costs of the e-commerce platform.

Moreover, the quantitative findings show that respondents' perceived ease of use also impacts the behavioural intention towards its usage. This is consistent with Effendi *et al.* (2020:917) and Salem and Nor (2020:19), who assert that mental effortlessness provided by e-commerce positively affects attitudes and attracts more adoption behaviour by SMEs. Based on TAM, less effort going into using e-commerce results in a greater inclination to use e-commerce by SMEs because it is easier and more service-oriented (Vahdat *et al.,* 2020:2).

Finding 2: Ease of use of e-commerce is significantly important in its adoption. However, most Soweto-based SMEs had a positive attitude and were willing to invest all the time needed to learn how to use e-commerce.

5.5.3 Perceived benefits as a factor for e-commerce adoption

Chapter 3 of this thesis describes the anticipated benefits that SMEs can derive from the usage of e-commerce. Table 5.6 exhibits six (6) declarations that respondents had to evaluate and rate as they relate to the perceived benefits of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = stronglyagree) was used. This analysis was meant to examine the level of influence that perceived benefits have on the adoption of e-commerce. The responses to the six statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.46, SD=0.59) was regarding the influence of e-commerce in helping SMEs expand business opportunities and increase sales and profits, followed by (M=4.43, SD=0.57), which looked at how e-commerce helps SMEs access more information. The third highest (M=4.42, SD=0.57) indicated that e- commerce helps SMEs communicate and provide improved customer care to clients. The fourth highest (M=4.38, SD=0.59) shows that e-commerce helps SMEs improve business processes. The fifth place looked at how e-commerce helps SMEs to save costs and time (M=4.33, SD=0.57), and lastly, e-commerce helps SMEs reach more customers (M=4.28, SD=0.60). The subconstructs of the perceived benefits were all rated highly (i.e., all at least M=4 out of 5).

The high mean score suggests that, agreeably, most of the Soweto-based SMEs' perceived benefits of e-commerce have a strong influence on their decision to adopt e-commerce.

Table 5.6 Perceived benefits

N=267	Mean	SD
I believe that the adoption of e-commerce helps SMEs save costs and time.	4.33	0.57
I believe that the adoption of e-commerce helps SMEs reach more customers.	4.28	0.60
I believe that the adoption of e-commerce helps SMEs access more information.	4.43	0.57
I believe that the adoption of e-commerce helps SMEs to improve business processes.	4.38	0.59
I believe that the adoption of e-commerce helps SMEs expand business opportunities, increase sales and profits.	4.46	0.59
I believe that the adoption of e-commerce helps SMEs to communicate and provide improved customer care to clients.	4.42	0.57
Perceived Benefits (Overall)	**4.39**	**0.45**

The perceived benefits of e-commerce were further analysed by the owners' and business profiles. The focus of the analysis is on highlighting any significant differences observed from the results. The comparative analysis reveals that SMEs that are formally registered with CIPRO perceived benefits of e-commerce significantly higher (M=4.43; SD=0.41) than unregistered SMEs that are trading informally with a rating of (M=4.25, SD=0.54), p=0.01. There were no substantial differences on how the SMEs perceived benefits of ecommerce by any of the other demographic and business profile factors (p>0.05).

Based on the interview results, the researcher deduced that the main sub-themes emanating from the participants regarding the perceived benefits of e-commerce mainly referenced business growth and cost savings from theme four, which looked at the perceived usefulness of e-commerce holistically by including a few sub-categories (Figure 5.2).

5.5.3.1 Business growth

Most SMEs prioritise business growth as a key objective. By adopting e-commerce, SMEs can benefit from increased market accessibility, improved productivity through automation, heightened creativity and innovation, wider global reach, increased market penetration, and greater revenue as noted by several authors (Helkkula *et al.,* 2018:284; Iyamu, 2020:2; Tseng

et al., 2019:60; Fitriasari, 2020:57). Based on the technology acceptance model (TAM), SMEs are more likely to adopt e-commerce if they perceive a higher level of benefits (Iyamu, 2020:2; Schmidthuber *et al.,* 2020:8). The interviews revealed that the prevailing opinion was that e-commerce enabled business growth by providing access to a wider geographic market. Participants explain:

> *'I'm always pleased to get business from people in many different parts of the country, like people as far as Cape Town and Durban buy from me, that trust of someone buying something from you and hoping that you will deliver, and courier things to them… The biggest benefit is the ability to reach an audience out of your normal markets that is the biggest one really. - Participant (1)*

> *'I do have clients out of Gauteng as well, but it depends on how far they are…Yes, am reaching more people.' - Participant (6)*

However, some of the business owners pointed out that adopting e-commerce had not necessarily led to higher business revenue. Participant 6 further elaborates:

> *It does give me some money, but there isn't a huge increase in terms of the money I have been making then and the money I am making now in terms of e-commerce, it's basically still the same. - Participant (6)*

Many of the other participants believe that the adoption of e-commerce has contributed to their business growth. Related to reaching a wider geographic market was growing a larger customer base using e-commerce, participants denote that most of their customers were found on online platforms such as social media and that e-commerce made it possible to save time in reaching multitudes of various people all at the same time:

> *I think that's where I find most customers, I don't have a particular reason why I'm only using Facebook over the others. Maybe it's because I was*

more exposed to Facebook and that's where I have the most "friends" and those that are on my Facebook are also on Instagram. - Participant (3)

It is actually useful, just remember when you doing events not only focusing on your area you going everywhere and anywhere, so when you going everywhere and anywhere, there's no need for me to drive anymore. There's no need for me to go to people and meet with them face to face. I can use e-commerce, I can use video, I can use Zoom you know. - Participant (7)

Most of the interviewees believe that expanding their business to new geographical markets through e-commerce has a significant impact on their decision to adopt this technology. This is because e-commerce enables them to reach a wider customer base and increase their business potential. However, not all Soweto-based SMEs experience the same benefits from e-commerce, as some participants, including Participant 6, reported no significant increase in revenue generation. Therefore, the benefits of e-commerce are not equally distributed among all Soweto-based SMEs. Nonetheless, those who perceive e-commerce as more useful tend to believe that it positively affects their business performance (Jan *et al.,* 2019:204).

Finding 3: Most Soweto-based SMEs believe that the adoption of e-commerce has helped to expand business opportunities into new geographical markets, increase sales and profits.

5.5.3.2 Cost savings

Consistent with the fact that the SME owners considered costs as one of the key e-commerce adoption factors during the interviews, participants cited cost savings as one of the elements they had found beneficial about e-commerce. The benefits for SMEs that adopt e-commerce included a reduction in input costs such as a reduction in administration and communication costs, which can advance an enterprise's competitive advantage (Xuhua *et al.,* 2019:81).

Examples of how e-commerce substantially reduced business costs were through lower advertising rates and the enablement of data-free access by some platforms, as explained in the following manner by participants:

> *I'm saying WhatsApp does not use a lot of data and also Facebook has I think three options. If you don't have data you can use words only then people can see pictures after...maybe my data has been depleted right now and I have no time to buy and load then I can still send and they can see on the other side where there are words and there's one with no pictures. - Participant (7)*

> *90% of my transactions happen on the e-commerce. I don't see the clients personally. Most of the time my interactions with them are conducted remotely. – Participant (2)*

> *Everything is about convenience. You don't actually need to drive off from wherever you are for you to come through to me. You didn't have to waste your petrol to come here to have this discussion with me. Things can be done remotely with clients. So it had quite a positive impact. – Participant (4)*

> *There's no need for me to drive anymore; there's no need for me to go to people and meet with them face to face. I can use e-commerce, I can use video, I can use Zoom you know. – Participant (7)*

The statements from the interviews corroborate those of Costa and Castro (2021:3044), Nasution, Rafiki, Lubis and Rossanty (2021:271) as well as Wanzu, Turyakira and Katumba (2019:48) who report that participants in their studies were relatively motivated by the potential and realised benefits offered by e-commerce, such as increased efficiencies in business operations, reduction of costs, increased sales and profit, enhanced market reach, global presence and improved communication with partners and customers. In addition, the findings show that from the quantitative data, respondents' perception of the benefits that can

be derived from the adoption of e-commerce suggests that they believe that e-commerce significantly increases their competitive advantage in numerous facets of their business operations.

Furthermore, the above statements from the quantitative and qualitative phases correspond with the findings of Dahdi and Benmoussa (2019:812), Ezzaouia *et al.* (2020:3) and Susanty *et al.* (2020:386), who affirm that the adoption of e-commerce can lead to various benefits and is a very strong prerequisite for the adoption of e-commerce among SMEs. In accordance with TAM, the higher the perceived benefits, the greater the influence of adopting e-commerce among SMEs (Iyamu, 2020:2; Schmidthuber *et al.,* 2020:8). This outcome is consistent with existing studies confirming the significance of the perceived benefits of e-commerce and how they strongly influence the adoption and diffusion of e-commerce among Soweto-based SMEs (Ait, 2020:3; Chege & Wang, 2020:257; Iyamu, 2020:2; Schmidthuber *et al.,* 2020:8). The assessment of the perceived benefits of the adoption of e-commerce among Soweto-based SMEs has led to finding 4.

Finding 4: The perceived benefits is the highest consideration and influencer in the adoption and diffusion of e-commerce amongst Soweto-based SMEs.

5.5.4 Intention to adopt e-commerce by Soweto-based SMEs

The intention to adopt e-commerce tries to determine the beliefs, perceptions and attitudes of SMEs towards an inclination to adopt e-commerce. Table 5.7 presents four (4) affirmations that respondents had to consider and appraise as they relate to the intention to adopt e-commerce with a 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree). This analysis was meant to examine the level of influence that the beliefs, perceptions and attitudes of SMEs have on the adoption of e-commerce. The responses to the four statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.37, SD=0.62) measured the recommendation for others to use e-commerce, which was followed by (M=4.36, SD=0.61) it is worthwhile to use

e-commerce. Third place (M=4.32, SD=0.64) e-commerce will largely benefit the business and last, the intention to adopt e-commerce in the future at (M=4.25, SD=0.65). The sub-constructs of the intention to adopt e-commerce were all rated highly (i.e., all at least M=4 out of 5). The high mean score suggests that most of the Soweto-based SMEs' beliefs, perceptions and attitudes towards the intention to adopt e-commerce have a strong influence on their decision to adopt e-commerce.

Table 5.7 Intention to adopt e-commerce.

N=267	Mean	SD
I believe it is worthwhile to use e-commerce	4.36	0.61
I believe that my business intends to adopt e-commerce in the future	4.25	0.65
I believe that the adoption of e-commerce will largely benefit my Business	4.32	0.64
I would recommend others to use e-commerce	4.37	0.62
Intention to Adopt E-commerce (Overall)	**4.34**	**0.52**

The owners' and business' profiles were further analysed, as they relate to the intention to adopt e-commerce, as shown in Appendix 5. The comparative analysis shows that SMEs that are formally registered with CIPRO had a higher inclination to adopt e-commerce with a mean score of 4.39 (SD=0.47) compared to SMEs trading informally with a rating of (M=4.19, SD=0.63), p=0.01. In addition, SMEs with a customer base in Soweto and other provinces rated the intention to adopt e-commerce higher, with a mean score of 4.51 (SD=0.44), than SMEs with customers who are only based in Soweto, with a mean score of 4.29 (SD=0.52), p=0.02. There were no significant differences in how the SMEs rated their intention to adopt e-commerce by any of the other demographic and business profile factors (p>0.05).

The DOI model proposes that the initial stage of the technology adoption process involves informing the decision maker about the technology, followed by persuasion based on the perceived benefits and value it offers. This persuasion then shapes the attitude of the SME owner towards the technology (Rogers, 2003:163). In the interviews, the participants shared how they first learned about e-commerce and were convinced of its value by observing its benefits. Factors that influenced their persuasion included the compatibility of the technology with existing systems, its complexity, its relative advantage over current practices

and the opportunity to trial it to see its benefits, as reported by some participants in the following manner:

> *With the e-commerce, I didn't know about it and then a friend of mine (in the same line of business) said she had been doing orders online and that it's much easier for her. – Participant (6)*

> *I am also looking at having my own individual website. – Participant (8)*

> *Over the years, I have learnt that there is more to a website than just putting your products or just selling. – Participant (1)*

> Despite the lack of understanding precisely how e-commerce works, persuasion and the attitude towards the perceived features and benefits of e-commerce appear to be favourable for participant 4:

> *Actually, I am planning on, it's just the lack of understanding on how exactly it works, but the intention is to migrate to that (e-commerce). – Participant (4)*

The findings from both the interviews and quantitative data align with previous research conducted by Gurure and Takavarasha (2020:3471) as well as Setiyani and Rostiani (2022:1129). These studies discovered that perceived usefulness, relative advantage, compatibility and complexity, which are technological indicators of the TAM and DOI frameworks, all play a significant role in the intention to adopt e-commerce. Furthermore, DOI suggests that the adoption of e-commerce by SMEs should be considered a multistage process rather than a simple binary decision of "use" or "not use" (Rahayu & Day, 2017:29; Reardon *et al.,* 2021:6; Susanty *et al.,* 2020:384). Moreover, Rogers (2003:168) argues that the diffusion process concentrates on the stages that an individual undergoes, starting from acquiring initial knowledge of an innovation to developing an attitude towards it and ultimately deciding whether to adopt or reject the innovation. Similarly, the TOE framework's organisational factors, such as the availability of resources, business size, organisational readiness and management support, play a crucial role in predicting the intention to adopt e-

commerce. On the other hand, the TOE framework's environmental factors, including government support, pandemic outbreaks such as COVID-19 and competitor pressures, significantly affect the intention to adopt e-commerce. Additionally, the study indicates that respondents' intention to use e-commerce is influenced by their perception of its benefits, as revealed by the quantitative data. However, lack of awareness and understanding of e-commerce's potential value can hinder the intention to adopt e-commerce (Verdugo, 2019:303).

Finding 5: Most of the Soweto-based SMEs had the intention to adopt e-commerce.

5.5.5 Technology adoption that leads to usage of e-commerce

The technology adoption theme assessed whether SMEs have adopted and made use of e-commerce within their operational business activities. Table 5.8 displays six (6) statements that respondents had to evaluate and appraise as they relate to SMEs' usage of e-commerce within their business operations. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was meant to examine whether SMEs have adopted and made use of e-commerce within their operational business activities. The responses to the six statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.38, SD=0.66) measured the usage of e-commerce to market business products and services, which was followed by (M=4.26, SD=0.71) the frequent usage of e-commerce to interact with customers. Third place (M=4.25, SD=0.82) is the measurement of e-commerce key performance indicators by the business, and fourth place (M=4.22, SD=0.77) is the business with specific e-commerce guidelines. In fifth place, the business monitors e-commerce usage (M=4.20, SD=0.75) and lastly, the business has an e-commerce policy (M=4.16, SD=0.76). The sub-constructs of e-commerce adoption were all rated highly (i.e, all at least M=4 out of 5). The high mean score suggests that most of the Soweto-based SMEs that have adopted e-commerce make use of e-commerce within their operational business activities.

Table 5.8 Technology adoption

N=267	Mean	SD
My business uses e-commerce to market our products and Services	4.38	0.66
My business has an e-commerce policy	4.16	0.76
My business has specific e-commerce guidelines	4.22	0.77
My business monitors e-commerce usage	4.20	0.75
My business measures e-commerce Key Performance Indicators	4.25	0.82
My business frequently uses e-commerce to interact with Customers	4.26	0.71
Technology Adoption (Overall)	**4.25**	**0.62**

A comparative analysis on e-commerce adoption based on the owners' and business profiles as displayed in Appendix 5 indicates that SMEs managed in the capacity of both owner and manager, rated technology adoption in their businesses significantly lower with a mean score of 3.89 (SD=0.92) compared to SMEs that were managed in other capacities, $p<0.001$. SMEs that are formally registered with CIPRO rated technology adoption in their businesses significantly higher, with a mean score of 4.30 (SD=0.48), compared to unregistered SMEs that are trading informally, with a rating of (M=4.05, SD=0.89), $p<0.001$.

In addition, SMEs that operated from specific business premises rated technology adoption in their businesses considerably higher, with a mean score of 4.31 (SD=0.55), compared to SMEs operating from home, with a significantly lower mean score of 3.99 (SD=0.79), $p<0.001$. As would be expected, the results also show that SMEs that did not use e-commerce rated technology adoption significantly less (M=3.72; SD=1.38) than those using e-commerce ($p<0.001$). There were, however, no significant differences on how the SMEs perceived ease of use of e-commerce by any of the other demographic and business profile factors ($p>0.05$).

During the interviews, the participants detailed the types of processes and activities they had undertaken or were undertaking to implement e-commerce in their operational business activities. The predominant pattern of e-commerce adoption was that although some had

started off with fully-fledged e-commerce websites and an array of social media platforms, most were adopting the technologies in phases. Adopting e-commerce in phases further allows SME owners the opportunity to test the viability of the technologies and to manage their budget spent on e-commerce. In addition, they needed to implement an approach that corresponded to business growth or evolution. The abovementioned statement is in line with DOI theory, which asserts that a user's decision regarding an innovation is not an immediate undertaking but a process comprising a series of actions that occurs over time (Pantano & Vannucci, 2019:298).

The Soweto-based SME owners indicated during the interviews that in addition to the ICT skills required and the cost implications of adopting e-commerce, a phased approach of implementing e-commerce further provides the business with room to contextualise its achievements and assess whether any additional requirements are needed through a step-by-step process. In accordance with DOI, the innovation-decision processes that can be used to classify the various stages of adoption are assessed by first gathering more information about e-commerce and then assessing its usage within business operations (Burgess *et al.,* 2017:3). In addition, trialability and observability denote opportunities to enable SMEs to test the system, observe and witness the potential benefits and risks from using the technology which can consequently influence the rate of adoption (Mamun, 2018:115; Selase *et al.,* 2019:5). Participant 8 explains further:

> *I'm thinking maybe having to take it as step by step…I mean really sure let's see maybe I want to do it at once. I just believe in alright let's say taking it step by step so that I know that from this step I'm moving on to the next step, which is why from here, this is where I go until I see at the end result. - Participant (8).*

Based on the interviews conducted, it was evident that for newly established SMEs facing financial constraints and resource limitations, it is imperative to devise innovative strategies to gradually integrate e-commerce into their business operations. Participant 7 explains:

Remember also this is a new business, so yes you know you have to invest in your business but how are you investing when there is nothing at all it's starting. - Participant (7)

Concurrently, several participants indicated that ultimately, they would want to adopt a fully-fledged e-commerce platform because it would be easier to have a digitised process flow from start to end. The participants expressed the following:

The end goal is to get something fully fledged. - Participant (1).

Because I have already started, I am thinking of a fully-fledged one because it will be easier, then just to go in all at once cause I've already started so I just want to go in there and so everything at once. – Participant (6)

In line with the DOI model, the adoption and implementation rate of e-commerce, as well as the features of individual decision-making processes, have a significant impact on e-commerce diffusion by interview participants (Mamun, 2017:115; Ndayizigamiye *et al.,* 2019:264). Similarly, the diverse perspectives, encounters and viewpoints of Soweto-based SMEs play a pertinent role in the diffusion process of e-commerce within their business operations (Matyila, 2019:66). The assessment of e-commerce adoption and implementation among Soweto-based SMEs has led to two findings, which are Findings 6 and 7 below.

Finding 6: Individual decision-making processes, diverse perspectives, experiences and viewpoints of Soweto-based SMEs determine the types of e-commerce diffusion processes to be implemented.

Finding 7: Most of the Soweto-based SMEs ultimately want a fully-fledged e-commerce platform but prefer to implement a step-by-step phased approach

5.5.6 Technology affordability as a factor for e-commerce adoption

Technology affordability looks at whether SMEs can afford the costs related to the adoption of e-commerce. Table 5.9 shows five (5) assertions that respondents had to consider and rate as they relate to technology affordability and its impact on the adoption of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was meant to examine whether SMEs can afford the costs related to the adoption of e-commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.39, SD=0.64) looked at the ability of the businesses to afford the cost of data/Wi-Fi for the adoption of e-commerce, which was followed by (M=4.31, SD=0.70) affording the cost of learning how to use e-commerce for the adoption of e-commerce. Third place (M=4.30, SD=0.69) is the measurement of businesses' ability to afford the cost of social networks for the adoption of e-commerce and fourth place (M=4.26, SD=0.68) is the business that can have IT-related expertise for the adoption of e-commerce. Finally, the business can afford the cost of setting up a website for the adoption of e-commerce (M=4.15, SD=0.80). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score implies that most of the Soweto-based SMEs can afford the costs related to the adoption of e-commerce.

Table 5.9 Technology affordability

N=267	Mean	SD
I believe my business can afford the cost of data/Wi-Fi for the adoption of e-commerce.	4.39	0.64
I believe my business can afford the cost of setting up a website for the adoption of e-commerce.	4.15	0.80
I believe my business can afford the cost of learning how to use e-commerce for the adoption of e-commerce.	4.31	0.70
I believe my business can have IT-related expertise for the adoption of e-commerce.	4.26	0.68
I believe my business can afford the cost of social networks for the adoption of e-commerce.	4.30	0.69
Technology Affordability (Overall)	**4.280.57**	

The outcome of technology affordability in relation to the adoption and diffusion of e-commerce based on the owners' and business profiles is shown in Appendix 5. SMEs that are formally registered with CIPRO rated technology affordability higher with a mean score of 4.32 (SD=0.51) compared to unregistered SMEs that are trading informally with a rating of (M=4.14, SD=0.73), $p<0.03$. In addition, the results also show that SMEs that did not use e-commerce rated technology affordability significantly less (M=3.53; SD=0.95) than those using e-commerce ($p<0.001$). There were, however, no significant differences on how the SMEs rated the influence of technology affordability on the adoption and diffusion of e-commerce by any of the other demographic and business profile factors ($p>0.05$).

Affordability represents the availability of financial resources and ICT resources within enterprises to adopt e-commerce and acquire the necessary data needed for the functionality of e-commerce. Affordability is associated with the internal resources available for the adoption of e-commerce within the organisational context of the TOE theoretical framework (Chau *et al.,* 2020:6). In addition, the organisational context looks at how the internal resources of SMEs influence decisions concerning the adoption of e-commerce (Eze *et al.,* 2019:573). The results from the interviews conducted indicated that the affordability of implementing e-commerce and the costs of data were two of the major factors that the Soweto-based SME owners considered when deciding whether to adopt e-commerce. Participants highlighted the differences between

the cost of developing or purchasing their own e-commerce platform versus using social media platforms at much lower costs:

> *The finances were a contributing factor because I had to cough out money from my own pocket to set up the e-commerce…I remember I paid about R9000.00. - Participant (3)*

> *So that's when I went on Shopify because she recommended it, but it needed a bit of a cost. So then, I went onto Facebook because it offers the option of having an online shop so I have been doing it through Facebook. – Participant (6)*

> *I considered having my online shop but to get a developer to do that was a bit pricey. So I have used social media options versus the option of having a fully-fledged site of my own. – Participant (1)*

Participants also outlined that the fundamental consideration of technology acquisition was the cost of data and doing a price comparative analysis:

> *Number one…it is the prices, the different prices and Vodacom system was the most expensive one with regards to data…You need to check all those things…So data (costs) was the most important factor. - Participant (7)*

> *Network costs have a major influence. – Participant (2)*

Participant 8 alluded to data costs being the most important factor influencing their decision to adopt e-commerce. Equally important is the presence of a budget to oversee expenditures, ensuring they cover the costs of acquiring data and are managed wisely:

> *With regards to budget, you have to start thinking of let's say for example, what are you going to use for your classes? Let's say for example, you probably need data to advertise, maybe you go on*

> *Facebook or whatever social media platform. You need obviously some data so you start with the budget…I wrote down my budget then I came up with my total of what I needed and how I was going to maintain this budget. So you have to make sure you don't actually overspend when it comes to the budget because you also need to make a bit of profit. – Participant (8)*

The participants therefore agree that the affordability of e-commerce and the cost of data have a significant influence on the decision of whether to adopt e-commerce with their business operations. However, some participants felt that although data costs are a significant contributing factor to the adoption of e-commerce, they mitigate the negative impact by budgeting ahead to make provisions for data expenses. The researcher further noted that costs of employing staff and training staff to use e-commerce did not have a direct impact on the SMEs interviewed. This could be because in most cases, the technology is used and operated only by the SME owner.

> *When it comes to data, it's something that we have incorporated in our daily lives; we are used to it now. It may be expensive, but we are used to it now and I just budget and get onto data plans. – Participant (1)*

The researcher observed that the participants were comfortable talking about the subject of affordability and costs and were also able to engage in a conversation about doing price comparisons and finding ways to mitigate high data costs. This confirmed that they had taken the time to think about the internal resources at their disposal and the cost implications for the adoption and usage of e-commerce within their business operations (Zoroja *et al.*, 2020:323).

In contrast to prior research by Gugure and Takavarasha (2020:3471) and Kimana (2020:25), which suggest that most SMEs cannot afford the costs associated with the usage of e-commerce, leading to lower levels of adoption, the quantitative data results from this study align with the findings of the interviews, indicating that most Soweto-based SMEs are capable of affording the costs of data for e-commerce usage in their businesses. These findings are aligned with the TOE Framework, which asserts that SMEs with available financial resources readily utilise e-commerce in their operational business processes (Ha, 2020:2822).

Although the analysis conducted in this study does not support the notion that data costs negatively impact the adoption and diffusion of e-commerce, the quantitative and qualitative data results indicate that Soweto-based SMEs are unable to afford the initial capital outlay required for the development and implementation of a website and e-commerce platform. These findings align with previous literature by Agyapong (2018:269), Chau *et al.* (2020:2), Sombultawee (2020:256) and Uneanya (2018:2), who argue that adoption and implementation costs remain significant barriers to the adoption of technology.

Furthermore, to facilitate the usage of e-commerce, certain elements, such as technological infrastructure, affordable internet costs and a certain level of IT skills, are necessary. While both the literature and empirical data confirm that adoption and implementation costs are significant barriers to e-commerce adoption, especially among SMEs in developing countries, the results of this study contradict this notion by indicating that data costs associated with e-commerce utilisation do not have a negative impact on usage among Soweto-based SMEs.

Finding 8: Most Soweto-based SMEs can afford the cost of data to use e-commerce. However, most of them cannot afford the cost of developing and implementing their own websites and e-commerce platforms.

5.5.7 Entrepreneurial orientation as a factor for e-commerce adoption

In Chapter 3 of this thesis, entrepreneurial orientation comprises the processes, practices and decision-making styles of the entrepreneurs who engage in entrepreneurial activities to influence the adoption and diffusion of e-commerce. Table 5.10 exhibits five (5) declarations that respondents had to evaluate and rate as they relate to entrepreneurial orientation and its influence on the adoption and diffusion of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was designed to measure the influence of entrepreneurial orientation on the adoption of e-commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.32, SD=0.59) looked at the business owners' willingness to promote creativity in designing and implementing new products and services such as e-commerce. The second place (M=4.28, SD=0.66) business owner has expertise in innovative technology practices, and the third place (M=4.28, SD=0.64) business owner is willing to take the risk of adopting innovations such as e-commerce to outperform industry competitors. The fourth place (M=4.26, SD=0.64) business owner has adequate knowledge in new technologies such as e-commerce and lastly, the business owner has the propensity to exploit new ideas and opportunities such as e-commerce at (M=4.21, SD=0.69). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score indicates that the adoption of e-commerce is influenced by the entrepreneurial orientation of the business owner.

Table 5.10 Entrepreneurial orientation

N=267	Mean	SD
I believe that the business owner has expertise in innovative technology practices.	4.28	0.66
I believe that the business owner has the propensity to exploit new ideas and opportunities such as e-commerce.	4.21	0.69
I believe that the business owner is willing to promote creativity in designing and implementing new products and services such as e-commerce.	4.32	0.59
I believe that the business owner is willing to take the risk of adopting new innovations such as e-commerce to outperform industry competitors.	4.28	0.64
I believe that the business owner has adequate knowledge in new technologies such as e-commerce.	4.26	0.64
Entrepreneurial Orientation (Overall)	**4.27**	**0.52**

Entrepreneurial orientation was further analysed by the owners' and business profiles, as displayed in Appendix 5. SMEs whose customer base is B2B rated entrepreneurial orientation higher with a mean score of (M=4.57, SD=0.39) compared with SMEs whose customer base is B2C with a mean score of (M=4.21, SD=0.56), p=0.02. The results also show that SMEs that did not use e-commerce rated entrepreneurial orientation significantly less (M=3.60, SD=0.89) than those using e-commerce (p<0.001). There were no substantial differences in how the SMEs rated the influence of entrepreneurial orientation on the adoption of e-commerce by any of the other demographic and business profile factors (p>0.05).

The SME owners' ICT literacy, knowledge and previous technological skills are crucial factors that influence e-commerce adoption. The SMEs' ICT proficiency and technological capability are pertinent to both the technological and organisational contexts of the TOE theoretical framework, as they assess whether the business owner has sufficient knowledge of new technologies or is willing to foster innovation by introducing new products and services such as e-commerce (Giotopouplos *et al.,* 2017:61; Matyila, 2019:67). Maduku *et al.* (2016:713) and Matikiti *et al.* (2018:3) assert that the technological context examines the necessary technical skills that SME owners consider before adopting e-commerce. Furthermore, the SME owners' ICT literacy levels are linked to technological readiness, which can aid in assessing organisational readiness and overall preparedness to adopt and diffuse e-commerce using the TOE framework by considering whether the business owner is inclined to explore new ideas or is willing to take risks by adopting new innovations such as e- commerce.

During the interviews, participants admitted that for them, technological skills were a novelty and that they are keen to learn and be taught on how to use technology in their businesses. The issue of willingness to learn more about the usage of technology was highlighted by a few participants and begs the question as to whether ICT literacy and skills are necessary for all SME owners that are currently using or intend to adopt e-commerce. The SME owners explained their technical knowledge as follows:

> *It took me quite a while in terms of learning how to upload the catalogues, pictures and pricing on the online shop. It took me about two to three months because I wasn't sure how it worked but I ended up getting the hang of it. – Participant (6)*

> *Like I've said, I'm still new with technology so maybe you could teach me or give me a few options. - Participant (5)*

The SME owners' entrepreneurial orientation encompasses their traits, proactiveness and decision-making styles (Zhai *et al.,* 2018:3). In this regard, DOI theory highlights the significant impact of SME owners' individual characteristics and technology features on the diffusion process (Hussain *et al.,* 2020:4; Schmidthuber *et al.,* 2020:2). Furthermore, the importance of

the business owner's technical skills and attitude towards e-commerce was articulated by the participants:

> *Coming to IT skills, in most cases it's not everyone of us who are very much IT equipped, so you also have to sort of enhance your IT skills by upgrading a little…For me, the good thing is that I had sort of a background of how to use a computer, computer literacy. So I knew the basics. - Participant (8)*

The participants expressed similar views on the significance of the SME owner's computer literacy in effectively adopting e-commerce into their business operations. Moreover, if the SME owner lacks confidence in their ICT literacy, he or she may need to hire employees with IT knowledge and capabilities. However, this could result in increased staffing costs, which many SMEs may not be able to afford.

> *I make sure I get the right people who understand how technology works. - Participant (2)*

In addition, some of the participants identified a link between their level of ICT knowledge and skills to the reduced cost benefits of adopting and using e-commerce. The perceived benefits stated above translate to the anticipated advantages gained when e-commerce is adopted (Chege & Wang, 2020:257; North *et al.,* 2019:2). The literature review states that the benefits are reflected in the degree to which e- commerce is expected to lead to various benefits, including reducing costs (Susanty *et al.,* 2020:386). Participant 3 added the following:

> *I must add that I had to learn certain things so that I can cut costs, because I had to make monthly payments…So, in order to cut the monthly costs I had to go learn, hence I said that when I realised that I could do the e-commerce by myself, there was no need to find someone to do it for me. - Participant (3)*

These findings are consistent with Chandra and Kumar (2018:263), Kumar *et al.* (2020:3394) and Rahayu and Day (2017:27), who put forward that entrepreneurs in successful enterprises

are willing to support creativity and experimentation, and possess a forward-looking perspective to outperform industry competitors by adopting the right technology for the task at hand. Thus, entrepreneurial orientation can significantly increase the probability of adopting e-commerce by SMEs (Diabate *et al.*, 2019:3). From an organisational context of the TOE framework, entrepreneurship orientation comprises the processes, practices and decision-making styles of the SME owners that engage in entrepreneurial activities (Zhai, Sun, Tsai, Wang, Zhao & Chen, 2018:3).

On the other hand, the age of the business owner can determine their willingness to learn and explore the usage of e-commerce. DOI theory further explains how the characteristics of individual decision-making processes shape e-commerce diffusion, the communication channels involved and the characteristics of the technology being considered for adoption (Giotopoulus, 2017:61; Mamun, 2017:115; Ndayizigamiye *et al.,* 2019:264). Schmidthuber *et al.* (2020:2) suggest that characteristics of the entrepreneur, such as age, level of education and income, are some of the influencing factors in the diffusion process of new technologies. In certain instances, some participants felt that they were too old to learn new things and to explore the value e- commerce could bring to their businesses. Participant 5 is of the opinion that:

You know, I am a bit too old for technology. - Participant (5)

The results from the quantitative and qualitative data conform with previous studies by Muathe and Muraguri-Makau (2020:4), Nasution *et al*. (2021:270) and Yacob, Sulistiyo, Erida, and Siregar (2021:250), who assert that entrepreneurial competencies of the business owner have a significant relationship as a moderator towards the adoption and diffusion of e-commerce. In addition, the results indicate that respondents believe that SME owners that have a high level of entrepreneurial orientation are more likely to exploit e-commerce technology to achieve higher operational efficiency and marketing capability than those that have a low level of entrepreneurial orientation. That entrepreneurship orientation dimensions, proactiveness and risk-taking propensity greatly enhance business performance, while innovation, competitive aggressiveness, autonomy and competitive energy also produce major shifts towards the adoption and diffusion of e-commerce (Fadda, 2018:24).

5.5.8 Organisation readiness as a factor for e-commerce adoption

Chapter 3 of this thesis, organisational readiness represents the availability of financial resources, ICT resources, and human resources with relevant IT skills within enterprises to adopt e-commerce. Table 5.11 presents five (5) affirmations that respondents had to consider and appraise as they relate to organisational readiness to adopt e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was designed to measure the influence of organisational readiness towards the adoption and diffusion of e-commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score was obtained (M=4.36, SD=0.62), and most of our employees were computer literate, which was second place (M=4.34, SD=0.66). My business has the capacity to absorb the cost of implementing e-commerce. Third (M=4.30, SD=0.69), my business has sufficient financial resources for the adoption of e- commerce. In fourth place (M=4.25, SD=0.63), we have internet connectivity and lastly, my business has sufficient information technology resources for the adoption of e-commerce (M=4.17, SD=0.67). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score suggests that the adoption of e-commerce is influenced by organisational readiness.

Table 5.11 Organisation readiness

N=267	Mean	SD
My business has sufficient financial resources for the adoption of e-commerce.	4.30	0.69
My business has sufficient information technology resources for the adoption of e-commerce.	4.17	0.67
We have internet connectivity.	4.25	0.63
Most of our employees are computer literate.	4.36	0.62
My business has the capacity to absorb the cost of implementing e-commerce.	4.34	0.66
Organisational Readiness (Overall)	**4.28**	**0.51**

A comparative analysis indicates organisational readiness based on the owners' and business profiles, as shown in Appendix 5. SMEs that are formally registered with CIPRO rated organisational readiness higher with a mean score of (M=4.34, SD=0.45) compared to

unregistered SMEs that are trading informally with a rating of (M=4.11, SD=0.66), p<0.001. In addition, SMEs that operated from specific business premises rated organisational readiness considerably higher with a mean score of (M=4.32, SD=0.44) compared to SMEs operating from home with a significantly lower mean score of (M=4.15, SD=0.74), p=0.04. As would be expected, the results also show that SMEs that did not use ecommerce rated organisational readiness significantly less (M=3.70, SD=0.99) than those using e-commerce (p<0.001). There were, however, no significant differences on how the SMEs rated the influence of organisational readiness on the adoption and diffusion of e-commerce by any of the other demographic and business profile factors (p>0.05).

The purpose of assessing organisational readiness is to evaluate how prepared an enterprise is to adopt and implement e-commerce within the TOE framework's organisational context. This evaluation involves examining factors such as whether the business has the financial resources to cover the costs of implementing e- commerce and whether the business has access to the internet and employees with computer literacy. During interviews, it was discovered that most SME owners were aware of their current status regarding their readiness to make significant changes and recognised the importance of analysing the necessary resources needed to prepare for e-commerce adoption, as expressed by Participant 2 as followers:

> *I know that I have to be computer literate. Know how systems work, how computer networks work, know how other people respond to me, make sure I get the right people who understand how technology works. – Participant (2)*

Furthermore, during the interviews, the participants commonly expressed that comprehending the steps involved in adopting e-commerce and becoming familiar with it was a gradual process that took time:

> *So, I'm just implementing things slowly but surely because not everyone is acquainted with the actual process. – Participant (6)*

The results from the interviews are aligned with the quantitative data and in agreement with previous studies by Costa and Rafael (2021:3044), Gugure and Takavarasha (2020:3471) and Hussain, Akbar, Shahzad, Poulova, Akbar and Hassan (2022:12), who state that an SME's preparedness regarding commercial, technical and social infrastructure is necessary to support the adoption of e-commerce. In addition, organisational readiness is also dependent on the availability of financial and technological resources. Moreover, Nguyen *et al.* (2022:74) argue that the available resources of the business, knowledge and capabilities of employees and the positive attitude of management towards innovation and technology were among the key factors facilitating organisational readiness and the adoption and diffusion of e- commerce amongst SMEs.

Furthermore, in line with the TOE framework, organisational readiness is intended to assess the enterprise's overall preparedness for adopting and diffusing e-commerce, which needs to be applied to support the proposed strategic plans of the enterprise (Hoang *et al.,* 2021:52; Ramdansyah & Taufik, 2017:232). Moreover, Babic and Golob (2018:1377) posit that the adoption of e-commerce by SMEs can be a complex process that may depend on several factors related to the strategic orientation of the enterprise, its resources and the business environment. This means that most of the difficulties in adopting e-commerce among respondents to quantitative data relate mainly to the lack of capacity needed to handle complex processes, lack of technological readiness and lack of financial resources (Costa & Castro, 2021:3044). Thus, the outcome of the results is consistent with existing studies confirming that the adoption of e-commerce is influenced by organisational readiness (Cilliers, 2018:2; Mkansi *et al.*, 2019:26).

5.5.9 Management support as a factor for e-commerce adoption

In Chapter 3 of this thesis, the focus is on examining how management support plays a pivotal role in steering the allocation of resources, the integration of services and the re-engineering of processes, all aimed at fostering the adoption of e-commerce. Table 5.12 displays five (5) statements that respondents had to evaluate and appraise as they relate to management support's role in the adoption of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was designed to measure the influence of management support on the adoption and diffusion of e-

commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.34, SD=0.59) business management devotes time to the adoption of e-commerce in proportion to its cost and potential, which was followed by, in the second place (M=4.32, SD=0.64), business management facilitates integrating e-commerce with the business processes. Third place (M=4.31, SD=0.60), business management encourages and motivates employees on the usage of e- commerce. In the fourth (M=4.27, SD=0.66) was business management provides adequate resources for the adoption of e-commerce, and lastly, business management is enthusiastic about the adoption of e-commerce (M=4.25, SD=0.61). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score implies that agreeably, the adoption of e-commerce is influenced by management support.

Table 5.12 Management support

N=267	Mean	SD
I believe that the business management provides adequate resources for the adoption of e-commerce.	4.27	0.66
I believe that the business management is enthusiastic about the adoption of e-commerce.	4.25	0.61
I believe that the business management encourages and motivates employees on the usage of e-commerce.	4.31	0.60
I believe that the business management devotes time to the adoption of e-commerce in proportion to its cost and potential.	4.34	0.59
I believe that the business management facilitates integrating e-commerce with the business processes.	4.32	0.64
Management Support (Overall)	**4.30**	**0.50**

Management support was analysed using the owners' and business profiles, as shown in Appendix 5. SMEs that are formally registered with CIPRO rated management support higher with a mean score of (M=4.37, SD=0.45) compared to unregistered SMEs that are trading informally with a rating of (M=4.07, SD=0.59), $p<0.001$. In addition, SMEs that operated from specific business premises rated management support considerably higher with a mean score

of (M=4.33, SD=0.44) compared to SMEs operating from home with a significantly lower mean score of (M=4.17, SD=0.70), p=0.04. SMEs whose customer base is B2B rated management support higher with a mean score of (M=4.49, SD=0.46) compared with SMEs whose customer base is B2C with a mean score of (M=4.23, SD=0.51), p=0.03. As would be expected, the results also show that SMEs that did not use ecommerce rated management support significantly less (M=3.75, SD=0.89) than those using e-commerce (p<0.001). There were, however, no significant differences on how the SMEs rated the influence of management support on the adoption and diffusion of e-commerce by any of the other demographic and business profile factors (p>0.05).

During interviews, SME owners recognised the vital role of management in facilitating the integration of e-commerce into their business operations. This is because management support guides resource allocation and involves communication, encouragement and motivation of employees to adopt new technologies within the organisational context of the TOE framework (Ezzaouia *et al.*, 2020:3). Moreover, SME owners expressed the importance of having a basic understanding of computer literacy. In relation to this, the participants expressed themselves in the following manner:

> *Coming to IT skills, in most cases, it's not everyone of us who are very much IT equipped. So, you also have to sort of enhance your IT skills by upgrading a little…For me, the good thing is that I had sort of a background of how to use a computer, computer literacy, so I knew the basics. – Participant (8)*

> *I'm the only one right now but with events I get people on the go when I get a gig, then that's when I source (resources.) – Participant (7)*

On the other hand, some participants are of the view that hiring computer-literate employees is equally crucial to immediately add value to the business:

> *I make sure I get the right people who understand how technology works. – Participant (2)*

The results of the quantitative and qualitative data are in line with previous studies by Alkhalil *et al.* (2017:11), Chandra and Kumar (2018:263), Costa and Castro (2021:3045) as well as Ezzaouia *et al.* (2020:3), who found that management support centres around the involvement, encouragement, and motivation from management towards adopting technologies. Despite e-commerce being crucial to enhancing productivity within SMEs, Hamad *et al.* (2019:213) point out that employees are often resistant to using new technologies primarily because of poor communication from top management regarding the strategic benefits of new tools. Enthusiasm, which can be linked to improved communication processes by top management, can endorse the adoption of e-commerce while also supporting innovations that benefit the enterprise's business strategy (Chandra & Kumar, 2018:242). Thus, in line with Costa and Rafael (2021:3044), Hussain *et al.* (2020:14) as well as Maduku *et al.* (2016:714), the results indicate that management support is an essential factor in adopting e-commerce among SMEs.

5.5.10 Customer pressures as a factor for e-commerce adoption

Chapter 3 of this thesis refers to customer pressures where SMEs are expected to meet evolving and growing customer demands that may require the usage of e-commerce. Table 5.13 below shows five (5) statements that respondents had to consider and rate as they relate to the influence of customer pressures on the adoption of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was meant to measure the influence of customer pressures on the adoption and diffusion of e-commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score was obtained (M=4.31, SD=0.63) for our customers expected us to use e-commerce. In the second place (M=4.27, SD=0.63) the usage of e-commerce is something that would make our customers happy, and in the third place (M=4.27, SD=0.63), our customers are ready to engage us using e-commerce. Fourth place (M=4.24, SD=0.68), customers prefer businesses that use e-commerce and lastly, our customers demand that we use e-commerce at (M=4.15, SD=0.72). The sub-constructs of e-commerce adoption were all

rated highly (i.e., all at least M=4 out of 5). The high mean score suggests that agreeably, the adoption of e-commerce is influenced by customer pressures.

Table 5.13 Customer pressures

N=267	Mean	SD
Our customers expect us to use e-commerce.	4.31	0.63
Our customers demand that we use e-commerce.	4.15	0.72
The usage of e-commerce is something that would make our customers happy.	4.27	0.63
I believe that our customers are ready to engage us using e-commerce.	4.27	0.63
Customers prefer businesses which use e-commerce.	4.24	0.68
Customer Pressures (Overall)	**4.25**	**0.55**

Considering the owners' and business profiles, the role of customer pressures was analysed, as shown in Appendix 5. SMEs that are formally registered with CIPRO rated customer pressures higher with a mean score of (M=4.32, SD=0.46) compared to unregistered SMEs that are trading informally with a rating of (M=4.03, SD=0.72), $p<0.001$. In addition, SMEs whose customer base is B2B rated customer pressures higher with a mean score of (M=4.47, SD=0.40) compared with SMEs whose customer base is B2C with a mean score of (M=4.18, SD=0.57), $p=0.03$. Furthermore, the results also show that SMEs that did not use e-commerce rated customer pressures significantly less (M=3.73, SD=1.01) than those using e-commerce ($p<0.001$). There were, however, no significant differences on how the SMEs perceived ease of use of e-commerce by any of the other demographic and business profile factors ($p>0.05$).

For e-commerce to be successfully implemented and consistently used, both SMEs and their customers must possess a reasonable level of computer literacy. Customers must be willing and able to utilise the technology that the business has introduced. Moreover, having technology-savvy customers may result in SMEs facing customer pressures to gain a competitive edge, leading them to increasingly strive to be perceived as customer-centric. This aspect falls under the environmental context of the TOE framework which includes external pressures outside the business (Habel *et al.,* 2020:25). In the interviews, SME owners not only

assessed their own level of ICT literacy, knowledge and skills but also that of their target customers. It was crucial to evaluate customers' readiness to use technology to determine whether they would be able to engage in transactions with Soweto-based SMEs using e-commerce. The participants also emphasised the significance of their target customers' computer literacy:

> *I would say that a great number of clients are able to use technology. They love using the technology, so it may be just a few of them who are unable to use the online technology but most of them I can see that they are very much interested; you even see the keenness from some… So yes, generally a high number of the clients want to use the online platform. - Participant (8).*

> *Yes, I think the customers would be ready for it because I have customers of all ages that are technology savvy. – Participant (5)*

The findings from both the quantitative and qualitative data support previous research by Fedushko and Ustyianovych (2022:15) and Puiu *et al.* (2022:14), indicating that SMEs are influenced not only by their own perceptions and attitudes but also by the opinions and behaviours of those around them, including their customers. These customer pressures fall under the environmental context of the TOE framework, where SMEs are expected to meet the evolving and increasing demands of their customers (Ezzaouia *et al*., 2020:4). Furthermore, the quantitative data results demonstrate that the respondents are highly motivated to adopt e-commerce because their customers expect them to use it.

To gain a competitive advantage, the interviewed SMEs emphasised the importance of being perceived as customer-centric by prioritising their customers' interests in their business activities. Furthermore, since SMEs typically seek repeat purchases from their customers, building intimacy and trust with customers and utilising technology to obtain feedback can help them pivot quickly in response to changes, improve business efficiency and meet customer needs promptly (Triandini *et al.,* 2020:112; Zhelyazkova, 2020:263). Consequently, as per Igwe *et al.'s* (2020:48) research, customer pressures facilitate the adoption of e-commerce among SMEs.

Finding 9: Customers of Soweto-based SMEs are mostly techno-savvy and expect SMEs to use e-commerce.

5.5.11 Competitor pressures as a factor for e-commerce adoption

Chapter 3 of this thesis explored the degree to which competitors and SME peer-to-peer interactions influence the adoption and diffusion of e-commerce. Table 5.14 exhibits five (5) assertions that respondents had to evaluate and rate as they relate to the influence of competitor pressures on the adoption of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was meant to measure the influence of competitor pressures on the adoption and diffusion of e-commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.32, SD=0.60) is that e-commerce can give the business a competitive advantage and help the business increase its market share in its industry. The second place (M=4.30, SD=0.61) was remaining competitive and staying abreast with the latest developments in my industry is important to me and the third place (M=4.30, SD=0.62) our competitors who have adopted e-commerce will have a strong influence on the decision to adopt e-commerce in my business. The fourth place (M=4.21, SD=0.68) was our competitors who have adopted e-commerce are doing very well and lastly, I may feel compelled to adopt e-commerce in my business when more competitors in the industry have adopted e-commerce at (M=4.15, SD=0.74). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score suggests that agreeably, the adoption of e-commerce is influenced by competitor pressures.

Table 5.14 Competitor pressures

N=267	Mean	SD
Our competitors who have adopted e-commerce will have a strong influence on the decision to adopt e-commerce in my business.	4.30	0.62
I may feel compelled to adopted e-commerce in my business when there are more competitors in the industry who have adopted e-commerce.	4.15	0.74
Remaining competitive and staying abreast with the latest developments in my industry is important to me.	4.30	0.61
Adoption of e-commerce can give the business a competitive advantage and help the business to increase its market share in the industry.	4.32	0.60
Our competitors who have adopted e-commerce are doing very well.	4.21	0.68
Competitor Pressures (Overall)	**4.26**	**0.53**

Considering the role of competitor pressures based on the owners' and business profiles, SMEs that are formally registered with CIPRO rated competitor pressures higher with a mean score of (M=4.32, SD=0.49) compared to unregistered SMEs that are trading informally with a rating of (M=4.06, SD=0.60), $p<0.001$. In addition, SMEs whose customer base is B2B rated competitor pressures higher with a mean score of (M=4.56, SD=0.33) compared with SMEs whose customer base is B2C with a mean score of (M=4.17, SD=0.51), $p<0.001$. There were, however, no significant differences on how the SMEs perceived ease of use of e-commerce by any of the other demographic and business profile factors ($p>0.05$).

Similar to customer pressures, SMEs are also influenced by the opinions and behaviours of those around them, including their competitors. Competitor pressures are part of the environmental context of the TOE theoretical framework, where external pressures such as staying competitive and keeping up with the latest industry developments are important for SMEs (Hamad *et al.*, 2019:214; Maduku *et al.,* 2016:714). The participants noted that their business processes were influenced by their observations or knowledge of their competitors' actions to gain a competitive advantage in the market:

> *With the e-commerce, I didn't know about it, and then a friend of mine (in the same line of business) said she had been doing orders online and that it's much easier for her. – Participant (6)*

The findings from both qualitative and quantitative data support previous research conducted by Fedushko and Ustyianovych (2022:2), Nguyen *et al.* (2022:74) and Puiu *et al.* (2022:14) that suggests that the adoption of e-commerce among SMEs is influenced by the competitive environment that involves peer-to-peer interactions. The pressure to adopt e-commerce is heightened when SMEs in the same industry have favourable perceptions of the benefits derived from its usage (Chandra & Kumar, 2018:263; Muathe & Muraguri-Makau, 2020:8). The reasoning behind this is that if one SME competitor adopts e-commerce, other SMEs in the industry may feel compelled to do the same, thereby increasing the pressure to adopt (Vahdat *et al.,* 2020:3).

5.5.12 Government support as a factor for e-commerce adoption

In chapter 3 of this thesis, the provision of assistance, incentives and access to initiatives that encourage the adoption of e-commerce by government was discussed. Table 5.15 presents five (5) declarations that respondents had to consider and appraise as they relate to government support to promote the adoption of e- commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was meant to measure the influence of government support on the adoption and diffusion of e-commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.15, SD=0.75) is that the government provides tax incentives for the adoption of e-commerce by SMEs. Second (M=4.04, SD=0.80), government support plays an important role in facilitating e-commerce adoption among SMEs, and third (M=4.02, SD=0.82), the government provides guidelines, policies and legal frameworks to facilitate the adoption of e-commerce by SMEs. Fourth (M=4.01, SD=0.82), the government provides infrastructure at a reasonable cost to facilitate the adoption of e-commerce by SMEs, and lastly, government provides access to initiatives that promote the adoption of e-commerce by SMEs (M=3.97, SD=0.76). The sub-constructs of e-commerce adoption were not all rated highly (i.e., some at least M=3 out of 5). The low mean score suggests that government support does not highly influence the adoption of e-commerce. In line with a previous study (Hussain *et al.,* 2022:12).

Table 5.15 Government support

N=267	Mean	SD
The government provides tax incentives for the adoption of e-commerce by SMEs.	4.15	0.75
The government provides access to initiatives that promote the adoption of e-commerce by SMEs.	3.97	0.76
The government provides infrastructure at a reasonable cost to facilitate the adoption of e-commerce by SMEs.	4.01	0.82
The government provides guidelines, policies and legal frameworks to facilitate the adoption of e-commerce by SMEs.	4.02	0.82
Government support plays an important role in facilitating e-commerce adoption amongst SMEs.	4.04	0.80
Government Support (Overall)	**4.04**	**0.69**

A further analysis of government support according to the owners' and business profiles as shown in Appendix 5, unregistered SMEs that are trading informally rated government support significantly lower (M=3.80, SD=0.78) than SMEs that are formally registered with CIPRO rated higher with a mean score of (M=4.11, SD=0.64), $p<0.001$. In addition, SMEs operating from home rated government support significantly lower, with a mean score of (M=3.73, SD=0.91), compared to SMEs that operated from specific business premises, with a higher mean score of (M=4.11, SD=0.60), $p<0.001$. SMEs whose customer base is B2C rated government support with a significantly lower mean score of (M=3.95, SD=0.71) than SMEs whose customer base is B2B with a higher mean score of (M=4.36, SD=0.59), $p=0.02$. As would be expected, the results also show that SMEs that did not use e-commerce rated government support significantly less (M=2.98, SD=0.91) than those using e-commerce ($p<0.001$). Government support was not rated considerably different by any of the other demographic and business profile factors ($p>0.05$). According to the TOE framework, government support is considered an environmental factor that affects the adoption of technology. For instance, the government may offer infrastructure at an affordable rate to facilitate the adoption of e-commerce or provide tax incentives to encourage SMEs to adopt e-commerce (Setiyani & Rostiani, 2021:1117). However, based on the interviews conducted, it was discovered that most SMEs did not heavily rely on government support to adopt e-commerce. Instead, the majority of participants relied on their mobile devices for data, as there was a lack of ICT infrastructure

or fibre optic cables installed in their neighbourhoods. Only participant 2 had recently started using fibre after it was installed in their area:

I am using fibre now. – Participant (2)

The qualitative and quantitative data suggest that government support does not have a significant impact on the adoption of e-commerce among Soweto-based SMEs. These findings contradict previous research conducted by Bădîrcea, Manta, Florea, Bădîrcea,Manta, Florea, Popescu, Manta and Puiu (2021:101), Billal *et al.* (2019:56), Ibam *et al.* (2018:2), Revinova (2019:2) and Zain *et al*. (2020:56), which suggests that government plays a crucial role in providing the necessary infrastructure and legal framework to facilitate the adoption of e-commerce by SMEs. The results also differ from the claims made by Effendi *et al.* (2020:919) that government regulations, such as reduced data tariffs, lower internet costs and infrastructure support can encourage SMEs to adopt e-commerce.

Government support emerged as an insignificant factor in the adoption and diffusion of e-commerce. This study's findings also resonate with those of Sombultawee (2020:257), who reports that government support is not always a critical factor in the adoption of e-commerce.

Finding 10: Government support is an insignificant factor for the adoption and diffusion of e-commerce amongst Soweto-based SMEs.

5.5.13 Impact of the pandemic as a factor for e-commerce adoption

In Chapter 3 of this thesis, a pandemic is described as an epidemic (large outbreak of disease) occurring worldwide and usually affecting many people globally. Table 5.16 displays five (5) affirmations that respondents had to evaluate and appraise as they relate to the impact of the pandemic on the adoption and diffusion of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was designed to measure the influence of government support on the adoption and diffusion of e-commerce. The responses to the five statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.25, SD=0.68) shows that e-commerce plays a significant role in ensuring that businesses continue to provide goods and services to their customers during pandemics such as COVID-19, which is followed by (M=4.19, SD=0.73) a pandemic such as COVID-19, which is an influential factor in the adoption of e-commerce by SMEs. Third place (M=4.18, SD=0.65) I considered adopting e-commerce for my business before the impact of COVID-19 and fourth place (M=4.18, SD=0.72) COVID-19 has made me consider the adoption of e-commerce for the business. Lastly, in fifth place, a pandemic such as COVID-19 has influenced my outlook on the adoption of e-commerce for the business (M=4.12, SD=0.68). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score suggests that a pandemic such as COVID-19 has an impact on the adoption of e-commerce.

Table 5.16 Impact of pandemic

N=267	Mean	SD
I considered adopting e-commerce for my business before the impact of COVID-19.	4.18	0.65
I believe a pandemic such as COVID-19 has influenced my outlook on the adoption of e-commerce for the business.	4.12	0.68
I believe a pandemic such as COVID-19 has made me consider the adoption of e-commerce for the business.	4.18	0.72
I believe that e-commerce plays a significant role in ensuring that businesses continue to provide goods and services to their customers during pandemics such as COVID-19.	4.25	0.68
I believe a pandemic such as COVID-19 is an influential factor to the adoption of e-commerce by SMEs.	4.19	0.73
Impact of Pandemic (Overall)	**4.19**	**0.57**

A further analysis on the impact of the pandemic was conducted based on the owners' and business profiles, as shown in Appendix 5. SMEs that are formally registered with CIPRO rated the impact of the pandemic higher, with a mean score of (M=4.24, SD=0.57) compared to unregistered SMEs that are trading informally, with a rating of (M=4.01, SD=0.57), p=0.01. In addition, SMEs whose customer base is B2B rated the impact of the pandemic higher, with a mean score of (M=4.43, SD=0.54), than SMEs whose customer base is B2C, with a significantly lower mean score of (M=4.10, SD=0.61), p=0.01.

SMEs with a customer base in Soweto and other provinces rated the impact of the pandemic higher, with a mean score of (M=4.37, SD=0.55) than SMEs with customers based in South Africa and globally, with a mean score of (M=4.11, SD=0.70), p=0.02. As would be expected, the results also show that SMEs that did not use e-commerce rated the impact of the pandemic significantly less (M=3.70, SD=1.11) than those using e-commerce (p=0.04). The impact of the pandemic on the adoption of e-commerce was not rated considerably differently by any of the other demographic and business profile factors (p>0.05).

The TOE theoretical framework refers to the environmental context which encompasses the external factors that affect SMEs in their business operations. The COVID-19 pandemic, considered a Vis Major event, had a significant impact on the global community. Alfonso, Boar *et al.* (2021:2) discovered that the pandemic accelerated the adoption of e-commerce by SMEs worldwide. Most interviewees acknowledged the positive effects of e-commerce adoption during the pandemic. However, some participants discussed how COVID-19's movement restrictions had a negative impact on their businesses.

> *I'll say initially we used to do the face-to-face classes like more of them, but when lockdown hit, we had to shift over and move over to conduct online sessions. – Participant (8)*

5.5.13.1 Positive impact of COVID-19

As per the interviewees' experiences, the COVID-19 pandemic had a silver lining in that some businesses were able to acquire more customers through online channels. Despite restrictions on physical interactions, the adoption of e-commerce enabled consistent communication between businesses and customers. The participants elaborated on both the positive outcomes and the difficulties posed by the pandemic:

> *COVID-19 gave me more of an advantage because I was able to get more clients. But a challenge I had was with deliveries. Remember we had movement restrictions; that's the online challenge I experienced. – Participant (3)*

That's right. The positive was that could still continue communicating with clients. - Participant (4)

For other participants, the lockdown increased the levels of interaction with clients exponentially, and e-commerce made it possible to also engage with clients from different geographical areas. In addition, participants also mentioned that there were substantial improvements in online advertising and marketing which led to more business transactions:

I would say that it was an advantage for me. I've never had to have much of an interaction with clients; I only interacted with those close to me because I'm based in Pretoria and Polokwane. In other words, only those I could arrange meetings with I would go ahead and set up meetings. - Participant (3)

I would say during 2020 I had quite a lot of business coming in. There was a boom in my business and then it went quiet towards the end of the year and picked up again significantly in the beginning of 2021…I think it was the marketing, being consistent every day in terms of marketing, promoting my business every day. - Participant (6)

The pandemic was said to have accelerated the adoption of e-commerce in general. People who had never used the technology and had limited ICT literacy would simply source people with the capabilities to use e-commerce. Others were inclined to immediately start using e-commerce when establishing new businesses during COVID-19 due to job losses:

It was social media and other events were virtual so you would source out someone who's doing that service. - Participant (7)

I made (using e-commerce) more permanent at the beginning of lockdown because I had also lost my job at that time. – Participant (6)

Based on the results of the interviews, e-commerce has proven to be a valuable mechanism to facilitate business continuity during lockdown periods due to the COVID-19 pandemic (Bhatti

et al., 2020:1451; Hoang *et al.,* 2021:48). For the above reasons, Soweto-based SMEs felt compelled to embrace e-commerce as an essential function for interacting with and searching for more customers in aiding business continuity during COVID-19 (Ilyihamije, 2019:2; Kartiwi *et al.,* 2018:1; Mekdessi *et al.,* 2021:8).

5.5.13.2 Negative impact of COVID-19

As reported by several interviewees, the COVID-19 pandemic had a detrimental impact on businesses, primarily due to the lockdown measures and the resulting uncertainty. This situation forced some businesses to shut down, leading to significant losses in revenue and sales. While online transactions were still feasible for some businesses, they were impeded by the inability to provide physical products or conduct face-to-face interactions as these activities required physical movement which was restricted by the government during the pandemic. Respondents had this to say:

> *Extremely bad…I can say in terms of revenue and sales 75-80% loss due to the uncertainty of the whole economic structure. Whoever has the money, they are trying to hold onto it as much as possible. So, it has been extremely bad. - Participant (4)*

> *For me, my biggest clientele is the taxi industry. I deal a lot in the taxi space; so the biggest issue I had was taxis were not operating because no cars were moving at that point in time. When the taxis started moving, they were moving at 50% capacity, so there was no business at that time really. - Participant (1)*

> *It wasn't really easy to conduct the business online…I think as time went on, we got to strategise how you can actually get your clients to agree to move from doing face to face to an online platform. - Participant (8)*

I produced and now I had to deliver; people would get their stuff a bit later than usual. We had movement restrictions; that's the online challenge I experienced. – Participant (3)

During lockdown, our business was closed. Both shebeen and kiosk. – Participant (5)

Kuckertz *et al.* (2020:2) and Pantelimon *et al.* (2020:38) assert that despite the significant disruptions faced by the global community due to the COVID-19 pandemic, such as movement restrictions and widespread negative impacts, e-commerce can significantly mitigate such challenges.

5.5.13.3 No impact from COVID-19

Few SME owners expressed that COVID-19 did not have any effect. This was especially the case for those who have already started using e-commerce and working remotely before the COVID-19 outbreak Participant 2 puts it:

There was no impact. I've been working remotely all along, so there was just no impact for me. - Participant (2)

The findings from both the quantitative and qualitative data align with previous research, affirming the substantial impact of a pandemic such as COVID-19 on the adoption of e-commerce (Higueras-Castillo, Liébana-Cabanillas, & Villarejo-Ramos 2023:8; Li, Ornstein, Li & Liu, 2021:3056; Reardon *et al.,* 2021:472; Gray, 2020:243). Likewise, Sahetapy (2021:10584) notes that the COVID-19 pandemic has expedited the global growth of e-commerce adoption. In addition, Alfonso *et al.* (2021:2), Bhatti *et al.* (2020:1451), and Hoang *et al.* (2021:48) observed that e-commerce has emerged as an effective strategy for businesses to sustain operations amidst the pandemic's constraints, leading to the swift adoption of e-commerce by SMEs. These results are in line with the TOE theoretical framework which acknowledges a pandemic as part of the environmental context that significantly impacts the markets and the environment in which SMEs function. Thus, the

outcomes of this study indicate that the COVID-19 pandemic had a noteworthy impact on the adoption of e-commerce.

Finding 11: E-commerce helped most Soweto-based SMEs ensure business continuity to render services to their customers during COVID-19.

5.5.14 Relative advantage as a factor for e-commerce adoption

In Chapter 2 of this thesis, relative advantage is described as the extent to which e-commerce is comprehended as being superior to the idea it supersedes and is influenced by the economic benefits derived from the usage of e-commerce. Table 5.17 shows four (4) statements that respondents had to consider and rate as they relate to the relative advantage of e-commerce usage. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was designed to measure the influence of relative advantage on the adoption and diffusion of e-commerce. The responses to the four statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.31, SD=0.61) is that e-commerce improves internal processes and knowledge flow in the business, followed by (M=4.31, SD=0.63). Using e-commerce enhances my effectiveness on the job. In the third place (M=4.28, SD=0.62), using e-commerce enables me to accomplish tasks more quickly, and lastly, using e-commerce improves the quality of the work that I do (M=4.16, SD=0.69). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score implies that the adoption of e-commerce is influenced by relative advantage.

Table 5.17 Relative advantage

N=267	Mean	SD
Using e-commerce enhances my effectiveness on the job.	4.31	0.63
Using e-commerce improves the quality of the work that I do.	4.16	0.69
Using e-commerce enables me to accomplish tasks more quickly.	4.28	0.62
Using e-commerce improves internal processes and knowledge flow in the Business.	4.31	0.61
Relative Advantage (Overall)	**4.28**	**0.54**

Considering the role of relative advantage based on the owners' and business profiles as shown in Appendix 5, SMEs that were managed in the capacity of manager rated relative advantage in their businesses significantly lower with a mean score of (M=4.36, SD=0.52) compared to SMEs that were managed in the capacity of manager with a rating of (M=4.21, SD=0.53) p=0.04. Furthermore, SMEs that are formally registered with CIPRO rated higher with a mean score of (M=4.34, SD=0.47) compared to unregistered SMEs that are trading informally with a rating of (M=4.07, SD=0.69), p<0.001. In addition, SMEs whose customer base is B2B rated relative advantage higher with a mean score of (M=4.53, SD=0.46) compared with SMEs whose customer base is B2C with a mean score of (M=4.19, SD=0.59), p<0.001. The results also show that SMEs that did not use e-commerce rated relative advantage significantly less (M=3.50, SD=1.34) than those using e-commerce (p<0.001). There were no significant differences in how the SMEs rated relative advantage by any of the other demographic and business profile factors (p>0.05).

The DOI model identifies relative advantage as one of its five factors which refer to how much innovation is perceived to be better than the idea it replaces (Muathe & Muraguri-Makau, 2020:4). In the interviews, participants elaborated on how they were leveraging e-commerce to gain a competitive advantage, enter new markets and expand their marketing and payment options, having learned how to implement and use the tool:

> *It wasn't really easy to conduct the business online, but I think that helped to have more skills about marketing online, using social media and I think as time went on, we get to strategise how you can actually get your clients. – Participant (8)*

> *I've got my own events so if I send it on WhatsApp and I send it on Facebook. I get a lot (of responses) there. – Participant (7)*

> *Now there is a (online payment) link I can send you on your WhatsApp as well. - Participant (1)*

The findings from both the quantitative and qualitative data corroborate previous research by Zain, Jusoh, Munir and Putit (2020:56) which show that SMEs are more likely to adopt e-

commerce when they perceive its potential advantages. Similarly, Mamun's (2017:127) study on process and service innovation in Malaysian manufacturing SMEs found that economic benefits were a key factor influencing innovation adoption decisions.

5.5.15 Compatibility as a factor for e-commerce adoption

In Chapter 2 of this thesis, the extent to which it is perceived that the adoption of e-commerce is constant with previously adopted technologies when compared to the SME owner's prevailing values and norms was considered. Table 5.18 exhibits four (4) assertions that respondents had to evaluate and rate as they relate to the compatibility of e-commerce adoption. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was designed to measure the influence of compatibility on the adoption and diffusion of e-commerce. The responses to the four statements were ranked according to mean scores (M) and standard deviation (SD). The highest mean score obtained (M=4.36, SD=0.63) using e-commerce is compatible with the businesses' operating procedures, followed by (M=4.27, SD=0.57) e-commerce, which is consistent with our business beliefs, culture and values. In the third place (M=4.27, SD=0.61), using commerce fits well with our preferred work practices and using e-commerce creates changes that are compatible with our business. Finally, using e-commerce creates changes that are compatible with our business (M=4.13, SD=0.63). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score shows that the adoption of e-commerce is influenced by compatibility.

Table 5.18 Compatibility

N=267	Mean	SD
Using e-commerce is compatible with the businesses operating Procedures.	4.36	0.63
Using e-commerce creates changes that are compatible with our Business.	4.13	0.63
Using commerce fits well with our preferred work practices.	4.27	0.61
E-commerce is consistent with our business beliefs, culture and Values.	4.27	0.57
Compatibility (Overall)	**4.28**	**0.50**

Compatibility was further analysed based on the owners' and business profiles, as shown in Appendix 5. SMEs that have been operating for between 11 and 15 years rated compatibility higher, with a mean score of (M=4.62, SD=0.42), than those that had started operating in the last 12 months when data was collected, with a mean score of (M=4.16, SD=0.69), p=0.02. Furthermore, SMEs that are formally registered with CIPRO rated compatibility higher with a mean score of (M=4.31, SD=0.45) compared to unregistered SMEs that are trading informally with a rating of (M=4.17, SD=0.63), p=0.04. As it would be expected, the results also show that SMEs that did not use e-commerce rated compatibility significantly less (M=3.85, SD=1.29) than those using e-commerce (p=0.01). There were, however, no significant differences in how the SMEs rated compatibility by any of the other demographic and business profile factors (p>0.05).

According to the DOI model, compatibility refers to the need for an innovation to be integrated into long-term sustainability plan of a business, given the considerable thought, analysis and effort needed to successfully diffuse it into SMEs' operations (Amaglo, 2020:17; Pantano & Vannucci, 2019:298). Similarly, the TAM model posits that perceived compatibility of innovation, such as when e-commerce is believed to be consistent with business beliefs, culture and values of an SME, it influences its adoption. During the interviews with SME owners in Soweto, it was revealed that the compatibility of e-commerce with their current systems necessitated learning how the system works to facilitate its implementation and integration into their existing business operations:

> *I am operating it from the back end because orders are made in the front-end…. because once you put in an order it comes like an invoice that is populated, you see what the client wants and when they need the item. – Participant (3)*

> *I know that I have to be computer literate. Know how systems work, how computer networks work, know how other people respond to me. – Participant (2)*

> *I have adjusted my prices how I am meant to adjust them by not being too expensive and not too cheap in order for me to also receive my*

profit. So I'm just implementing things slowly but surely. – Participant (6)

The quantitative and qualitative data findings are consistent with Selase *et al.* (2019:5), who suggest that SMEs with a higher level of compatibility are more likely to adopt innovations compared to those with a lower level of compatibility. Moreover, the analysis of the quantitative data shows that SMEs consider e-commerce to be consistent with their existing values, norms and knowledge, which increases compatibility with previously adopted innovations, as noted by Elimelech *et al.* (2022:1).

Previous studies, exemplified by Costa and Castro (2021:3044) and Kimana (2020:25), indicate that the transition to e-commerce presents notable challenges for SMEs. These challenges stem from the more assertive nature of the digital landscape in contrast to traditional commerce settings, potentially leading SMEs to hesitate in adopting e-commerce. Additionally, the findings outlined in this study underscore the significance of compatibility in shaping SMEs' adoption of e-commerce.

5.5.16 Trial period as a factor for e-commerce adoption

In chapter 2, section 2.5.3 (iv) of this thesis, the researcher looked at the degree to which e-commerce can be experimented with on a limited basis. Table 5.19 presents four (4) declarations that respondents had to consider and appraise as they relate to the trial period to experiment with the usage of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was meant to measure the influence of the trial period on the adoption and diffusion of e-commerce. The responses to the four statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained (M=4.12, SD=0.79), I was able to make the necessary amendments to the e-commerce based on our business requirements followed by (M=4.12, SD=0.85), before deciding whether to use any e-commerce, I was permitted use it on a trial basis. In third place (M=4.09, SD=0.76), experimenting with e-commerce reduces the level of uncertainty for adopting the technology, and lastly, I was permitted to use e-commerce on a

trial basis long enough to see what it could do was rated at (M=3.97, SD=0.77). The sub-constructs of e-commerce adoption were not all rated highly (i.e., some at least M=3 out of 5). The low mean score suggests that the trial period is not a precursor for the adoption of e-commerce.

Table 5.19 Trial period

N=267	Mean	SD
Before deciding whether to use any e-commerce, I was permitted to use it on a trial basis.	4.12	0.85
I was permitted to use e-commerce on a trial basis long enough to see what it could do.	3.97	0.77
I was able to make the necessary amendments to the e-commerce based on our business requirements.	4.12	0.79
Experimenting with e-commerce reduces the level of uncertainty for adopting the Technology.	4.09	0.76
Trial Period (Overall)	**4.09**	**0.70**

Further analysis of the impact of the trial period based on the owners' and business profiles is shown in Appendix 5. The comparative analysis indicates that SMEs operating from home rated the impact of the trial period significantly lower, with a mean score of (M=3.90, SD=0.77), compared to SMEs that operated from specific business premises that rated the trial period higher, with a mean score of (M=4.14, SD=0.68), p=0.03. SMEs whose customer base is B2B rated the trial period higher, with a mean score of (M=4.41, SD=0.59), compared with SMEs whose customer base is B2C, with a mean score of (M=4.01, SD=0.74). The results show that SMEs that did not use ecommerce rated the trial period significantly less (M=3.00, SD=1.49) than those using e-commerce (p=0.01). The impact of the trial period on the adoption of e-commerce was not rated considerably differentl by any of the other demographic and business profile factors (p>0.05).

In line with the DOI model and in accordance with Mamun (2017:115), when an innovation is trailable, it affords the adopters trial opportunities to remodel, test or redesign the innovation based on initial feedback, ultimately lowering the level of uncertainty for SMEs that are adopting.

Having the opportunity to sample, experiment and test an innovation is an essential part of the research and development process to enable SMEs to refine their products and to identify areas for improvement to better meet customer needs, as explained by Participant 6:

> *Well for starters, I thought it's because people didn't have enough money in terms of the economy. But then when I look around, there are events taking place, people are ordering cakes. So, I'm not sure if there's something wrong that I am doing because I have adjusted my prices how I am meant to adjust them by not being too expensive and not too cheap in order for me to also receive my profit. – Participant (6)*

In addition, during the interviews, some of the SME owners mentioned that implementing the phased approach for e-commerce greatly assists in identifying and addressing potential issues early in the process to minimise any risks and maximise the potential impact of their innovations:

> *I'm thinking maybe having to take it as step by step… so that I know that from this step I'm moving on to the next step, which is why from here, this is where I go until I see at the end result. - Participant (8)*

In contrast, several SMEs interviewed felt comfortable to start using e-commerce and felt that a trial period did not have much impact on their adoption and diffusion of e-commerce decisions. While others had already been using e-commerce for some time and therefore not impacted by trialability:

> *I've been working in telecommunications all my life so …. I didn't see any difference. – Participant (1)*

Based on the results of the quantitative and qualitative data, there were mixed and conflicting opinions from Soweto-based SMEs regarding trialability, with most indicating that trialability did not have much of an impact on their decision to adopt and diffuse e-commerce into the business.

Finding 12: A trial period to test e-commerce is not a precursor for the adoption of e-commerce amongst Soweto-based SMEs.

5.5.17 Complexity as a factor for e-commerce adoption

Chapter 2 of this thesis conferred the extent to which it is perceived that e-commerce is fairly difficult to understand and use and therefore is expected to negatively influence the adoption of e-commerce. Table 5.20 displays four (4) affirmations that respondents had to evaluate and appraise as they relate to the complexity of adopting and using e- commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was designed to measure the influence of complexity in the adoption and diffusion of e-commerce. The responses to the four statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score was obtained (M=4.36, SD=0.57). E-commerce is easy to understand, followed by (M=4.29, SD=0.61). Learning to operate e-commerce is easy for employees to understand. In third place (M=4.25, SD=0.59), e-commerce is easy to use, and lastly, I would have no difficulty telling others about the results of using e-commerce (M=4.25, SD=0.63). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score suggests that complexity is a precursor for the adoption of e-commerce.

Table 5.20 Complexity

N=267	Mean	SD
E-commerce is easy to understand.	4.36	0.57
E-commerce is easy to use.	4.25	0.59
Learning to operate e-commerce is easy for employees to understand.	4.29	0.61
I would have no difficulty telling others about the results of using e-commerce.	4.25	0.63
Complexity (Overall)	**4.30**	**0.49**

Complexity was further analysed by the owners' and business profiles, as shown in Appendix 5. SMEs that are formally registered with CIPRO rated complexity higher with a mean score

of (M=4.35, SD=0.45) compared to unregistered SMEs that are trading informally with a significantly lower rating of (M=4.16, SD=0.57), p=0.01. In addition, SMEs that operated from specific business premises rated complexity higher with a mean score of (M=4.35, SD=0.43) compared to SMEs operating from home with a significantly lower mean score of (M=4.10, SD=0.67), p<0.001. SMEs whose customer base is B2C rated complexity significantly lower with a mean score of (M=3.22, SD=0.54) compared with SMEs whose customer base is B2B with a higher mean score of (M=4.47, SD=0.38), p=0.01. As it would be expected, the results show that SMEs that did not use ecommerce rated complexity significantly less (M=3.78, SD=0.86) than those using e-commerce (p<0.001). There were, however, no significant differences in how the SMEs rated complexity by any of the other demographic and business profile factors (p>0.05).

In line with the DOI and TAM models, complexity refers to the level of difficulty in understanding and using innovation, which is expected to impede its adoption (Sanchez-Torres & Juarez-Acosta, 2019:138; Jan *et al.,* 2019:204). During the interviews, SME owners shared their initial struggles with e-commerce, with some perceiving it to be complex while others saw it as a matter of being open to learning new things. Despite the lengthy learning process, most participants displayed a positive attitude towards acquiring the skills needed to use e-commerce. These findings support the notion that complexity plays a role in the adoption of e-commerce by SMEs, as expressed by the following participants:

> *I didn't do any training but it took me quite a while in terms of learning how to upload the catalogues, pictures and pricing on the online shop. It took me about two to three months because I wasn't sure how it worked but I ended up getting the hang of it. – Participant (6)*

> *I must add that I had to learn certain things so that I can cut costs, because I had to make monthly payments…so in order to cut the monthly costs I had to go learn. Hence I said that when I realised, I could do the e-commerce by myself there was no need to find someone to do it for me. - Participant (3)*

Participant 4 and participant 5 expressed lack of confidence in using e-commerce, citing complexity in the learning process that left them feeling discouraged:

> *It's not user friendly and secondly, I feel that I do know how to get to the product market. – Participant (4)*

> *I used to feel like it's complicated to use those platforms (Instagram & Twitter). I don't know, maybe I need someone to teach me how to use them. – Participant (5)*

The results of the quantitative and qualitative data validate that SMEs are most likely to adopt innovation that aligns with their absorptive capacity, representing employees' essential knowledge and skills for the successful adoption of the innovation (Schmidthuber *et al.,* 2020:2). In accordance with the DOI model, SMEs assess the innovation-decision processes by first finding out about the innovation, assessing its usage and the capabilities required to use it, including assessing any complexities related to its adoption within the business operations of SMEs (Burgess *et al.,* 2017:3). Furthermore, the results show that most SMEs are willing to take the time needed to learn how to use the technology.

In contrast, if the consequences of complexity denote that an innovation is perceived to be fairly difficult to understand and use, it is therefore expected to negatively influence the adoption and diffusion of e-commerce (Sanchez-Torres & Juarez-Acosta, 2019:138). Moreover, in line with Rahmi *et al.* (2018:11), Hoang *et al.* (2021:53) and Muathe and Muraguri-Makau (2020:8), the results revealed that diversity aspects such as the characteristics of the SME business owner, including age and level of education, employee absorption capacity and technological characteristics such as ease of use, compatibility and complexity, do influence the adoption and diffusion of e-commerce.

5.5.18 Observability as a factor for e-commerce adoption

Section 2.5.3 (v) in Chapter 2 of this thesis denotes opportunities to enable SMEs to witness the outcomes of potential benefits, which are expected to positively influence the adoption of e-commerce. Table 5.21 shows four (4) statements that respondents had to consider and rate

as they relate to the observability of what they can derive from the usage of e-commerce. A 5-point Likert scale (1= strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) was used. This analysis was meant to measure the influence of observability on the adoption and diffusion of e-commerce. The responses to the four statements were ranked according to mean scores (M) and standard deviation (SD).

The highest mean score obtained was (M=4.29, SD=0.62), which relates to: The positive results of using e-commerce are apparent to me followed by (M=4.27, SD=0.63), regarding businesses that use e-commerce have more prestige than those that do not use e-commerce. In third place (M=4.26, SD=0.60), I have seen what my business can accomplish through the usage of e-commerce, and lastly, the usage of e-commerce visibly increases efficiency and productivity in the business (M=4.18, SD=0.65). The sub-constructs of e-commerce adoption were all rated highly (i.e., all at least M=4 out of 5). The high mean score suggests that observability is a precursor for the adoption of e-commerce.

Table 5.21 Observability

N=267	Mean	SD
I have seen what my business can accomplish through the usage of e-Commerce.	4.26	0.60
The usage of e-commerce visibly increases efficiencies and productivity in the business.	4.18	0.65
Businesses that use e-commerce have more prestige than those that do not use e-commerce.	4.27	0.63
The positive results of using e-commerce are apparent to me.	4.29	0.62
Observability (Overall)	**4.26**	**0.52**

Observability was further analysed by the owners' and business profiles, as shown in Appendix 5. SMEs that operated from specific business premises rated complexity higher with a mean score of (M=4.29, SD=0.50) compared to SMEs operating from home with a significantly lower mean score of (M=4.13, SD=0.57), p=0.04. In addition, SMEs whose customer base is B2B rated observability higher with a mean score of (M=4.58, SD=0.43) compared with SMEs whose customer base is B2C with a significantly lower mean score of (M=4.17, SD=0.54), $p<0.001$.

The DOI model asserts that a user's decision regarding innovation is not an immediate undertaking but a process comprising a series of actions that occur over time, which also allows SMEs to observe the opportunities that e-commerce can present and witness what the business can accomplish through the usage of e-commerce (Pantano & Vannucci, 2019:298). Some of the participants expressed that they felt most comfortable implementing a phased approach to allow them to test and observe the value that can be derived from the usage of e-commerce, as articulated by Participant 8:

I just believe…taking it step by step so that I know that from this step I'm moving on to the next step, which is why from here this is where I go until I see at the end result. - Participant (8)

The literature review confirms that SMEs are more likely to adopt innovation when they can visualise the potential benefits and risks of adopting the innovation (Mamun, 2017:115; Selase *et al.,* 2019:5). Moreover, the analysis of the quantitative and qualitative data results validates that observability denotes opportunities to enable SMEs to witness the outcomes of potential adoption, which is expected to positively influence innovation adoption (Das, 2019:283).

5.6 IMPLEMENTATION OF E-COMMERCE

Apart from existing ICT skills and the cost factors as stated above, some of the Soweto-based SME owners felt that adopting e-commerce was inherently a phased- in approach that corresponded to business growth or evolution. The abovementioned statement is in line with the DOI theory, which asserts that a user's decision regarding innovation is not an immediate undertaking but a process comprising a series of actions that occurs over time (Pantano & Vannucci, 2019:298). Participant 4 is of the opinion that:

> *Evolution basically, you can't be stuck in the past but you have a notebook and a paper then you're driving up and down to your client. So, everything needs to be all digitalised by from start to end. - Participant (4)*

In addition to the ICT skills required and the cost implications of adopting e-commerce, Participant 8 emphasises that a phased approach to implementing e-commerce further provides the business with room to contextualise its achievements and assess whether any additional

requirements are needed through a step-by-step implementation process. In accordance with DOI, the innovation-decision processes that can be used to classify the various stages of adoption are assessed by first gathering more information about e-commerce and then assessing its usage within business operations (Burgess *et al.,* 2017:3). In addition, the ability to try out and observe a system refers to the chances for SMEs to test the technology, witness its potential benefits and risks, and ultimately impact the speed of its adoption (Mamun, 2017:115; Selase *et al.,* 2019:5).

Participant 8 explains further:

> *I'm thinking maybe having to take it as step by step…I mean really sure let's see maybe I want to do it at once, I just believe in alright let's say taking it step by step so that I know that from this step I'm moving on to the next step, which is why from here, this is where I go until I see at the end result. - Participant (8).*

Most new SMEs with financial constraints and lack of resources need to find creative mechanisms that will allow them to gradually introduce e-commerce into their business operations. Participant 7 explains:

> *Remember also this is a new business. So, yes, you know you have to invest in your business but how are you investing when there is nothing at all it's starting. - Participant (7)*

5.6.1 ICT resources available

There are a variety of ICT resources that are utilised by Soweto-based SMEs within their daily business operational activities. The interview participants described the ICT resources available within their businesses, which ranged from hardware, software, and a variety of online platforms, as detailed below. In this instance, the accessibility of ICT resources and staff with the relevant IT skills within the enterprise refer to organisational readiness that aligns with the organisational context of the TOE theoretical framework (Setiyani & Rostiani, 2021:1116). Thus, the ICT resources embedded in the enterprise play a significant role in promoting

organisational readiness and in encouraging SMEs to embrace the adoption of e-commerce (Giotopoulus, 2017:61; Hoang *et al.,* 2021:52). Participant 2 is very comfortable with interacting and working remotely with clients through the usage of e-commerce and explains the experience as follows:

> *Ninety perecent (90%) of my transactions happen on e-commerce. I don't see the clients personally. Most of the time my interactions with them is remote. - Participant (2)*

5.6.1.1 Hardware used for e-commerce

Hardware tools that most participants used in their businesses included desktop computers, laptops, Wi-Fi routers and mobile phones. In addition, Participant 2 outlined the various hardware and software tools being used in the business:

> *I use operating systems, computers, laptops, routers for Wi-Fi, fibre optics…My cell phone is linked to my network, thus whatever I do in my cellphone happens on the computers. - Participant (2)*

> *I have a small phone that I am using to create my logos, my banners. I also use an invoice generator which is digital but that is on my phone and also social media platforms. – Participant (6)*

> *I had a tablet, I have a business tablet which I have been using – Participant (1)*

> *For some items like the business cards and brochures, I had to buy a printer, just a standard business printer. – Participant (3)*

> *Cellphone, laptop, yeah those are the two major ones. – Participant (4)*

> *I am using my cell phone and my laptop. – Participant (8)*

5.6.1.2 Online platforms used for e-commerce

A wide variety of online platforms that were used by the participants and mentioned during the interviews included business websites, Google businesses, OLX, Gumtree, Shopify, online video platforms, Excel and accounting software. In the interviews, owners of SMEs asserted that utilising third-party e-commerce platforms is a more cost-effective and simpler option, as it does not entail a significant initial investment and can be implemented right away as a plug-and-play solution. Furthermore, third- party plug-and-play online platforms that are free, provide SMEs with initial access and basic usage of e-commerce as described by the following participants:

Through Google business and websites that I'm currently subscribed to. – Participant (4)

> *I have used OLX, I have used Gumtree and the classified. Those are the main ones I have used. - Participant (1)*

> *I use my laptop, which can be via video. We use video when I do my classes. – Participant (6)*

> *I can say that I use a bit of Excel. And also, I have this application that I use to generate invoices for my clients. – Participant (8)*

Finding 13: Most Soweto-based SMEs are already using various electronic gadgets, hardware and 3rd party plug-and-play online platforms to conduct business transactions.

5.6.1.3 Social media platforms used for marketing

Social media platforms used by most of the participants to conduct business included Facebook, Instagram, Twitter and LinkedIn. It became evident during the interviews that social

media is also a very popular means through which business owners can access e-commerce. In certain instances, more than one social media platform is utilised by Soweto-based SME owners to reach a variety of types of customers. They are also cognisant of the fact that the provision of good service to their customers also gets them repeat business through word-of-mouth referrals, as articulated by the participants:

> *I make use of Facebook. I also use Instagram but mostly on Facebook that's where I get most of my customers. But then I ensure that I give them a good service so that they can refer me to others via word of mouth. - Participant (3)*

> *I would say for me the most prevalent one in Facebook. I market my services mostly on Facebook. I also use Instagram, I use Twitter and I use WhatsApp. – Participant (8)*

> *I do not have a website as yet, I'm just currently on Instagram. I'm also working on Twitter account for my business and I'm on Facebook as well and WhatsApp. – Participant (6)*

> *I considered options like Facebook where you can advertise your products. – Participant (1)*

> *In terms of events, I use Facebook and WhatsApp. – Participant (7)*

Finding 14: Most Soweto-based SMEs primarily rely on social media platforms, including Facebook, Instagram, LinkedIn and Twitter as a substitute for developing and implementing their own websites and e-commerce platforms due to financial constraints.

5.6.1.4 Instant messaging used for communication

The two instant messaging platforms used were WhatsApp and Messenger. In certain instances, these could lead to expansion options where using one platform leads to expanding to other platforms such as online payment links. Participants explain how instant messaging is used for their business:

> *I used platforms like WhatsApp or maybe if I'm hosting a stokvel, I would go to the Internet cafe and login to my Facebook account and post on my page. – Participant (5)*

> *My clients reach me through phone or emails or WhatsApp. – Participant (6)*

> *Now there is a (online payment) link I can send you on your WhatsApp as well. - Participant (1)*

> *I don't use e-mail I use WhatsApp. – Participant (7)*

5.6.1.3 Payment systems used for financial transactions

A wide variety of payment systems that include both manual and online platforms were mentioned during the interviews and used by the participants included speed point machines such as Yoco, YEP, POS, EFT, e-wallet and cash. Various payment systems are available to SMEs for their customers to make purchases, transact and make online payments or manual payments. The participants stated that their business offers customers the choice of using either a manual payment system or an online payment system, thereby providing varied payment options:

> *So basically I've got a normal POS (Point of Sale). I also have a cash register. – Participant (1)*

We use a scan QR code that I have which is called 'pay me' or they can pay via EFT. – Participant (6)

If they want to use EFT they use that. Some even use e-wallet. – Participant (8)

I use Yoco. Yoco uses the phone also. - Participant (7)

The researcher observed that the point of sale for most SME owners is on a different platform to which they advertise their products and services as stated above. They market and advertise their services on social media platforms such as Facebook, Instagram or LinkedIn. Thereafter, communication with customers is conducted on instant messaging platforms such as WhatsApp and Messenger. However, payments are made on a different platform such as e-wallet, EFT or cash because the social media platform that is used for advertising does not offer payment options. As a result, participants offer customers the choice of using either an online payment system or a manual payment system.

In addition, an extension of the TAM on mobile banking has shown that the practicality of e-commerce has a significant positive impact on attitudes towards its usage by SMEs (Vahdat *et al.,* 2020:2). Furthermore, the accessibility of such payment ICT resources relates to organisational readiness that aligns to the organisational context of the TOE theoretic framework (Giotopoulus, 2017:61; Hoang et al., 2021:52). The SMEs' adoption of diverse marketing and advertising platforms, along with various payment systems, aligns with the DOI model's emphasis on SMEs' pursuit of methods to facilitate e-commerce integration and address customer demands (Setiyani & Rostiani, 2021:1116).

Finding 15: SMEs use different systems and platforms for payment transactions. Often, a hybrid of electronic payments and manual cash payments.

5.6.2 Level of e-commerce adoption and diffusion

Questions from 11 onwards of the quantitative questionnaire deal more directly with the research objectives and questions on the implementation process for the adoption and diffusion of e-commerce among Soweto-based SMEs. Thus, comparisons of the results by demographics are relevant and will be presented. The p value indicates that tests for the normality of data distribution were conducted using the Kolmogorov–Smirnov and Shapiro–Wilk tests. These tests assess the extent to which data for both the independent and dependent variables deviated from a normal distribution, with $p<0.05$ indicating significant deviations. In other words, the results showing $p<0.05$ indicate a significant association between variables, whereas the results showing $p>0.05$ imply an insignificant association between variables. Question 11 of the questionnaire sought to establish the extent and level of e-commerce adoption among the Soweto-based SMEs that participated in this study.The results denoted that 28% of Soweto-based SMEs had already adopted e-commerce and were using the platform for online orders and payments, with 22.1% of the SMEs having taken the level of e-commerce adoption further to also provide customer service and to manage social media on the platform. While 18% used e-commerce to allow customers to complete online forms based on their requests, only 6.4% of SMEs utilised advanced e-commerce platforms that make provision for suppliers and customers to connect. In contrast, 15% of the SMEs had a static website to display and promote their products and services, with 8.6% making use of emails but having no website. On the other hand, only 1.5% made no usage of technology at all in their business operations as shown in Appendix C.

The level of e-commerce adoption was further compared according to the demographic and business profiles. For this comparison, the level of adoption was converted into a numeric scale where 1 indicated nonadoption/non-use of technology and 7 indicated an advanced e-commerce platform that connected suppliers and customers to perform online transactions, in tandem with the categorical version of scale shown in Table 5.22. Consequently, the higher the mean score out of 7, the higher the level of e-commerce adoption.

Table 5.22 Level of e-commerce adoption

Level of e-commerce adoption	N=267, n (%)
1. Nonadopters – No use of technology.	4 (1.5%)
2. Internet connection with emails, but no website.	23 (8.6%)
3. Basic company information available on the internet, but no customer interaction.	40 (15.0%)
4. It is possible to make requests online, send emails and fill in online forms.	48 (18.0%)
5. It is possible to buy and sell products and services online.	76 (28.5%)
6. It is possible to buy and sell products and services online, as well as online customer service and social media.	59 (22.1%)
7. An advanced e-commerce platform that also connects suppliers and customers to do online transactions.	17 (6.4%)

5.6.2.1 Level of e-commerce adoption by age of business

Table 5.23 compares the level of e-commerce adoption by the age of the business, and the results show that there was a significant association between the age of the business and the level of e-commerce adoption (p=0.03). In general, the level of e- commerce adoption increased with the age of the business, with the exception being that businesses aged 16 years and older displayed lower levels of e-commerce adoption. It could be that older businesses were established before technology became an integral part of the business environment, and therefore, they prefer to use traditional ways of doing business (Soja & Soja, 2020:421; Xu, Tong, Liao, Zhou & Yu, 2018:759). In addition, Muathe and Muraguri-Makau (2020:4) assert that risk aversion factors associated with e-commerce adoption increase in older businesses.

Table 5.23 Level of e-commerce adoption by age of the business

	N	Mean	SD	p value
0– 1 year	18	4.72	1.84	0.03
2–3 years	87	4.14	1.49	
4–5 years	94	4.74	1.36	
6–10 years	52	4.81	1.33	
11–15 years	10	5.00	0.82	
16 years and older	6	4.00	1.41	

During the interviews, the researcher learned that the establishment of the businesses by the Soweto-based SME owners ranged between twenty-two (22) and two (2) years. While some of the SME owners established their businesses a few years ago to explore entrepreneurial opportunities associated with the creation of growth-oriented business objectives, other SME owners were left unemployed due to the retrenchments induced by the negative impact of COVID-19. The retrenched participants were inclined to start their businesses in 2020 to overcome the unfortunate circumstances of suddenly becoming unemployed.

> *I established my business just before lockdown and then I made it more permanent at the beginning of lockdown because I had also lost my job at that time. – Participant (6)*

> *This business has been trading since 2000. I started implementing or using technology in my business immediately. – Participant (2)*

> *We conduct face to face and online classes for pregnant moms and mothers with babies are less than six months. The business was established in 2020. – Participant (8)*

> *It was established in 2019. Almost 3 years now. – Participant (1)*

> *The graphic design thing I did it when I was doing my second year in 2014. I mostly use e-commerce for the graphic design (business). – Participant (3)*

In addition, the interview results revealed that businesses that were established after 2020 started using e-commerce soon after inception. Some of the businesses that started before 2020 struggled with the concept of adopting and implementing e- commerce in their businesses. In line with the quantitative results, businesses only up to one year old also had relatively higher levels of e-commerce adoption. This could be because businesses that were established in the last 12 months during the COVID- 19 pandemic felt that adopting e-

commerce was necessary for business continuity (Costa & Rafael, 2021:3055; Reardon *et al.,* 2021:472).

Finding 16: Most of the businesses that were established in the year 2020 during the COVID-19 pandemic started using e-commerce soon after inception.

5.6.2.2 Level of e-commerce adoption by age of SME owner

The results in Table 5.24 imply that there were significant differences in the level of e-commerce adoption by age of business owner (p=0.04). Specifically, even though the level of e-commerce adoption was considerably high among business owners of all ages, including owners aged 25–34 years who scored (M=4.22; SD=1.54). However, that score was still significantly lower when compared to the other age categories. These results are contrary to earlier research studies by Muathe and Muraguri-Makau (2020:4) that owners aged 25–40 years old are more likely to adopt e-commerce.

Table 5.24 The level of e-commerce adoption by the age of SME owner

	N	Mean	SD	p value
18 - 24 years old	4	4.75	1.71	0.04
25–34 years old	82	4.22	1.54	
35–44 years old	100	4.55	1.37	
45–54 years old	67	4.97	1.37	
55–65 years old	14	4.43	1.22	

During the interviews, most of the participants did not reveal their ages; however, the researcher was able to establish that some of the older participants who had established their businesses a while longer felt they were too old to be dealing with technology. In contrast, younger participants felt comfortable introducing e-commerce into their business.

> *I'm 33 years of age and I am based in Soweto…we conduct face to face and online classes for pregnant moms….the business was established in 2020. – Participant (8)*

As of 2004 until today, I have been running this business….You know, I am a bit too old for technology. - Participant (5)

Although the quantitative results indicated that e-commerce adoption levels were significantly higher among SME owners aged 45-55 years and 18-24 years, the interviews revealed a varied pattern of e-commerce adoption across different age groups. Some age groups found it more feasible to integrate e-commerce into their business operations than others.

5.6.2.3 The level of e-commerce adoption by business status

The results in Table 5.25 show that there were significant differences in the level of e-commerce adoption by business status ($p<0.001$). Table 5.11 presents the level of e-commerce adoption by business status and shows that businesses formally registered with CIPRO had a significantly higher level of e-commerce adoption (M=4.76; SD=1.30) than SMEs that were unregistered and trading informally (M=3.87; SD=1.66).

Table 5.25 The level of e-commerce adoption by business status

	N	Mean	SD	p-value
Registered with CIPRO - Formal	204	4.76	1.30	<0.001
Unregistered – Informal	63	3.87	1.66	

In the interviews, many participants did not disclose the formal registration status of their businesses. Nevertheless, the researcher was able to identify that some participants might have had formally registered businesses based on the nature of their business activities. For example, Participant 5 operates a shebeen and liquor outlet, which necessitates an official license and permit for trading. Such licenses are only granted to companies that are formally registered with CIPRO. Additionally, Participant 2 primarily deals with international companies and would need to have a formally registered business to send and receive forex transactions through the South African Reserve Bank. The following statements were expressed by the participants:

As of 2004 until today, I have been running this business with that permit. Then in 2018 or 2017, it was supposed to be converted into a shebeen license….You know, I am a bit too old for technology. - Participant (5)

I use e-commerce to communicate with my suppliers most of them are overseas companies….The only problem is that one of my suppliers is in China. – Participant (2)

During the interviews, it was observed that not all formally registered SMEs exhibited a strong propensity towards integrating e-commerce into their business operations, despite the quantitative data suggesting otherwise.

Finding 17: Not all formally registered SMEs exhibited a strong propensity towards the adoption of e-commerce.

5.6.2.4 The level of e-commerce adoption by place of business operation

The results presented in Table 5.26 suggest that there were significant differences in the level of e-commerce adoption by place of business operation ($p<0.001$). Table 5.26 shows that businesses operating from specific business premises had a significantly higher level of e-commerce adoption (M=4.69; SD=1.35) than SMEs that are trading informally (M=3.94; SD=1.35).

Table 5.26 The level of e-commerce adoption by place of business operation

	N	Mean	SD	p-value
At home	50	3.94	1.65	<0.001
Specific business premises	217	4.69	1.35	

The interviews revealed that some SMEs operating from specific business premises did not exhibit a strong inclination towards integrating e-commerce into their business operations, despite the quantitative data suggesting otherwise. The participants explained as follows:

I established a physical shop, but I was already online selling since back then. – Participant (1)

I started implementing or using technology in my business immediately (upon inception) …I've been working remotely from home all along so there was just no impact for me. – Participant (2)

Right now, I am back (working from) home. I freelance as a graphic designer…. I mostly use e-commerce for the graphic design (business). – Participant (3)

Consistent with the findings of Iyamu (2020:2) and Tseng *et al.* (2019:60), the interview results in this study also indicated that many of the SMEs that have embraced e-commerce also operate from home. Furthermore, Fitriasari (2020:57) posits that e-commerce offers SMEs the flexibility to operate their businesses 24/7 from anywhere without incurring the significant costs associated with renting a physical store or business premises.

5.6.2.5 The level of e-commerce adoption by number of employees

Table 5.27 compares the level of e-commerce adoption by the number of employees, and the results show that there was a significant association between the number of employees and the level of e-commerce adoption (p=0.03). In general, the level of e- commerce adoption increased with the number of employees, with the exception being businesses employing more than 41 people, which displayed lower levels of e- commerce adoption.

Table 5.27 The level of e-commerce adoption by number of employees

	N	Mean	SD	p value
No employees	8	3.38	1.85	0.03
1–10 employees	159	4.47	1.45	
11–20 employees	64	4.64	1.24	
21–30 employees	26	5.04	1.25	
31–40 employees	7	5.43	1.81	
41 and above	3	4.00	2.65	

The findings contrast with the study conducted by Turyakira and Katumba (2019:47), who contend that the growth of e-commerce adoption is primarily driven by larger businesses with a substantial staff complement, as opposed to the comparatively low rate of e-commerce adoption among SMEs. Likewise, the interviews revealed that some SME owners who do not have any employees are already utilising e-commerce in their business operations.

> *I started implementing or using technology in my business immediately (upon inception)...I make sure I get the right people who understand how technology works. – Participant (2)*

> *I'm the only one right now but with events I get people on the go when I get a gig, then that's when I source. – Participant (7)*

The quantitative data revealed that businesses with more than 41 employees exhibited lower levels of e-commerce adoption. This could be because SMEs with a larger staff complement may find it burdensome to implement changes, which could include higher training and development costs (Hussain *et al.,* 2020:14). On the other hand, SMEs with no employees had relatively lower levels of e-commerce adoption, which might indicate that SMEs with no employees who participated in the quantitative survey do not perceive any benefits from adopting e-commerce. However, the quantitative findings contradicted the qualitative results, which suggested that even SMEs with no employees embraced the adoption of e-commerce.

5.6.2.4 The level of e-commerce adoption by type of customers

The results in Table 5.28 denote that there were significant differences in the level of e-commerce adoption by type of customer ($p<0.001$). Businesses whose customers were primarily B2B had a significantly lower level of e-commerce adoption (M=4.00; SD=1.52) than those whose customers were both B2C and B2B (M=4.91; SD=1.37).

Table 5.28 The level of e-commerce adoption by type of customers

	N	Mean	SD	p value
Individuals (B2C)	149	4.39	1.43	<0.001
Other companies and businesses (B2B)	20	4.00	1.52	
Both (B2C and B2B)	98	4.91	1.37	

It was established during the interviews that SMEs providing products and services to B2B and B2C as well as a combination of both B2B and B2C were making use of e- commerce.

> *So, I am a retailer basically. I retail car parts and accessories. I was already online selling since back then (B2C and B2B). – Participant (1)*

> *They pay any form of electronic payment system on their side into my bank account. The business relationship is B2B. – Participant (2)*

> *We conduct face-to-face and online classes for pregnant moms (which is B2C). – Participant (8)*

In contrast to the quantitative data, the interview results suggest that the adoption of e-commerce among SMEs based in Soweto is not highly dependent on whether the customer is B2C or B2B. The type of customer that SMEs cater for does not seem to make a significant difference.

5.6.2.5 Uses of e-commerce in the business

Question 13 of the questionnaire was designed to determine what e-commerce was used for in business operations. The findings revealed that 59.9% used e-commerce for marketing activities, 53.9% operated e-commerce for business operational and processing activities while 50.2% deployed e-commerce for procurement and purchasing activities. Furthermore, 43.8% used e-commerce for financial processing activities, 34.8% applied e-commerce for

logistic and distribution activities, while 21.3% adopted e-commerce for after-sales services. The results indicate that most SMEs may find it much easier and more cost effective to market their product offerings using e-commerce (Novanda, Saputraa, Priyono & Sriyoto, 2021:32; Yeni & Yasri, 2020:640). These results are further consistent with Demircioglua and Chen (2019:51), Gao, Siddik, Khawar Abbas, Hamayun, Masukujjaman and Alam (2023:1594), who found that e-commerce is a major tool for marketing the business by communicating with customers and providing after- sales services. Figure 5.2 provides an overview of the uses of e-commerce among the Soweto-based SMEs that participated in the study.

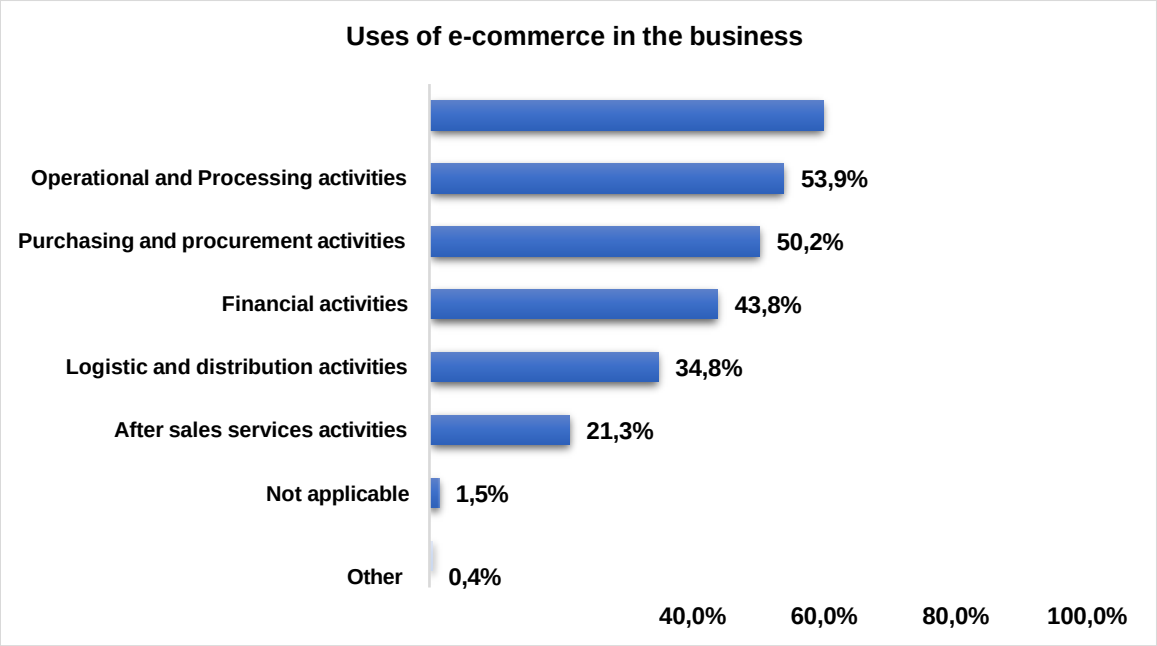

Figure 0.1 Uses of e-commerce in the business

Figure 5.2 Uses of e-commerce in the business

The cross tabulation based on the uses of e-commerce (see Appendix 6) indicates that, regarding the utilisation of e-commerce for marketing purposes, there are no significant differences based on the demographic or business characteristics of the respondents. The results suggest that SMEs in Soweto place considerable importance on using e-commerce for marketing activities, regardless of their demographic or business profiles. This is consistent with the research conducted by Demircioglua and Chen (2019:51), Gao *et al.* (2023:1), Kimana (2020:27) and Nasution *et al.* (2021:271), all of whom found that e-commerce is a critical tool for sales and marketing among most SMEs.

During the qualitative interviews, the researcher established that online platforms enabled some of the Soweto-based SMEs to constantly reach their markets using messaging. E-commerce also provides extra time for business owners to focus on marketing their products and services according to Participant 6:

> *I think it was the marketing, being consistent every day in terms of marketing, promoting my business every day. - Participant (6)*

Given that most people were using social media platforms, e-commerce also meant that SMEs had instant access to the market, as explained by the participants:

> *It's even efficient looking at the rate, especially as you see nowadays most people are on social media. So, if everyone would just be on social media, WhatsApp and Facebook; so it's very efficient. I think it's really quicker to advertise online. - Participant (8).*

> *Specifically marketing and communicating with clients. – Participant (2)*

> *The marketing and communication, yeah mostly marketing and communication. – Participant (4)*

> *We put up posters on Facebook, WhatsApp statuses, Instagram and Twitter. So we do advertising online. – Participant (8)*

Another example of instant access to the market was the ability to have online live interactions with potential clients. The real-time interactions and access to the market is a major highlight according to some of the participants:

I can say it (business website) is interactive because at the end of the day the moment you punch or whatever it is then I can be able to respond to you. - Participant (4)

I use e-commerce to communicate with my suppliers most of them are overseas companies. – Participant (2)

The qualitative feedback from the participants during the interviews aligns with the quantitative results, as they pointed out that e-commerce simplifies the arduous and time-consuming procedures involved in traditional customer interactions and communication channels. In addition, they asserted that it allows SMEs to allocate more time towards marketing and selling their offerings.

Finding 18: Most of the Soweto-based SMEs use e-commerce for sales and marketing activities.

5.6.3 E-commerce diffusion considerations and processes

The diffusion of innovation theory (DOI) introduced by Rogers in 1995 aims to explain the different stages and pace of technology adoption (Burgess *et al.,* 2017:2; Pantano & Vannucci, 2019:298). It is a framework based on the process of technology adoption that elucidates the reasons, methods and pace at which enterprises adopt new technologies (Amaglo, 2020:17; Chau *et al.,* 2020:6).

In the interviews, the participants provided a comprehensive account of the processes and activities involved in integrating e-commerce into their day-to-day business operations. The dominant trend in e-commerce adoption was that while a few had already established fully functional e-commerce websites along with various social media platforms, the majority were implementing the technology in stages. By adopting e-commerce gradually, SME owners can assess the effectiveness of the technology and better manage their expenditures:

The end goal is to get something fully fledged. I would love to have my own website and an app for the business. Over the years, I have learnt that there is more to a website than just putting your products or just selling. - Participant (1)

5.6.3.1 Affordability

Affordability pertains to the availability of financial and ICT resources within enterprises to facilitate the adoption of e-commerce and obtain the necessary data required for e-commerce functionality. Affordability is linked to internal resources, such as capital and ICT resources, which are accessible for e-commerce implementation and align with the organisational context of the TOE theoretical framework (Chau *et al.,* 2020:6). Furthermore, the organisational context relates to SMEs' organisational readiness and preparedness to assess their capability to adopt e-commerce (Eze *et al.,* 2019:573).

In addition, the DOI model outlines the various stages in the e-commerce diffusion process, which highlights the gradual integration of e-commerce within SMEs' business operations to overcome financial resource constraints (Rahayu & Day, 2017:28). The diffusion process aligns with the pragmatic philosophical worldview of this study, which acknowledges that e-commerce adoption by SMEs is not a fixed process, and that SMEs experience different levels of development during the diffusion process (Creswell & Creswell 2018:10; Maree, 2020:333; Setiyani & Rostiani, 2021:1116).

The interviews revealed that the costs and affordability of procuring and deploying various e-commerce tools were crucial factors that influenced the decision of Soweto-based SME owners to either adopt e-commerce all at once or to gradually implement it in stages. Developmental costs for creating a business website that is interactive with customers can be quite expensive for most of the participants. Participant 1 elaborates on the e-commerce implementation and diffusion process that they adopted:

> *I considered having my online shop but to get a developer to do that was a bit pricey so I considered options like Facebook where you can advertise your products. So, I have used social media options versus having a fully-fledged site of my own. - Participant (1)*

The finances were a contributing factor because I had to cough up money from my own pocket to set up the e-commerce…I remember I paid about R9000.00. - Participant (3)

For deliveries, the cheaper ones would be your physical ones like PEP and PnP; they are relatively cheaper but the ones I would use e-commerce are slightly more pricier. – Participant (1)

Participants explained further about mitigating the financial impact of implementing a fully-fledged e-commerce platform and how that has influenced them to adopt a phased-in approach to implementing e-commerce in their business operations:

Yes, correct (I am implementing e-commerce in phases)…I just need to work around my finances because I do have someone who can do that for me and I am currently still waiting for a quote from him so that is definitely something I plan on doing. - Participant (6)

Not really, I was putting bits and pieces yeah (e-commerce implementation). – Participant (4)

I would say what contributed to that is the price, (e-commerce implementation). It was not as expensive when compared to the other (Developer). So I think affordability was also a factor. – Participant (3)

However, Participant 2 was not interested in having a website because his business offering is to a niche clientele where he renders B2B services and relies on word of mouth.

I see it as an unnecessary cost for hosting it. – Participant (2)

The results from the quantitative data in Table 5.9 revealed that the cost of setting up a website for the implementation and application of e-commerce was the least affordable amongst the respondents (mean=4.15, SD=0.80). The findings of the interviews align with the qualitative

results which indicate that the costs of developing a website and implementing an e-commerce platform are a major challenge for most SMEs although they can manage and budget data costs.

Regarding data costs, the participants emphasised that the cost of data and conducting a price comparison analysis among internet service providers was the primary factor to consider for the diffusion of e-commerce. It is equally essential to have a budget in place to manage the expenses of purchasing data and ensure proper management of data costs. During the interviews, some of the participants felt that even though data costs played a significant role in the diffusion of e-commerce, they could mitigate the adverse effects by planning ahead and setting aside funds to cover data expenses.

> *Yes, it's expensive but I don't have any other means, I just need to ensure that maybe in two weeks I purchase about R100 worth of data, I'm using Telkom and I think it's better cause it lasts for about two weeks. – Participant (5)*

> *When it comes to data, it's something that we have incorporated in our daily lives, we are used to it now; it may be expensive but we are used to it now and I just budget and get onto data plans. – Participant (1)*

> *It's not a challenge (data costs). I'm saying WhatsApp does not use a lot of data and also Facebook has I think three options, if you don't have data, you can use words only then people can see pictures after. – Participant (7)*

> *I wrote down my budget then I came up with my total of what I needed and how I was going to maintain this budget. So, you have to make sure we see you don't actually overspend when it comes to their budget because you also need to make a bit of some profit. So, what I normally do is that I load enough data to sustain me throughout all the 10 classes. So, data has never been a challenge. Although data is expensive, I budget for it. – Participant (8)*

Table 5.9's quantitative data results revealed that the affordability of data costs and Wi-Fi had the highest mean score of (M=4.39, SD=0.64) for the implementation and adoption of e-commerce, indicating that Soweto-based SME owners have considered recurring data cost expenses and are not adversely affected by them. The qualitative findings from the interviews align with these results and indicate that the participants can manage and budget for data costs, thus enabling them to afford the costs associated with implementing and utilising e-commerce in their day-to-day business operations.

During the interviews, it became clear that a dichotomy exists among Soweto-based SMEs concerning the costs associated with implementing and utilising e-commerce. Specifically, these businesses cannot afford the initial capital outlay required to develop a website and e-commerce platforms. However, they can manage and afford the recurring expenses associated with data costs required for utilising e-commerce within their business operations. Moreover, these SMEs rely on third-party plug-and-play social media and e-commerce platforms to access technology usage for their businesses.

Finding 19: Soweto-based SMEs cater and budget for recurring data cost expenses, thus not adversely affected by the high data costs.

5.6.3.2 ICT knowledge and skills

The presence of ICT resources and skilled human resources within enterprises is crucial for the successful implementation and diffusion of new technologies, as noted by Maduku *et al.* (2016:714) and Setiyani and Rostiani (2021:1116). Consistent with the organisational context of the TOE framework, an enterprise's internal resources such as relevant tech-savvy skills necessary to facilitate the implementation and diffusion of e-commerce, are a prerequisite. During interviews, SME owners who adopted a full-fledged e-commerce platform from the outset often cited their pre-existing technological literacy and familiarity with ICT as a common reason. Participants emphasised that prior technological proficiency had a beneficial impact on the ability to implement a fully-fledged e-commerce platform immediately and reap its benefits.

I had a good base of using computers, so for me it wasn't any issue honestly. – Participant (1)

I grew up in the electronics industry, and I already had knowledge about how this can benefit my business. - Participant (2)

The participants noted that while some business owners lack the necessary IT technical skills, it is essential for them to proactively acquire computer knowledge and upgrade their technological literacy to be able to consider e-commerce adoption. This suggests that a basic level of technological proficiency is a requirement for SME owners to have before contemplating the implemention of e-commerce for their businesses. Furthermore, the adoption of e-commerce is influenced by the willingness of SME owners to embrace technological advancements, which is affected by the increasing use of the internet worldwide. The participants shared the following experiences on this matter:

I didn't do any training, but it took me quite a while in terms of learning how to upload the catalogues, pictures and pricing on the online shop. It took me about two to three months because I wasn't sure how it worked, but I ended up getting the hang of it. – Participant (6)

I know that I have to be computer literate, know how systems work, how computer networks work, know how other people respond to me. – Participant (2)

The age we are living in is about technology now. That's basically why I am adopting e-commerce. - Participant (4)

Table 5.5 of the quantitative data on ease of use revealed that SME owners found it easiest to acquire the necessary skills to use e-commerce as it obtained the highest mean score. Moreover, table 5.10, which pertains to entrepreneurial orientation, showed that the fourth-highest mean score was obtained regarding business owners having sufficient knowledge of e-commerce. Table 5.11, which relates to organisational readiness, revealed that the highest mean score was achieved for employees finding it easy to understand how to operate e-

commerce, and most of them were computer-literate. Furthermore, during the interviews, participants acknowledged the knowledge and technical competencies required to integrate e-commerce systems into their business operations. This finding aligns with Selase *et al*. (2019:5) assertion that SMEs with a higher level of technical skills and knowledge are more likely to adopt innovations than those with lower levels of the SME owner's technical skills and knowledge.

5.6.3.3 E-commerce application processes

Apart from the cost factors and ICT skills mentioned earlier, the adoption and spread of e-commerce among SMEs can take various approaches, as noted by Rahayu and Day (2017:28). This statement aligns with DOI theory, which suggests that a user's decision regarding innovation is not an immediate action but a process that occurs over time which involves a series of actions, according to Pantano and Vannucci (2019:298). Furthermore, DOI theory highlights that the entrepreneur's individual characteristics and the technology's characteristics play a critical role in the diffusion process of e-commerce and that SMEs cannot adopt a one-size-fits-all approach (Hussain *et al.,* 2020:4; Schmidthuber *et al.,* 2020:2).

During the interviews, some Soweto-based SME owners expressed the view that the adoption of e-commerce is a gradual process that corresponds with business growth or evolution. Participant 8 emphasised that a phased-in approach to implementing e-commerce provides the business with an opportunity to contextualise its achievements and assess whether any additional requirements are necessary through a step-by-step process. In line with DOI theory, the innovation-decision processes used to classify the various stages of adoption are assessed by first gathering more information about e-commerce and then evaluating its usage within business operations, as noted by Burgess *et al.* (2017:3). Additionally , the concepts of trialability and observability represent opportunities for SMEs to test the system, observe potential benefits and risks of using the technology, and influence the rate of adoption (Mamun, 2018:115; Selase *et al.,* 2019:5). Participant 8 explains further:

> *I'm thinking maybe having to take it as step by step…I mean really sure let's see maybe I want to do it at once. I just believe in alright let's say*

taking it step by step so that I know that from this step I'm moving on to the next step, which is why from here this is where I go until I see at the end result. - Participant (8)

In line with Mamun (2018:115) and Schmidthuber *et al.* (2020:2), the qualitative interviews revealed that SMEs exhibit varying rates of technology adoption, attributable to their diverse nature and differing business objectives and personal capabilities. Moreover, the participants reported during the interviews that they had implemented a hybrid approach that integrates traditional face-to-face product and service delivery methods and manual cash payments, as well as online and digital facilities in order to meet the diverse needs of their customers. Moreover, affordability is also a key determinant of the methods and practices employed in implementing e- commerce, with some of the SMEs opting for manual product delivery via retail stores due to cost considerations.

It's either the ones who are doing face to face they give me like cash in the class and the online ones, they pay into my business account. Yes, they also do ewallets. – Participant (7)

If they want to use EFT they use that, some even use e-wallet. – Participant (8)

We get our clients from the clinic, so even those that we approach face to face, they will attend our online sessions. – Participant (8)

Yeah I use PEP or PnP stores (for deliveries). I ask clients if they have a PnP or PEP store near them. They are less pricier. – Participant (1)

In addition, according to Alkhalil *et al.* (2017:10), SMEs face distinct challenges which include interrelated criteria and constraints that must be considered when implementing e-commerce. The interviews conducted by the researcher revealed that some SMEs encountered difficulties in digitising products that required physical rendering. As a result, they are obligated to continue rendering services traditionally.

Remember which it's not like a packaging product that I sell which can be delivered, it ends up with me having to go there physically which now impaired the final output. The initial part of it … yes you can do it on the digital platform, but the actual rendering of the service I need to actually go on site. – Participant (4)

It's all the paying ways, if it's cash I need to be there cash on delivery because I do have things, say if someone has hired something from me for their event and they not hiring my services but they're hiring my equipment then they say cash on delivery then it's going to be cash. – Participant (7)

Logistically, no it's not, especially taking into consideration the hot weather we have but I have made a cake and had it sent to a client based in Mpumalanga. - Participant (6)

SMEs based in Soweto exhibit a range of business practices and encounter multiple obstacles, including limitations in infrastructure, insufficient technical expertise and low levels of awareness (Bvuma & Marnewick, 2020:2; Cilliers, 2018:2). The interviews revealed that participants employ varied approaches and methods when implementing e-commerce. These choices are influenced by their business strategies, perceived effectiveness, compatibility with current systems, and their capacity to fulfil customer requirements.

I used to use a website where you just order a logo and pay for it online. It's just that now I've stopped it cause it had some hiccups. Once payment has been made, I can start with the concepts and send them to you. Once you approve and then you pay the full amount. Iit's the same with business cards; when you want business cards, you can just order it online and then I design them and send you three concepts. The one you choose, and if it requires printing, you will pay the full price and I will courier it to you. – Participant (3)

It's not mine but it goes directly to me it's basically a rented website. – Participant (4)

Yeah, (I want) a complete website with everything. I think if you're choosing a website just go fully-fledged – Participant (7)

Yes, before 2020, I used platforms like WhatsApp or maybe if I'm hosting a stokvel, I would go to the Internet cafe and login to my Facebook account and post on my page. I would not post everyday seeing that I'm running a business. – Participant (5)

The qualitative interview findings are consistent with the DOI Model, which suggests that the adoption of e-commerce by SMEs can range from basic activities such as static websites and emails to more advanced activities such as online payments, purchasing, and customer services (Ndayizigamiye *et al.,* 2019:263). Given the socio-economic challenges and infrastructure limitations faced by SMEs in Soweto, the opportunity to gradually progress through basic e-commerce activities can help build their confidence and eventually move towards more advanced activities (Susanty *et al.,* 2020:382). Basic e-commerce activities also provide a chance for SMEs to learn and test the waters while managing the financial constraints associated with fully-fledged e-commerce platforms (Busaidi *et al.,* 2019:36; Cant & Wiid, 2016:1879). Moreover, the implementation of e-commerce by SMEs involves the utilisation of diverse approaches and techniques that align with their business strategies and are deemed effective, compatible with current systems, and meet the demands of their customers.

5.7 BARRIERS TO THE ADOPTION AND DIFFUSION OF E-COMMERCE

Section 3.5 in chapter 3 of this thesis looks at the inhibiting factors for the adoption of e-commerce by SMEs. Because the barriers had the opposite effect to the enabling factors in relation to the adoption and diffusion of ecommerce, the direction of the 5- point Likert scale used in relation to the inhibiting factors was the opposite of that for the enabling factors. This means that when respondents *strongly agreed* that a given item was a barrier, a numeric score of 1 was allocated, and a numeric score of 5 was allocated when respondents *strongly*

disagreed that a given item was a barrier. As such, the closer to 1 out of 5 the mean score for a given item, the stronger it was as a barrier, and the closer to 5 the mean score, the weaker the item was as a barrier.

Table 5.29 presents fourteen (14) statements that respondents had to evaluate and rate as they relate to the barriers to the adoption and diffusion of e-commerce. This analysis was meant to measure the negative impact of barriers to the adoption and diffusion of e-commerce. The responses to the four statements were ranked according to mean scores (M) and standard deviation (SD).

The lowest mean score obtained (M=1.61, SD=0.56) is that the lack of financial means is a barrier to completely implementing e-commerce in the business, followed by (M=1.67, SD=0.61) which means that the lack of trustworthy and effective telecommunication infrastructure is a barrier to e-commerce diffusion. In third place (M=1.67, SD=0.58), reluctance to change business processes is a barrier to e-commerce diffusion, followed by (M=1.69, SD=0.59) organisational culture. In fifth place, the lack of perceived need for e-commerce is a barrier to e-commerce diffusion (M=1.70, SD=61), followed by (M=1.71, SD=0.63) lack of awareness.

Other sub-constructs related to the barriers that inhibit the adoption and diffusion of e-commerce that were rated included high data costs (M=1.72, SD=0.62), lack of secure payment infrastructure (M=1.73, SD=0.59), lack of knowledge and understanding of e-commerce by business owners or management (M=1.73, SD=0.59), training costs (M=1.73, SD=0.60), lack of government support (M=1.73, SD=0.62), lack of skilled employees (M=1.73, SD=0.63), lack of business law on e-commerce (M=1.73, SD=0.65) and finally, lack of customer demand (M=1.78, SD=0.62). The sub-constructs of the negative impact of barriers to the adoption and diffusion of e-commerce were all rated highly (i.e., all below M=2 out of 5). The low mean score suggests that the negative impact of barriers influences the adoption and diffusion of e-commerce.

Table 5.29 Barriers that inhibit e-commerce adoption

N=267	Mean	SD
The lack of financial means is a barrier to completely implementing e-commerce in the business.	1.61	0.56
The lack of knowledge and understanding of e-commerce by business owner or management is a barrier to e-commerce diffusion.	1.73	0.59
The lack of customer demand is a barrier to e-commerce diffusion.	1.78	0.62
The lack of skilled employees is a barrier to e-commerce diffusion.	1.73	0.63
The lack of a trustworthy and effective telecommunication infrastructure is a barrier to e-commerce diffusion.	1.67	0.61
The lack of perceived need for e-commerce is a barrier to e-commerce diffusion.	1.70	0.61
The lack of government support is a barrier to e-commerce diffusion.	1.73	0.62
The lack of secure payment infrastructure is a barrier to e-commerce diffusion.	1.73	0.59
High data costs are a barrier to e-commerce diffusion.	1.72	0.62
Training costs are a barrier to e-commerce diffusion.	1.73	0.60
Reluctance to change business processes is a barrier to e-commerce diffusion.	1.67	0.58
Organisational culture is a barrier to e-commerce diffusion.	1.69	0.59
Lack of awareness is a barrier to e-commerce diffusion.	1.71	0.63
Lack of business law on e-commerce is a barrier to e-commerce diffusion.	1.73	0.65
Barriers (Overall)	**1.71**	**0.46**

Considering the impact of barriers on the adoption of e-commerce, the adoption and diffusion of e-commerce was further analysed based on the owners' and business profiles, as shown in Table 5.30. SMEs that are formally registered with CIPRO rated barriers as being stronger with a mean score of (M=1.66, SD=0.43) compared to unregistered SMEs that are trading informally with a rating of (M=1.87, SD=0.52), $p<0.001$. This means that formal businesses perceived the barriers to be stronger, even though the statement may sound like a contradiction given that they have a higher level of e-commerce adoption and diffusion, as presented earlier. However, it is important to note that the abovementioned paradox could also insinuate that because registered SMEs are using e-commerce frequently, they are more aware of the barriers. Furthermore, SMEs whose customer base is B2B rated barriers higher with a mean score of (M=1.50, SD=0.46) compared with SMEs whose customer base is B2C with a mean score of (M=1.77, SD=0.45), $p=0.02$.

Table 5.30 Rating of the barriers impacting the adoption of e-commerce by demographic and business profiles

	N	Mean	Std. Deviation	P-value
Age of business				
0 - 1 year	18	1.66	0.60	0.71
2 to 3 years	87	1.76	0.49	
4 to 5 years	94	1.72	0.43	
6 to 10 years	52	1.64	0.44	
11 to 15 years	10	1.73	0.33	
16 years and older	6	1.55	0.47	
Age of owner				
18 - 24 years old	4	1.53	0.36	0.45
25–34 years old	82	1.77	0.48	
35–44 years old	100	1.66	0.47	
45–54 years old	67	1.72	0.44	
55–65 years old	14	1.73	0.39	
Job level				
Owner	103	1.73	0.49	0.79
Manager	138	1.70	0.43	
Owner and Manager	26	1.67	0.52	
Industry				
Hospitality/restaurant	65	1.65	0.46	0.12
Retail/wholesale	55	1.69	0.47	
Services	101	1.73	0.42	
Property	11	1.75	0.55	
Manufacturing	18	1.70	0.52	
Construction	5	1.90	0.23	
Agriculture	3	2.27	0.46	
Technology	5	1.26	0.48	
Business status				
Registered with CIPRO - Formal	204	1.66	0.43	<0.001
Unregistered – Informal	63	1.87	0.52	
Place of operation				
At home	50	1.83	0.57	0.04
Specific business premises	217	1.68	0.43	
Number of employees				
No employees	8	1.75	0.75	0.93
1-10 employees	159	1.71	0.45	
11-20 employees	64	1.70	0.43	
21-30 employees	26	1.69	0.41	

31-40 employees	7	1.69	0.68	
41 and above	3	2.00	0.75	
Customer type				
Individuals	149	1.77	0.45	0.02
Other companies and businesses	20	1.50	0.46	
Both	98	1.66	0.45	
Customer base				
Only in Soweto	201	1.72	0.45	0.19
In Soweto and other provinces	59	1.64	0.47	
In South Africa and globally	7	1.96	0.65	
Years using e-commerce				
No e-commerce	8	1.93	0.73	0.59
In the last 12 months	39	1.72	0.55	
Between 1-3 years	82	1.71	0.49	
More than 3 years	138	1.69	0.39	

Finding 20: Financial constraints were the highest barrier to the development and implementation of a website and e-commerce platform. This was followed by lack of reliable ICT infrastructure, then followed by inertia towards changes in business processes, and lastly, organisational culture. These are the four highest barriers to e-commerce diffusion.

Researchers have identified many barriers and inhibiting factors for the adoption of e-commerce by SMEs (Busaidi, 2019:37; Hussain *et al.,* 2020:2; Rahayu & Day, 2017:26). However, literature the review points out that the barriers faced by SMEs from developing countries are often a lack of awareness of the vast benefits that can be derived from the adoption of e-commerce, lack of technology skills, poor infrastructural development and expensive data costs (Awiagah *et al.,* 2016:816; Worku & Muchie, 2019:351). As a result, the Soweto-based SME owners shared the barriers they have encountered during the adoption and implementation stages of e-commence. The section below looks into the different barriers that were raised by the participants during the interviewas asthey relate to lack of ICT knowledge and skills, lack of financial resources, lack of infrastructure, lack of government support, lack of trust and scepticism by customers and conservatism among customers. Participant 3 sums up all the barriers experienced below:

Yes, over 50% of people don't trust it and still prefer to make EFT payments. The other reason is data because it's very expensive and lastly the other problem is your connectivity due to loadshedding. – Participant (3)

5.7.1 Lack of ICT knowledge and skills

In line with the earlier identification of ICT knowledge and skills as one of the facilitators of e-commerce adoption, the researcher revealed that lack of technology knowledge was cited as one of the barriers that impeded the adoption of e-commerce during the interviews with the participants. Participants expressed the necessity of possessing a certain level of ICT literacy and skills, as lacking them would hinder their ability to participate in e-commerce activities. Participant 7 believed that understanding the benefits of e-commerce often require knowledge of technology skills by SME owners:

Remember for somebody to understand that e-commerce works, they need to understand technology. - Participant (3)

Participant 6 concurred with the aforementioned statements and emphasized that gaining knowledge about new technology and acquiring ICT skills is challenging. This difficulty is compounded by the lack of formal training available to Soweto-based SME owners, who must often dedicate their own time to self-taught technology literacy. To become knowledgeable about technology as a self-taught SME owner, one needs to possess a positive mindset and be ready to invest time and resources in learning new skills in the initial stages of implementing e-commerce. Since most SME owners are always busy trying to run their businesses, finding the time to upskill their technological skills poses a barrier that can inhibit the adoption of e-commerce. Participants further elaborate:

I didn't do any training but it took me quite a while in terms of learning how to upload the catalogues, pictures and pricing on the online shop. It took me about two to three months because I wasn't sure how it worked but I ended up getting the hang of it. - Participant (6)

I'm still new with technology (and don't know much). So, maybe you could teach me or give me a few options. – Participant (5)

It wasn't really easy to conduct the business online. – Participant (8)

5.7.2 Lack of financial resources

The implementation of e-commerce was also hampered by the costs of implementing an e-commerce platform and the high costs of data. Furthermore, data are needed for connecting to the internet, which enables the functionality of e-commerce. In most instances, SMEs must be creative and often improvise to find mechanisms that can address the expensive costs of data. According to participant 4:

South Africa is the highest in terms of data; it is quite costly so I use both data and mobile data and fibre as well. - Participant (4)

It is a problem when you use mobile (because) mobile data is expensive…I used to use Telkom mobile, but it was expensive. – Participant (2)

Yeah (mobile data) it is expensive. But, I have seen that it is a challenge (especially) for moms…..but now we do post updates on the WhatsApp group so moms (who) struggle with data can access those messages and to access the links as well. – Participant (8)

Costs became even more of a barrier when a business is experiencing financial constraints. Over and above the many business and financial obstacles faced by SMEs, those that wish to implement e-commerce find it even more challenging due to the expensive data costs, as articulated by participant 5:

I mentioned to you that my business is not doing well. But I do wish to get (a website). Maybe I can do so and get my website for the new construction projects in the new financial year. - Participant (5)

I considered having my online shop but to get a developer to do that was a bit pricey. - Participant (1)

Yes, correct (I am implementing e-commerce in phases)…I just need to work around my finances. - Participant (6)

5.7.3 Lack of infrastructure

The lack of critical infrastructure to enable seamless connectivity to the internet, particularly fibre optics, was another barrier to the implementation of e-commerce among Soweto-based SMEs. Participants complained during the interviews that there was still a high deficiency of ICT and fibre infrastructure in the township of Soweto, which in essence created challenges for most SMEs to implement e-commerce. The absence of fibre infrastructure in the township of Soweto means that most inclined to use other alternatives such as mobile routers which are also an expensive means to acquire data according to the participants:

I haven't gotten fibre as yet, but I am moving over to that cause it is quite a process because I need to have it installed. - Participant (6)

No, there isn't (fibre infrastructure in the area)…I don't have fibre right now, I'm currently using a pocket router. - Participant (3)

I don't have fibre right now; I'm currently using a pocket router. – Participant (5)

I use mobile data. There is no fibre in our area. – Participant (8)

Poor internet connectivity due to network failures was another related infrastructural barrier. Network failures and slow connectivity problems create further challenges in delivering products and services to customers, as described by Participant 6:

So in terms of social media, I would discover that I'll experience network issues. You will find that a client might have sent an email in the morning at 10am and I only receive it at around 11am or 12noon; that basically causes a delay when receiving messages and you will find that a particular client might need a cake urgently and that ends up delaying the whole process. - Participant (6).

Still on the topic of lack of infrastructure, the so-called loadshedding has caused a crisis. Loadshedding is a temporary shutdown of electric power by the power utility Eskom in particular areas or regions of South Africa due to insufficient electricity generation to meet the demand. As a result, the loadshedding crisis serves as a major barrier to the adoption and usage of e-commerce for most SMEs. Since 2019, South Africa has been facing constant electricity cuts that have negatively impacted the livelihoods of many people, including many businesses. Since most SMEs do not have capital to opt for alternative power restoration alternatives such as solar systems or generators, constant electricity interruptions do impede their ability to conduct business using e-commerce. This negatively impact SMEs' ability to process and deliver products and services to customers timeously, as explained by participants during the interviews:

The other reason is loadshedding. Remember it affects you because when you promised to send items to a client and when you try to process their order and loadshedding hits then you have got a problem. - Participant (3)

It's a data free platform but still if they have load shedding, they can't connect. – Participant (7)

Yes, there is also the electricity crisis. – Participant (5)

Finding 21: The majority of Soweto-based SMEs depend on mobile data and mobile routers to access the internet due to the inadequate ICT infrastructure in the township of Soweto.

5.7.4 Lack of government support

Closely tied to infrastructural challenges is the inadequate provision of basic amenities like water, electricity, and reliable roads.. The slow processes in service delivery from the government and municipalities are a barrier to the implementation of e- commerce. For the purposes of this study, government support also denotes the assistance provided by the state to encourage and facilitate the adoption of e-commerce by SMEs (Salem & Nor, 2020:19). Government support is one of the environmental factors that influences technology adoption in the TOE framework (Effendi *et al.,* 2020:919; Setiyani & Rostiani, 2021:1117). Support from the government can be granted in four different aspects: ICT infrastructure, regulations, policies, funding and support programmes (Chau *et al.,* 2020:12; Kshetri, 2018:93; Revinova, 2019:2).

However, during the interviews, it became evident that the participants were not greatly impacted by government support or lack thereof in terms of getting grants or funding or being part of government assistance and support programmes. However, one of the participants did complain about poor government support and their lack of understanding of the importance of quick turnaround times needed in responding to queries and problems being experienced by the SMEs poses a major challenge to sustain the usage of e-commerce in the business according to participant 2:

> *If I speak to the City of Johannesburg Municipality, they take a long time to respond…Some of the (municipality) employees are not at the (proficiency) level expected of them. - Participant (2)*

5.7.5 Lack of trust and scepticism by customers

A significant challenge faced by many SMEs that seek to incorporate e-commerce into their business models is the existence of a lack of trust and scepticism among certain customers towards online shopping. Lack of knowledge and lack of trust among customers is a major barrier to the usage of e-commerce, especially regarding the fear of making payments to a faceless stranger. Participant 4 elaborates further:

I think a lot of education still needs to go into that on the customer's side because now as much as they are ready, that element of trust is a big issue because now if somebody had to part with their money they want to know exactly who it is or who they are paying, you understand. So, everything is digitalised it becomes quite shaky…I say pay, 90% of the time you'll be skeptical, who am I paying and am I really going to get what I'm paying for? - Participant (4)

The same vexations were outlined by participant 8 regarding the scepticism received from potential customers when advertising or marketing products and services online were a barrier to the usage of e-commerce:

The barriers that exist mostly is that you find that firstly, it would be when it comes to advertising or marketing. You definitely market your business online and it's not everyone who is going to take that at the first glance. There will be those who be skeptical about your business, so skepticism is the first barrier. – Participant (8).

Participant 3 went further to outline that some sceptical customers require SMEs to take the time to explain, provide assurance and educate them pertaining to the security of transacting online and conducting online payments to mitigate their lack of trust:

Some (customers) are not that comfortable in making payments online; they go to the extent of asking me if they can trust the website and if it won't take their money and I tell them no, and that in order for them to trust the site they should look at the URL, the lock sign shows that the site is secured. - Participant (3)

Some come (in person) and pay cash. - Participant (6)

The biggest issue is the trust issue for some people. Sometimes people want to come to your store physically in Soweto, and there are people who are skeptical in coming to Soweto. After establishing trust,

only then once you have a relation, then they can transact online. – Participant (1)

It wasn't that easy to get new clients. Sometimes when you advertise your services online people think it is a scam; all those sorts of things. You have to make sure that they believe that your business is legit and after you have won their trust, then you can now transact online. – Participant (8)

The issue of lack of trust is sometimes also experienced by the SME owners due to untraceable customers that fail to make payment after the service has been rendered to them, as explained by participant 8 below:

Still upon completion, some of the clients do not pay. It is sometimes difficult to come up with a follow-up plan in terms of getting that payment. It is also difficult to trace that client to make the payment. – Participant (8)

Finding 21: Lack of trust amongst customers was a major challenge but did not deter Soweto-based SMEs from adopting and utilising e-commerce.

5.7.6 Conservatism among customers

The preference for traditional methods and channels of doing business compounded by the reluctance to embrace new methods of transacting by some customers was also mentioned as a challenge. Inertia and resistance to embracing new changes and technology by customers is a barrier for several of the participants interviewed since some customers insist on transacting physically and maintaining the traditional ways of doing business as experienced by participants:

For me, I am servicing a traditional market…It means that even if they see you online, they want to complete the sale physically. They must see the shop physically. – Participant (1)

> *Some still prefer to make payments to a bank and we still allow that. So, some will make an order and then call and ask to make the payment directly into my account. - Participant (3)*

Some of the conservatism by customers was attributed to the preference for the human touch. Despite the many interventions to introduce digital transactions, human interaction by many people is still highly valued, with many customers yearning for the human touch element to overcome the scepticism and mistrust towards SMEs that utilise e-commerce, as explained by participant 4:

> *The lack of the human touch basically, the face-to-face interaction, the trust that comes with clients having to trust the e-commercial space…there's no human interaction there and the level of trust goes down drastically. - Participant (4)*

The findings regarding the barriers affecting the adoption and spread of e-commerce, drawn from both quantitative and qualitative data in this study, align with previous research conducted by Costa and Castro (2021:3045), Escamilla, Fransoo, and Tang (2021:677), and Gugure and Takavarasha (2020:3471). These studies assert that the adoption and spread of e-commerce among SMEs are hindered by diverse challenges including financial constraints, insufficient technological infrastructure, ineffective operations, and a lack of information technology skills among employees.These challenges collectively limit the scope and scale of e-commerce implementation. Furthermore, Hoang *et al.* (2021:53), Moslehpour *et al.* (2018:3) and Zoroja *et al.* (2020:313) assert that the diversity of political systems, economies, ideologies, demographics, culture and race in developing countries exacerbates inhibiting factors for SMEs to adopt e-commerce as these countries are far from homogenous.

Furthermore, these findings are reinforced by a study conducted by Ibrahim et al. (2019:48), which uncovered that SMEs in developing nations face numerous hurdles in embracing e-commerce. These obstacles encompass concerns regarding security and privacy, limited comprehension and awareness of e-commerce, and the high expenses associated with ICT maintenance. Interestingly, the findings from the data diverge from earlier studies by Costa

and Castro (2021:3044) and Ramdansyah and Taufik (2017:232), who suggested that e-commerce is readily accessible, easy to use, low cost and more fluid form of technology than many traditional ICTs.

However, it is evident from the results that many SMEs face a wide variety of barriers that inhibit their ability to adopt and diffuse e-commerce into their operational business activities. On the other hand, other major factors negatively impacting the adoption and diffusion of e-commerce among SMEs are inertia and resistance to embracing new changes, reluctance to adopt a new culture of doing business online, lack of trust and lack of e-commerce awareness (Kimana, 2020:28). Thus, the negative impact of barriers does have a significant influence on the adoption and diffusion of e-commerce among Soweto-based SMEs.

5.8 TESTING THE ASSUMPTIONS OF MULVARIATE ANALYSIS

Statistical models often rely on several assumptions, including distributional assumptions on outcome variables as well as relational assumptions representing the relationship between outcomes and independent variables (Hamid, Huang & Rosen, 2022:5556). Variance analysis is a method used to test whether there is a statistical difference between three or more group means. According to Ateş Kaymaz, Kale & Tekindal (2019:1), multivariate analysis of variance (MANOVA) is the extension of ANOVA. Furthermore, the test statistics for MANOVA give a measure of the overall likelihood of picking two or more random variables of means (Ilaboya, Iyeke & Abulu, 2021:650).

MANOVA has three main assumptions, as in all parametric tests. The first is the assumption that observations are independent of each other. The second assumption is that the dependent variables have a multivariate normal distribution in the group. The third assumption is the homogeneity of variances (Ates *et al.,* 2019:1).

5.8.1 Test of normality

The normality of distribution was tested using the Kolmogorov–Smirnov and Shapiro– Wilk tests, which showed that the data on the various independent and dependent variables deviated from a normal distribution ($p<0.05$). The Kolmogorov–Smirnov and Shapiro–Wilk

techniques are tests that are used to test the null hypothesis that a set of data comes from a normal distribution. If the indicated p-value (Sig.) is <0.05, we therefore reject the null hypothesis and conclude that the data do not come from a normal distribution (i.e, the data are not normally distributed). The results in Table 5.31 show that the data for all 19 factors were not normally distributed (i.e, p<0.001) for all of them.

Despite the observed data asymmetry, parametric instead of nonparametric tests were used in the multivariate analyses. First, providing effect size estimates was important in this study, and parametric tests have this advantage over nonparametric methods. Second, there were 25 or more cases in most of the sub-groups being compared, and parametric tests have been shown to be reliable in such cases because they can still report the mean scores and standard deviations. Table 5.31 displays the Kolmogorov– Smirnov and Shapiro–Wilk tests, which indicate that the data are not normally distributed.

Table 5.31 Test of normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
Construct	**Statistic**	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Perceived Usefulness	0,118	267	0,00	0,892	267	0,00
Perceived Ease of Use	0,151	267	0,00	0,899	267	0,00
Perceived Benefits	0,126	267	0,00	0,912	267	0,00
Intention to Adopt Ecommerce	0,161	267	0,00	0,886	267	0,00
Technology Adoption	0,217	267	0,00	0,833	267	0,00
Technology Affordability	0,181	267	0,00	0,882	267	0,00
Entrepreneurial Orientation	0,197	267	0,00	0,886	267	0,00
Organisational Readiness	0,178	267	0,00	0,887	267	0,00
Management Support	0,155	267	0,00	0,904	267	0,00
Customer Pressures	0,205	267	0,00	0,871	267	0,00
Competitor Pressures	0,148	267	0,00	0,915	267	0,00
Government Support	0,265	267	0,00	0,851	267	0,00
Impact of Pandemic	0,205	267	0,00	0,885	267	0,00
Relative Advantage	0,202	267	0,00	0,851	267	0,00
Compatibility	0,204	267	0,00	0,860	267	0,00
Trial Period	0,261	267	0,00	0,852	267	0,00
Complexity	0,184	267	0,00	0,871	267	0,00
Observability	0,200	267	0,00	0,850	267	0,00
Barriers	0,189	267	0,00	0,900	267	0,00

5.8.2 Multicollinearity test

In linear models, an assumption is made that the regressors must be independent of each other. However, if they are not independent of each other, then multicollinearity is said to be present (Senaviratna & Cooray, 2019:2). The regression parameters are highly affected by the presence of multicollinearity (Asthana, 2020:2). A tolerance value close to 1 means there is

little multicollinearity, whereas a tolerance value close to 0 suggests that multicollinearity may be a threat (Oke, Akinkunmi & Etebefia, 2019:655). The reciprocal of the tolerance is known as the variance inflation factor (VIF). VIF is a well-known measure of multicollinearity (Mohammadi, 2022:724). The VIF shows how much the variance of the coefficient estimate is being inflated by multicollinearity.

Daoud (2017:012009) explains that if any of the VIF values exceeds 5 or 10, it implies that the associated regression coefficients are poorly estimated because of multicollinearity. If one or more of the eigenvalues are small (close to zero) and the corresponding condition number is large, then multicollinearity is indicated (Oke *et al.,* 2019:655). A much higher correlation between the explanatory variables means more risk in the statistical inference about the significance of the regression coefficients (Mohammadi, 2022:724). The results displayed in Table 5.32 indicate possible multicollinearity between the independent variables, which affects the regression model estimates. Furthermore, it was ascertained that all the covariates in the models had acceptable (VIFs) of less than 5, as illustrated in Table 5.32.

Table 5.32 Multicollinearity test

Model		Collinearity Statistics	
		Tolerance	VIF
1	Perceived Usefulness	0.70	1.43
	Perceived Ease of Use	0.38	2.64
	Perceived Benefits	0.46	2.17
	Technology Affordability	0.36	2.79
	Entrepreneurial Orientation	0.38	2.66
	Organisational Readiness	0.40	2.52
	Management Support	0.41	2.43
	Customer Pressures	0.38	2.62
	Competitor Pressures	0.42	2.36
	Government Support	0.54	1.87
	Impact of Pandemic	0.53	1.88
	Relative Advantage	0.33	2.99
	Compatibility	0.45	2.24
	Trial Period	0.66	1.50
	Complexity	0.46	2.18
	Observability	0.48	2.08
	Intention to Adopt Ecommerce	0.52	1.91

5.9 QUANTITATIVE RESEARCH RELIABILITY AND VALIDITY

This section analyses the reliability and validity of the data collected. Reliability is an indication that a measurement is valid. For reliability, Cronbach's alpha was used to test the tool for internal consistency. On the other hand, validity refers to how accurately a method measures what it is intended to measure. If research has high validity, it produces results that correspond to real characteristics and variations in the physical or social world.

Exploratory factor analysis (EFA) was used to test the validity of the data collected. For correlation analysis, ANOVA was used to determine if criterion-related validity existed. Multiple linear regression modelling was used to estimate the relationship between two or more independent variables and one dependent variable. It compares means across populations and/or treatment conditions.

5.9.1 Cronbach's alpha

For reliability, Cronbach's alpha was used to test the tool for internal consistency. The minimum threshold required for sufficient internal consistency and instrument reliability is an alpha of 0.7, and as shown in Table 5.33, the scales used met the overall as well as for the subscales within the questionnaire.

Table 5.33 Cronbach's alpha test

Scale	N of Items	Cronbach Alpha
Overall	102	0,98
Perceived Usefulness	6	0,84
Perceived Ease of Use	6	0,89
Perceived Benefits	6	0,86
Intention to Adopt Ecommerce	4	0,85
Technology Adoption	6	0,91
Technology Affordability	5	0,88
Entrepreneurial Orientation	5	0,87
Organisational Readiness	5	0,84
Management Support	5	0,87
Customer Pressures	5	0,89
Competitor Pressures	5	0,87
Government Support	5	0,92
Impact of Pandemic	5	0,89

Relative Advantage	4	0,87
Compatibility	4	0,83
Trial Period	4	0,90
Complexity	4	0,84
Observability	4	0,85
Barriers	14	0,94

5.9.2 Exploratory factor analysis

Exploratory Factor Analysis (EFA) is used to test the validity of the data that were collected. EFA is popularly used to analyse and validate interrelationships among a set of variables and the measured parameters. In addition, the EFA statistical technique was used in this study for its strength in producing a smaller number of linear combinations of original factors that may positively and negatively influence the adoption and diffusion of e-commerce amongst township SMEs in a manner that accounts for most of the variability in the data correlations towards the adoption and diffusion of e-commerce to address objectives 1, 2 and 3 of this study.

Furthermore, the study achieved a sample size of 267, which is considered suitable for factor analysis (Strohacker *et al.,* 2019:621). The Kaiser–Meyer–Olkin (KMO) index was used to establish the commonality between the variables. The values of the KMO index vary between 0 and 1, with 0.50 or more considered suitable for factor analysis. The study achieved a KMO index of 0.92, which is considered adequate for the purpose of the analysis. Bartlett's test of sphericity was also used to test significance.

This study achieved a Bartlett's test of sphericity of p≤0.000, which is considered significant (p<0.05), and the data matrix has sufficient correlation to factor analysis. Table 5.34 indicates the KMO and Bartlett's test of sphericity. Overall, the data are suitable for factor analysis.

Table 5.34 KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,92
Bartlett's Test of Sphericity	Approx. Chi-Square	22048,520
	df	5151
	Sig.	0,000

5.9.3 Correlation analysis

Correlation analysis was used to measure the strength of the linear relationship between two variables and compute their association. In other words, correlation analysis calculates the level of change in one variable due to the change in the other. It was used in the study to discover whether there is a relationship between two variables and how strong that relationship is. The Pearson correlation coefficient was used to examine the nature and size of covariances between the independent and dependent variables in this study. For example, the correlation analysis table (see Appendix 7) shows that there is a significant linear relationship between technology affordability and e-commerce adoption.

5.9.4 Regression analysis

Multiple linear regression modelling identified factors that influenced the intention to adopt e-commerce as well as factors that influenced the actual adoption and diffusion of e-commerce. As part of the linear regression analysis, residual plots provided a visual check for the linearity assumption, while the assumption of independence of the residuals was checked using the Durbin Watson statistic (see Appendix 8 and 9).

5.10 QUALITATIVE RESEARCH TRUSTWORTHINESS

To achieve confirmability, semi-structured interviews were conducted during the qualitative phase, which enabled the researcher to maintain consistency when asking the participants questions (Bryman, 2012:472). Therefore, all of the participants were subjected to the same questions, meaning that the same research instrument was uniformly applied throughout the interview process. Moreover, there is an audit trail of the recorded and transcribed interviews as well as the field notes (Maree, 2020:145).

The study's dependability was sustained through the consistent application of the chosen research design, methodology and processes, thereby ensuring the findings' reliability and replicability (Maree, 2020:145). Furthermore, following the selected research approach enabled the research problem to be addressed systematically (Creswell & Creswell, 2018:34). To enhance the transferability of the study's findings, this researcher maintained

comprehensive and detailed descriptions of aspects such as demographics of the participants under investigation, sample size, selection process, data analysis and study results (Connelly, 2016:435). The interviewer also jotted notes during the interviews and during the course of the research process (Patton, 2002:438).

The credibility of this study was reinforced through triangulation of sources that involved interviewing Soweto-based SMEs from 3 different enterprise development programmes and comparing SMEs with different perspectives on the adoption and diffusion of e-commerce (Creswell & Poth, 2018:256). Furthermore, the researcher ensured the correctness of interpretations of that data by sharing the data collected with the participants given that a pragmatist paradigm was adopted for this study (Patton, 2002:552).

5.11 CONCLUSION

This chapter provided an integrated presentation, analysis and discussion of the quantitative data from the questionnaire and qualitative data from the interviews conducted among Soweto-based SMEs. The chapter began with data response rate analysis and data screening for both research methods, followed by the analysis of the demographic information of the respondents and participants of this study.

From the quantitative data, nineteen (19) main constructs were computed and analysed as average (i.e., mean with standard deviation) out of 5. A five-point Likertscale that ranges from (1) strongly agree to (5) strongly disagree was used for the 19 main constructs in the questionnaire. From the qualitative data analysis results, five (5) main themes were identified, with each theme having sub-themes to further provide an in-depth understanding of the perception, opinions and experiences of the participants regarding the adoption and diffusion processes involved in the implementation of e-commerce within their businesses. Having deployed the triangulation convergent mixed method design, the results from the quantitative data and the qualitative data were thereafter merged to compare and contrast, and to identify similarities or relationships between the two databases to produce a combined discussion and well-validated conclusions.

Implications derived from the main issues and arguments that the researcher discovered from the analysis of the quantitative and qualitative results were discussed in terms of:

(1) E-commerce adoption factors that are applicable to Soweto-based SMEs;
(2) Adoption and implementation processes of e-commerce; and
(3) Barriers to the adoption and diffusion of e-commerce.

There are twenty-one findings emanating from the empirical results that have a bearing on the research objectives of this study. Some of the findings were used to develop the proposed integrated theoretical framework (Figure 6.1) as illustrated in the next chapter.

Additionally, inferential statistics involving multivariant test, exploratory factor analysis, (EFA) and the Kaizer-Meyer-Olkin (KMO) index were used to establish the commonality between the variables for the quantitative data. In addition, the trustworthiness of the qualitative data was discussed. The next chapter will discuss the findings from the mixed methods methodologies and the proposed integrated theoretical framework.

CHAPTER 6
DISCUSSION OF FINDINGS FROM MIXED METHODS AND THE PROPOSED INTEGRATED THEORETICAL FRAMEWORK

6.1 INTRODUCTION

In chapter 5, the integrated results of quantitative and qualitative data were presented, analysed and discussed in terms of the following:

(1) E-commerce adoption factors that are specifically applicable to Soweto-based SMEs;
(2) How e-commerce is adopted and implemented amongst Soweto-based SMEs; and
(3) The barriers to the adoption and diffusion of e-commerce amongst Soweto-based SMEs.

This chapter discusses how the use of mixed methods methodology influenced the findings of this study and how the integration of the three theories – TAM, TOE and DOI – is reflected in the framework that was conceptualised for this study. Furthermore, this chapter presents a theoretical framework from the findings of the integrated results of the mixed data.

6.2 ADOPTION OF MIXED METHODS RESEARCH

Chapter 4 stated that the pragmatism research philosophy is concerned with utilising multiple data collection methods to address research problems (Maree, 2020:333; Creswell & Tashakkori, 2007:305). Pragmatists argue that from an ontological perspective, reality can be interpreted differently by individuals (Edoru, 2018:90; Zamora-bonilla & Jarvie, 2011:213). Moreover, from an epistemology perspective, pragmatists also believe that there is no one specific way to gain knowledge as there are multiple realities to understand a phenomenon (Cherryholmes, 1992:14; Corbin & Strauss, 2015:19-20). Therefore, by integrating various research methods that encompass both qualitative and quantitative research methods and by further integrating theoretical frameworks, researchers can gain knowledge and an understanding of numerous realities (Greene, 2007:20).

6.2.1 Contextual background findings

This section discusses the contextual background of how mixed-methods research was used to bring to fore the different perspectives to investigate factors that influence the adoption of e-commerce and how the diffusion of e-commerce is implemented and to understand the barriers that hinder the adoption of e-commerce among Soweto-based SMEs. Since the adoption of e-commerce by developing countries and, in particular, Soweto-based SMEs is different from e-commerce adoption by SMEs in developed countries due to the varied business philosophies, different cultures and types of infrastructure, the application of mixed research methods extends the scope and depth of understanding the phenomenon.

In addition, the generalisability of current research findings is criticised for not considering the unique peculiarities and characteristics of the township business environment (Biesta, 2015:2; Morgan, 2014:1051). Thus, mixed-methods methodology provides scientific modelling and testing of the variables and presents profound insights from the perceptions, experiences and opinions amongst Soweto-based SMEs (Biesta, 2015:2; Morgan, 2014:1051). The utilisation of mixed-methods research also considers the contextual realities of Soweto-based SMEs and enables their realities to be compared and contrasted with findings from previous studies regarding the adoption of e-commerce (Almalki, 2016:291). This enhances the knowledge creation process and provides a more nuanced understanding of the topic at hand (Cartwright & Montuschi, 2014:9; Davies & Fisher, 2018:22).

6.2.2 The influence of the quantitative methodology on the study findings

According to Bryman (2012:35) and Rahman (2020:105), quantitative methodology is a research approach that emphasises the measurement and quantification of gathered data, aiming to address questions beginning with “how much,” “how many,” and “to what extent”. The quantitative methodology used in this study was systematic and objective because it placed great emphasis on measuring variables that can be generalised to Soweto-based SMEs using a questionnaire (Maree, 2020:184). Payne and Payne (2004:180) state that the quantitative methodology uses deductive logic to identify consistencies in people's lives by breaking down the social world into empirical components and sub-dividing reality into smaller, manageable pieces for a better understanding. The quantitative methodology for this

study was further represented numerically as rates or frequencies and whose connections were analysed using statistical techniques and systematic measurements. Moreover, the quantitative data from the questionnaire were used to help generate the qualitative sample of Soweto-based SME participants to be interviewed for this study. Furthermore, quantitative data were used to corroborate the findings of the qualitative data.

The quantitative methodology in this study further provided insights regarding the detailed demographic characteristics of Soweto-based SMEs. From the quantitative results, the researcher was able to ascertain that a greater proportion of SMEs in Soweto that have been in business for two to five years, have already implemented or had intentions to adopt e-commerce and that a larger percentage of SME business owners aged 25 to 44 had either adopted or intended to adopt e-commerce. The quantitative methodology provided additional noteworthy findings, such as the fact that 76.4% of the surveyed SMEs had formal registration with the CIPC and that 81.3% of the Soweto-based SMEs conducted their operations from designated business premises. Furthermore, the quantitative findings showed that the majority (59.6%) of the SME participants had a workforce of between one and 10 employees and that SMEs offering B2C services tended to have a higher proportion of customers located exclusively in Soweto. The analysis also indicated that a larger percentage of the SMEs based in Soweto were operating in the service, hospitality and retail sectors.

6.2.3 Qualitative data unearthed novel insights beyond the reach of the quatitative data.

Hamilton and Finley (2020:1) define qualitative research methodology as a type of research that does not rely on statistical procedures or any other form of quantification to arrive at findings. The qualitative methodology places emphasis upon exploring and understanding the meanings that people ascribe to a social phenomenon. By applying qualitative methodology, the researcher was able to contextualise the information based on a broad range of subjective inferences that Soweto-based SMEs had towards the adoption and diffusion of e-commerce, including personal experiences, emotions, opinions, perceptions and behaviours of SME owners as well as social movements and cultural phenomena (Patton, Quinn & Quinn, 2002:11; Rahman, 2020:103).

The qualitative approach facilitated the exploration, discovery and comprehension of answers to questions beginning with "what," "why," and "how" related to the adoption and diffusion of e-commerce among SMEs in Soweto (Flick, 2014:542). Moreover, through the qualitative component of this study, the researcher discovered that although most Soweto-based SMEs ultimately aim to establish a fully-fledged e- commerce platform, they prefer to adopt a phased-in approach in integrating e- commerce into their day-to-day business operations. The qualitative research methodology also revealed that Soweto-based SMEs were using online 3rd party e- commerce and social media platforms to conduct business transactions.

Additionally, the qualitative findings discovered that despite the ease of use of e-commerce being a significant influence on its adoption, most Soweto-based SMEs were willing to invest all the time required to learn how to use e-commerce. During the interviews, it further emerged that the majority of Soweto-based SMEs were self-reliant and used mobile devices to access data due to a lack of ICT infrastructure in Soweto. The qualitative information helped to enhance the meaning that people bring in their own specific context and brought out additional insights about how and why Soweto-based SMEs apply various activities and processes in adopting and implementing e-commerce. The quantitative data would not have been able to explain the abovementioned nuances.

6.2.4 The quantitative data displayed different insights that the qualitative data could not show

By utilising the quantitative methodology, the researcher determined that the most significant considerations and influences on the adoption and diffusion of e-commerce among SMEs in Soweto were perceived benefits, perceived usefulness and ease of use. The results indicated that perceived benefits, for the majority of SMEs, involved expanded business opportunities, increased revenue, access to more information and improved customer service. In addition, the quantitative findings confirmed that, in terms of perceived usefulness, e-commerce facilitated easier completion of job tasks for most SME owners, while ease of use provided the flexibility to use e-commerce for customer interactions. The qualitative approach would not have been able to quantify these significant findings, as the methodology cannot measure variables that can be generalised to the broader population under this study.

6.3 UNIQUE QUALITIES THAT EACH METHODOLOGY BROUGHT TO THE STUDY

Due to the lack of prior empirical research to explore and gain a better understanding to explain the perceptions, experiences and opinions of Soweto-based SME owners towards the factors that influence the adoption and diffusion of e-commerce in their businesses, the qualitative methodology uniquely facilitated the understanding of how Soweto-based SME owners interpret and make sense of this complex phenomenon (Creswell & Poth, 2018:7; Denzin & Lincoln, 2011:3). Moreover, the qualitative methodology uniquely encompasses various methods that involve an interpretive, naturalistic approach to the research problem of this study while incorporating multiple perspectives aimed at decoding, describing and translating the views of Soweto- based SMEs (Denzin & Lincoln, 1994:2; Rahman, 2020:103).

Although the quantitative approach can measure behaviours, it is limited in its ability to answer questions about why Soweto-based SME owners chose to follow certain practices in the adoption of e-commerce or how the behaviours of Soweto-based SME owners influence the diffusion process of e-commerce. Instead, for this study, the quantitative approach was primarily used to identify patterns and averages, make predictions, test causal relationships and generalise results to the broader population of Soweto-based SMEs.

The qualitative approach, in contrast, provided more in-depth and detailed information about the demographic characteristics of Soweto-based SMEs. The interviews enabled the researcher to gather not only information on the industries in which these SMEs operated in but also specific business sectors, such as farming, electronic engineering and the alcohol industry. Furthermore, through the interviews, the researcher was able to obtain a detailed understanding of the products and services offered by each SME, such as online maternity classes, cake baking, graphic design and retailing car parts. The qualitative approach was particularly conducive to social transformation as it allowed the researcher an opportunity to build rapport with the participants in a way that one-shot surveys conducted through a quantitative methodology could not. Moreover, the qualitative data were further used to assess the validity of the quantitative findings.

6.3.1 Concurrence between the mixed methods

Based on the quantitative findings, a larger proportion of SMEs in Soweto confirmed that they could buy and sell products and services online, as well as offer online customer service and interact through social media. This assertion was supported by the qualitative interviews, which indicated that the majority of the interviewed SMEs leveraged third-party e-commerce and social media platforms to promote their services and carry out business operations. In addition, in line with both the quantitative and qualitative outcomes, most of the SMEs (55.8%) that took part in the research provided B2C services.

6.3.2 Contradictions between the mixed methods

According to the quantitative analysis, a higher proportion of Soweto-based SMEs (51.7%) reported that their operations were managed by managers, while 38.6% were managed by owners. These results contradicted the qualitative findings, which revealed that most of the SMEs were managed by the owners. Another inconsistency from the quantitative outcomes was that 81.3% of the SMEs operated from designated business premises, while during the interviews, a much higher percentage of the participants claimed to work from home. Moreover, the quantitative data indicated that 51.7% of SMEs had been using e-commerce for more than 3 years, whereas the majority of SMEs stated during the interviews that they only started using e-commerce during the COVID-19 pandemic. Furthermore, the quantitative results suggest that trialability had little influence on the decision of Soweto-based SMEs to adopt and diffuse e-commerce into their business. Yet, the qualitative interviews revealed that Soweto-based SMEs preferred a phased-in approach to implementation, allowing them to test the system and observe the benefits derived from its usage.

6.4 RATIONAL FOR USING MIXED-METHODS METHODOLOGY

Given that this study was underpinned by pragmatic philosophical paradigms, it made intuitive sense to gather information from multiple sources, utilising different methods that work together efficiently. The researcher also believes that it is far more important to focus on understanding an issue and finding solutions to problems than focusing upon specific methods or approaches. Furthermore, mixed methods integrate the two fundamental ways of thinking

about the adoption and diffusion of e-commerce among Soweto-based SMEs (Davies & Fisher, 2018:22; Thierbach *et al.,* 2020:2). Consequently, the mixed-methods approach dramatically enhanced the value of the research and was better suited for answering the research question under investigation and to gain an in-depth understanding of the adoption and diffusion of e-commerce among Soweto-based SMEs (Plano Clark & Ivankovi, 2016:6). Additionally, mixed methods gathered complimentary yet distinct different data on the same topic to provide opportunities for convergence and corroboration of findings that are derived from the different research methodologies (Bowen, Rose & Pilkington, 2017:11; Creswell & Creswell, 2018:14).

Moreover, previous research on e-commerce activities in the township of Soweto offers a narrow understanding of the specific factors influencing its adoption among SMEs. As a result, mixed methods provided a realistic link between quantitative and qualitative methodologies in providing an innovative approach for addressing contemporary issues pertaining to the adoption and diffusion of e-commerce among Soweto-based SMEs. This study employed mixed methods research for the broad purposes of breadth and depth to achieve a "whole greater than the sum of the parts" in gaining a comprehensive grasp of the adoption and diffusion of e-commerce among Soweto-based SMEs (O'Cathain, Murphy & Nicholl, 2010:1147).

6.4.1 Fresh perspectives that emerged from the application of mixed- methods methodology

The mixed-methods approach yielded new insights that shed further light on the influence of ease of use in the adoption of e-commerce. While the quantitative component underscored the importance of user-friendliness, the qualitative strand revealed a more nuanced understanding of how Soweto-based SMEs behaved with respect to the ease of use of e-commerce. Specifically, through the interviews, the researcher discovered that most Soweto-based SMEs had a positive attitude towards acquiring new knowledge and were willing to invest the necessary time to learn how to use e-commerce. This comprehensive insight regarding the importance of ease of use and the willingness of Soweto-based SMEs to learn how to use e-commerce would not have surfaced if only one research methodology was employed in this study.

The mixed-methods approach yielded additional interesting findings about the affordability of adopting and implementing e-commerce among Soweto-based SMEs. The quantitative component of this study revealed that a higher percentage of respondents could afford the cost of data to access e-commerce. However, the mean score for the affordability of setting up a website for e-commerce was low. The qualitative component provided a more comprehensive understanding of this issue, delving deeper into why SMEs could afford only data costs but not website development and implementation. The researcher discovered that data were essential for internet access, and SMEs were willing to allocate funds for this. In addition, third-party online platforms such as social media were much cheaper to use, easing the immediate financial pressure of creating a fully-fledged e-commerce website. Nevertheless, most SMEs still planned to establish their own e-commerce platforms using a phased-in approach to overcome financial constraints. This discovery could not have been made if only one research methodology was been employed.

Furthermore, the findings from the mixed methods data supported the idea that Soweto-based SME owners are influenced not only by their own attitudes and perceptions but also by the opinions and behaviours of others around them, including their customers. Both the quantitative and qualitative data showed that the customers of Soweto-based SMEs were mostly tech-savvy and expected them to use e-commerce for conducting business. Moreover, the findings from both the quantitative and qualitative data indicated that government support did not have a significant impact on the adoption of e-commerce among Soweto-based SMEs. This discovery contradicts previous research which suggests that the government plays a crucial role in providing the necessary infrastructure support, reducing data tariffs and lowering internet costs and making provision for legal framework to facilitate the adoption of e-commerce. Instead, the majority of participants relied on their mobile devices for data due to the lack of ICT infrastructure in Soweto, indicating that government support was not a critical factor in the adoption of e-commerce.

Other results obtained from both the quantitative and qualitative data are consistent with previous research, which confirms the significant impact of a pandemic such as COVID-19 on the adoption of e-commerce. The mixed-method data verify that the COVID-19 pandemic has accelerated the proliferation of e-commerce, as it has become a viable strategy for businesses to maintain operations despite the pandemic's restrictions, resulting in the rapid adoption of e-

commerce by SMEs. Most SMEs that were established in 2020 during the COVID-19 pandemic began using e-commerce soon after their inception. Lastly, the qualitative and quantitative data revealed that lack of trust among customers was a major challenge but did not deter Soweto-based SMEs from adopting and utilising e-commerce.

6.5 THE IMPACT OF THE TRIANGULATION CONVERGENT DESIGN ON STUDY FINDINGS

Furthermore, a triangulation convergent design was used by the researcher to acquire diverse but complementary data on the same topic and to gain an in-depth understanding regarding the research problem (Morse, 1991:122; Creswell & Plano Clark, 2018:68). The triangulation convergent design comprised collecting, analysing and merging quantitative and qualitative data results simultaneously (Creswell & Plano Clark, 2018:69; Moseholm & Fetters, 2017:2). The researcher implemented the triangulation convergent design to consolidate the strengths and weaknesses of quantitative and qualitative methods to evaluate quantitative statistical results with qualitative findings for a comprehensive understanding of the research problem to corroborate and validate the quantitative results with qualitative findings (Creswell & Plano Clark, 2018:68; Doyle *et al.*, 2017:4; Maleku *et al.,* 2020:4). For the purposes of this study, triangulation was used to address the research problem using different methods and to gain a more complete picture of the phenomenon as well as to describe corroboration and divergence between the two sets of data results.The uniqueness of the integration of the study was through “connecting”, which occurred when the interview participants were selected from the population of participants who responded to the survey (Fetters, Curry, Creswell 2013:2139). Further uniqueness of the integration of the study was through integration of the two databases together for analysis and comparison, which also aided the validation of the findings of quantitative data with the results of the qualitative data (Fetters *et al.,* 2013:2135). This synthesising approach was important to develop a unified approach to validate descriptive and casual inference by applying the standards of quantitative methods to qualitative methods or vice versa.

The overall intent of the triangulation convergent design was to obtain a wider and deeper picture from all angles and to look for convergence, divergence, contradictions or relationships between the two databases to produce well-validated conclusions (Plano Clark & Ivankova,

2018:74; Plonsky, 2017:33). Furthermore, the design was efficient in enabling the comparison of different perspectives collected from participants through open-ended questioning format through interviews with the viewpoints derived from the researchers' perspective using a questionnaire in close- ended questioning.

6.6 INTEGRATION OF THE THEORIES

The second chapter of the literature review in this study highlighted that depending exclusively on a single theoretical model falls short in comprehensively addressing the contextual challenges experienced by SMEs in township settings (Chau *et al.,* 2020:5; Eze *et al.,* 2019:572). On that premise, this study attempted to address the gaps uncovered through the integration of multiple theoretical frameworks. Considering the unique technological aspects and the intricate operational landscape of SMEs in Soweto, the integration of multiple theories into a unified framework offered a more holistic and robust theoretical foundation for elucidating the adoption and diffusion of e-commerce among SMEs in Soweto, a proposition supported by multiple research studies (Eze *et al.,* 2019:572; Selase *et al.,* 2019:5; Tongsuksai *et al.,* 2019:4).

6.6.1 Contextual background findings

This section discusses the contributions of each theory and looks at how the integration of theories was employed to explore various perspectives on the factors influencing e-commerce adoption, the implementation and diffusion of e-commerce, and the barriers hindering its adoption among Soweto-based SMEs. By integrating theories, this study elevated the scope of the study and gained a comprehensive understanding of the phenomenon, encompassing various perspectives that operate within and outside Soweto-based SMEs. The technological and individual characteristics that facilitate the adoption and diffusion of e-commerce were also taken into consideration in the study (Alfahl *et al.,* 2017:35; Alkhalil *et al.,* 2017:4; Chau *et al.,* 2020:7; Riyadh *et al.,* 2019:2144).

6.6.2 The integration of three theories is reflected in the framework that was conceptualised for the study

The study applied the three theoretical frameworks in discussing and understanding the findings from the quantitative and qualitative results that were analysed concurrently given that the triangulation convergent design was deployed. Furthermore, the integrated theoretical framework enhanced our understanding of the social phenomenon, featuring variables and correlations in terms of events and interactions that influence the behaviours and actions of Soweto-based SMEs towards the adoption and diffusion of e-commerce. Moreover, the integration of the three theoretical frameworks necessitated the deployment of a mixed methods methodology to offer a more resonant understanding of the technological phenomenon at hand. The next section discusses the contribution of each theory to this research study and how the contributions were merged into one theoretical framework.

6.7 DISCUSSION OF FINDINGS THROUGH THE USAGE OF TECHNOLOGY ACCEPTANCE MODEL (TAM)

The overarching model of TAM was used for this study to focus on the individual technological attributes that influence the adoption of e-commerce. TAM is based on the theory of reasoned action, which centres on people's behaviour and intention towards e-commerce adoption (Jan *et al.*, 2019:203). Specifically, this study used TAM to examine SME owners' acceptance of e-commerce by focusing on three factors that determine their decision to adopt and use e-commerce, namely; perceived usefulness, ease-of-use and attitude towards using e-commerce. However, the researcher expanded on TAM theory by including perceived benefits, as the original definition of perceived usefulness was limited to "the degree to which a person is certain that the continuous usage of a particular system will enhance their job performance" (Davis, 1989; cited in Al-Emran & Granić, 2021:2). This definition did not take into consideration other benefits that may be derived from the adoption and usage of e-commerce.

Given that Davis (1989) asserts that system use is a response that may be explained and predicted by user motivation, the researcher argues that based on the significant findings of the data in this study, perceived benefits ultimately act as a stimulus for inquiry or investigation for the intention, acceptance and potential usage of e- commerce. Moreover, an overwhelming

number of respondents on the quantitative and qualitative interviews ranked the perceived benefits of using e-commerce as the most significant factor influencing Soweto-based SMEs' decision to adopt e-commerce. Thus, it can be argued that the attitude towards using e-commerce (one of the three factors of TAM) can be significantly influenced by the attributes and perception that SME owners place on the perceived benefits derived from the usage of e-commerce.

First, the addition of perceived benefits as an expansion of TAM addresses a gap in scholarly literature that focuses on the beliefs of Soweto-based SME owners. Soweto-based SME owners believe that perceived benefits such as expanding business opportunities to new geographical markets, increasing sales and profits, gaining instant access to markets and information, improving customer service as well as reducing costs, significantly influence SME owners' attitudes towards adopting and using e- commerce. Contrary to Khan and Uwemi's claim (2018:455) that South African SMEs are not aware of the benefits of e-commerce, this study's findings confirmed that most Soweto-based SMEs acknowledged that the perceived benefits of using e-commerce were the most influential factor in their decision to adopt e-commerce. Nonetheless, the application of TAM, which aims to explain SME owners' attitudes towards using e- commerce, led to Finding 5, which revealed that most Soweto-based SMEs participating in this study had intentions to adopt e-commerce based on the perceived benefits.

Moreover, TAM was used to identify that the ease of use of e-commerce had a significant impact on its adoption. In terms of complexity, the data results showed that most Soweto-based SMEs found e-commerce to be easy to understand and use. In addition, respondents stated that their employees found it easy to learn how to operate e-commerce technology. Interestingly, the results also indicated that the perceived benefits of e-commerce led to a positive attitude towards its adoption by most Soweto-based SME owners, which encouraged them to invest the time needed to learn how to use the technology. This finding aligns with Abed's (2020:3) research, which found that SMEs are more likely to adopt a new technology if they believe it will enhance task performance and overall business performance. This finding implies a causal link that perceived ease of use, perceived usefulness, perceived benefits and

attitude towards e-commerce usage are significant factors for the adoption and diffusion of e-commerce, supported by the literature and data results.

6.8 DISCUSSION OF FINDINGS THROUGH THE TECHNOLOGY, ORGANISATION, AND ENVIRONMENT (TOE) FRAMEWORK

The TOE framework was used for contextualising the various interactions from several perspectives that take place inside and outside the SMEs from the technological context, organisational context, and environmental context. This section discusses the individual contributions that each component of the TOE framework brings to this study.

6.8.1 Findings for the technology context

From a technological perspective, TOE revealed the different types of technology resources available to the SMEs and how they were being utilised for daily business operational activities. According to Abed (2020:3), the technological attributes of an SME typically explain the technological innovation characteristics that influence the adoption of an innovative technology.

However, contrary to previous claims by Marnewerk (2014:11) and Mkansi *et al.* (2019:26) that technology is underutilised and does not play a vital part in the business operations of Soweto-based SMEs, the findings from the data collected in this study revealed that Soweto-based SMEs were advanced in their usage of technological resources for their daily business activities. Through the application of TOE and DOI frameworks to establish the kinds of technology resources Soweto-based SMEs use, the qualitative interviews discovered that technologies used by SMEs comprise hardware, access to online platforms, social media platforms, instant messaging and payment systems.

Furthermore, the results from the data revealed that the relative advantages presented by the technological attributes of e-commerce improved internal processes and knowledge flow in the business operations of Soweto-based SMEs. Through the application of TOE and DOI frameworks to determine how relative advantage impacted the adoption of e-commerce. The data showed that the usage of e- commerce enhanced effectiveness on the job, which enabled

most Soweto-based SME owners to accomplish tasks faster, resulting in improved quality of work according to the respondents in this study.

From a compatibility perspective, using e-commerce was rated as being compatible with business operating procedures and that e-commerce was consistent with the business values, culture and beliefs of Soweto-based SMEs. The findings from the data also confirmed that using commerce fits well with their preferred work practices and that using e-commerce created changes that were compatible with business operations. These findings corroborate several previous studies by Sanchez- Torres and Juarez-Acosta (2019), Giotopoulos *et al.* (2017) and Mamun (2017), who assert that variables connected to the technology context, such as compatibility and relative advantage influence the adoption of e-commerce among SMEs.

6.8.2 Findings from the organisational context

The TOE framework's organisational context addresses the internal resources available to Soweto-based SMEs for adopting e-commerce (Chau *et al.,* 2020:6). This framework also explains how SMEs' internal resources, affordability and enterprise characteristics influence their decisions about adopting e-commerce (Eze *et al.,* 2019:573). This study's findings show that Soweto-based SME owners budget for recurring data costs, which allows them to afford the cost of learning how to use e-commerce through third-party plug-and-play platforms such as social media. These platforms are considered substantially cheaper and more cost-effective than the expensive capital required to develop and implement e-commerce platforms for Soweto-based SMEs. Although most of the Soweto-based SMEs intended to have their business websites, they could not afford the cost of implementing an e-commerce platform.

In addition, the TOE framework's organisational context in this study includes entrepreneurial orientation, management support, and organisational readiness of Soweto-based SMEs. Entrepreneurial orientation encompasses decision-making styles, processes and practices followed by SME entrepreneurs, including dimensions such as autonomy, innovativeness, risk-taking, proactiveness and competitive aggressiveness (Abed, 2020:3). According to Hussain, Shahzad and Hassan (2020:4), successful entrepreneurs are open to creativity and experimentation because they possess a forward-looking perspective to outperform

competitors by adopting appropriate technology. This study's results showed that Soweto-based SME owners and managers were willing to foster creativity in designing and implementing new products and services, including e-commerce. Furthermore, SME owners had expertise in innovative technology practices and were willing to take the risk of adopting new innovations such as e-commerce, to gain a competitive edge.

Regarding management support, this study's findings showed that Soweto-based SMEs allocate time and resources to the adoption of e-commerce based on its cost and potential return on investment. This was supported by the fact that SME owners and managers were willing to invest the necessary time to learn and understand how to use e-commerce based on its perceived return on investment. Likewise, this study showed that business management supported the integration of e-commerce into their business processes and provided sufficient resources to encourage and motivate employees to adopt and use e-commerce. The findings corroborate previous findings by Adam *et al.* (2020:847), Ezzaouia *et al.* (2020:3) and Eze *et al.* (2019:573) that management support centres around the provision of the necessary resources, involvement, encouragement and motivation towards adopting technologies within the organisational context of TOE.

Organisational readiness is intended to assess the enterprise's overall preparedness for adopting and diffusing e-commerce within the TOE framework (Maduku *et al.,* 2016:714; Setiyani & Rostiani, 2021:1116). Organisational readiness evaluated the availability of financial resources, ICT resources and human resources with the relevant IT skills within the business operations of the Soweto-based SMEs. According to the findings of this study, Soweto-based SMEs have the capacity to absorb costs such as data required for connecting to the internet and using e-commerce since most employees were computer literate.

Moreover, the Soweto-based SMEs showcased a level of organisational preparedness for e-commerce adoption, as they possess adequate ICT resources such as hardware, access to online platforms, social media platforms, instant messaging and payment systems. These findings contrast with previous research conducted by Hare and Walwyn (2019:2), Kubone (2019:19) and Oduwole (2018:145), which suggested that, due to the predominantly informal nature of township SMEs and their survivalist nature, coupled with the socio-economic complexities experienced in these areas, the business environment might not be conducive

enough to facilitate organisational readiness among township SMEs. The statement above suggests that Soweto-based SMEs have the necessary technology infrastructure and capabilities, thus indicating technological readiness.

Soweto-based SMEs seem to have organisational structures and processes in place that are conducive to e-commerce adoption, suggesting operational readiness. On the other hand, Marnewick's research (2014:11) highlight that technology was primarily utilised as a basic tool by township SMEs and not fully integrated into their business operations. Therefore, the findings of this study challenge previous research and affirm that despite the survivalist nature of most Soweto-based SMEs, they exhibit organisational readiness in their pursuit of e-commerce adoption. Furthermore, the findings imply that Soweto-based SMEs might also have a strategic approach or willingness to adopt e-commerce, which indicates strategic readiness.

6.8.3 Findings from the environmental context

The environmental aspect of the TOE framework pertains to the business surroundings in which an enterprise operates (Matikiti *et al.,* 2018:3). In this study, environmental factors were examined to determine how external agents such as customers and competitors influence Soweto-based SMEs to adopt and integrate e- commerce. The findings from the data indicated that customers of Soweto-based SMEs have expectations for them to utilise e-commerce, and most of these customers are willing to engage with SMEs through e-commerce platforms. The results of this study align with the assertions of Costa and Castro (2021:3045) as well as Zhelyazkova (2020:263) that we reside in a society where customers have high expectations for swift delivery of goods and services, and that e-commerce has the potential to enhance business efficiency and promptly meet customer demands. Furthermore, it was discovered that customers preferred conducting business with Soweto-based SMEs that had implemented e-commerce, highlighting the significant impact of customer pressures on e-commerce adoption.

Moreover, Soweto-based SMEs expressed that their decision to embrace e- commerce was greatly influenced by their competitors who had already adopted it. Additionally, these SMEs firmly believe that utilising e-commerce can provide them with a competitive edge. Soweto-

based SMEs consider it highly significant to remain competitive and stay updated with the latest industry advancements, aligning with the impact of competitor pressures on e-commerce adoption. The results corroborate Rahmi *et al.* (2018:10), who found that SME peer-to-peer interactions, referred to as referent power, have a significant influence on competitor pressures.

The environmental context encompasses various factors such as the industry's structure, government policies and regulations, market structure and technological infrastructure (Abed, 2020:4). Interestingly, the data revealed that government support had a negligible impact on the adoption of e-commerce among Soweto-based SMEs. The SMEs in Soweto expressed dissatisfaction with the lack of accessible initiatives from the government that promote the adoption of e-commerce. Moreover, they believe that the government fails to provide affordable ICT infrastructure that facilitates e-commerce adoption by SMEs, and they do not perceive any tax incentives from the government to encourage the adoption of e-commerce by SMEs. The previous research by Billal *et al.* (2019:56) argues that in every developing economy, the government plays a vital role in facilitating the essential requirements for the adoption of e-commerce by SMEs and providing the relevant legal framework to support the adoption of e-commerce. The findings of the study contradict the claim that the government plays a crucial role in facilitating the adoption of e-commerce among Soweto-based SMEs.

The data analysis revealed that, considering inadequate ICT infrastructure support from the government, most Soweto-based SMEs have opted for a self-sufficient strategy. They rely on mobile data and have developed their own internet plans to secure internet access. Interestingly, the findings also demonstrate that Soweto-based SMEs effectively manage, budget and allocate funds for recurring data expenses, demonstrating they are not significantly impacted by high data costs. Furthermore, the SMEs expressed lack of guidance, policies, and legal frameworks from the government to facilitate the adoption of e-commerce among SMEs. Contrary to previous studies by Hamad *et al.* (2019:214) as well as Salem and Nor (2020:20) that reduced data tariffs and lower cost of using the internet encouraged the fast track of e-commerce adoption. The results of this study confirmed that the adoption and diffusion of e-commerce among Soweto-based SMEs is independent of government support.

The environmental context encompasses external circumstances beyond control, such as force majeure events, including plagues, pandemics, wars, strikes, riots, and natural disasters such as earthquakes, floods and hurricanes (Fitriasari, 2020:53). The outbreak of epidemics such as COVID-19 has had an impact on global economic activities. A pandemic falls under the environmental context of the TOE theoretical framework (Ait, 2020:3; Pantelimon *et al.,* 2020:39). This study's findings revealed that the majority of Soweto- based SMEs firmly believed that e-commerce played a crucial role in ensuring the continuous provision of goods and services to their customers during pandemics such as COVID-19. The SMEs expressed that the influence of COVID-19 on their adoption of e-commerce was significant and in line with previous studies (Hoang *et al.,* 2021:48; Mekdessi *et al.,* 2021:8).

Furthermore, it is worth noting that some Soweto-based SMEs had contemplated adopting e-commerce even before onset of COVID-19 outbreak. This is supported by previous literature by Reardon *et al.* (2021:7) and Sahetapy (2021:10584), who assert that e-commerce was already experiencing rapid growth in regions such as Asia, Latin America and other emerging markets prior to the COVID-19 pandemic. However, from the results of the questionnaire and from most of the interviewed Soweto-based SMEs, the impact of COVID-19 served as a significant catalyst for considering the adoption of e-commerce in their businesses.

6.9 DISCUSSION OF FINDINGS THROUGH THE DIFFUSION OF INNOVATION THEORY (DOI)

The diffusion of innovation theory (DOI) theory was deployed in the study to explain the rate and stages of e-commerce adoption and to further focus on the technological characteristics that facilitate the diffusion process in the adoption of e-commerce among Soweto-based SMEs (Burgess, Sellitto, Cox, Buultjens & Bingley, 2017:2; Pantano & Vannucci, 2019:298). As a process-based framework, DOI was utilised to explain how, why and at what rate e-commerce is adopted and diffused among Soweto-based SMEs through qualitative interviews (Alfahl, 2017: Chau, 2020:7).

The researcher established that the DOI was best explained through the data collected from the qualitative interviews because the researcher was able to ask probing questions, namely, **"**how and why", to establish what types of activities and processes were being deployed by Soweto-

based SMEs in the adoption and diffusion of e- commerce. The research philosophy of the researcher is based on humanistic naturalism, which posits that human beings are best able to understand and control the world using methods that are scientific and social values of humanism. Furthermore, the lens through which the researcher gathered the knowledge and interprets this study is aligned with the pragmatic worldview, which advocates that reality is interpreted differently by different individuals (Edoru, 2018:90; Jarvie & Zamora-Bonilla, 2011:213). Applying the qualitative interviews through DOI theory allowed the researcher to explore and determine at what rate e-commerce was being adopted and diffused amongst the Soweto-based SMEs. Moreover, the researcher argues that the quantitative methodology has its limitations in fleshing out and providing an in-depth and more resonant explanation through the DOI theory given that it is a process-based framework. That is not to say that the quantitative data were not useful because they were able to provide some information to back-up the findings from the qualitative results. Notwithstanding the fact that the results from the qualitative data were able to identify that Soweto-based SMEs use different systems and platforms for sales and marketing to conduct business, payment transactions and to engage with customers through the application of DOI, this information was not evident from the results of the quantitative findings.

The DOI theory was further deployed to evaluate the decision-making processes used by SMEs in Soweto when adopting e-commerce. This process involved categorising the different stages of e-commerce adoption, starting with how Soweto-based SMEs first became aware of e-commerce, their decision-making process to adopt it, their assessment of its implementation and utilisation in their business operations (Burgess *et al.,* 2017:3). The interviews conducted with the participants revealed that Soweto- based SMEs often resorted to a hybrid combination of electronic and cash payments due to customer mistrust and scepticism towards online transactions through e- commerce. These findings were further supported by quantitative results, which indicated that the lack of reliable and efficient telecommunication infrastructure as well as insecure payment systems, posed significant obstacles to the adoption and widespread use of e-commerce by customers.

The stages of diffusion and growth stage models provide explanations on how, why, and at what rate e-commerce is diffused (Amaglo, 2020:17; Chau *et al.,* 2020:6). Through DOI theory, the researcher ascertained that individual decision-making processes, diverse perspectives,

experiences and viewpoints of Soweto-based SME owners determine the types of e-commerce diffusion processes to be implemented. As a result, entrepreneurial orientation, the SMEs' business owners' individual characteristics and the technology's characteristics play a crucial role in the diffusion process of e-commerce. During the interviews, some Soweto-based SME owners and managers expressed the view that the adoption of e-commerce is a gradual process that corresponds with business growth or evolution. Moreover, in line with Mamun (2017:115) and Schmidthuber *et al.* (2020:2), the qualitative interviews conducted revealed that SMEs exhibit varying rates of technology adoption, attributable to their diverse nature and differing business objectives and personal capabilities.

Although trialability was rated as not being a precursor for the adoption and diffusion of e-commerce among Soweto-based SMEs from the quantitative results, in contrast, the qualitative interviews revealed that the participants were opting for a phased-in approach to implementing e-commerce to observe the benefits that can be derived from its usage and to assess whether any additional requirements are necessary through a step-by-step process. Thus, the trialability and observability provided the Soweto-based SMEs with opportunities to test the system and observe the potential benefits and risks of using e-commerce, which ultimately influenced the rate of its adoption. In line with DOI theory, the decision processes used to classify the various stages of adoption were assessed by first gathering more information about e- commerce and then evaluating its usage and the benefits that can be derived within business operations (Burgess *et al.,* 2017:3; Busaidi *et al.,* 2019:36; Cant & Wiid, 2016:1879).

Although most of the Soweto-based SMEs indicated that they ultimately want a fully- fledged e-commerce platform, they also prefer to implement a step-by-step phased-in approach. The qualitative interview findings are consistent with DOI theory, which suggests that the diffusion process of e-commerce spans from entry-level activities to sophisticated activities (Ndayizigamiye *et al.,* 2019:263). The interviews revealed that most Soweto-based SMEs primarily rely on social media platforms such Facebook, Instagram, LinkedIn and Twitter as substitutes for developing and implementing their own websites and e-commerce platforms due to financial constraints.

As mentioned in the previous paragraph, most Soweto-based SMEs can afford the cost of data to connect to the internet. However, most of them cannot afford the cost of developing and implementing their own website and e-commerce platforms. Findings from the interviews reveal that the implementation stages and diffusion processes of e-commerce can be influenced by a variety of factors, such as trialability and observability, entrepreneurial orientation, compatibility and financial constraints. This corroborates earlier studies by Hoang *et al.* (2021:52); Hussain *et al.* (2020:4); Msimango, (2018:23) as well as Setiyani and Rostiani (2021:1116), who opined that the diffusion of e-commerce adoption by SMEs is not a fixed process and that SMEs experience several and various levels of development during the diffusion process.

6.10 NOVEL INSIGHTS DERIVED FROM THE METHODOLOGIES AND THEORIES DEPLOYED IN THE STUDY

- Perceived benefits are the highest consideration and influencer in the adoption and diffusion of e-commerce among Soweto-based SMEs. This finding came about as a result of insights that were received from the mixed methods methodology and aligned to the TAM framework.
- A higher percentage of Soweto-based SMEs have either already adopted e-commerce or had intentions to adopt e-commerce. This finding emenated from the mixed methods approach adopted in this study and is supported by the integration of all three theories.
- A total of 76.4% of SMEs that participated in the survey were formally registered with the CIPC, according to the quantitative survey results obtained through the TOE framework.
- Soweto-based SMEs were using online 3rd party e-commerce and social media platforms to conduct business transactions. This finding emanated from the qualitative methodology and is supported by the combination of DOI and TOE theoretical frameworks.
- Most SMEs felt that triability did not have much of an impact on their decision to adopt and diffuse e-commerce into the business. This finding was because of the mixed methods approach and was aligned with the DOI model.
- Despite ease of use of e-commerce being a significant influence on its adoption, most

Soweto-based SMEs were willing to invest all the time required to learn how to use e-commerce. This finding emerged from the mixed methods methodology and is supported by the integration of all three theories.

- Soweto-based SMEs can afford the cost of data for e-commerce but cannot afford the cost of implementing a fully-fledged e-commerce website. This finding was determined through the usage of mixed methods methodology and based on the combination of TOE and DOI theories.
- Most of the SMEs that were established in 2020 during the COVID-19 pandemic started to use e-commerce immediately after inception. This finding was derived from the qualitative methodology and is supported by the combination of TOE and DOI theoretical frameworks.
- Customers of Soweto-based SMEs are mostly tech-savvy and expect Soweto-based SMEs to use e-commerce to conduct business. This finding emerged as a result of the insights gained from the mixed methods methodology and is based on the TOE framework.
- Government support does not have a significant impact on the adoption of e-commerce among Soweto-based SMEs. The majority of Soweto-based SMEs rely on their mobile devices for data since there is a lack of ICT infrastructure in Soweto. This finding emanated from the mixed methods methodology and is aligned to the TOE framework.
- Although most Soweto-based SMEs ultimately want a fully-fledged e- commerce platform, they prefer to implement a step-by-step phased-in approach towards the diffusion of e-commerce. This finding was derived from the qualitative methodology and is supported by the combination of DOI and TOE theories.

6.11 PROPOSED INTEGRATED THEORETICAL FRAMEWORK

Previous studies using the TAM were primarily quantitative and focused on identifying factors that influenced e-commerce adoption without delving into how SMEs implement e-commerce. However, by employing a mixed-methods methodology and incorporating additional theoretical frameworks such as the TOE framework and the DOI theory, the researcher was able to uncover how individual decision-making processes, diverse perspectives, experiences

and viewpoints of Soweto-based SMEs shape the types of e-commerce diffusion activities and processes that are implemented.

Figure 6.1 was developed to illustrate a proposed integrated theoretical framework that identified factors that influence the adoption and diffusion of e-commerce among Soweto-based SMEs through mixed methods methodology and the integration of the three theories, namely, TAM, TOE and DOI. Based on the findings from the data analysis, an overwhelming number of respondents to the quantitative survey as well as from the qualitative interviews ranked the perceived benefits as the most influential factor impacting the adoption of e-commerce among Soweto-based SMEs. Moreover, the researcher argues that the addition of "perceived benefits" as an expansion of TAM addresses a gap in scholarly literature that focuses on the beliefs of Soweto-based SME owners and managers. As a result, perceived benefits form part of the proposed integrated theoretical framework as an integral factor that impacts the intention, adoption and diffusion of e-commerce among Soweto-based.

In accordance with TAM, the Soweto-based SME owners' or manager's attitude toward e-commerce adoption was primarily shaped by their perceptions of both the ease of use and the usefulness of the technology, subsequently influencing their intentions to adopt e-commerce. In addition, following the principles of DOI theory, the attitude of Soweto-based SMEs toward adopting e-commerce is shaped by the relative advantages that can be derived through its usage and the degree of complexity associated with the technology, as indicated in the proposed integrated theoretical framework.

Furthermore, based on the results of the interviews, the proposed integrated theoretical framework indicates that entrepreneurial orientation played a significant role in the implementation and diffusion of e-commerce among Soweto-based SMEs. Entrepreneurial orientation in accordance with TOE and DOI, considered having a strong internal locus of control and demonstrating willingness to learn how to use e-commerce systems by the Soweto-based SMEs owners and managers. The results also revealed that Soweto-based SME owners and managers are self-reliant because they use mobile data and mobile devices to overcome challenges arising from lack of ICT infrastructure.

For the implementation and diffusion of e-commerce, the proposed integrated theoretical framework illustrates that the role of management support is essential. Furthermore, management support in accordance with TOE is responsible for ensuring that the SME business is ready and equipped with the necessary resources for the implementation and diffusion of e-commerce. Moreover, the affordability of acquiring technology and the costs of developing an e-commerce platform had a great impact on the ability of Soweto-based SMEs to implement and diffuse e-commerce within their business operations. In addition, through the application of TOE and DOI, the findings revealed that most Soweto-based SMEs required technology hardware and software tools for them to be able to implement e-commerce within their business operations. Most of the participants in the study had the needed technology tools.

The proposed integrated theoretical framework also revealed that the compatibility of e-commerce with the existing systems and processes of SMEs in Soweto played a vital role in the implementation and diffusion process. In line with DOI theory, many Soweto-based SMEs opted for a phased-in approach, initially employing third-party plug-and-play social media tools to experiment with the technology's functionality. This phased-in approach was also adopted as a cost-effective strategy to manage the high expenses associated with acquiring an e-commerce platform. Furthermore, in response to customer pressures, as indicated by the TOE framework, Soweto-based SMEs emphasised the importance of implementing a payment system that offered flexibility to accommodate both cash and online payments, ensuring that they remained customer-centric.

According to the proposed integrated theoretical framework, the environmental factor of COVID-19 significantly influenced the pace at which SMEs in Soweto adopted and diffused e-commerce into their business operations. Many of the participants interviewed were compelled to establish businesses and to adopt e-commerce to connect with customers during the lockdown imposed by COVID-19. Moreover, Soweto-based SMEs felt pressured to adopt e-commerce as they observed their competitors who had already implemented e-commerce achieving higher efficiency and success in their business endeavours.

Furthermore, the proposed integrated theoretical framework (see Figure 6.1), guided by DOI theory, found that Soweto-based SMEs preferred to initially experiment with e- commerce using

social media platforms. This approach allowed them to observe how e-commerce could have a positive impact on their businesses, and it was a more cost-effective strategy. In addition, the interviews revealed that most SMEs were eager to create their own websites. However, due to financial limitations, they opted for a phased-in approach to implementing e-commerce. This phased-in approach enabled them to gradually assess the effectiveness and utilisation of the e-commerce system in stages.

Figure 6.1 Proposed integrated theoretical framework.

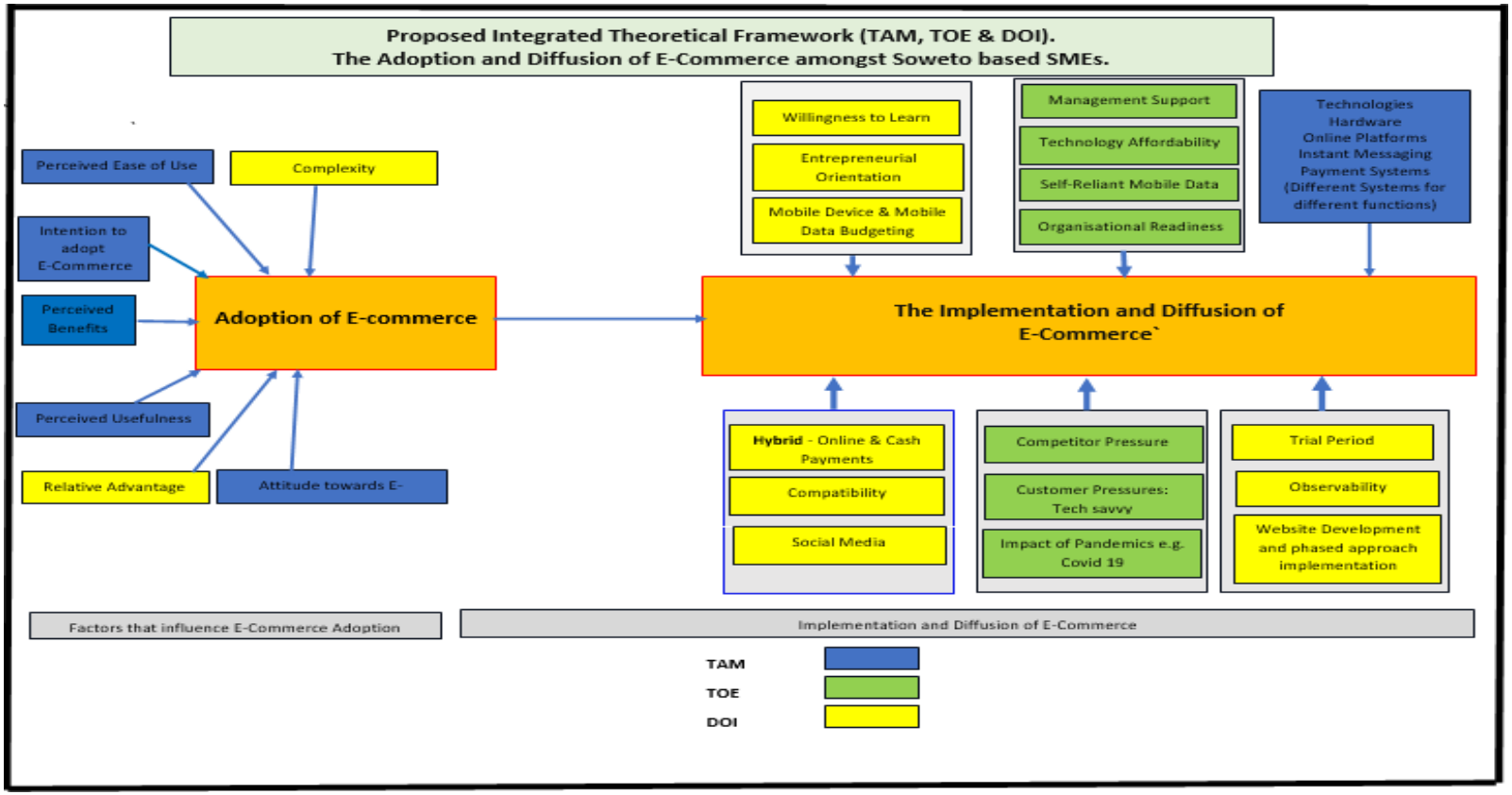

Table 0.1 Proposed integrated theoretical framework.

Source: Researcher's own compilation of findings

6.12 CONCLUSION

In conclusion, the mixed methods methodology was a suitable approach for this study and its usage yielded positive benefits in that the deployment of mixed methods provided greater depth and breadth of information, which is not possible utilising singular methodologies in isolation. Despite its time-consuming nature, the mixed methods did afford opportunities for the researcher to have profound insights generated by both quantitative and qualitative data collection methods. Furthermore, rather than restricting the opportunities for the study by utilising either qualitative or quantitative methods, a mixed methods approach provided the researcher with greater scope to investigate the adoption and diffusion of e-commerce among Soweto-based SMEs. The usage of the triangulation convergent design involving both quantitative and qualitative data analysis reinforced the study's credibility and robustness. This methodological approach facilitated a more comprehensive exploration of the research problem, thereby enhancing the reliability of the findings.

The application of mixed methods together with the three theoretical lenses aided in encapsulating the distinctiveness of townships and the experiences of the SME owners through the usage of flexible theoretical frameworks. By amalgamating three influential theoretical models, namely, TAM, TOE and DOI, this study presented a comprehensive and holistic viewpoint on the factors that influence the adoption of e- commerce among SMEs in Soweto. This integration effectively addressed the limitations associated with relying solely on a single theory, resulting in a more profound and extensive comprehension of the phenomenon. Lastly, the proposed integrated theoretical framework was adaptable to provide an understanding of the full scope of e-commerce adoption and diffusion approach that is holistic to include both the Soweto-based SMEs from an organisational perspective and the experiences of the SME owners and managers from an individual perspective.

The incorporation of the proposed integrated theoretical framework deepens our comprehension of the social phenomenon surrounding e-commerce adoption within SMEs based in Soweto. It delves into the interrelated variables and correlations, shedding light on the events and interactions that influence the behaviours and actions of Soweto-based SMEs in relation to e-commerce adoption and diffusion. Moreover, the proposed integrated

theoretical framework that was developed by the researcher brings lucidity to the significant factors and processes involved in adopting and implementing e-commerce within the business operations of Soweto-based SMEs. The proposed integrated theoretical framework elucidates the intricate dynamics of e- commerce adoption in the specific context of Soweto-based SMEs, offering valuable insights into operational aspects.

In summary, this study advances the technology field by providing a more comprehensive and nuanced understanding of the factors that affect e-commerce adoption within the specific context of SMEs in Soweto. The integration of multiple theories, coupled with a rigorous research design, enabled a more in-depth exploration of this intricate and dynamic phenomenon, thereby contributing valuable insights to the body of knowledge in the field of technology adoption and diffusion within the SME sector. The final chapter concludes the study with a final summary, core findings, limitations, recommendations and implications for future research.

CHAPTER 7
CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

Chapters 5 and 6 presented the analysis and discussion of the data collected. The data included completed and valid surveys from 267 respondents as well as responses from eight participants who formed part of interviews that were conducted. The collected data were integrated with the literature in an effort to compare and to contrast against the quantitative and qualitative methodologies applied throughout this study. Moreover, the researcher further discussed the application of the three theoretical frameworks that were deployed throughout the study to the collected data, namely, technology acceptance model (TAM), technology-organisation-environmental (TOE) framework and diffusion of innovations (DOI) theory. This was followed by a discussion of the proposed integrated theoretical framework based on the findings from the data. This current chapter provides an overview of the chapters to this study, the objectives and the significant findings from the data. Finally, it outlines the conclusion and the recommendations for industry authorities, contributions to the body of knowledge and areas for further research.

7.2 OVERVIEW

Chapter 1 provided an overview of the study, problem statement, research question, primary and secondary objectives, conceptual framework and research methodology used in this study, followed by ethical considerations.

Chapter 2 focused on literature review and addressed the theoretical review of e-commerce. The chapter comprised a comprehensive overview of the background to the e-commerce economy (see section 2.1.1) and the definition of e-commerce and the various categories of e-commerce (see sections 2.2 and 2.3). The history and the evolution of e-commerce (see section 2.4), a discussion of the theoretical frameworks underpinning the adoption of e-commerce as well as providing a rationale for an integration of the theories (see section 2.5). The role of e-commerce among SMEs (see section 2.6) and the global review of the adoption of e-commerce among SMEs in developed and developing countries, including South Africa (see section 2.7).

Chapter 3 reported on the township economy and the adoption of e-commerce among township SMEs (see section 3.2). The chapter identified and discussed the 10 most common factors that influence the adoption of e-commerce SMEs based on previous literature (see section 3.3), the diffusion process of e-commerce and the various stages in the theory of diffusion (see section 3.4). The chapter also focused on a discussion of the barriers that impede the adoption of e-commerce by SMEs (see section 3.5).

Chapter 4 outlined the philosophical foundations of this study (see section 4.2) and the research methodology (see section 4.3). The chapter went further to focus on research design and the mixed-methods methodology employed in this study (see section 4.4). Moreover, the chapter focused on the population and the research setting (see section 4.5), followed by the research methods, which presented an overview of the procedural steps that were applied in the triangulation convergent design (see section 4.6). The quantitative and qualitative methodologies were also discussed (see sections 4.7 and 4.8), followed by the validity and credibility of each research methodology (see section 4.9) and ethical considerations (see section 4.10).

Chapter 5 reported on the data and the findings of this study. The data reported were of completed and valid surveys from 267 respondents as well as responses from eight participants who formed part of the interviews that were conducted. SPSS was used to analyse the quantitative data, and Atlas.ti was used to analyse the qualitative data. The quantitative data were reported as three main elements emanating from the data collected, and the qualitative data were reported in five main themes. Given that the triangulation convergent mixed methods design was deployed for this study, the consolidated presentation, analysis and findings of the two research methodologies were discussed under three headings. These headings were e-commerce adoption factors that are applicable to Soweto-based SMEs (see section 5.5), implementation and diffusion of e-commerce (see section 5.6) and barriers to the adoption and diffusion of e-commerce (see section 5.7). Exploratory factor analysis (EFA) and the Kaizer-Meyer-Olkin (KMO) index were used to establish the commonality between the variables and to assess the construct validity of the questionnaires.

Chapter 6 presented a discussion of the integrated findings of the data collected with previous literature to determine how the use of mixed methods methodology influenced the findings of

this study (see section 6.2). The findings from this study were further compared and contrasted against the quantitative and qualitative methodologies deployed throughout the study and looked at the implications of each finding (see section 6.3). Furthermore, the application of the three theoretical frameworks that were deployed throughout the study was discussed, namely; the TAM, TOE and DOI frameworks (see section 6.6 – 6.9). In addition, novel insights derived from the mixed methods methodologies and theories deployed in the study were pointed out (see section 6.10). Finally, the proposed integrated theoretical framework was developed, presented and discussed based on the findings of the integrated results of the mixed data (see section 6.11).

7.3 RESEARCH OBJECTIVES

The aim of this study was to investigate which factors from the literature review influence the adoption and diffusion of e-commerce among Soweto-based SMEs. The main objective was further studied through several secondary objectives:

7.3.1 Research objectives

To achieve the main objective, the following secondary objectives were used:

1 Explore the factors that influence the adoption and diffusion of e-commerce among Soweto-based SMEs.
2 Determine how the adoption of e-commerce is implemented and diffused among Soweto-based SMEs.
3 Explore what barriers hinder the adoption of e-commerce among Soweto-based SMEs.

7.3.2 Research questions

The main research question that defined this study was: “Do the identified factors from the literature review influence the adoption and diffusion of e-commerce among Soweto-based SMEs?”

The main question gave impetus to three research questions:

1 What are the factors that influence the adoption of e-commerce among Soweto-based SMEs?

1 How is the adoption of e-commerce implemented and diffused among Soweto-based SMEs?

2 What are the barriers that hinder the adoption of e-commerce among Soweto-based SMEs?

7.4 SECONDARY RESEARCH QUESTION 1:

What are the factors that influence the adoption of e-commerce among township SMEs?

- The most significant considerations and influences on the adoption and diffusion of e-commerce among SMEs in Soweto were perceived benefits, perceived usefulness and perceived ease of use. It is imperative for the integrated theoretical framework to incorporate these perceived gains and advantages of using e-commerce as a precursor towards the formulation and development of a receptive positive attitude regarding the intention and adoption of e-commerce.
- Technology affordability affects the ability to have access to the internet and to be able to connect to e-commerce platforms. Technology affordability includes the cost of data, access to available technology resources such as hardware, access to online platforms, instant messaging and payment systems. Soweto-based SMEs would need to be able to afford the costs of such resources to use e-commerce. It is therefore essential to include affordability for all the necessary resources and accessories required for the adoption of e-commerce as part of the integrated theoretical framework.
- There is a need for management support to guide the allocation of adequate resources and to devote time to the adoption of e-commerce in proportion to its cost and potential benefits to the business. For example, it is imperative that business management encourages and motivates employees to be enthusiastic in utilising e-commerce.
- Organisational readiness in the form of human resources and employees who are computer literate with the capacity to absorb the cost of implementing e-commerce

is a requirement to the adoption and diffusion of e-commerce. Moreover, having sufficient financial resources such as the data required to access the internet are precursors to the adoption of e-commerce. Furthermore, Soweto-based SMEs require the necessary information technology resources to prepare for significant changes in their business operations needed for e-commerce adoption.

- Customer and competitor pressures are expected to continue playing a significant part in the adoption of e-commerce. Given that most SMEs' primary purpose is to cater to the needs of customers, they feel compelled to meet evolving and growing customer expectations and demands to engage with them using e-commerce to maintain their competitive advantage. The same applies to competitor pressures, where SME peer-to-peer interactions, especially when more competitors in the same industry that have adopted e-commerce are doing very well, significantly influence the adoption and diffusion of e-commerce. The competitor term is referred to as the early majority in the DOI framework and speaks to people who rarely lead but will adopt the new technology since it is largely adopted already, thus signifying a particular status for having the new technology.
- The impact of major pandemics such as COVID-19 was a significant influential factor on the adoption of e-commerce by Soweto-based SMEs and ensured that businesses continue to provide goods and services to their customers during periods of uncertainty. COVID-19 contributed to the surge in e- commerce adoption among Soweto-based SMEs and influenced their outlook on the adoption of e-commerce. Most SMEs considered the adoption of e- commerce in their business due to COVID-19.
- When addressing this study's objective of examining the factors from the literature review that influenced the adoption and diffusion of e-commerce among SMEs in Soweto, the results demonstrated that nine out of the ten factors had a substantial influence. Notably, government support did not emerge as a significant factor in the adoption and diffusion of e-commerce among Soweto-based SMEs.

7.5 SECONDARY RESEARCH QUESTION 2:

How is the adoption of e-commerce implemented and diffused among township SMEs?

- The implementation and diffusion of e-commerce in SMEs are determined by the unique decision-making processes of individual SME owners, which are influenced

by various factors such as the entrepreneur's age, level of education, income and the characteristics of the technology itself. Entrepreneurial orientation is shaped by the individual choices, perceptions, expectations, experiences and opinions of SME owners. Each adopter falls into distinct categories, progressing from adoption to implementation and eventual diffusion of e-commerce. The characteristics of the entrepreneur and the technology significantly impact the diffusion process, emphasising the need to avoid a one- size-fits-all approach in the context of SMEs.

- While e-commerce may seem complex initially, the majority of Soweto-based SMEs are willing to acquire the necessary knowledge and skills to utilise it effectively. The process of diffusion involves keeping abreast of the latest technological developments in the business environment and adapting to those changes over time to remain competitive and relevant. Soweto-based SME owners who embrace the idea of acquiring new technological skills tend to experience significant perceived benefits from the usage of e-commerce. Implementing DOI theory could be particularly suitable and practical for SMEs in Soweto, as it allows for a gradual learning process and accommodates the unique challenges and circumstances faced by these businesses during the e-commerce diffusion journey.
- With most SMEs having limited resources, they should be intentional about budgeting and setting money aside for mobile data costs, which is essential for internet access. Given the lack of ICT infrastructure, Soweto-based SMEs are expected to be creative and use self-reliant methods to overcome the challenges presented by inadequate ICT infrastructure in the township of Soweto. Most Soweto-based SMEs feel inclined to implement an incremental approach in the diffusion process of e-commerce as a mechanism to overcome their lack of sufficient financial resources.
- Soweto-based SMEs should integrate the use of social media and third-party plug-and-play e-commerce platforms into their e-commerce adoption strategy. Given the limited resources of most SMEs, leveraging social media offers a convenient, cost-effective and accessible means for Soweto-based SMEs to instantly advertise, buy and sell products/services online, as well as provide online customer care services. Embracing entry-level e-commerce activities such as utilising social media can contribute to improved market access, increased revenue and profitability for SMEs in Soweto. By exploring the adoption of social media throughout all stages of the adoption and diffusion process, SMEs gain valuable insights into the considerations and challenges they may encounter beyond just the initial decision-making phase.

- Various online systems and platforms serve distinct business functions. For instance, social media platforms are utilised for sales and marketing purposes, while speed points and EFTs facilitate financial transactions. In addition, messaging platforms such as WhatsApp and Messenger are employed for customer engagement. Considering the diverse range of functions provided by these online systems, it becomes crucial to explore the integration of these platforms to enhance operational efficiency and streamline business processes.
- It is advisable to adopt a hybrid approach that incorporates both online payment systems and cash to accommodate the preferences and demands of the various customers. This approach recognises the need to cater to customers who may have reservations or concerns about using online platforms to process payments, particularly in Soweto. By offering multiple payment options, including cash transactions, Soweto-based SMEs can address the needs of customers who prefer or trust traditional payment methods, thereby fostering a sense of confidence and accommodating a wider customer base.
- To enable Soweto-based SMEs to explore and learn about e-commerce activities while managing financial constraints, it is recommended to incorporate observability into entry-level activities. This approach allows SMEs to test and gain first-hand experience with e-commerce, without the need for significant capital outlays associated with a fully-fledged e-commerce platform. By implementing observability, SMEs can assess the viability and potential benefits of e-commerce in a controlled and cost-effective manner, gradually building their knowledge and capabilities before committing to larger-scale e- commerce initiatives.
- The process of diffusion focuses on the stages through which SME owners progress, starting from gaining initial knowledge about e-commerce, forming attitudes towards it, making the decision to adopt it, and ultimately implementing e-commerce. By applying the diffusion of innovations (DOI) theory, one can uncover the diverse patterns of implementation and the mechanisms involved in the diffusion of e-commerce among Soweto-based SMEs. These individual patterns of diffusion provide valuable insights for predicting the successful implementation of e-commerce within the context of Soweto-based SMEs. E-commerce encompasses a range of activities, starting from entry-level tasks such as developing websites and utilising emails and progressing to more advanced and sophisticated activities such as online payments, online purchasing and customer services.

- Given the socio-economic challenges, limited infrastructure and financial constraints in townships, it is beneficial for Soweto-based SMEs to have the opportunity to gradually progress through entry-level e-commerce activities. This incremental approach can help boost their confidence and enable them to steadily advance towards more advanced e-commerce activities over a period of time. Moreover, the phased-in implementation approach serves as a mechanism to overcome the lack of sufficient financial resources faced by these SMEs. Introducing simple technology-related enablers of e-commerce such as free third-party online platforms and social media during the initial stages, is in line with their business strategy. The technological characteristics of these free platforms and social media are compatible and align well with the operational needs and capabilities of Soweto-based SMEs.

7.6 SECONDARY RESEARCH QUESTION 3:

What are the barriers that hinder the adoption of e-commerce among township SMEs?

- The most significant barrier to the implementation of e-commerce was hampered by the expensive website developmental costs of having an e-commerce platform designed for each Soweto-based SME.
- The lack of reliable technological infrastructure necessary for seamless internet connectivity presents a significant obstacle to implementing e- commerce, particularly in the township of Soweto. Insufficient ICT infrastructure in Soweto poses challenges for many Soweto-based SMEs, forcing them to seek alternatives, often expensive means such as mobile routers to access data. Network failures and slow connectivity further compound the difficulties faced by Soweto-based SMEs in delivering products and services to customers. Moreover, the persistent issue of frequent electricity cuts and loadshedding has detrimental effects on the livelihoods of individuals and businesses alike. Limited financial resources prevent most Soweto-based SMEs from acquiring generators or implementing alternative power restoration solutions such as solar systems. Consequently, these recurring electricity disruptions hinder their ability to conduct business through e-commerce, resulting in delays in processing and delivering products and services to customers.
- The lack of trust from customers poses a significant obstacle to the widespread adoption of e-commerce, particularly concerning apprehensions about making

payments through unfamiliar online platforms. Moreover, SME owners often encounter trust issues when dealing with customers who cannot be traced and subsequently fail to fulfil payment obligations after receiving services.

- The absence of government support and lack of comprehension regarding the crucial need for prompt response times to address queries and issues faced by SMEs present a significant hurdle in sustaining the use of e-commerce within the business sector.
- Organisational culture and inertia towards changes in business processes to accommodate the adoption and diffusion of e-commerce within business operations negatively impact some of the Soweto-based SMEs.
- Data connectivity costs are very high despite some Soweto-based SMEs being able to budget and make provisions to acquire the data, this high data costs remains a significant barrier to many Soweto-based SMEs.

7.7 SUMMARY OF CONTRIBUTIONS

The significance and contributions of this study may be classified in terms of adding value on three levels, namely, theoretical, empirical and practical levels.

7.7.1 Contributions at theoretical level

At a theoretical level, this study establishes a theoretical foundation that contributes to the comprehension of the essential constructs required for an integrated theoretical framework in understanding the factors influencing the adoption and diffusion of e-commerce among Soweto-based SMEs. The theoretical framework employed in this study incorporates the technology acceptance model (TAM), the technology organisation environment (TOE) framework, and the diffusion of innovation theory (DOI). Notably, no existing integrated framework combining TAM, TOE and DOI has been developed to explore the factors impacting e-commerce adoption, implementation and diffusion within the business operations of Soweto-based SMEs.

Moreover, this study contributes significant value to the existing body of knowledge by shedding light on the processes and activities associated with the implementation and diffusion of e-commerce within the business operations of Soweto-based SMEs. A key strength of the proposed integrated theoretical framework employed in this study is its contextualisation of the

opinions, experiences and perceptions of Soweto-based SME owners, as well as the business environment in which the Soweto-based SMEs operate. The development of the proposed integrated theoretical framework is anticipated to provide guidance for future research endeavours seeking to gain a deeper understanding of the phenomenon under investigation.

7.7.2 Contributions at an empirical level

In this study, a comprehensive set of variables was identified to form the proposed integrated theoretical framework for understanding the factors influencing the adoption and diffusion of e-commerce among Soweto-based SMEs. Prior research has predominantly focused on investigating the factors that influence the initial adoption of e-commerce while neglecting the subsequent post-adoption environment, including the implementation and diffusion processes within township SMEs. Furthermore, previous research in this domain has primarily relied on quantitative methodologies.

Using a mixed-methods methodology, this study examined the utilisation of e-commerce among SMEs situated Soweto. By adopting a pragmatic worldview, this study provides a well-rounded conclusion regarding the challenges and opportunities associated with the adoption and diffusion of e-commerce among Soweto-based SMEs, taking into account their unique realities. Consequently, this methodology enables a broader range of perspectives and insights into phenomena that have been previously studied in different contexts, enriching our understanding of the Soweto context and contributing to a more diverse knowledge base.

In addition, in this study, mixed-methods methodology was employed where each type of data was collected and analysed separately and independently using the specific techniques associated with each methodology. The quantitative method was utilised to address the unique characteristics and peculiarities of SMEs in Soweto, aiming to gain a comprehensive understanding of the factors influencing the adoption and diffusion of e-commerce among Soweto-based SMEs. On the other hand, the qualitative method was employed to delve deeper into the lived experiences, reasoning, perceptions and opinions of Soweto-based SMEs regarding the processes and activities involved in the implementation and diffusion of e-commerce within their business operations.

Subsequently, the mixed data were integrated, analysed and discussed simultaneously using a triangulation convergent design. Through this research design, the study makes a substantial

contribution to the progress of e-commerce adoption and usage among Soweto-based SMEs. Furthermore, the current study used empirical data to develop a proposed integrated theoretical framework employing mixed methods to achieve a comprehensive understanding of the factors influencing the adoption and diffusion of e-commerce in this specific context. As a result, this research significantly enhances our understanding of the dynamics surrounding e-commerce adoption and diffusion among Soweto-based SMEs, thus providing valuable insights for both theory and practice.

7.7.3 Contributions at a practical level

On a practical level, this study's findings serve as a valuable resource for industry authorities and other relevant bodies interested in the development of SMEs, as they can refer to these findings to devise measures aimed at enhancing Soweto-based SMEs' competitiveness through the adoption of e-commerce. Additionally, industry authorities and relevant bodies can utilise the study's findings to facilitate the adoption and diffusion of e-commerce within SMEs' core business operations. Soweto-based SME owners stand to benefit by gaining valuable insights into the key factors that influence their adoption of e-commerce, enabling them to enhance overall business efficacy. Moreover, these SME owners can gain a deeper understanding of how their individual characteristics, perceptions and experiences shape the manner and pace at which e-commerce is implemented and diffused in the Soweto context.
Moreover, the government can utilise the findings of this study as a reference to formulate policies and design programmes that facilitate the adoption of e-commerce and provide incentives for Soweto-based SMEs that adopt e-commerce. Incubators, on the other hand, can refer to these findings to develop relevant training programmes and provide tailored support for the adoption and diffusion of e-commerce among Soweto-based SMEs. In addition, the three organisations that assisted with data collection can refer to this study's findings to enhance their understanding of how they can better support the affiliated SMEs in their e-commerce adoption initiatives.

Lastly, this study contributes to the academic body of knowledge because it has added new insights that benefits academic research which seeks to comprehend the adoption of technology and innovation by Soweto-based SMEs. Through its significant theoretical, empirical and practical contributions, this study serves to advance our understanding in these domains and contribute to the body of knowledge.

7.8 RECOMMENDATIONS AS A RESULT OF THIS STUDY

It is recognised that Soweto-based SMEs face numerous challenges in the adoption and diffusion of e-commerce, which are paramount. The findings of this study point to four recommendations for addressing and improving access to the Internet, the rate of e-commerce adoption and the involvement of government in supporting the adoption of e-commerce among Soweto-based SMEs. Moreover, it is proposed that expanding on existing theoretical models and using integrated theoretical frameworks is essential in the context of the township business environment.

7.8.1 Recommendation 1: Introduction of a free centralised e-commerce platform by government

The upfront capital outlay required for the development of an e-commerce platform is very expensive and unattainable for most Soweto-based SMEs. In addition, Soweto-based SMEs have to use different online platforms to perform different business functions, resulting in inconsistent business practices and the inability to use data analytics to improve business performance. Based on the statement provided, the recommendations are for the creation of government initiatives in providing centralised e-commerce platforms with the aim of bridging financial gaps and promoting e-commerce adoption. In addition, the government should examine the economic and social consequences of these platforms, including their impact on local businesses, job creation, economic growth and business practices in Soweto.

Furthermore, the government should assess the user experience and adoption rates, focusing on platform usability, features, and accessibility to encourage SME adoption. It is also crucial for the government to examine e-commerce platforms' capabilities for data analytics and business performance enhancement, enabling informed decision-making and increased competitiveness. Evaluating the long-term sustainability of government-backed e-commerce platforms and SME transition to proprietary solutions as they grow is essential. Lastly, conducting comparative studies across similar initiatives in various regions and countries can help identify best practices and challenges for effective e-commerce platform creation and adoption facilitation.

7.8.2 Recommendation 2: The government needs to provide support to SMEs adopting e-commerce

The government should assume a more significant role in facilitating and supporting Soweto-based SMEs in their adoption and diffusion of e-commerce. This can be achieved through the development of favourable policies, the reduction of data tariffs, providing access to grants and actively monitoring the digital presence of Soweto-based SMEs to offer enhanced support. Moreover, lack of ICT infrastructure has been identified as a notable obstacle hindering the adoption of e-commerce among SMEs based in Soweto. Based on the statement mentioned above, the recommendation is for policymakers to analyse the direct impact of government policies aimed at supporting SMEs in e-commerce, focusing on increased adoption rates, improved business performance and reduced barriers to entry. Secondly, policy makers should look into the economic implications of government support, including the return on investment and its overall impact on Soweto's economy, which should be thoroughly examined. Furthermore, policymakers need to assess government-led initiatives that enhance ICT infrastructure and examine its effect on e-commerce adoption.

In addition, the government should also address the digital divide and infrastructure challenges in Soweto. Furthermore, the government needs to play an active role in monitoring SMEs' digital presence and assessing the effectiveness of support provided to Soweto-based SMEs. Comparative studies with other townships where similar government support initiatives have been implemented should be carried out by policymakers because such studies can provide valuable insights that can help to examine whether government support fosters self-sufficiency or creates dependencies in e-commerce adoption among Soweto-based SMEs.

7.8.3 Recommendation 3: Policymakers should investigate factors that influence the readiness to adopt e-commerce by township customers, education of customers and address the lack of trust.

The readiness of customers to embrace e-commerce holds significant importance within the adoption and diffusion of e-commerce among Soweto-based SMEs. To achieve widespread e-commerce adoption, customer awareness and education regarding the benefits of using e-commerce and cybersecurity to mitigate trust-related concerns is imperative. Based on the abovementioned statement, the recommendations are for policymakers to investigate the factors that influence customer readiness for e-commerce, including their demographic, socio-

economic and psychographic contexts. Next, policymakers should develop effective customer education strategies that cater to the unique needs of township customers, emphasising the benefits of e-commerce and identifying suitable channels for information dissemination.

Moreover, policymakers should focus on cybersecurity awareness to improve customer trust in e-commerce platforms and create educational programmes to address these concerns. Additionally, policymakers need to explore the impact of cultural and social factors on customer perceptions and decisions regarding e-commerce. The abovementioned recommended initiatives should also encompass case studies to identify best practices in successful customer education and trust-building initiatives in township settings. Finally, policymakers should assess the long-term effects of the recommended initiatives on e-commerce adoption and their impact on the growth of Soweto-based SMEs.

7.8.4 Recommendation 4: Expanding the TAM theory to incorporate perceived benefits of using e-commerce.

The adoption and diffusion of e-commerce among SMEs in Soweto are primarily influenced by perceived benefits, perceived usefulness and ease of use. Perceived benefits emerged as the most significant factor, scoring highest in this study's results. This highlights the crucial role that perceived benefits play in stimulating interest and motivating Soweto-based SMEs to explore and potentially adopt e-commerce. Based on the abovementioned statement, the recommendation is for academics to develop a comprehensive framework based on the Technology Acceptance Model (TAM) that centers on the perceived benefits of e-commerce, taking into consideration the diverse nature of these benefits and their contextual relevance. Secondly, academics should refine measurement tools and assessment methods to quantify perceived benefits, creating standardised scales for more accurate comparisons.

Furthermore, academics should conduct comparative studies across various townships to determine the consistency or variation in the significance of perceived benefits and their influence on e-commerce adoption. Moreover, academics should investigate the direct link between perceived benefits and behavioural outcomes such as adoption, implementation and long-term usage of e-commerce amongst Soweto-based SMEs. Lastly, academics need to perform longitudinal studies to track changes in perceived benefits over time and their correlation with fluctuations in e-commerce adoption rates.

7.9 LIMITATIONS OF THE STUDY

It is important to address the limitations of this research, which are intrinsic to the nature of the study and the context in which it was conducted:

- **Limited generalisability:** The study primarily focuses on SMEs in the township of Soweto. While this choice allowed for a deep exploration of a specific context, it inherently limits the generalisability of the findings. Soweto has its own unique characteristics and dynamics and these findings may not be applicable to other townships with different peculiarities.
- **SME uniqueness in Soweto:** Soweto, as a locale for SMEs, possesses its own distinctive features, largely stemming from the prevalence of informal businesses. This novelty, while valuable for understanding a specific subset of SMEs, does not fully represent the broader spectrum of SMEs across South Africa. It is crucial to acknowledge that this distinctiveness can affect the generalisability of the research outcomes (Cohen *et al.*, 2007:184).
- **Complex research design and challenges with access:** This study employed a triangulation convergent mixed-methods design, a comprehensive approach that involves both quantitative and qualitative data collection and analysis. While this approach offers valuable insights, it can be time-consuming and resource-intensive (DeCuir-Gunby & Schutz, 2018:100). Rigorously conducting both phases, especially when they entail a substantial amount of data or intricate procedures can extend the research timeline (Creswell & Plano Clack 2018:71). As a result, the researcher required extended access to Soweto- based SMEs for purposes such as consultation, data validation or further data collection (Creswell & Plano Clark, 2018:81). However, such access may not always be feasible due to the busy schedules or limited availability of SME owners and managers. These practical challenges can impact the depth and breadth of the research.
- **Snapshot of time:** The study is based on a cross-sectional design, providing a snapshot of the research setting at a specific point in time (Saunders & Lewis, 2012:123). This inherent time constraint limits the ability to capture changes and developments over a more extended period. To gain a more comprehensive understanding of the evolution of e-commerce adoption among Soweto-based SMEs, a longitudinal study should be considered in future research.

Understanding these limitations is essential to interpret the research findings accurately and to guide future research endeavours for a broader and more nuanced perspective on e-commerce adoption in the context of township SMEs.

7.10 RECOMMENDATIONS FOR FUTURE RESEARCH

This study attempted to investigate the factors that influence the adoption and diffusion of e-commerce as well as to explore how Soweto-based SMEs integrate e-commerce into their business operations. Furthermore, it aimed to identify the barriers that hinder the adoption of e-commerce among these SMEs. Moving forward, future research could focus on investigating different aspects related to the adoption and diffusion of e-commerce as well as extending the research to other townships in South Africa, thereby contributing to a more comprehensive understanding of this topic.

A potential future study utilising DOI theory could focus on examining the role of innovators and early adopters as opinion leaders in influencing the adoption rate of e-commerce among township SMEs. This study could explore the dynamics and mechanisms through which these influential individuals shape the diffusion process of e-commerce within the township context. By investigating the impact of innovators and early adopters, valuable insights can be gained into strategies for promoting and accelerating e-commerce adoption among township SMEs.

In future studies, employing a mixed-methods methodology could be beneficial in examining the influence of the education level of both SME owners and customers on the adoption of e-commerce within townships. This approach would allow for a comprehensive exploration of the impact of education on e-commerce adoption, considering various perspectives and capturing both qualitative insights and quantitative data.

A mixed-methods study that encompasses multiple townships across South Africa could be conducted to compare and assess the varying levels of e-commerce adoption. Such a study could provide valuable insights into the adoption patterns, challenges and opportunities specific to each township, allowing for a comprehensive understanding of the e-commerce landscape at a broader scale. By examining multiple townships, researchers can identify similarities and differences in the factors influencing e-commerce adoption, enabling the development of targeted strategies and interventions tailored to the unique characteristics of each township.

Lastly, future research could also focus on investigating the factors that influence the adoption of e-commerce among customers in townships. Understanding customers' needs, perceptions, motivations and barriers related to e-commerce adoption is crucial for the successful diffusion of e-commerce among township SMEs. By examining the specific factors that influence customers' acceptance and usage of e-commerce in townships, researchers can provide valuable insights to guide the development of strategies and intercessions aimed at increasing customer receptiveness and facilitating the widespread adoption of e-commerce in townships.

7.11 CONCLUSION

With the significant economic contributions of township SMEs in mind, this study aimed to gather crucial information that could shed light on the factors influencing the adoption of e-commerce among Soweto-based SMEs. Additionally, it sought to examine the diffusion of e-commerce within Soweto-based SMEs through the lens of an integrated theoretical framework. Furthermore, the study aimed to identify the barriers that impede the adoption and diffusion of e-commerce among Soweto-based SMEs. By exploring the perceptions, experiences and opinions of Soweto-based SMEs regarding the processes and activities involved in the diffusion of e-commerce, this study sought to enhance our understanding of this phenomenon and provide valuable insights regarding the impact of e-commerce in their business operations.

Soweto-based SMEs exhibit unique characteristics and face distinct challenges that make their adoption of e-commerce different from that of other SMEs. Factors such as poor technological infrastructure and lack of government support contribute to this differentiation. To bridge this gap, it was crucial to explore the perceptions, experiences and opinions of Soweto-based SMEs regarding the adoption and implementation of e-commerce in their business operations. A tailored integrated theoretical framework was necessary to capture the nuances specific to Soweto- based SMEs.

This study also identified ten prominent factors that influence the adoption of e-commerce among SMEs from the literature review. Based on TAM, perceived benefits, perceived usefulness, perceived use and attitude towards e-commerce are the factors that influence the adoption of e-commerce among SMEs. However, factors from the TOE framework included entrepreneurship orientation, management support, organisational support, customer pressures, competitor pressures, government support and vis major (in the context of this

study, the COVID-19 pandemic). The diffusion of innovation (DOI) theory was applied to understand the process of e-commerce diffusion over a period of time. It highlighted the adaptive nature of Soweto-based SMEs' choices, which evolve based on the characteristics of business owners and the technological aspects of the adoption process.

Moreover, the adoption of e-commerce by SMEs should be viewed as a multi-stage process, providing a contextual understanding of the challenges faced throughout the implementation and diffusion life cycle. Soweto-based SMEs tend to follow an incremental diffusion approach, starting with entry-level e-commerce activities such as social media and gradually advancing to more sophisticated e-commerce activities to overcome financial constraints.

Overall, this study sheds light on the complexities inherent in Soweto township business environment and the specific challenges faced by Soweto-based SMEs in adopting and diffusing e-commerce. Soweto-based SMEs are characterised by a high degree of heterogeneity, encompassing diverse ideologies and business cultures. The barriers to e-commerce adoption in the Soweto can be classified as internal and external. Internal barriers are factors that exist within an organisation, such as limited financial resources and organisational culture. External barriers, on the other hand, are beyond the immediate control of the organisation and include issues such as inadequate ICT infrastructure and lack of government support.

The adoption and diffusion of e-commerce among Soweto-based SMEs is influenced by various factors encompassed by the TAM, TOE and DOI theoretical frameworks. Soweto-based SMEs exhibit different perceptions and experiences, leading to the adoption of diverse diffusion processes and activities at different stages of growth. This aligns with the pragmatic philosophical worldview which recognises the existence of multiple realities regarding a phenomenon. Hence, this study employed a mixed-methods methodology, specifically applying the triangulation convergent design.

The empirical results yielded twenty-one findings that are relevant to the research objectives of this study. Summarised findings from the results of the study concluded the following:

- The most significant considerations and influences on the adoption and diffusion of e-commerce among SMEs in Soweto were perceived benefits, perceived usefulness and ease of use.
- Most Soweto-based SMEs had a positive attitude towards acquiring new knowledge

and were willing to invest the necessary time to learn how to use e-commerce.

- Soweto-based SMEs could afford only data costs but not website design and implementation. Data were essential for internet access, and SMEs were willing to allocate funds for this.
- Third-party online platforms such as social media were much cheaper to use, thus easing the immediate financial burden of creating a full-fledged e-commerce website.
- Most SMEs still planned to establish their own e-commerce platforms using a phased-in approach to overcome financial constraints.
- The COVID-19 pandemic has accelerated the proliferation of e-commerce as it has become a viable strategy for businesses to maintain operations despite the pandemic's restrictions, resulting in the rapid adoption of e-commerce by SMEs.
- Government support did not have a significant impact on the adoption of e-commerce among Soweto-based SMEs.
- Most participants relied on their mobile devices for data due to the lack of ICT infrastructure in Soweto, indicating that government support was not a critical factor in the adoption of e-commerce.
- Lack of trust among customers was a major challenge but did not deter Soweto-based SMEs from adopting and utilising e-commerce.

The growing prevalence of digital technologies has led to a substantial global surge in online sales and an ever-increasing number of people turning to online shopping. For SMEs, embracing e-commerce has become essential for survival and growth. However, in many developing regions such as Soweto, the adoption of e-commerce by SMEs remains a challenge due to issues such as internet security, lack of skills, limited government support, insufficient ICT infrastructure and lack of awareness. In the context of this study, Soweto-based SMEs' adoption and diffusion of e- commerce are influenced by factors within theoretical frameworks such as TAM, TOE and DOI, with perceived benefits, usefulness and ease of use being primary drivers.

Notably, Soweto-based SMEs displayed a positive attitude towards learning and adapted to financial constraints by using third-party online platforms such as social media. The pragmatic approach of this study, employing mixed methods and integrating theoretical frameworks, highlights the importance of understanding individual decision-making processes and diverse perspectives in shaping e-commerce adoption among Soweto-based SMEs, offering valuable insights for further exploration and action in the evolving e-commerce landscape. As we move

forward, it is crucial to recognise the nuances of e-commerce adoption in diverse contexts and tailor support, accordingly fostering equitable growth and inclusivity in the digital economy.

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APPENDICES

APPENDIX 1: ETHICAL CLERANCE CERTIFICATE

UNISA college of economic and management sciences

COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCE RESEARCH ETHICS REVIEW COMMITTEE

18 May 2022

Dear Miss Naledi Desiree Dorothy Gallant

NHREC Registration # : (if applicable)
ERC Reference # : 2021_CRERC_046 (FA)
Name: Miss Naledi Desiree Dorothy Gallant
Student No#:31446752

Decision: Ethics Approval from 2022 to 2027

Researcher(s): Ms Naledi Desiree Dorothy Gallant; 31446752@mylife.unisa.ac.za ; 0828707811
College of Economic and Management Sciences
Department of Applied Management
University of South Africa

"The adoption and diffusion of e-commerce by township SMEs: A mixed methods approach"

Qualification: PhD

Thank you for the application for research ethics clearance by the Unisa College of Economic and management Sciences Research Ethics Review Committee for the above-mentioned research. Ethics approval is granted for 5 years (**18 May 2022 2022 until 17 May 2027**).

*The **low risk application** was **reviewed** by the College of Economic and management Sciences Research Ethics Review Committee on **11 April 2022** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

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.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the College of Economic and management Sciences Research Ethics Review Committee.

3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date **(17 May 2027)** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.
8. Permission is to be obtained from the university from which the participants are to be drawn (the Unisa Senate Research, Innovation and Higher Degrees Committee) to ensure that the relevant authorities are aware of the scope of the research, and all conditions and procedures regarding access to staff/students for research purposes that may be required by the institution must be met.
9. If further counselling is required in some cases, the participants will be referred to appropriate support services.

Note:

*The reference number **2021_CRERC_046 (FA)** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Dr Vaola Sambo
Chairperson, CRERC
E-mail: Esambovt@unisa.ac.za
Tel: 012 429 4355

Prof MC Mulaudzi
Acting, Deputy Executive Dean
E-mail: tshilmc@unisa.ac.za
Tel: 012 429 3724

APPENDIX 2.3: PERMISSION TO CONDUCT RESEARCH

THE TRANSFORMATION LEGACY

THE TRANSFORMATION LEGACY

Tel: +27 10 023 0508
Email: info@transformationlegacy.com
Address: Constantia Square Office Park, 16th Road, Randjespark, Midrand, 1682
www.transformationleagcy.co.za

APPENDIX 2.3

Transformation Legacy
Contantia Square Ofice Park,
16th Road, Randjespark
Midrand, 1682
4 November 2021

Ms. Naledi Gallant
UNISA
College of Economic and Management Sciences
Department of Applied Management
Email: 31446752@mylife.unisa.ac.za
naledi@dalitso.co.za

Dear Naledi Gallant

REF: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research on Soweto SMEs that are registered with the Transformation Legacy. This research study will be towards your PhD doctorate degree with UNISA, provided ethical clearance has been obtained.

We note that the title of your research study is: **The adoption of e-commerce by township SMEs: A mixed methods approach.**

It is noted that the purpose of your study is to investigate the factors that influence the adoption of e-commerce and to determine how e-commerce is implemented and diffused into the business operations of Soweto SMEs.

Furthermore, it is noted that the study is a mixed methods approach consisting of quantitative research using a survey questionnaire to determine the factors that influence the adoption of e-commerce, as well as qualitative research through interviews to gain a better understanding of the perceptions, experiences and opinions of Soweto SMEs regarding the implementation and diffusion process of e-commerce in their businesses.

In compliance with the (POPI) Act of 2017, the survey questionnaire developed by the researcher will be distributed electronically by the Transformation Legacy to all the Soweto SMEs registered on our database for completion. Furthermore, the Transformation Legacy will enquire from the Soweto SMEs to indicate if they are interested to participate in the qualitative research interviews with the researcher. The researcher will be provided with the email addresses and contact details of all the Soweto-based SMEs that have given consent to participate in the qualitative interviews. All the

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Address: Constantia Square Office Park, 16th Road,
Randjespark, Midrand, 1682
www.transformationleagcy.co.za

interested SMEs will need to give consent for the Transformation Legacy to share their contact details with the researcher.

Please ensure the following appears on your questionnaire survey:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisors;
- Consent form is attached to the questionnaire survey and consent for interview form, all of which are to be signed by all participants before engaging with research study;
- Gatekeeper's approval letter

We also request that you furnish us with a report on the findings of your study.

Yours Sincerely,

Name: Mrs. Busi Raphekwane
Position: CEO
Organisation: Transformation Legacy
Contact details: 082 685 1803
Email: busi@transformatiomlegacy.com

APPENDIX 2.1: PERMISSION TO CONDUCT RESEARCH

APPENDIX 2.1

eKasi Entrepreneurship Movement NPC
1st Floor, Gateway West, 22 Magwa Cres,
Waterval City, Johannesburg, 2066
4 November 2021

Ms. Naledi Gallant
UNISA
College of Economic and Management Sciences
Department of Applied Management
Email: 31446752@mylife.unisa.ac.za
naledi@dalitso.co.za

Dear Naledi Gallant

REF: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research on Soweto SMEs that are registered with the eKasi Entrepreneurship Movement NPC. This research study will be towards your PhD doctorate degree with UNISA, provided ethical clearance has been obtained.

We note that the title of your research study is: **The adoption of e-commerce by township SMEs: A mixed methods approach.**

It is noted that the purpose of your study is to investigate the factors that influence the adoption of e-commerce and to determine how e-commerce is implemented and diffused into the business operations of Soweto SMEs.

Furthermore, it is noted that the study is a mixed methods approach consisting of quantitative research using a survey questionnaire to determine the factors that influence the adoption of e-commerce, as well as qualitative research through interviews to gain a better understanding of the perceptions, experiences and opinions of Soweto SMEs regarding the implementation and diffusion process of e-commerce in their businesses.
In compliance with the (POPI) Act of 2017, the survey questionnaire developed by the researcher will be distributed electronically by eKasi Entrepreneurship Movement NPC to all the Soweto SMEs registered on our database for completion. Furthermore, eKasi Entrepreneurship Movement NPC will enquire from the Soweto SMEs to indicate if they are interested to participate in the qualitative research interviews with the researcher. The researcher will be provided with the email addresses and contact details of all the Soweto-based SMEs that have given consent to participate in the qualitative interviews. All the

interested SMEs will need to give consent for eKasi Entrepreneurship Movement NPC to share their contact details with the researcher.

Please ensure the following appears on your questionnaire survey:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisors;
- Consent form is attached to the questionnaire survey and consent for interview form, all of which are to be signed by all participants before engaging with research study;
- Gatekeeper's approval letter

We also request that you furnish us with a report on the findings of your study, as it might be of assistance to us in the future as we are in the process of establishing the eKasi Online Commerce platform.

Yours Sincerely,

Name: Mr. Elvis Sekhaolelo
Position: Executive Director
Organisation: eKasi Entrepreneurship Movement NPC
Contact details: 079 439 5266

APPENDIX 3: INFORMED CONSENT
CONSENT TO PARTICIPATE IN THIS STUDY

One of the criteria in selecting your business, is that it must be based in Soweto and registered with the Transformation Legacy. The interview questions are tailored for Soweto-based SMEs that have adopted e-commerce or those that are interested in adopting e-commerce. Your participation will assist in gathering important information in determining the factors influencing the adoption of e-commerce amongst township SMEs as well as to determine how e-commerce is implemented and diffused amongst Soweto-based SMEs. The information will assist in formulating an integrated theoretical framework that contextualises the opinions, perceptions and experiences of Soweto-based SMEs when implementing e-commerce to their business operational activities. The integrated framework to be developed in this study is expected to guide future research relating to technology and innovation adoption by township SMEs. Kindly sign the informed consent form, if you are willing to participate in this study.

Your participation is voluntary, and your confidentiality is assured. No personal individual data will be reported.

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty.

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the interview.

I have received a signed copy of the informed consent agreement.

Participant Name & Surname…… (please print)

Participant Signature……..Date……

Researcher's Name & Surname……(please print)

Researcher's signature……..Date……

INERVIEW GUIDE FOR SOWETO SME OWNERS AND MANAGERS

Introduction

Thank you for agreeing to participate in this interview. My name is Naledi Gallant, a PhD student from the University of South Africa. My supervisors are Dr Anthea Amadi-Echendu and Dr Elriza Esterhuyzen. I am inviting you to participate in the study entitled: The adoption and diffusion of e-commerce amongst township SMEs: A mixed method approach.

I further want to assure you that all the information gathered in this interview will be kept confidential and your identity will be protected at all times. You are not required to provide your identity at any time. Feel free to tell me if you are not comfortable about any question, but I would appreciate it if you could answer as many questions as possible. If you have any questions, which are not sure about, please feel free to ask me for further clarity.

This interview is to be conducted with Soweto-based SME owners or managers that are 18 years old and above till the age of 65 years old. The aim of this study is to investigate what factors have an influence on the adoption of e-commence amongst SMEs from Soweto and furthermore to determine how e-commence is implemented and diffused into the business operational activities of SMEs from Soweto.

The interview will take approximately 45 minutes to an hour to complete. There are no wrong or right answers. Your participation in the study is greatly appreciated but also be reminded that participation is voluntary.

Keyword	Definition
E-Commerce	The process of buying and selling products and services and/or conducting financial services transactions through all computer mediated networks including cellphones and electronic or social media where payment and delivery of goods can be online or offline.

INTERVIEW QUESTIONS

1. Which factors influenced you to adopt or not to adopt e-commerce for your business? What types of technology did you consider?
2. What were the effects of Covid-19 on the adoption of e-commerce in your business?
3. What factors were considered when planning for e-commerce adoption? Budget? IT skills? Business strategy? Briefly describe the ICT resources available within the organisation: e.g., devices, software, infrastructure, IT skills and IT budget.
4. After the adoption of e-commerce, have you used it enough to form an opinion about whether or not it is useful? Kindly elaborate further about the usefulness (or lack thereof) of e-commerce to your business?
5. What types of processes or set of activities have you undertaken or currently undertaking to implement e-commerce in your business?
6. How long has to taken you to move through the phases of implementing e-commerce from email, static website, interactive website to a fully fledged e-commerce platform? Did you go through different phases of the implementation process or was it a once off implementation of a fully fledged intergrative e-commerce platform?
7. What barriers have you encountered during the implementation stages of e-commence?

Conclusion

We have come to the end of our interview. Do you have any final comments or questions for me to consider?

Thank you for your time and participation in this interview session. Please be assured that the information you provided will remain confidential, and your responses will be made anonymised.

APPENDIX 4: QUANTITATIVE SURVEY

THE ADOPTION AND DIFFUSION OF E-COMMERCE AMONGST TOWNSHIP SMES: A MIXED METHOD APPROACH

Dear Prospective Participant

My name is Naledi Gallant and I am doing research with Dr Anthea Amadi-Echendu a Senior Lecturer and Dr Elriza Esterhuyzen, Chair of Department in the Department of Applied Management towards a PhD at the University of South Africa. We are inviting you to participate in a study entitled 'The adoption and diffusion of e-commerce amongst township SMEs: A mixed method approach.'

One of the criteria in selecting your business, is that it must be based in Soweto and registered with eKasi Entrepreneurship Movement. Approval to conduct the research has been obtained from eKasi Entrepreneurship Movement. All responses are completely anonymous and will not be traced back to a particular individual. The results of the study will be used for research purposes only.

This questionnaire is to be completed by Soweto SME owners or managers that are 18 years old and above till the age of 65 years old. The aim of this study is to investigate what factors have an influence on the adoption of e-commence amongst SMEs from Soweto and furthermore to determine how e-commence is implemented and diffused into the business operations of SMEs from Soweto. The results of the study will used to pursue measures to enhance SMEs' competitiveness through the adoption e-commerce and to facilitate the rate to which SMEs adopt and diffuse e-commerce into core business operations.

It should take you approximately 20 minutes to complete the questionnaire. There are no wrong or right answers. Your participation in the study is greatly appreciated but also be reminded that participation is voluntary. The information collected will be treated with confidentiality, and your anonymity is guaranteed.

INSTRUCTIONS

1. Kindly respond to all questions.
2. The questionnaire consists of 32 questions. Please answer all questions.

3. On a scale from 'Strongly Agree' to 'Strongly Disagree', Please tick (✓) ONE for each statement that best reflects your opinion:
4. Choose only one option for each statement.

Demographic Information

1. How old is the business? Please tick (✓) ONE of the following boxes

0 to 1 year	
2 to 3 years	
4 to 5 years	
6 to 10 years	
11 and 15 years	
16 years and longer	

2. What is the age of the Business owner? Please tick (✓) ONE of the following boxes

18 - 24 years old	
25–34 years old	
35–44 years old	
45–54 years old	
55 - 65 years old	

3. **How will you categorise your job level**? Please tick (✓) ONE of the following boxes

Owner	
Manager	
Owner and Manager	

4. **What is your highest qualification**? Please tick (✓) ONE of the following boxes

No Education	
Primary school	
Matric	
Certificate	
Diploma	
Degree	
Post graduate qualification	

5. **How will you categorise your job**? Please tick (✓) ONE of the following boxes

Management	
Professional	
Technical Specialist	
Administrative	
Sales and Marketing	
Finance	
Other	

6. What industry is your business in? Please tick (✓) ONE of the following boxes

Hospitality/restaurant	
Retail/wholesale	
Services	
Property	
Manufacturing	
Construction	
Agriculture	
Technology	
Other	

7. What is the status of your business? Please tick (✓) ONE of the following boxes

Registered - Formal	
Unregistered – informal	

8. Where do you operate business operations? Please tick (✓) ONE of the following boxes

At home	
Specific business place	

9. How many people does the business employ? Please tick (✓) ONE of the following boxes

No employees	
1-10 employees	
11-20 employees	
21-30 employees	
31-40 employees	
41 and above	

10. Who are your customers? Please tick (✓) ONE of the following boxes

Individuals	
Other companies and businesses	
Both	

11. What is the level of e-commerce adoption within the business? Please tick (✓) ONE of the following boxes

Non adopters – No use of technology	
Internet connection with emails, but no website	
Basic company information available on the internet, but no customer interaction	
It is possible to make requests online, send emails and fill in online forms	
It is possible to buy and sell products and services online	
It is possible to buy and sell products and services online, as well as online customer service and social media	
There is an integration between suppliers and customers, that allows most commercial transactions online	

12. How long has the business made of use of e-commerce? Please tick (✓) ONE of the following boxes

No e-commerce	
In the last 12 months	
Between 1-3 years ago	
More than 3 years ago	

13. What is e-commerce used for in the business? Please tick (✓) ONE of the following boxes

Logistic and distribution activities	
Financial activities	
Purchasing and procurement activities	
Operational and Processing activities	
Marketing activities	
After sales services activities	
Not applicable	

On a scale from 'Strongly Agree' to 'Strongly Disagree', please rate to what extend you agree or disagree with the following views regarding the adoption of e-commerce by your business. Please tick (✓) ONE for each statement that best reflects your opinion:

14. Perceived usefulness	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that the adoption of e-commerce enables me to accomplish tasks more quickly					
I believe that the adoption of e-commerce will enhance my job performance.					
I believe that the adoption of e-commerce will provide more efficacy and productivity as compared to traditional business processes					
I believe that the adoption of e-commerce will improve my effectiveness on the job					
I believe that the adoption of e-commerce makes it easier to do my job					

I believe that the adoption of e-commerce is useful for my business					
15. Perceived ease of use	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that learning to use e-commerce in the business is easy for me					
I believe that it is easy to use e-commerce to do what I want it to do					
My interaction with e-commerce is clear and understandable					
I believe that e-commerce is flexible to use for interaction					
I believe it is easy for me to become skillful at using e-commerce					
I believe that e-commerce is easy to use					
16. Perceived benefits	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that the adoption of e-commerce helps SMEs save costs and time					
I believe that the adoption of e-commerce helps SMEs reach more customers					
I believe that the adoption of e-commerce helps SMEs access more information					
I believe that the adoption of e-commerce helps SMEs to improve business processes					
I believe that the adoption of e-commerce helps SMEs expand business opportunities, increase sales and profits					
I believe that the adoption of e-commerce helps SMEs to communicate and provide improved customer care to clients					
17. Intention to adopt e-commerce	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe it is worthwhile to use e-commerce					
I believe that my business intends to adopt e-commerce in the future.					
I believe that the adoption of e-commerce will largely benefit my business					
I would recommend others to use e-commerce					

Technology Adoption	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My business uses e-commerce to market our products and services					
My business has an e-commerce policy					
My business has specific e-commerce guidelines					
My business monitors e-commerce usage					
My business measures e-commerce Key Performance Indicators					
My business frequently uses e-commerce to interact with customers					
Technological	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe my business can afford the cost of data/Wifi for the adoption of e-commerce					
I believe my business can afford the cost of *setting up a website* for the adoption of e-commerce					
I believe my business can afford the cost of *learning how to use e-commerce* for the adoption of e-commerce					
I believe my business can have IT related expertise for the adoption of e-commerce					
I believe my business can afford the cost of social networks for the adoption of e-commerce					
. Entrepreneurial orientation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that the business owner has expertise in innovative technology practices					
I believe that the business owner has the propensity to exploit new ideas and opportunities such as e-commerce					
I believe that the business owner is willing to promote creativity in designing and implementing new products and services such as e-commerce					
I believe that the business owner is willing to take the risk of adopting new innovations such as e-commerce to outperform industry competitors					

I believe that the business owner has adequate knowledge in new technologies such as e-commerce					
. Organisational readiness	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
My business has sufficient financial resources for the adoption of e-commerce					
My business has sufficient information technology resources for the adoption of e-commerce					
We have connectivity to the internet					
Most of our employees are computer literate					
My business has the capacity to absorb the cost of implementing e-commerce					
. Management support	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I believe that the business management provides adequate resources for the adoption of e-commerce					
I believe that the business management is enthusiastic about the adoption of e-commerce					
I believe that the business management encourages and motivates employees on the usage of e-commerce					
I believe that the business management devotes time to the adoption of e-commerce in proportion to its cost and potential					
I believe that the business management facilitates integrating e-commerce with the business processes					

Customer pressures	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Our customers expect us to use e-commerce					
Our customers demand that we use e-commerce					
The usage of e-commerce is something that would make our customers happy					
I believe that our customers are ready to engage us using e-commerce					
Customers prefer businesses which use e-commerce					
Competitor pressures	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Our competitors who have adopted e-commerce will have a strong influence on the decision to adopt e-commerce in my business					
I may feel compelled to adopted e-commerce in my business when there are more competitors in the industry who have adopted e-commerce					
Remaining competitive and staying abreast with the latest developments in my industry is important to me					
Adoption of e-commerce can give the business a competitive advantage and help the business to increase its market share in the industry					
Our competitors who have adopted e-commerce are doing very well					
. Government support	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The government provides tax incentives for the adoption of e-commerce by SMEs					
The government provides access to initiative that promote the adoption of e-commerce by SMEs					
The government provides infrastructure at a reasonable cost to facilitate the adoption of e-commerce by SMEs					
The government provides guidelines, policies and legal frameworks to facilitate the adoption of e-commerce by SMEs					
Government support plays an important role in facilitating e-commerce adoption amongst SMEs					
. Pandemics (Covid-19)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I considered adopting e-commerce for my business before the impact of COVID-19					
I believe a pandemic such as Covid-19 has influenced my outlook on the adoption of e-commerce for the business					
I believe a pandemic such as COVID-19 has made me consider the adoption of e-commerce for the business					
I believe that e-commerce plays significant role in ensuring that businesses continue to provide goods and services to their customers during pandemics such as COVID-19					
I believe a pandemic such as COVID-19 is an influential factor to the adoption of e-commerce by SMEs					
Relative advantage	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Using e-commerce enhances my effectiveness on the job					
Using e-commerce improves the quality of the work that I do					

Using e-commerce enables me to accomplish tasks more quickly					
Using e-commerce improves internal processes and knowledge flow in the business					
Compatibility	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Using e-commerce is compatible with the businesses operating procedures					
Using e-commerce creates changes that are compatible with our business					
Using commerce fits well with our preferred work practices					
E-commerce is consistent with our business beliefs, culture, and values					
Trialability	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Before deciding whether to use any e-commerce, I was permitted use it on a trial basis					
I was permitted to use e-commerce on a trial basis long enough to see what it could do					
I was able to make the necessary amendments to the e-commerce based on our business requirements					
Experimenting with e-commerce reduces the level of uncertainty for adopting the technology					
Complexity	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
E-commerce is easy to understand					
E-commerce is easy to use					
Learning to operate e-commerce is easy for employees to understand					
I would have no difficulty telling others about the results of using e-commerce					
Observability	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I have seen what my business can accomplish through the usage of e-commerce					
The usage of e-commerce visibly increases efficiencies and productivity in the business					
Businesses that use e-commerce have more prestige than those that do not use e-commerce					
The positive results of using e-commerce are apparent to me					

On a scale from 'Strongly Agree' to 'Strongly Disagree', how likely is it that the following reasons could be a barrier to the diffusion of e-commerce to a basic stage within your business? Please tick (✓) ONE for each statement that best reflects your opinion:

Barriers to the diffusion of e-commerce	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The lack of financial means to completely implement e-commerce in the business					
The lack of knowledge and understanding of e-commerce by business owner or management					
The lack of customer demand for e-commerce					
Lack of skilled employees					
The lack of a trustworthy and effective telecommunication infrastructure					
Lack of perceived need for e-commerce					
The lack of government support					
Lack of secure payment infrastructure					
High data costs					
Training costs					
Reluctance to change business processes					
Organisational culture					
Lack of awareness					
Lack of business law on e-commerce					

This is the end of the questionnaire. Thank you for taking the time to participate in the survey.

APPENDIX 5: DEMOGRAPHIC ANALYSIS

APPENDIX 8 - Regression Analysis - Intention to Adopt E-commerce

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.595[a]	0,354	0,351	0,41948	0,354	145,032	1	265	0,000	
2	.654[b]	0,428	0,423	0,39552	0,074	34,088	1	264	0,000	2,027

a. Predictors: (Constant), PerceivedEaseUse
b. Predictors: (Constant), PerceivedEaseUse, PerceivedBenefits
c. Dependent Variable: IntentionAdoptE_commerce

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25,521	1	25,521	145,032	<.001[b]
	Residual	46,631	265	0,176		
	Total	72,152	266			
2	Regression	30,853	2	15,427	98,615	<.001[c]
	Residual	41,298	264	0,156		
	Total	72,152	266			

a. Dependent Variable: IntentionAdoptE_commerce
b. Predictors: (Constant), PerceivedEaseUse
c. Predictors: (Constant), PerceivedEaseUse, PerceivedBenefits

1	Regression	25,521	1	25,521	145,032	<.001[b]
	Residual	46,631	265	0,176		
	Total	72,152	266			
2	Regression	30,853	2	15,427	98,615	<.001[c]
	Residual	41,298	264	0,156		
	Total	72,152	266			

a. Dependent Variable: IntentionAdoptE_commerce
b. Predictors: (Constant), PerceivedEaseUse
c. Predictors: (Constant), PerceivedEaseUse, PerceivedBenefits

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	0,657	0,088		7,449	0,000	0,484	0,831					
	PerceivedEaseUse	0,613	0,051	0,595	12,043	0,000	0,513	0,713	0,595	0,595	0,595	1,000	1,000
2	(Constant)	0,372	0,096		3,855	0,000	0,182	0,562					
	PerceivedEaseUse	0,397	0,061	0,385	6,540	0,000	0,277	0,516	0,595	0,373	0,305	0,626	1,596
	PerceivedBenefits	0,399	0,068	0,343	5,839	0,000	0,264	0,533	0,579	0,338	0,272	0,626	1,596

a. Dependent Variable: IntentionAdoptE_commerce

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	PerceivedBenefits	.343[b]	5,839	0,000	0,338	0,626	1,596	0,626
	OrganisationalReadiness	.113[b]	1,914	0,057	0,117	0,696	1,437	0,696
2	OrganisationalReadiness	.066[c]	1,176	0,241	0,072	0,681	1,468	0,526

a. Dependent Variable: IntentionAdoptE_commerce
b. Predictors in the Model: (Constant), PerceivedEaseUse
c. Predictors in the Model: (Constant), PerceivedEaseUse, PerceivedBenefits

Coefficient Correlations[a]

Model			Perceived EaseUse	Perceived Benefits
1	Correlations	PerceivedEaseUse	1,000	
	Covariances	PerceivedEaseUse	0,003	
2	Correlations	PerceivedEaseUse	1,000	-0,611
		PerceivedBenefits	-0,611	1,000
	Covariances	PerceivedEaseUse	0,004	-0,003
		PerceivedBenefits	-0,003	0,005

a. Dependent Variable: IntentionAdoptE_commerce

Collinearity Diagnostics[a]

		Eigenvalu	Condition	Variance Proportions		
					Perceived	Perceived

		Perceived Benefits		
Covariances	Perceived EaseUse	0,004	-0,003	
	Perceived Benefits	-0,003	0,005	

a. Dependent Variable: IntentionAdoptE_commerce

Collinearity Diagnostics[a]

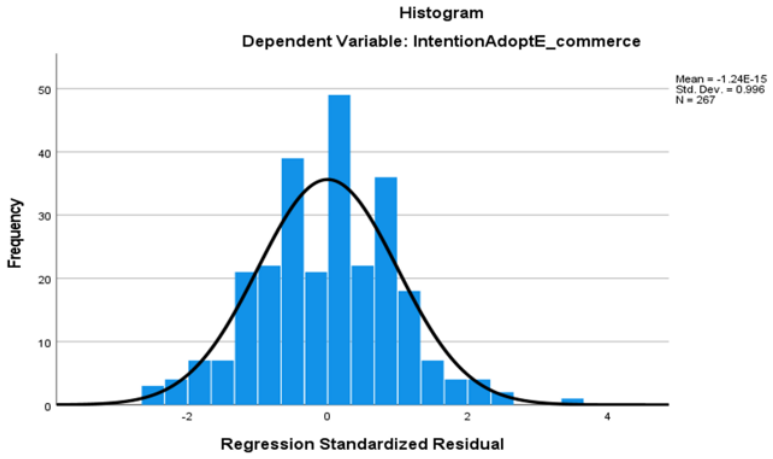
Model		Eigenvalue	Condition Index	Variance Proportions (Constant)	Perceived EaseUse	Perceived Benefits
1	1	1,957	1,000	0,02	0,02	
	2	0,043	6,726	0,98	0,98	
2	1	2,927	1,000	0,01	0,01	0,01
	2	0,044	8,151	0,88	0,42	0,04
	3	0,029	9,989	0,12	0,57	0,96

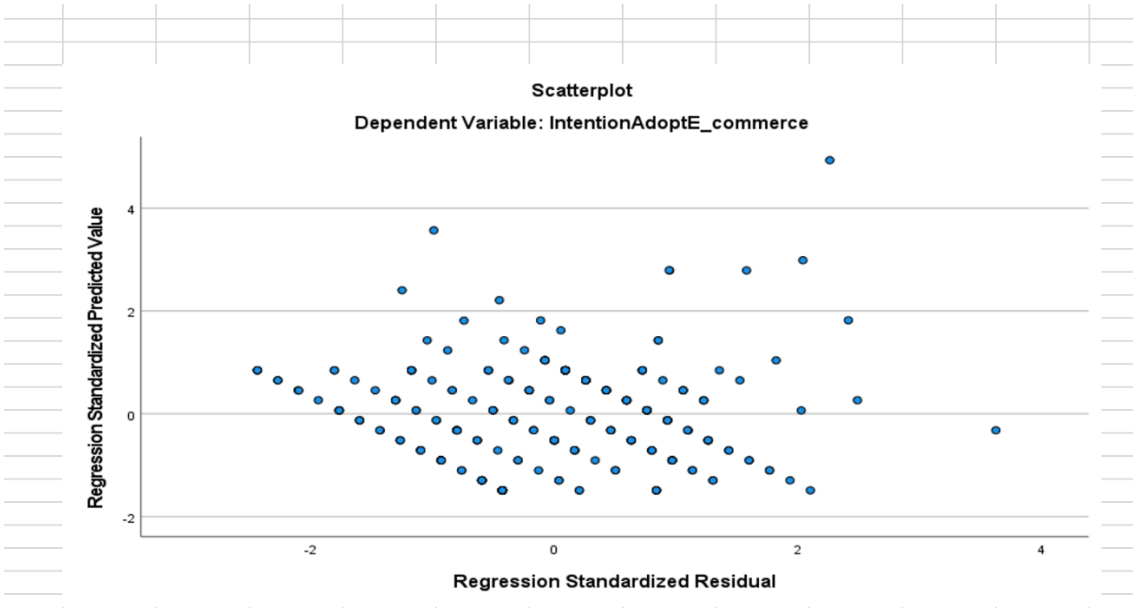
a. Dependent Variable: IntentionAdoptE_commerce

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,1673	3,3542	1,6742	0,34057	267
Residual	-0,96263	1,43502	0,00000	0,39403	267
Std. Predicted Value	-1,488	4,933	0,000	1,000	267
Std. Residual	-2,434	3,628	0,000	0,996	267

a. Dependent Variable: IntentionAdoptE_commerce




Scatterplot
Dependent Variable: IntentionAdoptE_commerce
Regression Standardized Predicted Value
Regression Standardized Residual
4
2
0
-2
-2
0
2
4

APPENDIX 6: CROSS TABULATION ANALYSIS BY THE USE OF E-COMMERCE

APPENDIX 7 : CORRELATION ANAYSIS

		Perceived Usefulness	Perceived Ease of Use	Perceived Benefits	Intention to Adopt Ecommerce	Technology Adoption	Technology Affordability	Entrepreneurial Orientation	Organisational Readiness	Management Support	Customer Pressures	Competitor Pressures	Government Support	Impact of Pandemic
Perceived Usefulness	R		0.48	0.39	**0.34**	0.44	0.32	0.38	0.38	0.36	0.30	0.34	0.19	0.28
	Pvalue		0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perceived Ease of Use	R	0.48		0.61	0.59	0.55	0.58	0.59	0.55	0.53	0.53	0.48	0.37	0.43
	Pvalue	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perceived Benefits	R	0.39	0.61	1.00	0.57	0.46	0.41	0.50	0.43	0.47	0.44	0.43	0.19	0.38
	Pvalue	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Intention to Adopt Ecommerce	R	0.34	0.59	0.57	1.00	0.50	0.40	0.48	0.41	0.45	0.49	0.46	0.27	0.42
	Pvalue	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Technology Adoption	R	0.44	0.55	0.46	0.50	1.00	0.64	0.59	0.58	0.50	0.50	0.46	0.48	0.41
	Pvalue	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Technology Affordability	R	0.32	0.58	0.41	0.40	0.64	1.00	0.72	0.66	0.53	0.42	0.41	0.40	0.46
	Pvalue	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Entrepreneurial Orientation	R	0.38	0.59	0.50	0.48	0.59	0.72	1.00	0.61	0.51	0.49	0.44	0.36	0.43
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Organisational Readiness	R	0.38	0.55	0.43	0.41	0.58	0.66	0.61	1.00	0.63	0.53	0.47	0.40	0.48
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Management Support	R	0.36	0.53	0.47	0.45	0.50	0.53	0.51	0.63	1.00	0.62	0.60	0.34	0.45
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Customer Pressures	R	0.30	0.53	0.44	0.49	0.50	0.42	0.49	0.53	0.62	1.00	0.66	0.53	0.52
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Competitor Pressures	R	0.34	0.48	0.43	0.46	0.46	0.41	0.44	0.47	0.60	0.66	1.00	0.43	0.50
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Government Support	R	0.19	0.37	0.19	0.27	0.48	0.40	0.36	0.40	0.34	0.53	0.43	1.00	0.48
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Impact of Pandemic	R	0.28	0.43	0.38	0.42	0.41	0.46	0.43	0.48	0.45	0.52	0.50	0.48	1.00
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	R	0.35	0.52	0.52	0.47	0.58	0.49	0.47	0.56	0.57	0.59	0.64	0.47	0.61

Relative Advantage	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compatibility	R	0.28	0.45	0.52	0.44	0.44	0.45	0.42	0.48	0.42	0.43	0.51	0.38	0.50
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trial Period	R	0.20	0.23	0.20	0.22	0.41	0.31	0.25	0.36	0.32	0.35	0.32	0.48	0.34
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Complexity	R	0.19	0.41	0.37	0.31	0.40	0.48	0.46	0.52	0.50	0.48	0.47	0.46	0.48
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Observability	R	0.21	0.46	0.37	0.37	0.43	0.43	0.48	0.42	0.46	0.50	0.52	0.38	0.47
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barriers	R	0.29	0.42	0.41	0.30	0.36	0.36	0.42	0.36	0.39	0.44	0.50	0.30	0.36
	Pvalue	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX 8: REGRESSION ANALYSIS ADAPTATION OF E-COMMERCE

APPENDIX 8 - Regression Analysis - Intention to Adopt E-commerce

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.595[a]	0,354	0,351	0,41948	0,354	145,032	1	265	0,000	
2	.654[b]	0,428	0,423	0,39552	0,074	34,088	1	264	0,000	2,027

a. Predictors: (Constant), PerceivedEaseUse
b. Predictors: (Constant), PerceivedEaseUse, PerceivedBenefits
c. Dependent Variable: IntentionAdoptE_commerce

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25,521	1	25,521	145,032	<.001[b]
	Residual	46,631	265	0,176		
	Total	72,152	266			
2	Regression	30,853	2	15,427	98,615	<.001[c]
	Residual	41,298	264	0,156		
	Total	72,152	266			

a. Dependent Variable: IntentionAdoptE_commerce
b. Predictors: (Constant), PerceivedEaseUse
c. Predictors: (Constant), PerceivedEaseUse, PerceivedBenefits

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	0,657	0,088		7,449	0,000	0,484	0,831					
	PerceivedEaseUse	0,613	0,051	0,595	12,043	0,000	0,513	0,713	0,595	0,595	0,595	1,000	1,000
2	(Constant)	0,372	0,096		3,855	0,000	0,182	0,562					
	PerceivedEaseUse	0,397	0,061	0,385	6,540	0,000	0,277	0,516	0,595	0,373	0,305	0,626	1,596
	PerceivedBenefits	0,399	0,068	0,343	5,839	0,000	0,264	0,533	0,579	0,338	0,272	0,626	1,596

a. Dependent Variable: IntentionAdoptE_commerce

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	PerceivedBenefits	.343[b]	5,839	0,000	0,338	0,626	1,596	0,626
	OrganisationalReadiness	.113[b]	1,914	0,057	0,117	0,696	1,437	0,696
2	OrganisationalReadiness	.066[c]	1,176	0,241	0,072	0,681	1,468	0,526

a. Dependent Variable: IntentionAdoptE_commerce
b. Predictors in the Model: (Constant), PerceivedEaseUse
c. Predictors in the Model: (Constant), PerceivedEaseUse, PerceivedBenefits

Coefficient Correlations[a]

Model			Perceived EaseUse	Perceived Benefits
1	Correlations	PerceivedEaseUse	1,000	
	Covariances	PerceivedEaseUse	0,003	
2	Correlations	PerceivedEaseUse	1,000	-0,611
		PerceivedBenefits	-0,611	1,000
	Covariances	PerceivedEaseUse	0,004	-0,003
		PerceivedBenefits	-0,003	0,005

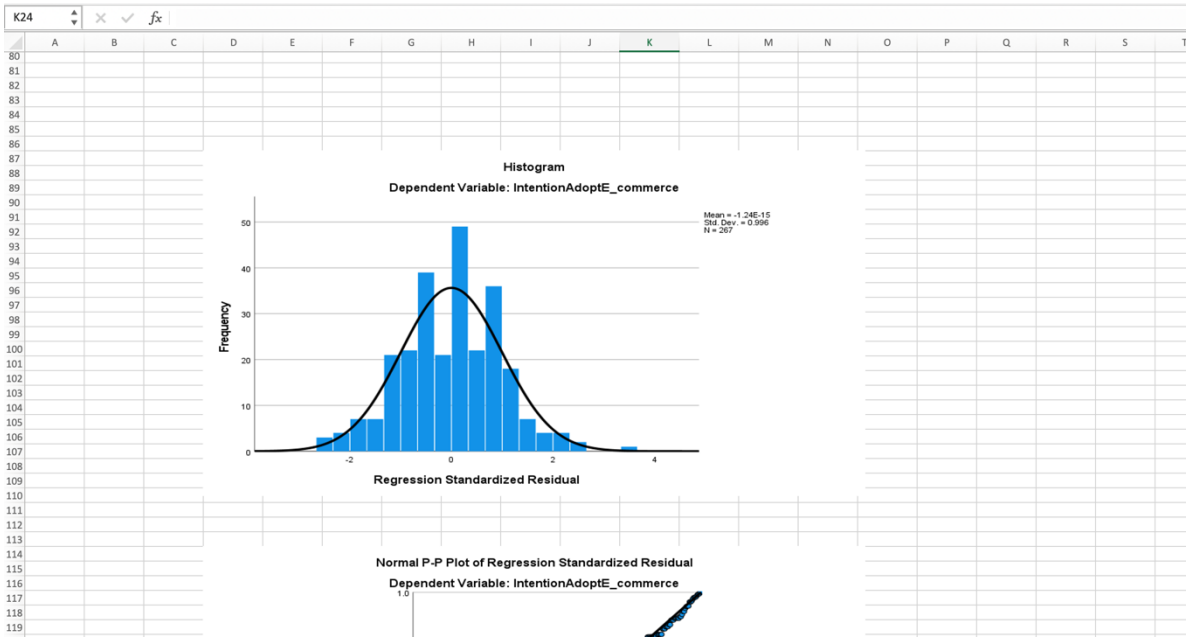
a. Dependent Variable: IntentionAdoptE_commerce

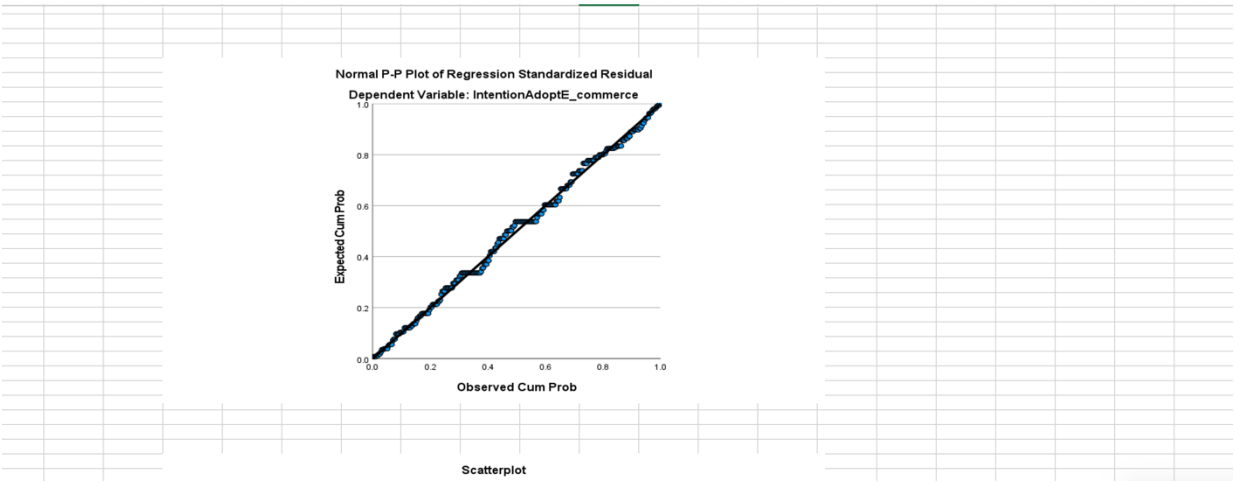
Collinearity Diagnostics[a]

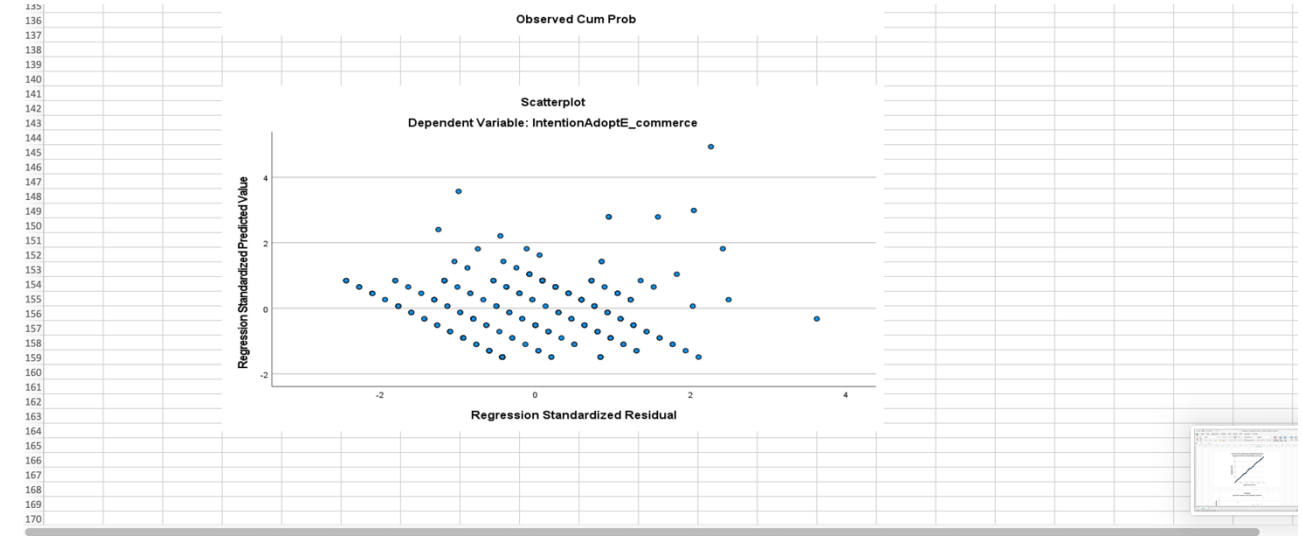
Model		Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Perceived EaseUse	Perceived Benefits
1	1	1,957	1,000	0,02	0,02	
	2	0,043	6,726	0,98	0,98	
2	1	2,927	1,000	0,01	0,01	0,01
	2	0,044	8,151	0,88	0,42	0,04
	3	0,029	9,989	0,12	0,57	0,96

a. Dependent Variable: IntentionAdoptE_commerce

Residuals Statistics[a]


K24
Histogram
Dependent Variable: IntentionAdoptE_commerce
Mean = -1.24E-15
Std. Dev. = 0.996
N = 267
Frequency
Regression Standardized Residual
Normal P-P Plot of Regression Standardized Residual
Dependent Variable: IntentionAdoptE_commerce


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: IntentionAdoptE_commerce
Expected Cum Prob
Observed Cum Prob
Scatterplot


Observed Cum Prob
Scatterplot
Dependent Variable: IntentionAdoptE_commerce
Regression Standardized Predicted Value
Regression Standardized Residual

APPENDIX 9 : ETHICAL CLEARANCE

COLLEGE OF ECONOMIC AND MANAGEMENT SCIENCE RESEARCH ETHICS REVIEW COMMITTEE

18 May 2022

Dear Miss Naledi Desiree Dorothy Gallant

NHREC Registration # : (if applicable)
ERC Reference # : 2021_CRERC_046 (FA)
Name: Miss Naledi Desiree Dorothy Gallant
Student No#:31446752

Decision: Ethics Approval from 2022 to 2027

Researcher(s): Ms Naledi Desiree Dorothy Gallant; 31446752@mylife.unisa.ac.za ; 0828707811
College of Economic and Management Sciences
Department of Applied Management
University of South Africa

"The adoption and diffusion of e-commerce by township SMEs: A mixed methods approach"

Qualification: PhD

Thank you for the application for research ethics clearance by the Unisa College of Economic and management Sciences Research Ethics Review Committee for the above-mentioned research. Ethics approval is granted for 5 years (**18 May 2022 2022 until 17 May 2027**).

*The **low risk application** was **reviewed** by the College of Economic and management Sciences Research Ethics Review Committee on **11 April 2022** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

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.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the College of Economic and management Sciences Research Ethics Review Committee.

3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after the expiry date **(17 May 2027)** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.
8. Permission is to be obtained from the university from which the participants are to be drawn (the Unisa Senate Research, Innovation and Higher Degrees Committee) to ensure that the relevant authorities are aware of the scope of the research, and all conditions and procedures regarding access to staff/students for research purposes that may be required by the institution must be met.
9. If further counselling is required in some cases, the participants will be referred to appropriate support services.

Note:

*The reference number **2021_CRERC_046 (FA)** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Dr Vaola Sambo
Chairperson, CRERC
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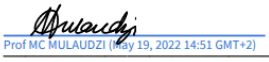

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URERC 25.04.17 - Decision template (V2) - Approve