Knowledge Base of Project Managers in the South African ICT Sector/Industry

A Research Report presented to the

Graduate School of Business Leadership

University of South Africa

In partial fulfilment of the requirements for the

MASTERS DEGREE IN BUSINESS LEADERSHIP,

UNIVERSITY OF SOUTH AFRICA

by

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30 November 2009

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STATEMENT

I hereby certify that this research report submitted by me in partial fulfillment of the MASTER DEGREE IN BUSINESS LEADERSHIP at the University of South Africa is my independent work and has not been submitted by me for a degree at another faculty or university. This report is my own work and all references used are accurately reported.

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Robert Toyo Hans

30 November 2009

AKNOWLEDGEMENTS

Firstly, I want to honour the Lord my creator for the courage and strength He gave me when at times quitting could have been an option. He showed me persistence is everything. Secondly, the following people played a significant role in this research study:

- Professor PMD Rwelamila, my supervisor, his insight in project management, guidance, valuable input and encouragement contributed immeasurably to the success of this research study.
- Tshwane University of Technology for financial assistance.
- Some colleagues of my syndicate group (study group in the MBL programme) for their support and inspiration.
- Sibongile Simelane for designing the web based research questionnaire.
- Arien Strasheim and Patrick Kobue for their assistance with statistical analysis.
- My dear wife Nozie and children, Siyamdumisa, Sivuyile and Siliziwe for their much needed support and understanding for all these years of studying.
- My dear friends and relatives, who were always there with timely advice.
- To all project managers and their organizations that participated in this research study, for their time and invaluable input.

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CHAPTER 1: GENERAL INTRODUCTION

1.0 Introduction

This chapter provides an overview of this research study. The overview is organised into the following sections: (1.1) Research Context, (1.2) Purpose of this Research, (1.3) Research Questions, (1.4) Limitations of this Study, (1.5) Importance of this Study and (1.6) Outline of the Research Report.

1.1 Research Context

Project failures in the ICT sector in particular are not a unique phenomenon to South Africa, but rather a world-wide problem. Project failures are indications that there are problems in the way ICT organisations manage projects. Ceran and Dorman (1995) state that these problems are not caused by a lack of books or ideas, neither by a lack of manuals, but rather by a lack of standards of performance for project managers. According to Kappelman, McKeeman and Zhang (2007), early warning signs of IT project failures can be categorised into two categories: people-related ('people-related risks') and process-related ('process-related risks'). Weak project managers fall under the category of people-related risks. Anderson and Merna (2005) state that projects that perform poorly signal a credibility gap as to the need for and competence of management in project mode.

Provided that projects are led by knowledgeable and competent project managers, good project management techniques and tools alone are of little value to an organisation. After all, projects are managed by project managers. However, project managers must also receive all necessary support from top management, to be successful in their work. Project success requires both project management competence and organisational project maturity and capability (Gehring, 2007).

Institutions of higher learning in South Africa play a critical role in providing project management competence skills to project managers. According to Rwelamila (2007), the project management training programmes offered by the institutions of higher learning in South Africa are skewed – most of the programme courses are dominated by 'technical knowledge base' and very little of 'social-cultural knowledge base'.

The important role played by a project manager in ensuring project success, as well as the findings by Rwelamila (2007), provide a compelling reason for focusing on project managers in terms of who gets selected to be a project manager and also in determining the knowledge base of these project managers in the South African ICT Sector/Industry. The latter statement serves as the research problem for this study.

The next section formally describes the research questions for which this study seeks to find answers.

1.2 Research Questions

The following are the two primary research questions of this research study:

- What is the knowledge base of project managers in the South African ICT sector?
- Is project management recognised as an important profession in the South African ICT Sector/Industry?

The secondary question that this study seeks to address is based on the first primary question of this study and it is:

- What should be done to address issues of South African ICT project managers' competencies in project management?

Now that the research questions have been outlined, the next seeks to outline the purpose of this research study.

1.3 Objectives of this Research

The primary purpose of this research study is three-fold:

- Firstly, to establish the knowledge base of project managers in the South African ICT Sector/Industry. This will also reveal who become project managers in the South African ICT Sector/Industry,
- Secondly, to establish whether project management as a discipline is regarded as an important profession in the South African ICT Sector/Industry and
- Thirdly, to establish strategies that could be used in addressing issues of South African ICT project managers' competencies in project management.

Once the knowledge base of the project managers has been established, this study should then reveal whether the imbalances of the project management training programme as it was established by Rwelamila (2007) are manifested in the knowledge base of the project managers.

1.4 Limitations of this Study

Due to time and budgetary constraints, the population of interest for this study is limited to all project managers of all ICT organisations listed on the Johannesburg Securities Exchange (JSE). The reason for using ICT organisations on the JSE is the availability of the list of these listed companies as well as the supposed expectations that project managers working for these companies possess the necessary skills to be successful in their roles as project managers.

It is not the aim of this study to establish the relationship between the knowledge base of project managers in the South African ICT Sector/Industry and the success rate of the projects managed by these project managers.

6.5 Importance of this Study

This study is important because:

- It will reveal the knowledge base of project managers in the South African ICT Sector/Industry. This is important to know so that organisations in the South African ICT Sector/Industry should be aware as to whether leaders of their projects possess the necessary skills to lead projects. If they do not possess the required skills, the study would reveal which skills they lack and what should be done to correct the problem.
- It will reveal whether project management is regarded as an important profession by organisations in the South African ICT Sector/Industry. This information will reveal how committed organisations in the South African ICT Sector/Industry are, to making sure that projects do succeed.
- It complements the research study done by Rwelamila (2007). This is so in that, once the knowledge base of the project managers is known, this study should then reveal whether the imbalances of the project management training programme as it was established by Rwelamila (2007) are manifested in the knowledge base of the project managers.

6.5 Outline of the Research Report

This research report consists of six chapters. Below is the brief outline of what each chapter contains.

Chapter 2: Knowledge Base of Project Managers in the ICT sector: Theory and Practice

This chapter reviews what the literature states with regard to the knowledge base of project managers. It also reviews the relevant literature concerning the importance of project management as a discipline in the ICT Sector/Industry.

Chapter 3: Research Methodology

This chapter outlines how data was collected for the study and states what tools and techniques were used in the process of sample, size and questionnaire method. It also describes the measuring instruments selected, the analytical tools and methodology used.

Chapter 4: Research Results

This chapter presents the results from the hypotheses tests, as well as other findings from the data analysis process. These results concern the demographic profile of the respondents, the knowledge base of the respondents and the perceived importance of project management by organisations of respondents.

Chapter 5: Synthesis and Analysis of Results

This chapter presents the synthesis and an analysis of the research results that were presented in Chapter 4 of this study. The analysis covers the demographic profile of the respondents, the knowledge base of the respondents and the perceived importance of project management by organisations of respondents.

Chapter 6: Conclusions and Recommendations

In this chapter conclusions are drawn, based on the analysis of the research results that were presented in the previous chapter. These conclusions concern the demographic profile of the respondents, the knowledge base of the respondents and the perceived importance of project management by organisations of respondents. Recommendations are also made which are aimed at addressing each issue of

concern. This chapter concludes by making a recommendation on further research on the topic of this study.

6.5 Summary

This chapter presented an overview of this research study and in the process the following was discussed:

- **Research Context**: In this section it was indicated that project success requires both project management competence and organisational project maturity and capability (Gehring, 2007). Knowledgeable and competent project managers play a key role in delivering successful projects. The role played by a project manager as well as the findings by Rwelamila (2007) provide a compelling reason for focusing on project managers in terms of who gets selected to be a project manager and also in determining the knowledge base of these project managers in the South African ICT Sector/Industry. The knowledge base of project managers in the South African ICT Sector/Industry mentioned in the previous statement serves as the research problem for this study.
- **Research Questions**: Two primary research questions which look at the knowledge base of project managers in the South African ICT Sector/Industry and whether project management is regarded as an important profession in the South African Sector/Industry were presented. One secondary research questions of this study was also presented.
- **Objectives of this Research**: Three primary objectives of this research study were presented. The primary objectives were formulated based on the research questions of this study.
- **Limitations of this Study**: Two constraints, namely, time and budgetary constraints were given as the reason for confining this study to project managers of all ICT organisations listed on the JSE. The availability of the list of these listed companies as well as the supposed expectations that project

managers working for these companies possess the necessary skills to be successful in their roles as project managers were given as the reasons for using ICT organisations on the JSE.

- **Limitations of this Study**: It was pointed out that the study is important in three ways:
    - It will reveal the knowledge base of project managers in the South African ICT Sector/Industry.
    - It will reveal whether project management is regarded as an important profession by organisations in the South African ICT Sector/Industry.
    - It complements the research study done by Rwelamila (2007).
- **Outline of the Research Report**: This section gave a brief outline of what each chapter of this report study contains.

CHAPTER 2: KNOWLEDGE BASE OF PROJECT MANAGERS IN THE ICT SECTOR: THEORY AND PRACTICE

2.0 Introduction

Project management is becoming an increasingly important discipline of management in all companies around the world (Graham and Englund, 2004). Since organisations use project management to enable them to manage projects better, the spotlight has fallen on project managers, who play an important role in making projects successful. Leung (2002) identifies the need to have a software project manager as a number one common good management practice. A project manager is the single point of responsibility for all key decisions of the project. Furthermore, Day and Bobeva (2003) state that project managers have great influence on the success of IT projects. Ceran and Dorman (1995) concur with this view and state that successful project management systems and competent project managers form the foundation for successful projects.

The popularity of project management and the increased demand for project managers has seen an increased interest in the competence of project managers (Crawford and Pollack, 2007). Furthermore, Skulmoski (2000) points out that competence in any discipline, including project management, is associated with an organisation's competitiveness and its ability to achieve its objectives. Therefore the selection process of a competent project manager is a necessary one. The competencies that a project manager is expected to possess are required for project success (Gehring, 2007).
Schwalbe (2007) defines project success as having satisfied the following criteria:

- Scope, time and cost goals,
- Satisfied client/sponsor
- Project having met its main objectives.

Most project managers regard their work as successfully completed if the three above-mentioned criteria have been met (Dvir, Sadeh & Malach-Pines, 2006). Therefore, for the purpose of this study, Schwalbe's (2007) project success criteria list provides a baseline for project success.

Project failures have become a common thing, both nationally and internationally. Standish Group (2004) state that almost 20 percent of Information and Technology (IT) projects are abandoned before they are completed and less than a third are completed within time and budget. A failed project implies resources and time that have been wasted. Since projects are means by which organisations drive change and growth, this perpetual state of project failure cannot be afforded. There are various reasons offered why projects fail. Though some of these reasons given are valid, one still fails to understand why so many projects fail when there are so many project management techniques and tools available to organisations to be used in order to improve project performance. Moreover, project management skills possessed by project managers should aid in deterring the project failure rate and thereby reversing the misfortunes.

Project failures are indications that there are problems in the way ICT organisations manage projects. Ceran and Dorman (1995) state that these problems are not caused by a lack of books or ideas, neither by a lack of manuals, but rather by a lack of standards of performance for project managers. According to Kappelman, McKeeman & Zhang (2007), early warning signs of IT project failures can be divided into two categories: people - related ('people-related risks') and process-related ('process-related risks').

Weak project managers fall under the category of people-related risks. Anderson and Merna (2005) state that projects that perform poorly signal a credibility gap as to the need for and competence of management in project mode. Provided that projects are led by knowledgeable and competent project managers, good project management techniques and tools alone are of little value to an organisation. After all, projects are managed by project managers. However, project managers must also receive all necessary support from top management, to be successful in their work. Project success requires both project management competence and organisational project maturity and capability (Gehring, 2007).

From this discussion it is clear that a project manager plays a critical role in ensuring project success. It is therefore important that the focus should be on project managers in terms of who gets selected to be a project manager in the ICT Sector/Industry. The next section discusses this important subject.

2.1 Who gets appointed as a Project Managers in the ICT Sector/Industry and what is their background in terms of their Knowledge Base?

Leung (2002) identifies the need to have a software project manager as a number one common good management practice. A project manager is the single point of responsibility for all key decisions of the project. Ceran and Dorman (1995) concur with this view and state that successful project management systems and competent project managers form the foundation for successful projects. Furthermore, Skulmoski (2000) points out that competence in any discipline, including project management, is associated with an organisation's competitiveness and its ability to achieve its objectives. Therefore the selection process of a competent project manager is an important

one. This assertion is further emphasised by Dvir, Sadeh & Malach-Pines (2006), who purport that better fit between project managers and the projects assigned to them has a positive contribution to project success. Rose (2007) concurs with Dvir, Sadeh & Malach-Pines (2006) and indicates that project managers are not one-size-fits all. The assertion is also further supported by Burke (2003), who states:

> *"Experience has shown that the selection of the project manager is a key appointment which can influence the success or failure of the project."*

Graham and Englund (2004) refer to project managers that are tasked to manage projects, without the necessary project management skills and support systems such as project manager development programmes, as 'accidental' project managers. Gehring (2007) states that instead of carefully selecting competent project managers, organisations tend to create 'accident' project managers by simply promoting a good technician or administrator into a project leadership role. This assertion is also supported by Nelloreisher and Blanchandra (2001) who state that often a project manager is given a project leadership position without the required skills. Furthermore, technical expertise is not an overriding indicator of the effective project manager and the appointment of best technical employees as project managers purely on the basis of their technical skills does not make sense (Rwelamila, 2007). Organisations need to understand that the skill set for project management is different from that of other professional disciplines (Graham and Englund, 2004). 'Accidental' project managers or project managers who have no organisational support, cannot apply solid leadership and communication skills, and should not be expected to manage projects successfully (Kappelman, McKeeman & Zhang, 2007).

Zwikael and Globerson (2006) found that out of four industries, three (including software and communication) industries did not have any support structures, such as project management training, for their project managers. Another study by Carbone and Gholston (2004) established that just over 11% of the respondents said their companies had extensive or comprehensive training in project management, while 74% had minimal or none. The same study shows that organisations have done very little to develop the skills of project managers. Another study conducted by Crawford and Gaynor (1999) indicates that only 12.4% of the respondents had any kind of certification or registration in project management.

These are indeed shocking revelations of how poorly prepared project managers are. The result of this lack of developing and preparing project managers for their roles can be seen in a lack of successful projects (Carbone and Gholston, 2004). This assertion is supported by Geist and Myers (2007), who state that the majority of projects fail because of a lack of competent project managers. Mann (2002) states that the skills gap has a negative contribution on the failure rate of information systems. A South African report on Joint Initiative on Priority Skills Acquisition (JIPSA) (2007) supports this assertion and states that the lack of project management capability has a negative impact on service delivery. ICT is one of the sectors in which South Africa is experiencing a skills shortage (JIPSA, 2007). The same report indicates that the skills shortage in this sector is harming South Africa's global competitiveness. Van Olst (2007) points out the poor conversion rate (university science and engineering entrants becoming graduates) as one of the reasons for the skills shortage in the South African ICT sector. However, according to Rwelamila (2007), South African higher learning institutions do not provide appropriate training for construction project managers. Therefore, the skills gap problem is exacerbated by these skewed training programmes. Furthermore, Kasvi, Vartiainen & Hailikari (2003) state that accumulative

knowledge by project managers and project team members is vital to the successful completion of IT projects.

Standing *et al.* (2006: 1149) state:

> *"Project managers have a great influence on the success of IT projects, by performing a multitude of roles according to the project situation."*

The Project Management Institute (2004:8) defines project management as:

> "*the application of knowledge, skills, tools and techniques to project activities to meet project requirements.*"

According to Sumner, Bock & Giamartino (2006) the application of the abovementioned skills affect IT project success. Furthermore, project managers are expected to use tools and techniques to accomplish project undertakings (Rwelamila, 2007). According to Rwelamila (2007) there are six (6) competencies that an outstanding project manager should possess. These are:

- Sense of ownership and mission – responsible for the project and other broader organisational issues.
- Political awareness – knows who the influential players are, what they want and how best to work with them.
- Relationship development – spends time and energy getting to know project sponsors, users and contractors.
- Strategic influence – builds coalitions and orchestrates situations to overcome obstacles and obtain support.
- Interpersonal assessment – identifies specific interests, motivations, strengths and weaknesses of others.
- Action orientation – reacts to problems *energetically and with a sense of urgency.*

Gehring (2007) states that a project manager needs the following six (6) units of competencies: achievement and action, helping and human service, impact

and influence, managerial, cognitive as well as personal effectiveness. One can clearly see that the competencies mentioned by both Rwelamila (2007) and Gehring (2007) are somewhat similar. According to Kimmons (1989) a project manager should possess the following qualities:

- Leadership qualities with organisational ability.
- Experience in project management.
- Co-ordination ability.
- Ability to encourage team members.
- Sensitivity to human relations.
- Complete understanding of procedures of his/her company.
- Ability to maintain a healthy relationship with the client.

Rwelamila (2007:5) states that an effective project manager is able to:

> "*Invoke the inner confidence to ask dumb questions and keep asking them; thrive in the ambiguity that surrounds working in an unstructured environment without clear lines of authority; operate through interpersonal ad hoc agreements and understandings, on the basis of personal credibility, good will; react instinctively to opportunities and crises, and thus maintain the credibility of the project (fill in any excuse); and identify the people whose support is crucial to the success of the project and win their allegiance."*

In the unstructured environment mentioned by Rwelamila (2007) above, a project manager is expected to thrive and bring the best out of every team member and deliver a successful project (Harrison, 1987). Furthermore, Anderson and Merna (2005: 12) state:

> *"Project managers tend to be craftsmen who have learned their trade empirically through on the job training and experience. They are not highly trained professionals but experienced practitioners (usually with a professional background) who have developed a skill and reputation for*

> *dealing with unique situations and irregular tasks, an aptitude for managing projects."*

A study by Brill, Bishop & Walker (2006) found that problem-solving expertise and leadership expertise were ranked as the top two key competencies required by a project manager. Weirauch (2000) echoes these sentiments and states that a project manager should be competent in two primary skill sets – technical skills and leadership skills. Marken (1998) agrees with this and states that both technical and business skills are needed by a project manager. According to Taylor (2006), a project manager needs two classes of skills: technical and human or relational skills. Furthermore, Thite (1999) states that project managers of successful IT projects have transformational and technical leadership qualities to a greater extent than managers of less successful projects. These views are also supported by Muzio, Fisher, Thomas & Peters (2007), who indicate that transformational leadership is important to project management.

Schmid and Adams (2008) advocate that a project manager should have, amongst other things, participative leadership style and an ability to motivate team members. On the other hand, Schwalbe (2007) advocates that a project manager should have a wide variety of skills and be able to know which skills to use and when. Pheng and Lee (1997) are in agreement with Schwalbe (2007)'s view and state that each project's phase demands different skills from the project manager. Moreover, Pheng and Lee (1997) state that a project manager should have the following skills (criteria): leadership, decision-making, stability, good listening and information-gathering skills, good analytical abilities, flexibility, multi-disciplinary oriented, right temperament, planning, management and follow-up skills. Dainty, Cheng & Moore (2005) also have a similar list of skills that a competent project manager is expected to possess. The view that a project manager should have a mixture of both technical and

managerial skills is also supported by Kerzner (2003), who indicates that communicative, interpersonal and technological skills are important. Skulmoski (2000), on the other hand, states that competencies are varied, multi-dimensional and are much broader than skills and knowledge. Competencies (soft competencies) include traits, motives, self-image and social role, while hard competencies refer to skills and knowledge (Skulmoski, 2000). As long as project managers are sent to 'war' without any necessary 'armour', the high failure rate of ICT projects will remain with us for some time.

A statement by Carbone and Gholston (2004:16) sums it up:

> *"We would not expect an untrained ear to lead a symphony; why do we expect project managers to deliver successful projects without investing in their development skills?"*

The development of project managers must be a top priority if organisations intend to reverse the tide of project failures. Organisations that succeed in project management usually grow their own project leaders internally, supporting them in terms of training and mentoring opportunities (Schwalbe, 2007). Development of project managers is a major priority for South Africa, in particular, as confirmed by the national skills development strategy which identifies project managers as one of the scarce skills (Expertise crucial for 2010 World Cup's stadiums, 2006). Field experience is important for project managers. However, training and mentorship to prepare them for the road ahead is vital, if organisations hope to change the current status quo of high rate project failures. Senge (1990) advocates that organisations should strive to be learning organisations by focusing on five disciplines: namely, shared vision, personal mastery, mental models, systems thinking and team learning. By becoming a learning organisation, an organisation would not only be creating its future, but also ensuring that there is knowledge-sharing and that a competitive advantage is maintained. It is therefore apparent that organisations

which promote the learning culture do manage knowledge. Reich (2007) indicates that knowledge management can contribute to project success.

Maples, Greco, Heady & Tanner (2005) raise another important question on the matter of project manager training, as to whether institutions that offer such training have educators that have real world exposure in project management. Educators without real-world project management exposure provide project managers with what Geist and Myers (2007) call 'objectivist, conventional, passive learning or explicit knowledge'. Geist and Myers (2007) recommend that teaching project management should be lecture-based and activity-based. This type of training would produce competent, well-balanced (in terms of theory and practice) project managers and would also enable them to be effective in their work. Institutions that provide training in the ICT sector should offer courses that address the ICT industry's real skills needs (Kim, Hsu & Stern, 2006).

A study by Boyle and Strong (2006) established that amongst a list of key skills that organisations expect from recent graduates of university programmes are team skills and knowledge (which includes project leadership capabilities). This finding re-emphasises the importance of learning institutions aligning their curricula offerings with organisational needs. This re-alignment of curricula by institution of higher learning is also emphasised by Rwelamila (2007), whose study established that programmes aimed at equipping project managers in the South African industry fall short of what is required/expected. Based on these findings, Rwelamila (2007) advocates for re-alignment of these programmes and further suggests an appropriate construction project management (CPM) programme framework.

Following the above discussion, Table 2.1 below provides a summary of competencies expected from a competent project manager. Similar/identical

competencies by different authors have been grouped together for the sake of conciseness. As can be seen from Table 2.1, most of the authors seem to be in agreement on the importance of having a project manager with multi-disciplinary orientation which includes leadership, management and technical skills. Again, many authors indicate the importance of personal characteristics such as analytical ability, flexibility, good listening skills, good communication and effective problem-solving.

Table 2.1 – Competencies Summary

Rwelamila (2007)	Gehring (2007)	Brill, Bishop & Walker (2006)	Weirauch (2000); Marken (1998)	Thite (1999) *; Muzio, Fisher, Thomas & Peters (2007) **; Muzio, Fisher, Thomas & Peters (2007) *; Schmid and Adams (2008)**	Kimmons (1989)	Pheng and Lee (1997); Dainty, Cheng & Moore (2005)	Skulmoski (2000)
• Sense of ownership and mission • Political awareness • Relationship development • Strategic influence • Interpersonal assessment • Action orientation	• Achievement and action • Helping and human service • Impact and influence • Managerial • Cognitive • Personal effectiveness	• Problem-solving expertise • Leadership expertise	• Technical skills • Leadership skills. • Business skills	• Transformational leadership qualities * • Technical leadership qualities • Participative leadership style ** • Ability to motivate team members **	• Leadership qualities with organisational ability. • Experience in project management. • Coordination ability. • Ability to encourage team members. • Sensitivity to human relations. • Complete understanding of procedures of his/her company. • Ability to maintain a healthy relationship with the client.	• Leadership • Decision-making • Stability • Good listening and information gathering skills • Good analytical abilities • Flexibility • Multi-disciplinary oriented • Right temperament • Planning • Management and follow-up skills.	**Competencies (soft competencies)**: • Traits • Motives • Self-image • Social role **Hard competencies**: • Skills and knowledge

Note: The asterisk (s) (* or **) indicate which competencies are cited by which author(s).

A competent project manager is the one with a balanced knowledge base (Rwelamila, 2007). Rwelamila (2007) states that a well-balanced knowledge base should consist of both a technical knowledge base and a social-cultural knowledge base. Even though his study was based on the construction industry, the principles are similar for other industries too where project management is used. Establishing how balanced is the knowledge base of project managers in the South African ICT Sector would be an interesting topic. However, it is not the primary aim of this study to establish this.

A competent project manager alone cannot guarantee project success; a mature project management organisation is necessary, too (Gehring, 2007). That is, ICT organisations must value project management skills and project management itself as an important discipline. This therefore brings us to another important question to which this study seeks to establish answers. The question relates to the importance of project management in the South African ICT sector. The next section will look at how project management is viewed by the ICT Sector/Industry globally.

2.2 The Importance of Project Management in the ICT Sector/Industry

According to Geist and Myers (2007), project management is a critical success factor of organisational change in any industry. Tesch, Kloppenborg & Frolick (2007) state:

> *"Effective project management (PM) is vital to the success of any software development project. In fact, the management aspects of a project are typically more critical to its success than the technical aspects."*

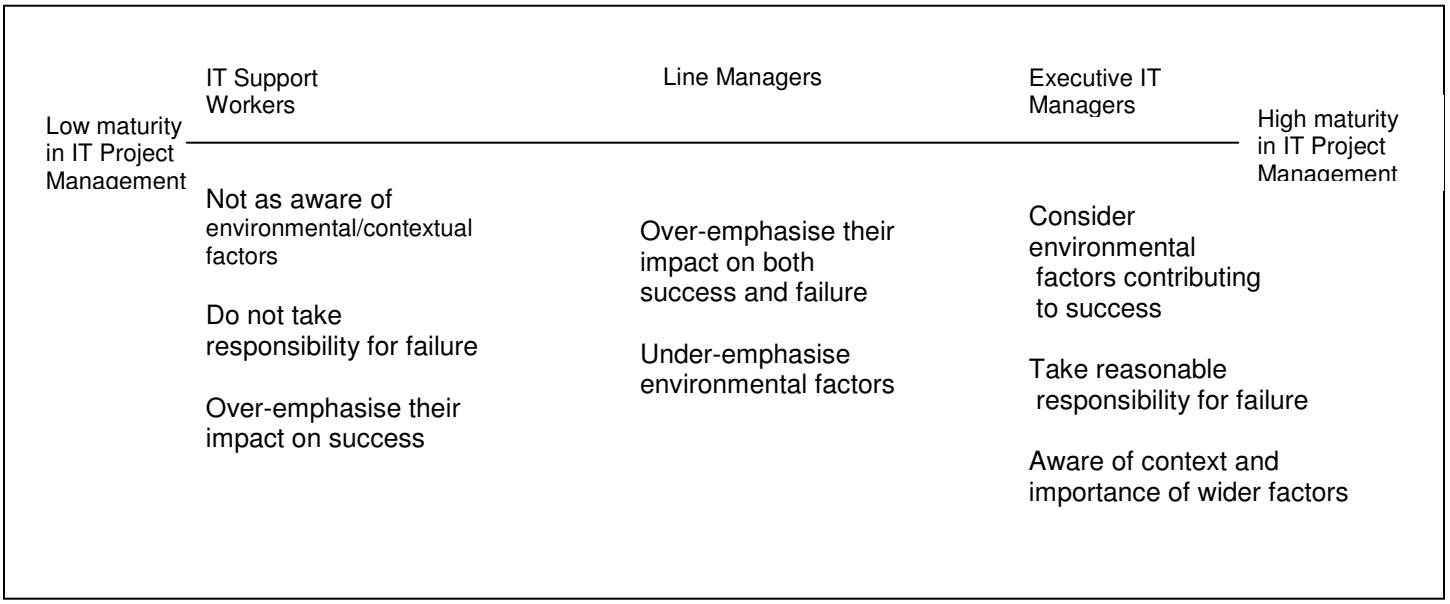
Huff and Prybutok (2008) concur with Geist and Myers (2007) and state that project management plays a vital role in production and innovation in today's society. The importance of project management in the ICT sector is also confirmed by the study done by Kim, Hsu & Stern (2006), which indicates that information systems (IS) and IS industry professionals value project management. Moreover, many organisations realise the importance of project management in helping them to handle complex projects (Schwalbe, 2007). Another reason that has elevated the status of project management is the strategic role that IT plays in many organisations (Tesch, Kloppenborg, & Frolick, 2007). Tesch, Kloppenborg, & Frolick (2007) further state that project management as a discipline has come a long way from just providing scheduling and resource data to the one that provides industries with better project management techniques. Brewer (2005) states that the importance of project management has placed a demand on organisations to hire skilled project managers.

The importance of project management has further been brought to bear by a number of organisations that have become 'project-based' (Brewer, 2005). Project management enables project managers to use a systems approach in understanding how projects relate to each other and to the organisation as a whole. Through a systems approach, project managers are able to identify how business, technological and organisational issues are affected by a project (Schwalbe, 2007). Schwalbe (2007) further states that this systematic way of thinking has an important effect on the way projects are selected and also in the management of projects. The results of research by Standing *et al.* (2006) further indicate the importance of project management. The results placed poor project management as one of the top five reasons why IT projects fail. This is confirmed by Schimmoller (2001) who states:

> *"The costs of poor project management can be tremendous."*

Furthermore, the lack of project management capacity has been attributed as one of the most common reasons for poor service delivery by the South African government (JIPSA, 2007). Figure 2.1 below, adapted from Standing *et al.* (2006), indicates a level of maturity in relation to IT project management from an IT professional's perspective.

Figure 2.1 Characteristics of IT Project Management maturity



Source: Standing, Guilfoyle, Lin & Love (2006:1158)

Figure 2.1 above shows that the majority of executive IT managers who participated in the study showed 'high maturity' in IT project management compared to IT support workers. This illustrates an awareness by IT executives of the important contribution that project management has in the success of a project. Kappelman, McKeeman & Zhang (2007) state that successful IT project management is critical not only to the growth of an organisation, but also to the career growth of the people involved.

McCormick (2006) further states that managers ought to treat project management with same respect as business improvement and change management, and should be seen as a core competency for competitive advantage in a business environment. This assertion is supported by Gillingham (2006), who reported that there is a growing body of evidence that capability in managing projects leads to superior performance in implementation strategy. Furthermore, Gillingham (2006) states that project management capabilities enable organisations to develop competitive advantages. Bolles (2002) agrees with McCormick (2006) and states that project management should be regarded as a weapon for competition that brings quality and add-on value to clients. He further argues that because of the importance of project management as a function, it should be established at the executive level of the organisation, thus emphasising the point made by McCormick (2006). The other reason why Bolles (2002) advocates for project management function to be placed higher up in the organisation's hierarchical structure is to enable and support the distribution and management of project management best practices across the organisation.

Having discussed the knowledge base of project managers and the importance of project management in the ICT sector, it is important to turn the focus on to the general performance levels of ICT projects.

2.3 General Performance Levels of ICT projects

In measuring project success in this study, as pointed out previously, time, budget, project scope and client/sponsor satisfaction are used as measurement indicators. Too often Information Technology (IT) projects end in failure (Murray, 2001). The same sentiments are echoed by Tesch, Kloppenborg, & Frolick (2007), who state that project failures have haunted the IT industry for a long time now. Dalcher and Drevin (2003) also indicate

that billions of US dollars are lost owing to failed projects. The Standish Group (2004) report indicates that about $64 billion is wasted yearly on either failed IT projects or late projects in the United States of America. Grenny, Maxfield, & Shimberg (2007) further states that poor performing projects not only cost organisations money, but cost employees their careers as well, as CEO turnover is said to have doubled in 2005. Reich (2007) concurs with this view and adds that the high failure rate of IT projects is a serious setback for organisations that use IT for innovation or competitiveness. A study performed on four industries by Zwikael and Globerson (2006), found that project performance envelope and customer satisfaction in both software and communications as well as service industries were relatively better than the other two industries. However, the software and communications industry showed poor performance on cost and schedule. Figure 2.2 below summarises the results of the study by Zwikael and Globerson (2006) on project success indices for four industry types.

Figure 2.2 Project success indices for four industry types

Industry type	Number of **questionnaires**	Cost overrun **(percent)**	Schedule overrun **(percent)**	Performance envelope **(1-10 scale)**	Customer satisfaction **(1-10 scale)**
Construction and Engineering	30	17	19	8.1	8.1
Software and Communications	98	27	33	8.2	8.3
Services	58	23	27	8.3	8.3
Production and Maintenance	10	26	32	7.9	7.9

Source: Zwikael and Globerson (2006: 693)

A panel of Chief Financial Officers, Chief Information Officers and financial directors from some of the top South African companies cited eight major factors, including communications, effective planning and reporting on projects as contributing to the success or failure of a project (van Tonder, 2007).

The above discussion has provided a global view on who gets appointed as a project manager and what skills and knowledge they should possess. Also, the discussion has given an overview of the importance of project management as a profession and the general performance levels of ICT projects. It would therefore be informative to establish how the above discussion relates to the South African context.

2.4 Summary

This chapter has provided a global view of the following issues:

- **Who gets appointed as a project manager and what skills and knowledge they should possess**: In this section it was pointed out that since a project manager is part of the foundation for successful projects, he/she is then expected to possess correct skill set for project management. The competencies that a project manager is required to possess are summarised in Table 2.1 above. Furthermore, it was also indicated that a competent project manager is the one with a balanced knowledge base – having a both technical knowledge base and a social-cultural knowledge base (Rwelamila, 2007).
- **The importance of project management as a profession**: The discussion in this section indicated the importance of project management discipline in general. It was argued that one of the important reasons why organisations should value project

management as an important discipline is the impact that poor project management has on project success. According to Standing *et al.* (2006) poor project management is one of the top five reasons why IT projects fail.

- **General Performance Levels of ICT projects**: Based on the number of sources, this section provided evidence that projects in the ICT sector too often end in failure. This poor project performance has further strengthened the need for organisations to appoint competent project managers in order to improve project success rate in the ICT sector in particular.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

Chapter 2 of this research study has provided a global view on who gets appointed as a project manager and what skills and knowledge they should possess. The discussion in the previous chapter has given an overview of the importance of project management as a profession and the general performance levels of ICT projects. This chapter discusses the research methodology used in this research to fulfil the purpose of this study.

This research study is more structured and more controlled in terms of the measuring instrument used and therefore lends itself to the quantitative research approach (Neser, Joubert & Sonnekus, 1995). Different research methodologies are briefly discussed in Section 3.1 below, before moving on to the research methodology used in this study.

2.3 Research Methodologies: Theory and Practice

There are mainly two methods or approaches available when doing research: the quantitative and qualitative method.

The quantitative methodology is more formalised in nature as well as being explicitly controlled, with more carefully defined scope (Mouton and Marais, 1989). This approach is often characterised by the researcher's aim being to examine the numerous relationships between two or more measurable concepts (Mouton and Marais, 1989). When using the quantitative approach, the researcher is not able to influence the measured concept through

personal interpretation or reflection (Norifard, Sarhangpour & Talebi, 2007). On the other hand, qualitative methodology requires the researcher to reflect upon and evaluate his/her own experiences, memories, values and opinions in relation to a specific issue or topic (Society & Culture Association, No date).

The qualitative methodology is an approach in which procedures are formalised and explicated in a less strict manner, but in which the scope is less defined in nature and in which the researcher does investigation in a more philosophical manner (Mouton and Marais, 1989). In this approach, observation generates the investigation (Mouton and Marais, 1989). For this type of research, preference is given to the following methods and techniques (Neser, Joubert & Sonnekus, 1995):

- Concepts that capture the meaning of the experience (situation), action or interaction of the research object (man)
- Unstructured (open) questionnaires and interviews
- Participant observation, ethnographic studies and case studies
- Recording of life histories, use of autobiographies and diaries
- Analysis of collected data by means of non-quantitative frameworks and category systems.

In summary, from the previous discussion it is clear that quantitative and qualitative methodologies cover different fields of study. The differences can be reduced to the following: differences in formalisation, external control and scope (Mouton and Marais, 1989).

Even though quantitative research and qualitative research differ, they can also complement each other in specific areas. The use of quantitative research and qualitative research on a complementary basis can be achieved through the triangulation method. This type of research yields results which are more reliable and valid (Neuman, 1997). This research study uses the

quantitative research method as explained above. The next section discusses the sample design and sample size that was used in this study.

3.2 Sample Design and Sample Size

Due to time and budgetary constraints, the population of interest for this study is limited to all project managers of all ICT organisations listed on the Johannesburg Securities Exchange (JSE). The other reason for using ICT organisations on the JSE is the availability of the list of these listed companies, as well as the supposed expectations that project managers working for these companies are expected to possess the necessary skills to be successful in their roles as project managers. Since the sample frame is readily available (list of ICT organisations listed on the JSE), unrestricted simple random element selection was used as a sampling design. Through the use of computer software, each ICT organisation listed on the JSE was assigned a unique number and simple random sampling was made. Each ICT organisation listed on the JSE was chosen randomly, so that each organisation had the same probability chance of being chosen at any stage during the sampling process. Using simple random sampling in which each population element has a known and equal chance of selection (Cooper and Schindler, 2003), 80% of the total population was selected. The desire to have a valid sample (enough elements in the sample) and higher confidence level in the precision estimation (the sample design should yield minimal sampling error) influenced the decision to have 80% of the total population selected for the study.

During the time of this study there were nineteen (19) ICT organisations that were listed on the JSE. These organisations were mainly based in Gauteng and KwaZulu Natal. Sixteen (16) organisations were randomly selected as

explained above, as a sample for this study. Four (4) companies either declined to participate or mentioned that they did not have any ICT projects and therefore had no project managers in their employment ranks. Therefore, twelve (12) organisations (75%) of the sixteen (16) selected organisations participated in this study. The twelve (12) organisations had forty-five (45) project managers amongst themselves. Eleven (11) either declined to participate or did not complete the questionnaire. Eight (8) of the thirty-four (34) project managers who participated submitted incomplete questionnaires and therefore these could not be used for final data analysis. Therefore, twenty six (26) (58%) project managers successfully participated in this study.

3.3 Data Collection Method

Data was collected using an internet-hosted, multi-part questionnaire which had three sections made up of one hundred and twenty eight (128) questions. The survey instrument was prepared and pre-tested with five (5) ICT companies in Pretoria in order to test its validity and to establish whether the time and effort required on the questionnaire were reasonable. Their response and comments were subsequently used to modify the questionnaire. The modified questionnaire was placed on a website for participating project managers to complete. A covering letter explaining the aim of the study, assuring respondents of their confidentiality as well as encouraging participation in the study, was also hosted together with the questionnaire on the website. Each participating project manager was given a unique username and password to use for logging in, as well as to ensure data confidentiality. Project managers could choose to complete the questionnaire anytime and they could also complete the questionnaire partially and return to complete it at a later stage. Telephone calls were made to participating project managers in order to ensure a high response rate to the questionnaire.

The three sections that made up the questionnaire were: Section A – Demographic data, Section B - Skills and competencies of project manager, Section C - Perceived importance of project management in the South African ICT sector. Brill, Bishop & Walker (2006) identify one hundred and seventeen (117) competencies and characteristics organised under nine categories, namely, Problem-Solving Expertise, Leadership Expertise, Context Knowledge, Analytical Expertise, People Expertise, Communication Expertise, Personal Characteristics, Project Administration Expertise and Tools Expertise that an effective project manager should possess. Section B of the questionnaire uses these competencies and asks project managers to rank their level of skills for each of the competencies and characteristics. The questions in Section B used a Likert 4-point rating scale (4 – highly skilled and 1 – poorly skilled) and participants were requested to rate their level of competencies or expertise by choosing any of the rating scales.

3.4 Method for Analysis

In analysing the data, statistical non-parametric methods such as chi-square were used to test the hypotheses. Non-parametric methods were chosen, as the data measurement scale used in this study is nominal (classificatory). Moreover, non-parametric methods have fewer and less stringent assumptions on the data used (Cooper and Schindler, 2003). Furthermore, non-parametric methods are usable with a variety of data types: namely, nominal, ordinal, ratio and interval data. The two hypotheses of this study were tested using the one sample Z-test for proportions (Diamantopolous and Schlegelmilch, 1997). In the one sample Z-test, it is appropriate to state an arbitrary value against which the hypothesis is tested. For the purpose of this study, the hypothesised proportion that was used for both hypotheses was

66.7% (significantly more than two-thirds of the population). For the first hypothesis of this study, proportions were calculated by summing up the proportions of respondents who indicated either “skilled” or “highly-skilled” as an answer to each question of the nine categories, whilst for the second hypothesis the proportions were calculated by summing up the proportions of respondents who provided “Yes” as an answer to each question of Section C of the research questionnaire. A test of significance was made to each question of Sections B and C in the research questionnaire to establish whether the hypotheses should be rejected or accepted. The statistic analytical software (SAS) version 9.1 and SPSS version 14.0 were used as tools for analysis.

3.5 Summary

Firstly, the research methodology used in this study was discussed in this chapter. Two main research methods, namely, quantitative and qualitative methods were discussed broadly. It was indicated that even though quantitative and qualitative methods differ, they can also complement each other in specific areas. The use of quantitative research and qualitative research on a complementary basis can be achieved through the triangulation method. This chapter indicated that this research study uses the quantitative research method.

Secondly, this chapter discussed sample design and sample size used in this study. Two constraints, namely, time and budgetary constraints were given as the reason for confining this study to project managers of all ICT organisations listed on the JSE. It was indicated that only twelve (12) of the sixteen (16) selected organisations participated in this study. Twenty six (26) of the forty-five (45) project managers from the twelve (12) organisations that

participated in this study managed to successfully complete the research questionnaire.

Thirdly, this chapter discussed the data collection method that was used in this study. The data collection method used was a multi-part questionnaire which had three sections made up of one hundred and twenty eight (128) questions. The questionnaire was placed on a website for participating project managers to complete and each project manager was given a unique username and password to use for logging in.

Finally, this chapter covered the method used in study to analyse the collected data. The two hypotheses of this study were tested using one sample Z-test for proportions (Diamantopolous and Schlegelmilch, 1997), a non-parametric statistical method. Non-parametric methods were chosen, because the data measurement scale used in this study is nominal (classificatory). Moreover, non-parametric methods have fewer and less stringent assumptions on the data used (Cooper and Schindler, 2003). SAS version 9.1 and SPSS version 14.0 were used as software tools for data analysis.

CHAPTER 4: RESEARCH RESULTS

4.0 Introduction

Chapter 3 discussed in detail the research methodology that was used in this study. This chapter presents the research results. Firstly, the demographic profile of the respondents is presented and then the knowledge base of the respondents is analysed by looking at the responses given by the respondents to the questions that were based on skills of competencies mentioned in the nine categories, as discussed in Chapter 2 of this study. Lastly, this chapter presents the results of the tests of the two hypotheses mentioned in this study.

4.1 Demographic Profile of Respondents

The demographic profile of the respondents discussed in this section is limited to respondents' gender, race, years of project management experience, highest qualification and whether formal training in project management was received.

Figure 4.1 and Figure 4.2 indicate that the respondents were mostly male (61.5%) and white (53.8%) respectively. The project management experience profile, as indicated by Figure 4.3, shows that most respondents (46.2%) have experience ranging between 1- 5 years, while 34.6% and 19.2% of respondents have experience ranging between 6 – 10 years and 11 – 20 years respectively. Figure 4.4 shows that 92.3% of the respondents have formal training in project management, and only 7.7% of the respondents did not have formal training. Finally, the majority of the respondents (61.5%) had first degree/diploma qualifications, followed by those with post-graduate qualifications (30.8%), as shown by Figure 4.5.

Figure 4.1 Gender profile of the respondents

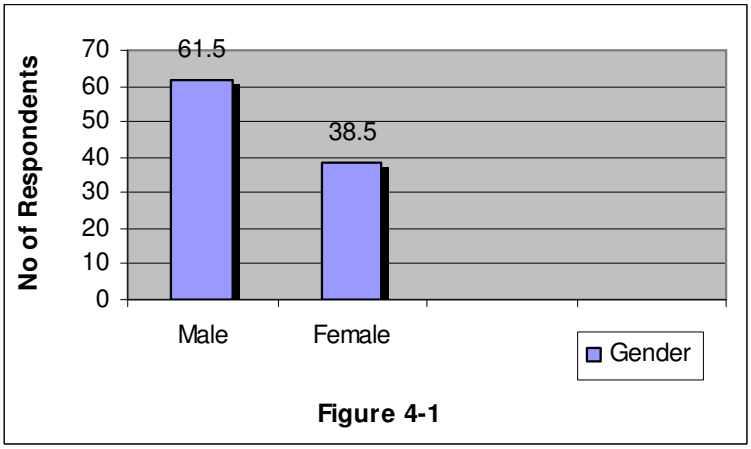


Figure 4-1

Figure 4.2 Race profile of the respondents

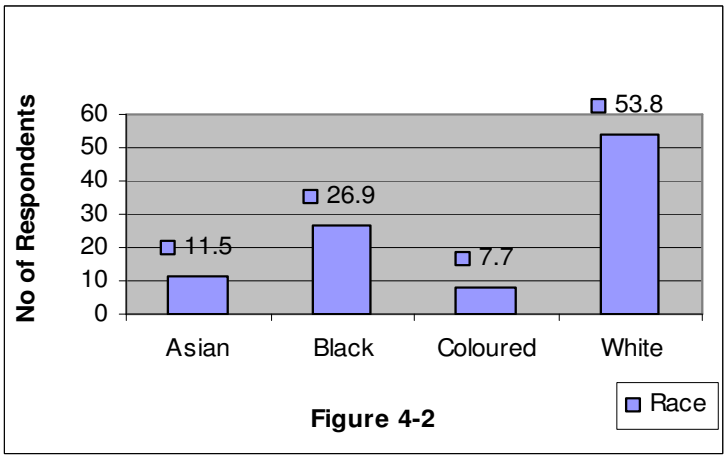


Figure 4-2

Figure 4.3 Experience of the respondents in PM

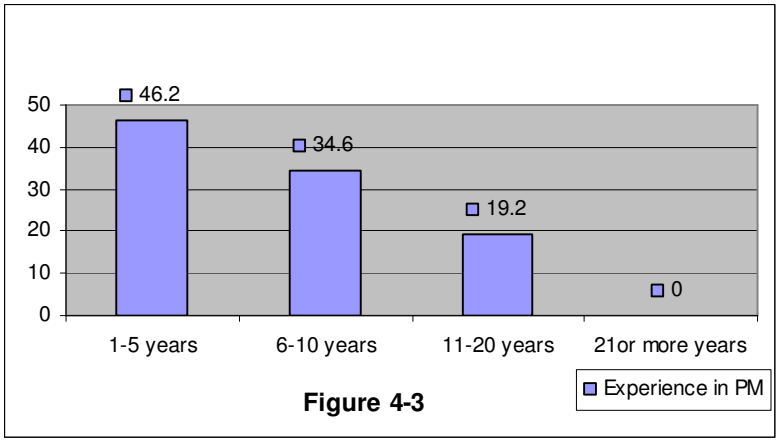


Figure 4-3

Figure 4.4 Training in PM of respondents

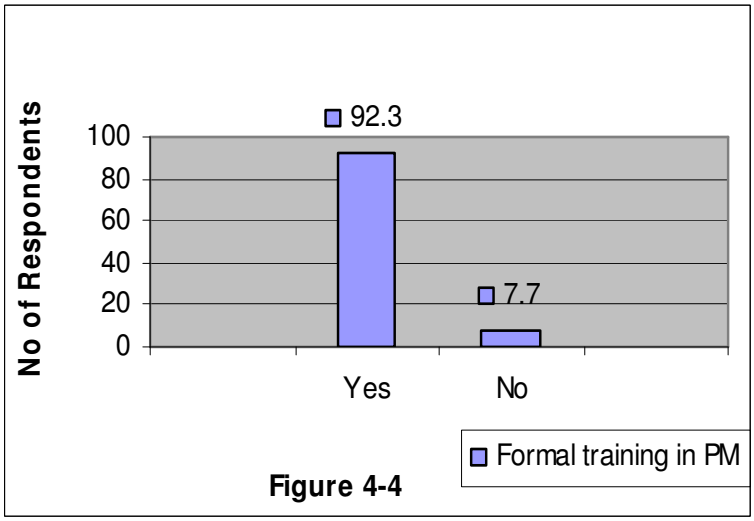


Figure 4-4

Figure 4.5 Qualification of the respondents

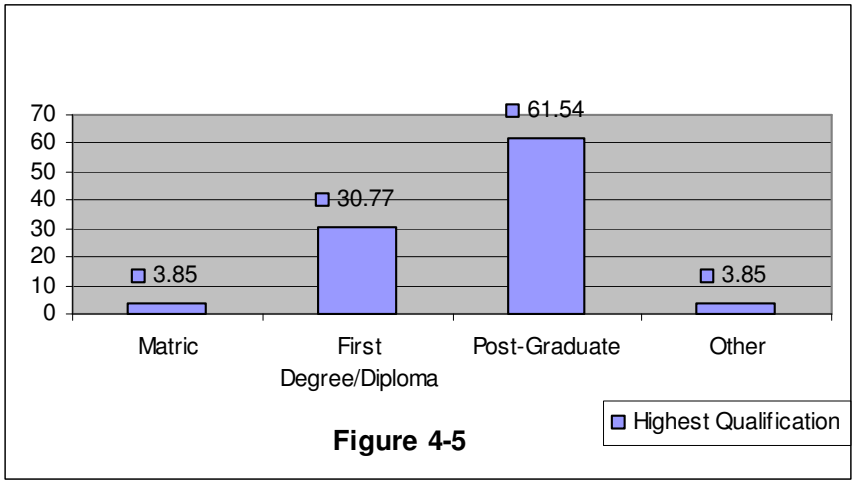


Figure 4-5

4.2 Knowledge Base of the Respondents

This section presents the analysis of the responses given by respondents to the questions in Section B of the research questionnaire of this study (see Appendix A). The questions were aimed at establishing skills competencies of the respondents, as specified in the nine categories of competencies. For each question, the frequency of distribution is determined - that is, the most frequently selected value (answer) as chosen by the respondents is determined.

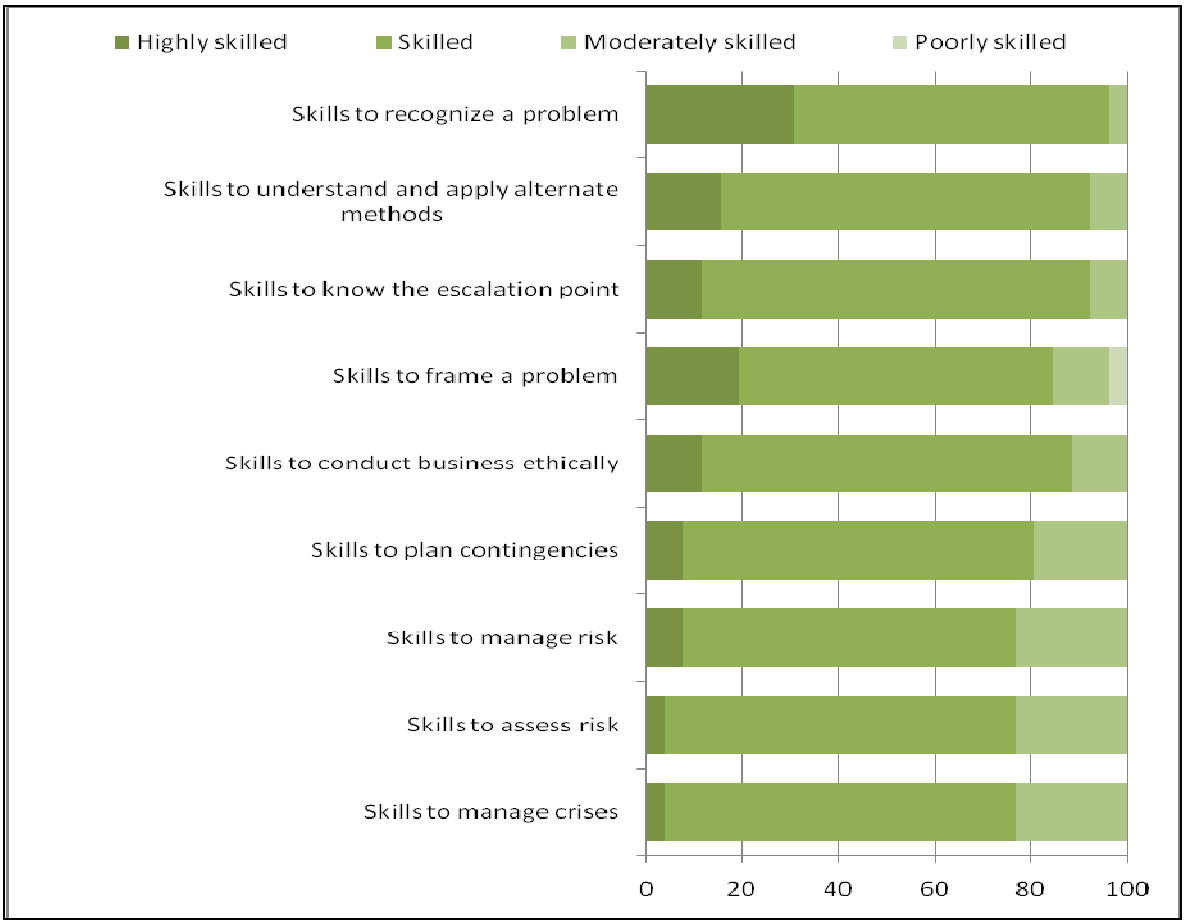
4.2.1 Problem-Solving expertise

The questions in this category in the research questionnaire of this study were aimed at establishing the level of expertise of respondents in solving problems that relate to a project (see Appendix A – The Primary Research Instrument in Category 1). The respondents were asked to rate their problem-solving skills, on the rating scale that ranged from poorly skilled to highly skilled. Table 4.1 shows the number of respondents for each rating scale to each question in this category, whilst Figure 4.6 presents the graphical responses of how the respondents rated themselves on each question with regard to problem-solving expertise. As the results show in both Table 4.1 and Figure 4.6 below, most respondents (more than 65%) rated themselves as skilled for all the questions in this category. That is, the most frequently occurring/selected value (answer) is ‘skilled’.

Table 4.1 Response distribution for Problem Solving Expertise questions

Problem-Solving Expertise	Mean	Poorly-skilled	Moderately skilled	Skilled	Highly-skilled
Skills to conduct business ethically	3.00	0	3	20	3
Skills to recognize a problem	3.27	0	1	17	8
Skills to manage crises	2.81	0	6	19	1
Skills to manage risk	2.85	0	6	18	2
Skills to frame a problem	3.00	1	3	17	5
Skills to assess risk	2.81	0	6	19	1
Skills to plan contingencies	2.88	0	5	19	2
Skills to know the escalation point	3.04	0	2	21	3
Skills to understand and apply alternative methods	3.08	0	2	20	4

Figure 4.6 Responses to Problem-Solving Expertise Questions



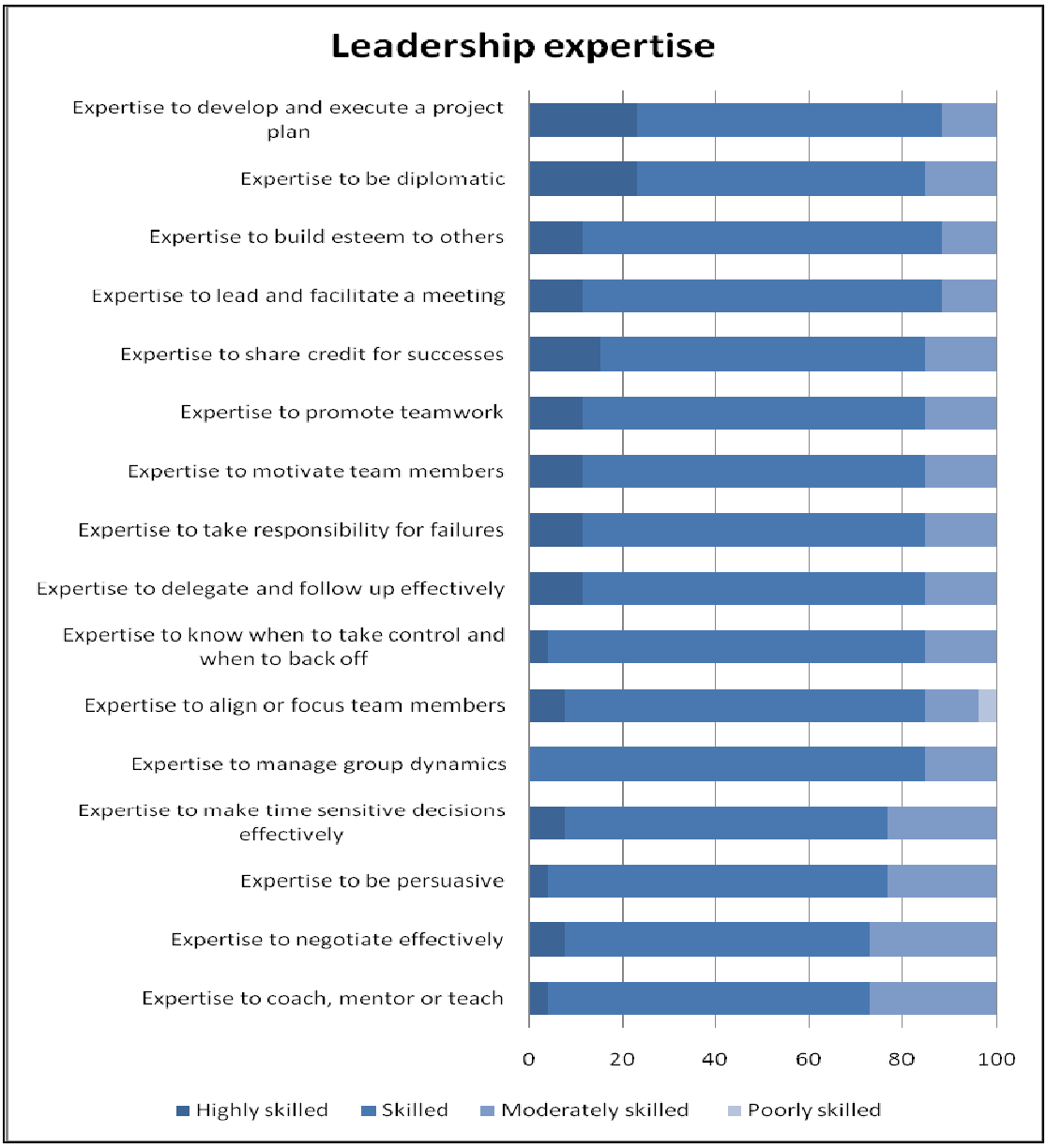
4.2.2 Leadership expertise

The questions in this category were aimed at determining level of leadership expertise of the respondents (see Appendix A – The Primary Research Instrument in Category 2). The respondents were asked once again to rate their leadership skills on a rating scale that ranged from poorly skilled to highly skilled. Table 4.2 shows the number of respondents for each answer to each question in this category, whilst Figure 4.7 presents the graphical responses of how the respondents rated themselves on each question of leadership expertise. As the results show in both Table 4.2 and Figure 4.7, most respondents (more than 61%) rated themselves as skilled for all the questions in this category. This means that the most frequently occurring/selected value (answer) by the respondents is 'skilled'.

Table 4.2 Response distribution for Leadership Expertise questions

Leadership Expertise	Mean	Poorly-skilled	Moderately skilled	Skilled	Highly-skilled
Expertise to share credit for successes	3.00	0	4	18	4
Expertise to make time-sensitive decisions effectively	2.85	0	6	18	2
Expertise to delegate and follow up effectively	2.96	0	4	19	3
Expertise to develop and execute a project plan	3.12	0	3	17	6
Expertise to take responsibility for failures	2.96	0	4	19	3
Expertise to align or focus team members	2.88	1	3	20	2
Expertise to know when to take control and when to back off	2.88	0	4	21	1
Expertise to motivate team members	2.96	0	4	19	3
Expertise to promote teamwork	2.96	0	4	19	3
Expertise to lead and facilitate a meeting	3.00	0	3	20	3
Expertise to manage group dynamics	2.85	0	4	22	0
Expertise to be diplomatic	3.08	0	4	16	6
Expertise to negotiate effectively	2.81	0	7	17	2
Expertise to be persuasive	2.81	0	6	19	1
Expertise to coach, mentor or teach	2.77	0	7	18	1
Expertise to build esteem in others	3.00	0	3	20	3

Figure 4.7 Responses to Leader Expertise Questions



4.2.3 Context knowledge

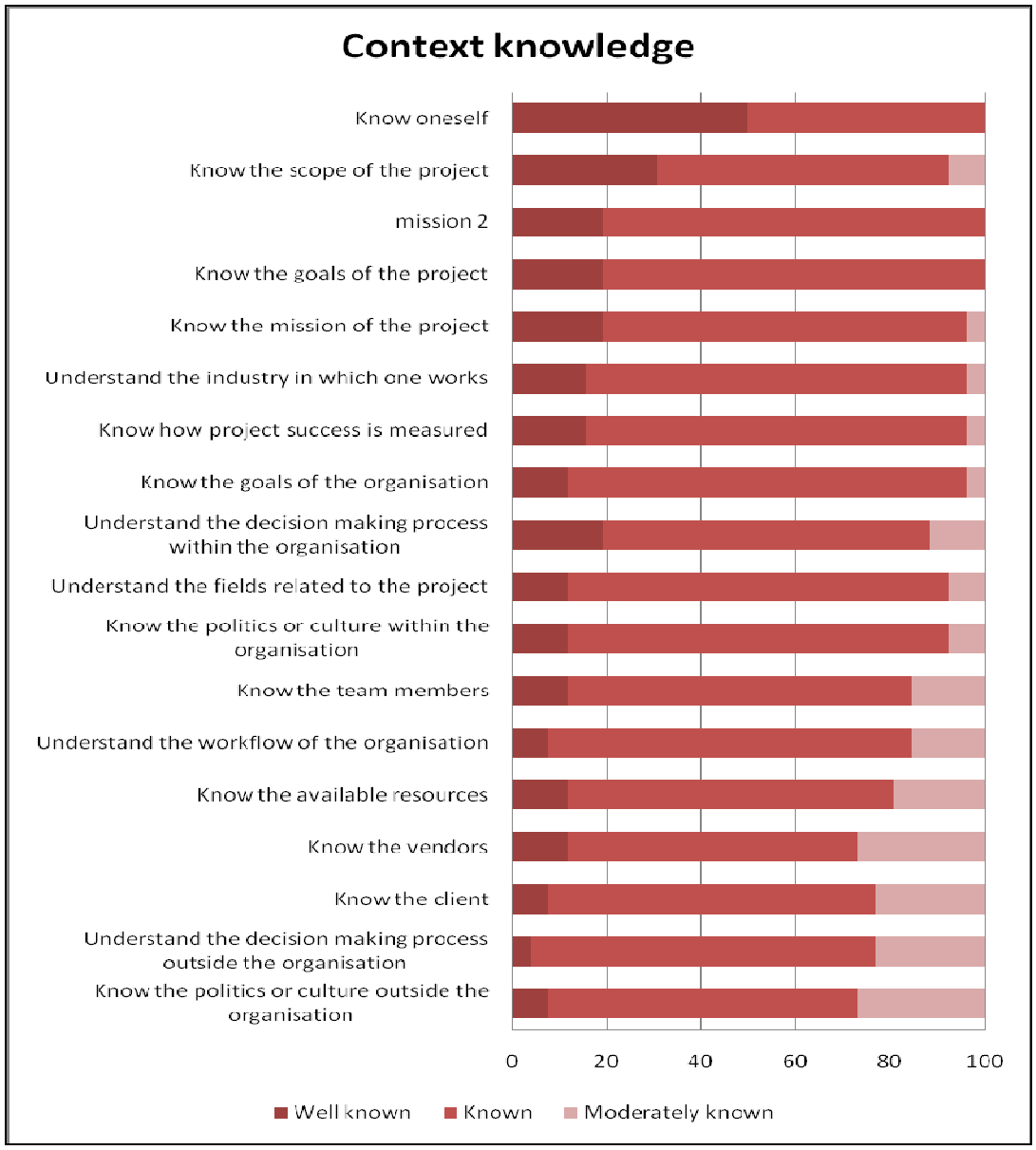
The purpose of the questions in this category was to determine how well respondents know the context within which projects operate in their organisations (see Appendix A – The Primary Research Instrument in Category 3).

The respondents were asked to rate their project context knowledge on the rating scale that ranged from poorly-known to well-known. Most respondents (84.6%), as seen in Table 4.3 and Figure 4.8 below, think that they know the goals of their organisations, whilst for the 'Know oneself' question the respondents were equally split, with both 'Known' and 'Well-known' answers getting 50% each out of the number of respondents. The answer 'Known', for the 'Know oneself' question, was the only answer that got the least number of respondents (50%) in this category. Therefore, as the results show in both Table 4.3 and Figure 4.8 below, most respondents (50% at least) regard themselves as knowing (answered 'Known') the context within which projects operate in their organisations. This means that the most frequently occurring/selected value (answer) by the respondents is 'Known'.

Table 4.3 Response distribution for Context Knowledge questions

Context Knowledge	Mean	Poorly-known	Moderately known	Known	Well-known
Know the goals of the project	3.19	0	0	21	5
Know the scope of the project	3.23	0	2	16	8
Know the mission of the project	3.15	0	1	20	5
Know how project success is measured	3.12	0	1	21	4
Know the available resources	2.92	0	5	18	3
Know oneself	3.50	0	0	13	13
Know the team members	2.96	0	4	19	3
Understand the decision- making process within the organisation	3.08	0	3	18	5
Know the client	2.85	0	6	18	2
Know the goals of the organisation	3.08	0	1	22	3
Know the politics or culture within the organisation	3.04	0	2	21	3
Understand the workflow of the organisation	2.92	0	4	20	2
mission 2	3.19	0	0	21	5
Understand the industry in which one works	3.12	0	1	21	4
Know the vendors	2.85	0	7	16	3
Know the politics or culture outside the organisation	2.81	0	7	17	2
Understand the fields related to the project	3.04	0	2	21	3
Understand the decision-making process outside the organisation	2.81	0	6	19	1

Figure 4.8 Responses to Project Context Knowledge Questions



4.2.4 Analytical expertise

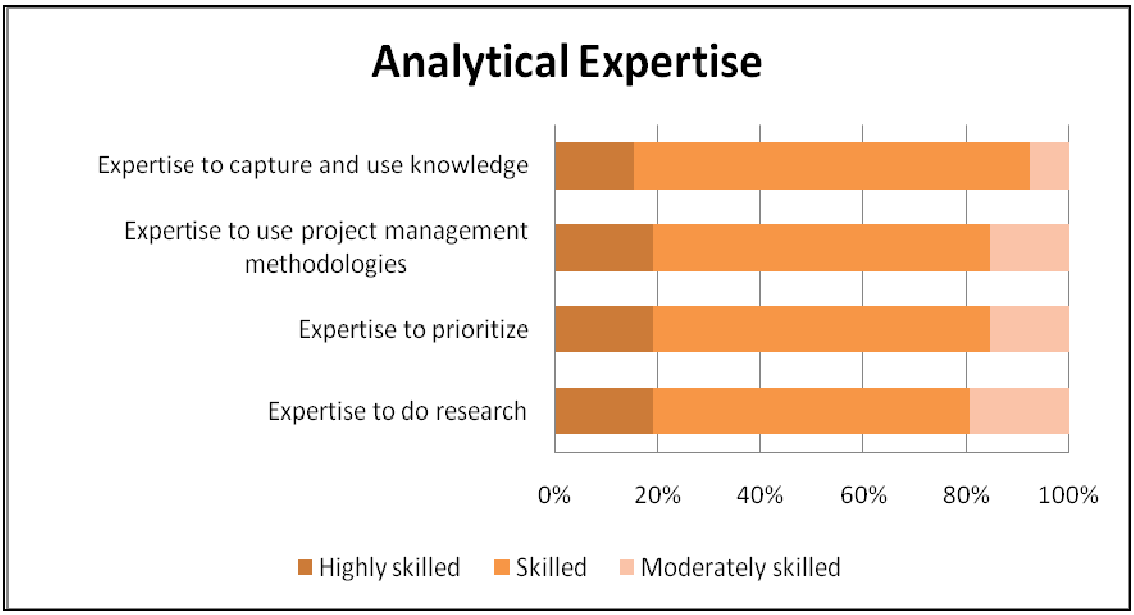
The questions in this category were aimed at establishing the level of analytical skills of respondents (see Appendix A – The Primary Research Instrument in Category 4). The respondents were asked to rate their level of analytical skills on the rating scale which ranged from poorly-skilled to highly-

skilled. Table 4.4 and Figure 4.9 provide tabular and graphical response summaries of how the respondents rated their level of analytical skills for each question in this category. Most respondents (76.9%) stated that they do possess expertise to capture and use knowledge, whilst 61.5%, which is the lowest number of respondents for the 'skilled' answer in this category, regard themselves as having skills to do research. Again, the frequency of distribution (as can be seen in Table 4.4 and Figure 4.9) indicates that most respondents (more than 61%) regard themselves as possessing analytical expertise. That is, most respondents chose 'skilled' as an answer to all the questions in this category.

Table 4.4 Response distribution for Analytical Expertise questions

Analytical Expertise	Mean	Poorly-skilled	Moderately-skilled	Skilled	Highly-skilled
Expertise to prioritize	3.04	0	4	17	5
Expertise to capture and use knowledge	3.08	0	2	20	4
Expertise to do research	3.00	0	5	16	5
Expertise to use project management methodologies	3.04	0	4	17	5

Figure 4.9 Responses to Analytical Expertise Questions



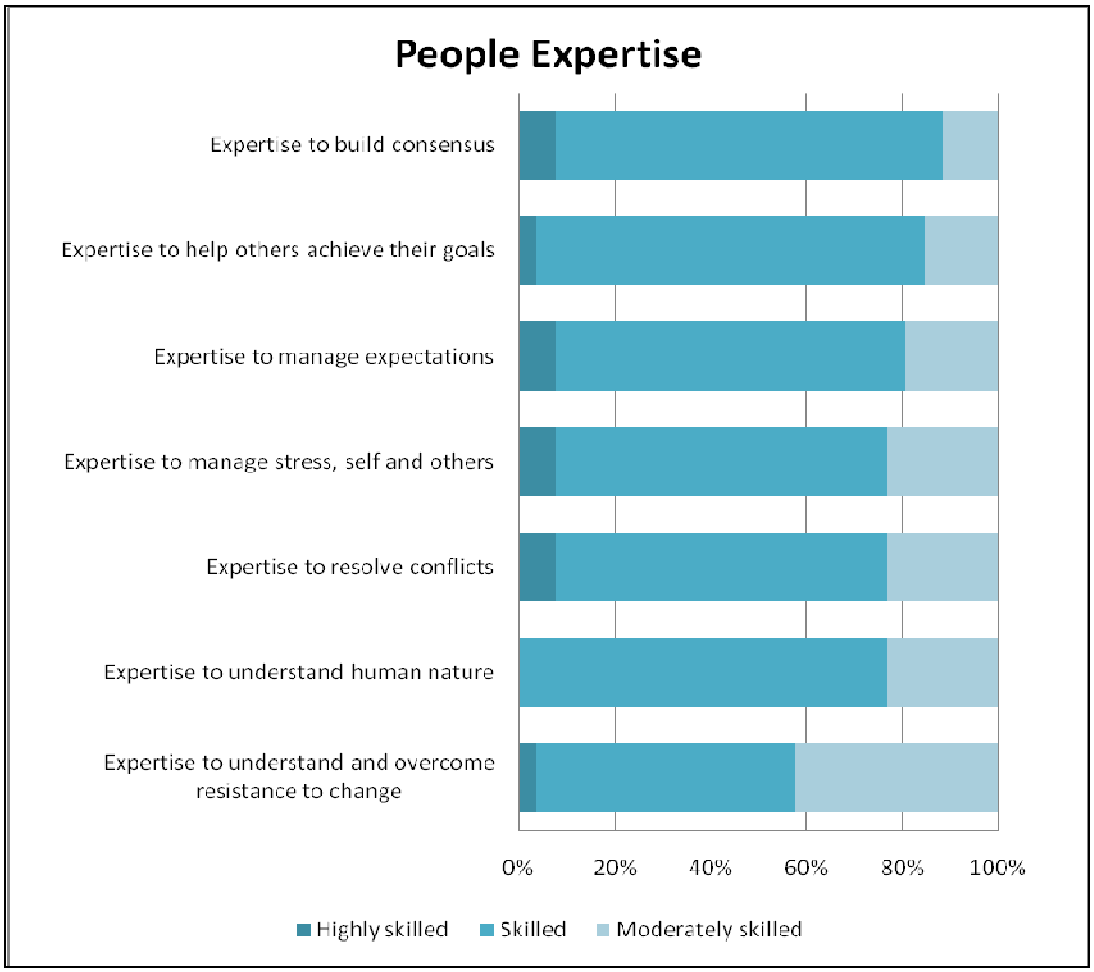
4.2.5 People expertise

The questions in this category were aimed at determining whether the respondents possess people expertise (see Appendix A – The Primary Research Instrument in Category 5). The respondents were asked to rate their level of people expertise on the rating scale that ranged from poorly-skilled to highly-skilled. Table 4.5 shows the number of respondents for each answer to each question in this category, whilst Figure 4.10 below presents the graphical responses of how the respondents rated themselves on each question on people expertise. The results in both Table 4.5 and Figure 4.10 below show that most respondents (more than 53%) rated themselves as 'skilled' for all the questions in this category. This means that the most frequently selected value (answer) by the respondents is 'skilled'.

Table 4.5 Response distribution for Analytical Expertise questions

People Expertise	Mean	Poorly-skilled	Moderately-skilled	Skilled	Highly-skilled
Expertise to manage expectations	2.88	0	5	19	2
Expertise to resolve conflicts	2.85	0	6	18	2
Expertise to understand human nature	2.77	0	6	20	0
Expertise to understand and overcome resistance to change	2.62	0	11	14	1
Expertise to help others achieve their goals	2.88	0	4	21	1
Expertise to manage stress, self and others	2.85	0	6	18	2
Expertise to build consensus	2.96	0	3	21	2

Figure 4.10 Responses to People Expertise Questions



4.2.6 Communication expertise

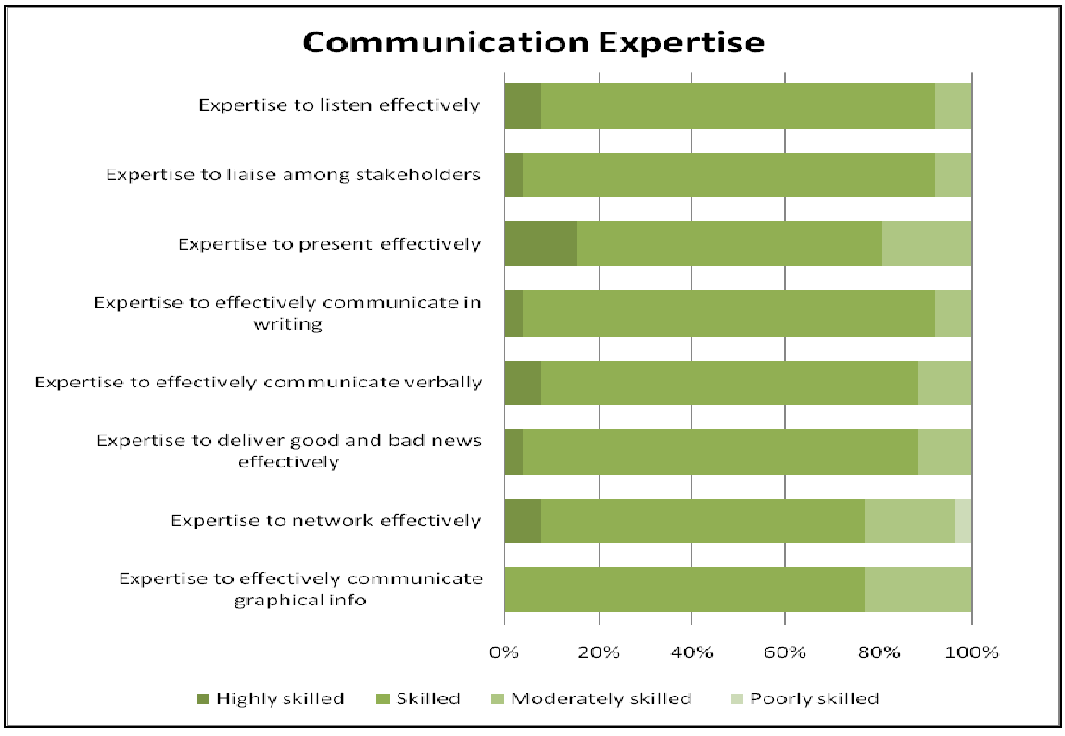
The questions in this category were aimed at establishing the level of communication skills of respondents (see Appendix A – The Primary Research Instrument in Category 6). The respondents were asked to rate their level of communication skills on the rating scale which ranged from poorly-skilled to highly-skilled. Table 4.6 and Figure 4.11 provide tabular and graphical response summaries of how the respondents rated their level of communication expertise for each question in this category. Most respondents (88.5% - see Figure 4.11) believe that they are skilled to deliver good and bad news effectively, as well as to network effectively. On the other

hand, only 65.4% of the respondents regard themselves as skilled to liaise among stakeholders. Once more the frequency of distribution indicates (as can be seen from Table 4.6 and Figure 4.11) that most respondents selected the answer 'skilled' for each question in this category.

Table 4.6 Response distribution for Communication Expertise questions

Communication Expertise	Mean	Poorly-skilled	Moderately-skilled	Skilled	Highly-skilled
Expertise to listen effectively	3.00	0	2	22	2
Expertise to effectively communicate verbally	2.96	0	3	21	2
Expertise to effectively communicate in writing	2.96	0	2	23	1
Expertise to deliver good and bad news effectively	2.92	0	3	22	1
Expertise to present effectively	2.96	0	5	17	4
Expertise to liaise among stakeholders	2.96	0	2	23	1
Expertise to network effectively	2.81	1	5	18	2
Expertise to effectively communicate graphical info	2.77	0	6	20	0

Figure 4.11 Responses to Communication Expertise Questions



4.2.7 Personal characteristics

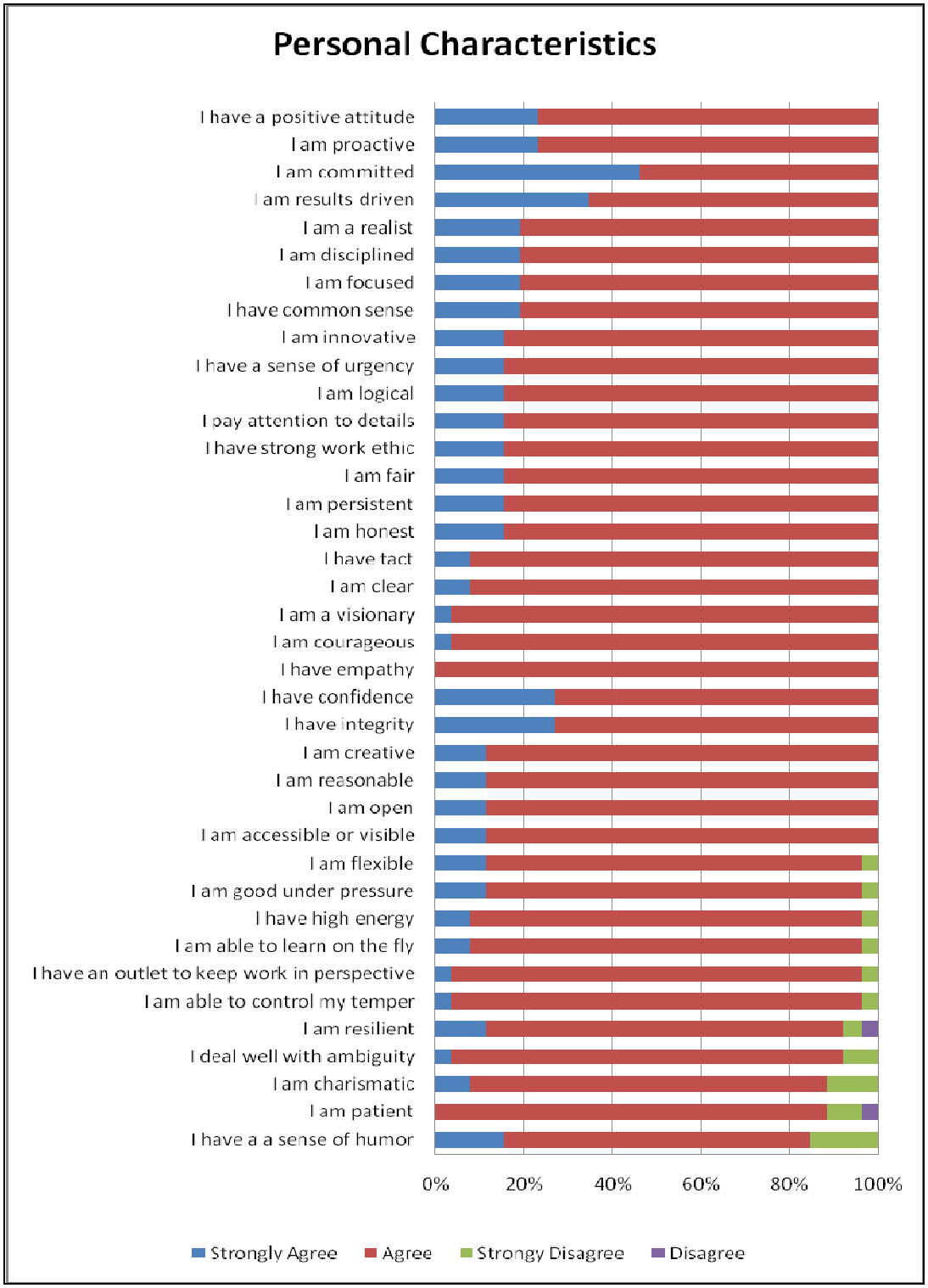
This category contained many questions compared to other categories. The purpose of the questions in this category was aimed at determining levels of personal characteristics possessed by the respondents (see Appendix A – The Primary Research Instrument in Category 7). The respondents were asked to choose one answer from four possible answers that ranged from 'Strongly disagree' to 'Strongly agree'. All respondents (100% - see Figure 4.12 below) believe they have empathy, whilst the question that received the lowest number of respondents (53.8% - see Figure 4.12 below) for the 'Agree' answer was regarding commitment (respondents were asked whether they regarded themselves as committed). Therefore, the results as confirmed by both Table 4.7 and Figure 4.12 below, show that most respondents (more than 53%) selected 'Agree' as an answer to each question in this category.

Table 4.7 Response distribution for Personal Characteristics questions

Personal characteristics	Mean	Strongly-disagree	Disagree	Agree	Strongly-agree
I have integrity	3.27	0	0	19	7
I am honest	3.15	0	0	22	4
I am good under pressure	3.08	0	1	22	3
I have common sense	3.19	0	0	21	5
I am clear	3.08	0	0	24	2
I am committed	3.46	0	0	14	12
I am focused	3.19	0	0	21	5
I am results-driven	3.35	0	0	17	9
I am persistent	3.15	0	0	22	4
I am flexible	3.08	0	1	22	3
I have confidence	3.27	0	0	19	7
I am proactive	3.23	0	0	20	6
I am accessible or visible	3.12	0	0	23	3
I am able to control my temper	3.00	0	1	24	1
I am fair	3.15	0	0	22	4
I have a positive attitude	3.23	0	0	20	6
I am resilient	3.00	1	1	21	3
I have strong work ethic	3.15	0	0	22	4

I am disciplined	3.19	0	0	21	5
I am able to learn on the fly	3.04	0	1	23	2
I pay attention to details	3.15	0	0	22	4
I am a realist	3.19	0	0	21	5
I am open	3.12	0	0	23	3
I deal well with ambiguity	2.96	0	2	23	1
I am logical	3.15	0	0	22	4
I am reasonable	3.12	0	0	23	3
I have a sense of urgency	3.15	0	0	22	4
I am charismatic	2.96	0	3	21	2
I have tact	3.08	0	0	24	2
I am creative	3.12	0	0	23	3
I have high energy	3.04	0	1	23	2
I am innovative	3.15	0	0	22	4
I have a sense of humour	3.00	0	4	18	4
I am courageous	3.04	0	0	25	1
I am patient	2.85	1	2	23	0
I am a visionary	3.04	0	0	25	1
I have empathy	3.00	0	0	26	0
I have an outlet to keep work in perspective	3.00	0	1	24	1

Figure 4.12 Responses to Personal Characteristics Questions



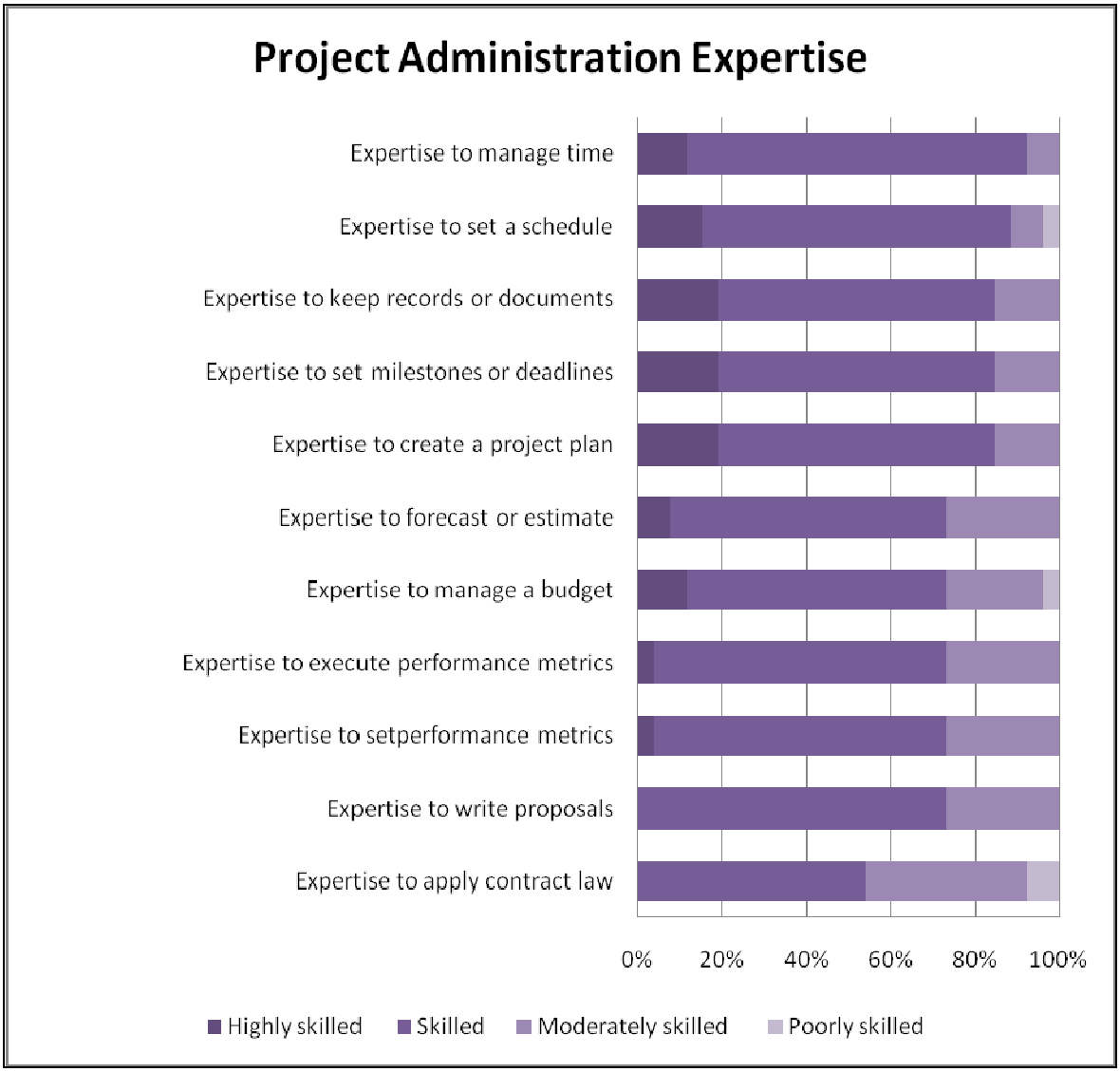
4.2.8 Project administration

The questions in this category were aimed at establishing the level of project administration skills of the respondents (see Appendix A – The Primary Research Instrument in Category 8). The respondents were asked to rate their level of skills in project administration on a rating scale that ranged from poorly-skilled to highly-skilled. Table 4.8 shows the number of respondents for each answer to each question in this category, whilst Figure 4.10 below presents the graphical responses of how the respondents rated themselves with regard to project administration skills to each question. This category is the only one where all questions had some respondents giving answers as 'moderately skilled'. The number of respondents who answered in such a manner ranged from 7.7% to 38.5%. The question that received the highest number of respondents (80.8% - see Figure 4.13) for the answer 'skilled' is the one that relates to 'Expertise to manage time', whilst the one that received the lowest number of respondents (53.8% - see Figure 4.13) for the same answer ('skilled') is 'Expertise to apply contract law'. This means that the most frequently selected value (answer) by the respondents is 'skilled' for all the questions in this category.

Table 4.8 Response distribution for Project Administration questions

Project Administration Expertise	Mean	Poorly-skilled	Moderately-skilled	Skilled	Highly-skilled
Expertise to create a project plan	3.04	0	4	17	5
Expertise to set milestones or deadlines	3.04	0	4	17	5
Expertise to manage a budget	2.81	1	6	16	3
Expertise to set a schedule	3.00	1	2	19	4
Expertise to manage time	3.04	0	2	21	3
Expertise to forecast or estimate	2.81	0	7	17	2
Expertise to keep records or documents	3.04	0	4	17	5
Expertise to set performance metrics	2.77	0	7	18	1
Expertise to execute performance metrics	2.77	0	7	18	1
Expertise to write proposals	2.73	0	7	19	0
Expertise to apply contract law	2.46	2	10	14	0

Figure 4.13 Responses to Project Administration Questions



4.2.9 Tools expertise

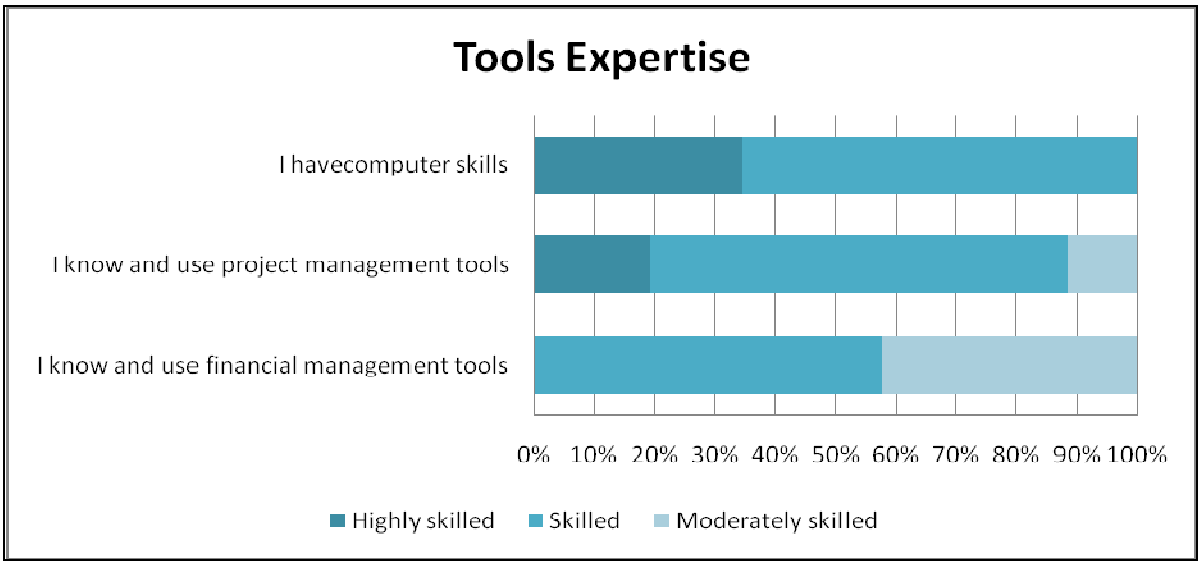
The questions in this category (see Category 9 in Appendix A – The Primary Research Instrument) were aimed at establishing the level of expertise of the respondents with regard to project management tools. The respondents were asked to rate their level of knowledge of project management tools on a rating scale that ranged from poorly skilled to highly skilled. This category had a few

number of questions (3), compared to other categories. Table 4.9 and Figure 4.14 show that most respondents (69.2%) regard themselves as skilled with regard to the ability to use project management tools, whilst 65% of the respondents regard themselves as 'skilled' when it comes to computer skills and only 57.7% of the respondents regard themselves as 'skilled' in using financial management tools. The results, therefore, as confirmed by Table 4.9 and Figure 4.14, show that most respondents (more than 57%) selected 'Skilled' as an answer to each question in this category.

Table 4.9 Response distribution for Tools Expertise questions

Tools Expertise	Mean	Poorly-skilled	Moderately-skilled	Skilled	Highly-skilled
I have computer skills	3.35	0	0	17	9
I know and use project management tools	3.08	0	3	18	5
I know and use financial management tools	2.58	0	11	15	0

Figure 4.14: Response to Tools Expertise Questions



4.3 Perceived Importance of Project Management

The questions in Section C of the research questionnaire were aimed at establishing whether the participants' organisations value and regard project management as an important discipline. The participants were then asked to rate their organisations in this regard.

The respondents were asked to respond by selecting No, Yes or Do not know to each of the five questions in Section C of the research questionnaire. Table 4.10 shows the number of respondents for each choice of each question, whilst Figure 4.15 below presents the graphical responses of how the respondents perceive their organisation in terms valuing the importance of project management as a discipline. The results in Table 4.10 and Figure 4.15 below, show that all respondents (100%) said their organisations do use project management methodology and also use some project management tools, whilst 92.3% of the respondents confirmed that their organisations support and distribute best project management practices as well as providing project managers with career opportunities, training and mentoring. On the other hand, only 88.5% of the respondents confirmed that their organisations require a project manager to have a formal training for the project management position. Therefore, the most frequently selected value (answer) is for all the questions in Section C of the questionnaire is 'Yes' (more than 88% of the respondents selecting 'Yes' as an answer to each question).

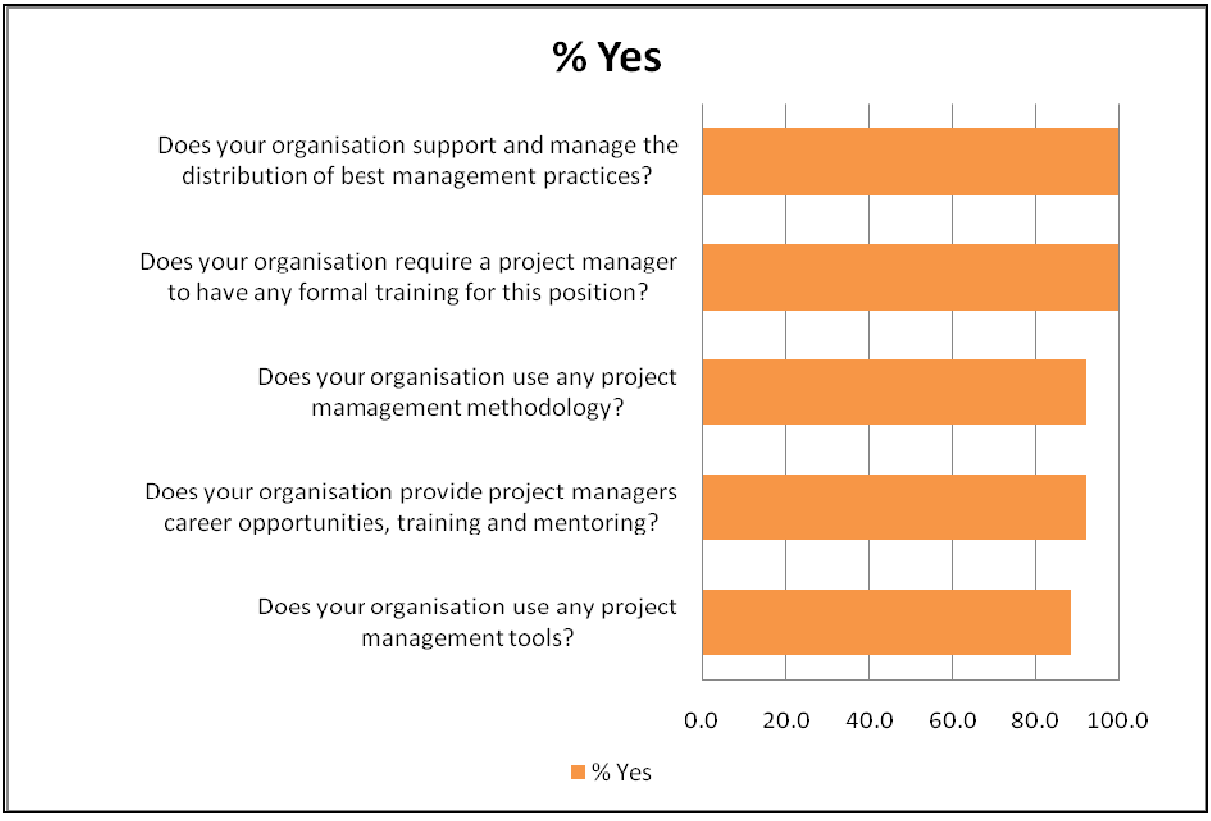
Table 4.10

Response distribution for Perceived importance of Project Management questions

Perceived importance of Project Management	Yes	No	Total
Does your organisation use any project management methodology?	26	0	26
Does your organisation use any project management tools?	26	0	26
Does your organisation support and manage the distribution of best management practices?	24	2	26
Does your organisation provide project managers career opportunities, training and mentoring?	24	2	26
Does your organisation require a project manager to have any formal training for this position?	23	3	26

Figure 4.15:

Response to Perceived Importance of Project Management Questions



4.4 Summary

This chapter presented the results of this study and covered the following issues:

- The demographics profile of the participants showed that the majority of the participants were male and also white.
- Knowledge base of participants was presented and discussed with specific reference to frequency of distribution of the answers that were provided for questions given in Section B of the research questionnaire.
- The answers to the questions of Section C of the research questionnaire of this study that were aimed at establishing whether organisations of participants regarded project management as an important discipline, were presented and discussed.

Now that the research results have been presented, then the two hypotheses given in this study should be tested. The next chapter tests the two hypotheses and analyses the research results that have been presented in this chapter.

CHAPTER 5: SYNTHESIS and ANALYSIS of RESULTS

5.0 Introduction

This chapter presents an analysis of the research results that were presented in Chapter 4 of this study. The analysis is organised into the following sections: (1) the demographic profile of the respondents, (2) the knowledge base of the respondents - analysing the responses given by the respondents to the questions that were based on skills of competencies mentioned in the nine categories of skills (see Appendix A – Section B of The Primary Research Instrument), (3) the perceived importance of project management by organisations of respondents - analysing the responses given by the respondents to questions that were aimed at establishing the perceived importance of project management by organisations (see Appendix A – Section C of The Primary Research Instrument).

5.1 Demographic Profile of Respondents

The demographic profile of the respondents discussed in this section is limited to respondents' gender, race, years of project management experience, highest qualifications and whether formal training in project management was received.

The demographic profile of the respondents shows that the respondents were mostly male (61.5%) and white (53.8%). This should not be surprising, given the employment history of South Africa. The project management experience profile of the respondents indicates that most respondents (46.2%) have relatively less experience (1 - 5 years) in project management, while only 19.2% of respondents have 11 – 20 years of experience in project management. It is therefore clear that that the majority of respondents are less experienced project managers and it further indicates that the majority of

projects are managed by project managers who are relatively less experienced in project management. On the other hand, the majority of the respondents (92.3%) have received formal training in project management. This is a sign that organisations realise the need for providing proper training and support systems for project managers and are therefore moving away from having projects that are managed by 'accidental project managers'.

5.2 Knowledge Base of the Respondents

In this section, the first hypothesis in this study will be tested. The test results of the hypothesis tests enable us to analyse skills competencies of the respondents. Therefore, an analysis of the respondents' skills competencies will also be performed whilst analysing the test results of the hypothesis tests.

5.2.1 Testing of hypothesis 1

The first hypothesis in this research study states that:

> *"Project managers in the South African ICT sector perceive themselves to have sufficient project management and leadership skills to manage projects."*

This hypothesis was tested using the one sample Z-test for proportions (Diamantopolous and Schlegelmilch, 1997). In the one sample Z-test, it is appropriate to state an arbitrary value against which the hypothesis is tested. For the purpose of this study, the hypothesised proportion that was used was 66.7%, with the idea that we are interested in knowing which specific skills were perceived to be well developed by significantly more than two-thirds of the population. The proportions were calculated by summing up the proportions of respondents who indicated either "skilled" or "highly-skilled" as an answer to each question of the nine categories.

To establish which specific skills were perceived to be well developed by significantly more than two-thirds in the population, the following hypotheses were formulated:

H_0: The percentage of respondents who chose either skilled or highly-skilled as an answer is less than or equal to 66.7%; against

H_1: More than 67% of the respondents chose either skilled or highly-skilled as an answer.

For each category of skills of competencies, a test of significance was made to establish which skills were perceived to be well-developed by significantly more than two-thirds in the population.

(i) Test of significance for problem-solving expertise

Table 5.1 presents the results of the Z-tests of each question in Category 1 (see Appendix A – The Primary Research Instrument), and indicates that in four of the nine skills listed in the Problem-Solving expertise category, significantly (p-value = $\alpha < 0.001$) more than two-thirds (or 66.7%) of the respondents felt they were appropriately skilled. For one of the skills, namely skills to frame a problem, at α=0.01, the respondents felt satisfied with their skills levels. Skills to plan contingencies were only significant at $\alpha = 0.03$.

Therefore, the skills in which the respondents thought they were most lacking were skills to manage crises, skills to manage risk as well as skills to assess risk (these were all significant at $\alpha = 0.11$). In summary, therefore, the problem solving skills that the respondents perceived to be lacking the most all pertained to risk management. Therefore, based on the discussion above, the null hypothesis is rejected for six skills of competencies (where p >= 81% – these are skills that were perceived to be highly-developed by the participants) and failed to be rejected for the other three skills of

competencies (where p = 77% – these are skills that were perceived to be lacking by the participants).

Table 5.1 Test of significance for problem-solving expertise

Problem solving expertise	P	Z	P-value	Significance
Skills to conduct business ethically	0.885	3.47	0.0003	***
Skills to recognize a problem	0.962	7.81	0.0000	***
Skills to manage crises	0.769	1.24	0.1080	
Skills to manage risk	0.769	1.24	0.1080	
Skills to frame a problem	0.846	2.53	0.0057	**
Skills to assess risk	0.769	1.24	0.1080	
Skills to plan contingencies	0.808	1.82	0.0344	*
Skills to know the escalation point	0.923	4.90	0.0000	***
Skills to understand and apply alternative methods	0.885	3.47	0.0003	***

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(ii) Test of significance for leadership expertise

Table 5.2 presents the results of the Z-tests of each question in Category 2 (see Appendix A – The Primary Research Instrument), and shows that for three of the sixteen skills listed in the Leadership Expertise category, significantly (p-value = $\alpha < 0.001$) more than two-thirds (or 66.7%) of the respondents felt they were appropriately skilled. For nine of the skills, the respondents felt satisfied with their skills levels (at α=0.01).

Therefore, the skills in which the respondents thought they were most lacking were expertise to make time-sensitive decisions effectively, negotiate effectively, be persuasive as well as skills to coach, mentor or teach (their significance at $\alpha >= 0.11$). Therefore, based on the discussion above, the null hypothesis is rejected for six skills of competencies (where p >= 85% – these are skills that were perceived to be highly developed by the participants) and

failed to be rejected for the other three skills of competencies (where p = 77% – these are skills that were perceived to be lacking by the participants).

Table 5.2 Test of significance for leadership expertise

Leadership expertise	p	Z	P-value	Significance
Expertise to share credit for successes	0.846	2.53	0.0057	**
Expertise to make time-sensitive decisions effectively	0.769	1.24	0.1080	
Expertise to delegate and follow up effectively	0.846	2.53	0.0057	**
Expertise to develop and execute a project plan	0.885	3.47	0.0003	***
Expertise to take responsibility for failures	0.846	2.53	0.0057	**
Expertise to align or focus team members	0.846	2.53	0.0057	**
Expertise to know when to take control and when to back off	0.846	2.53	0.0057	**
Expertise to motivate team members	0.846	2.53	0.0057	**
Expertise to promote teamwork	0.846	2.53	0.0057	**
Expertise to lead and facilitate a meeting	0.885	3.47	0.0003	***
Expertise to manage group dynamics	0.846	2.53	0.0057	**
Expertise to be diplomatic	0.846	2.53	0.0057	**
Expertise to negotiate effectively	0.731	0.73	0.2318	
Expertise to be persuasive	0.769	1.24	0.1080	
Expertise to coach, mentor or teach	0.731	0.73	0.2318	
Expertise to build esteem to others	0.885	3.47	0.0003	***

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(iii) Test of significance for context knowledge

Table 5.3 presents the results of the Z-tests of each question in Category 3 (see Appendix A – The Primary Research Instrument), and shows that for eleven of the eighteen context knowledge areas listed in the Context Knowledge category, significantly (p-value = $\alpha < 0.001$) more than two-thirds (or 66.7%) of the respondents felt they had appropriate knowledge. For two context knowledge areas, namely, 'know the team members' and 'understand the workflow of the organisation', the respondents felt satisfied with their context knowledge levels (at $\alpha = 0.01$). The context knowledge area, 'knowledge of available resources' was only significant at $\alpha = 0.03$.

The respondents thought they were lacking in the following four context knowledge areas: knowledge of client, knowledge of vendors, knowledge of politics or culture outside the organisation and understanding the decision-making process outside the organisation. Therefore, based on the discussion above, the null hypothesis is rejected for fourteen skills of competencies (where p >= 81% – these are context knowledge areas that were perceived to be highly developed by the participants) and failed to be rejected for the other three skills of competencies (where p <= 77% – these are context knowledge areas that were perceived to be lacking by the participants).

Table 5.3 Test of significance for context knowledge

Context knowledge	p	Z	P-value	Significance
Know the goals of the project	1.000	Nc		***
Know the scope of the project	0.923	4.90	0.0000	***
Know the mission of the project	0.962	7.81	0.0000	***
Know how project success is measured	0.962	7.81	0.0000	***
Know the available resources	0.808	1.82	0.0344	*
Know oneself	1.000	Nc		***
Know the team members	0.846	2.53	0.0057	**
Understand the decision making process within the organisation	0.885	3.47	0.0003	***
Know the client	0.769	1.24	0.1080	
Know the goals of the organisation	0.962	7.81	0.0000	***
Know the politics or culture within the organisation	0.923	4.90	0.0000	***
Understand the workflow of the organisation	0.846	2.53	0.0057	**
Know the mission of the organization	1.000	Nc		***
Understand the industry in which one works	0.962	7.81	0.0000	***
Know the vendors	0.731	0.73	0.2318	
Know the politics or culture outside the organisation	0.731	0.73	0.2318	
Understand the fields related to the project	0.923	4.90	0.0000	***
Understand the decision-making process outside the organisation	0.769	1.24	0.1080	

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(iv) Testing of significance for analytical expertise

Table 5.4 presents the results of the Z-tests of each question in Category 4 (see Appendix A – The Primary Research Instrument), and indicates that for one of the four skills listed in the Analytical Expertise category, significantly (p-value = $\alpha < 0.001$) more than two-thirds (or 66.7%) of the respondents felt they were appropriately skilled. For two of the skills, the respondents felt satisfied with their skills levels (at $\alpha = 0.01$). Expertise to do research was only significant at $\alpha = 0.03$.

Therefore, there was no expertise which respondents thought they were most lacking in for the Analytical Expertise category. Therefore, the null hypothesis is rejected for all of the four skills of competencies (where p >= 81% – these are skills that were perceived to be highly developed by the participants).

Table 5.4 Test of significance for analytical expertise

Analytical expertise	P	Z	P-value	Significance
Expertise to prioritize	0.846	2.53	0.0057	**
Expertise to capture and use knowledge	0.923	4.90	0.0000	***
Expertise to do research	0.808	1.82	0.0344	*
Expertise to use project management methodologies	0.846	2.53	0.0057	**

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(v) Test of significance for people expertise

Table 5.5 presents the results of the Z-tests of each question in Category 5 (see Appendix A – The Primary Research Instrument), and shows that for only one of the seven skills listed in the People Expertise category, significantly (p-value = $\alpha = 0.0003 < 0.001$) more than two-thirds (or 66.7%) of the respondents felt they were appropriately skilled. Again, in only one of

the seven skills did the respondents feel satisfied with their skills levels (at α = 0.01). The expertise to manage expectations was only significant at α = 0.03. Therefore, there were four skills in which the respondents thought they were most lacking, namely, expertise to resolve conflict, expertise to understand human nature, expertise to understand and overcome resistance to change, as well as expertise to manage stress, self and others. Therefore, based on the discussion above, the null hypothesis is rejected for three skills of competencies (where p >= 81% – these are skills that were perceived to be highly developed by the participants) and failed to be rejected for the other four skills of competencies (where p <= 77% – These are skills that were perceived to be lacking by the participants).

Table 5.5 Test of significance for people expertise

People expertise	P	Z	P-value	Significance
Expertise to manage expectations	0.808	1.82	0.0344	*
Expertise to resolve conflict	0.769	1.24	0.1080	
Expertise to understand human nature	0.769	1.24	0.1080	
Expertise to understand and overcome resistance to change	0.577	-0.93	0.8237	
Expertise to help others achieve their goals	0.846	2.53	0.0057	**
Expertise to manage stress, self and others	0.769	1.24	0.1080	
Expertise to build consensus	0.885	3.47	0.0003	***

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(vi) Test of significance for communication expertise

Table 5.6 presents the results of the Z-tests of each question in Category 6 (see Appendix A – The Primary Research Instrument), and shows that for five of the eight skills listed in the Communication Expertise category, significantly (p-value = α <= 0.0003 < 0.001) more than two-thirds (or 66.7%) of the respondents felt they were appropriately skilled. In only one of the eight skills,

namely, the expertise to present effectively, the respondents felt comfortable and it was only significant at $\alpha = 0.03$.

Therefore, there were two skills in which the respondents thought they were most lacking, namely, expertise to network effectively and expertise to effectively communicate graphical information. Therefore, based on the discussion above, the null hypothesis is rejected for five skills of competencies (where p >= 81% – these are skills that were perceived to be highly developed by the participants) and failed to be rejected for the other four skills of competencies (where p = 77% – these are skills that were perceived to be lacking by the participants).

Table 5.6 Test of Significance for communication expertise

Communication expertise	p	Z	P-value	Significance
Expertise to listen effectively	0.923	4.90	0.0000	***
Expertise to effectively communicate verbally	0.885	3.47	0.0003	***
Expertise to effectively communicate in writing	0.923	4.90	0.0000	***
Expertise to deliver good and bad news effectively	0.885	3.47	0.0003	***
Expertise to present effectively	0.808	1.82	0.0344	*
Expertise to liaise among stakeholders	0.923	4.90	0.0000	***
Expertise to network effectively	0.769	1.24	0.1080	
Expertise to effectively communicate graphical information	0.769	1.24	0.1080	

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(vii) Test of significance for personal characteristics

Table 5.7 presents the results of the Z-tests of each question in Category 7 (see Appendix A – The Primary Research Instrument), and shows that thirty-seven of the thirty-eight personal characteristics listed in the Personal Characteristics category, significantly (p-value = $\alpha < 0.001$) more than two-thirds (or 66.7%) of the respondents felt they strongly identified with. The

remaining personal characteristic, namely, 'I have a sense of humour', the respondents felt they satisfactorily identify with.

Therefore, there were no personal characteristics in which respondents thought they were most lacking for this category. Therefore, the null hypothesis is rejected for all of the thirty-eight personal characteristics (where p >= 85% – these are personal characteristics that were perceived to be highly developed by the participants).

Table 5.7 Test of significance for personal characteristics

Personal characteristics	P	Z	P-value	Significance
I have integrity	1.000	Nc		***
I am honest	1.000	Nc		***
I am good under pressure	0.962	7.81	0.0000	***
I have common sense	1.000	Nc		***
I am clear	1.000	Nc		***
I am committed	1.000	Nc		***
I am focused	1.000	Nc		***
I am results-driven	1.000	Nc		***
I am persistent	1.000	Nc		***
I am flexible	0.962	7.81	0.0000	***
I have confidence	1.000	Nc		***
I am proactive	1.000	Nc		***
I am accessible or visible	1.000	Nc		***
I am able to control my temper	0.962	7.81	0.0000	***
I am fair	1.000	Nc		***
I have a positive attitude	1.000	Nc		***
I am resilient	0.923	4.90	0.0000	***
I have a strong work ethic	1.000	Nc		***
I am disciplined	1.000	Nc		***
I am able to learn on the fly	0.962	7.81	0.0000	***
I pay attention to details	1.000	Nc		***
I am a realist	1.000	Nc		***
I am open	1.000	Nc		***

I deal well with ambiguity	0.923	4.90	0.0000	***
I am logical	1.000	Nc		***
I am reasonable	1.000	Nc		***
I have a sense of urgency	1.000	Nc		***
I am charismatic	0.885	3.47	0.0003	***
I have tact	1.000	Nc		***
I am creative	1.000	Nc		***
I have high energy	0.962	7.81	0.0000	***
I am innovative	1.000	Nc		***
I have a sense of humor	0.846	2.53	0.0057	**
I am courageous	1.000	Nc		***
I am patient	0.885	3.47	0.0003	***
I am a visionary	1.000	Nc		***
I have empathy	1.000	Nc		***
I have an outlet to keep work in perspective	0.962	7.81	0.0000	***

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(viii) Test of significance for project administration expertise

Table 5.8 presents the results of the Z-tests of each question in Category 8 (see Appendix A – The Primary Research Instrument), and shows that for two of the eleven skills listed in the Project Administration Expertise category, significantly (p-value = α <= 0.0003 < 0.001) more than two-thirds (or 66.7%) of the respondents felt they were appropriately skilled. The respondents felt satisfactorily skilled with three of the eleven skills, and they were significant at α = 0.01.

Therefore, there were six project administration expertise skills in which the respondents thought they were most lacking and of these, respondents felt themselves to be seriously lacking in the expertise to apply contract law, (it was significant at α = 0.91). Since the respondents are lacking in six project administration expertise skills, therefore the null hypothesis is rejected for five skills of competencies (where p >= 85% – these are skills that were perceived

to be highly-developed by the participants) and failed to be rejected for the other six skills of competencies (where p <= 73% – these are skills that were perceived to be lacking by the participants).

Table 5.8 Test of significance for project administration expertise

Project Administration Expertise	p	Z	P-value	Significance
Expertise to create a project plan	0.846	2.53	0.0057	**
Expertise to set milestones or deadlines	0.846	2.53	0.0057	**
Expertise to manage a budget	0.731	0.73	0.2318	
Expertise to set a schedule	0.885	3.47	0.0003	***
Expertise to manage time	0.923	4.90	0.0000	***
Expertise to forecast or estimate	0.731	0.73	0.2318	
Expertise to keep records or documents	0.846	2.53	0.0057	**
Expertise to set performance metrics	0.731	0.73	0.2318	
Expertise to execute performance metrics	0.731	0.73	0.2318	
Expertise to write proposals	0.731	0.73	0.2318	
Expertise to apply contract law	0.538	-1.31	0.9057	

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

(ix) Test of significance for tools expertise

Table 5.9 presents the results of the Z-tests of each question in Category 9 (see Appendix A – The Primary Research Instrument), and indicates that for two of the three skills listed in the project Tools Expertise category, significantly (p-value = $\alpha < 0.001$) more than two-thirds (or 66.7%) of the respondents felt they were appropriately skilled.

There was one expertise in which respondents thought they were most lacking for this category and that is the skill to use financial management tools (it was significant at $\alpha = 0.82$). Therefore, the null hypothesis is rejected for two of the three skills of competencies (where p >= 89% – these are skills that

were perceived to be highly developed by the participants) and failed to be rejected for the one skill of competencies (where p = 58% – this is a skill that was perceived to be lacking by the participants).

Table 5.9 Test of significance for tools expertise

Tools expertise	p	Z	P-value	Significance
I have computer skills	1.000	Nc		***
I know and use project management tools	0.885	3.47	0.0003	***
I know and use financial management tools	0.577	-0.93	0.8237	

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

In summary, the above tests of significance for the nine categories of skills of competencies reveal the following:

- More than two-thirds (66.7%) of the respondents felt that they were appropriately skilled (selected 'skilled' or 'highly skilled' as an answer) for all the skills of competencies in the following categories: Analytical Expertise category (Category 4) and Personal Characteristics category (Category 7); and
- Two-thirds (66.7%) or more of the respondents were lacking in some of the skills in the following categories: Problem-Solving Expertise category (Category 1), Leadership Expertise category (Category 2), Context Knowledge category (Category 3), People Expertise category (Category 5), Communication Expertise category (Category 6), Project Administration category (Category 8) and Tools Expertise category (Category 9).

Since two-thirds (66.7%) of the respondents were found to be lacking some of the skills of competencies in some of the nine categories of skills, therefore

the first hypothesis in this study which states that “Project managers in the South African ICT sector perceive themselves to have sufficient project management and leadership skills to manage projects” is rejected. The conclusion, therefore, is that project managers in the South African ICT sector do not have sufficient project management and leadership skills to manage projects.

The tests of significance carried out on the responses given by the respondents to the questions that concern skills of competencies in the nine categories (see Appendix A – The Primary Research Instrument) and subsequent discussions provide an answer to the first research question in this study, which seeks to establish the knowledge base of project managers in the South African ICT sector. The answer is that, out of nine categories of skills of competencies, project managers (66.7% or more) lack in some of the skills found in seven categories of skills of competencies.

It is worth noting that, should the arbitrary value against which the null hypothesis above was tested be 49% (that is, less than the minimum majority of the respondents), the null hypothesis would have been rejected for each Z-test performed on each skill of competency for all the nine categories of skills of competencies. Therefore, this would have resulted in failure to reject the first hypothesis in this study and thus confirm that the majority of project managers in the South African ICT sector do possess sufficient project management and leadership skills to manage projects.

There could be a number of reasons as to why the respondents are lacking in some skills competencies, as has been revealed above. One of these reasons could be because of the skewed project management training programmes offered by the institutions of higher learning in South Africa (Rwelamila, 2007). Table 5.10 below matches the findings of this study in this section with those of the study done by Rwelamila (2007).

Table 5.10 The findings of this study that relate to Rwelamila's (2007) study

Categories in which respondents lack some skills	Corresponding Curriculum broad topics Rwelamila (2007)	Comments (Match / No match in the studies)
Problem-Solving Expertise	Project techniques (PT)	No match – Rwelamila (2007) found that the programmes were strong in this topic.
Leadership	Behavioural aspects of project management (BAPM)	There is a match – Rwelamila (2007) found that the programmes were weak in this topic.
Project Context Knowledge	Organisational issues / Business fundamentals.	There is a match – Rwelamila (2007) found that the programmes were weak in both topics.
People expertise	Behavioural aspects of project management (BAPM)	There is a match – Rwelamila (2007) found that the programmes were weak in this topic.
Communication Expertise	Behavioural aspects of project management (BAPM) / Controlling techniques (CT)	There is a match – Rwelamila (2007) found that the programmes were weak in this topic.
Project Administration	Project techniques (PT)	No match – Rwelamila (2007) found that the programmes were strong in this topic.
Tools Expertise	Project techniques (PT)	No match – Rwelamila (2007) found that the programmes were strong in this topic.

The next section seeks to analyse the responses of the respondents, which were aimed at establishing whether the organisations of the respondents regard project management as an important discipline.

5.3 Perceived Importance of Project Management

The questions in Section C of the research questionnaire (see Appendix A – The Primary Research Instrument) were aimed at establishing whether the participants' organisations value and regard project management as an important discipline. The participants were then asked to rate their organisations in this regard.

Having now analysed the respondents' answers to questions with regard to perceived importance of project management by organisations of respondents, the second hypothesis of this study needs to be tested. The next section is aimed at testing the second hypothesis in this study.

5.3.1 Testing of hypothesis 2

The second hypothesis in this study states that:

> *"Project management is recognised as an important profession in the South African ICT sector."*

This hypothesis was tested using the one sample Z-test for proportions (Diamantopolous and Schlegelmilch, 1997). In the one sample test, it is appropriate to state an arbitrary value against which the hypothesis is tested. For the purpose of this study, the hypothesised proportion that was used was 66.7%, with the idea that we are interested in knowing which specific aspects of project management were well supported by organisations of the participants, as perceived by significantly more than two-thirds in the population. The proportions were calculated by summing up the proportions of respondents who provided "Yes" as an answer to each question of Section C of the research questionnaire.

To establish which specific aspects of project management were well supported by organisations of the participants, as perceived by significantly more than two-thirds in the population, the following hypotheses were formulated:

H_0: The percentage of respondents who chose 'Yes' as an answer is less than or equal to 66.7%; against

H_1: More than 67% of the respondents chose 'Yes' as an answer.

A test of significance was made to each question of Section C in the research questionnaire to establish which specific aspects of project management were well supported by organisations of the participants, as perceived by significantly more than two-thirds in the population.

Table 5.10 presents the results of the Z-tests of each question in Sepction C of the research questionnaire, and shows that for all five questions, significantly (p-value = $\alpha < 0.001$) more than two-thirds (or 66.7%) of the respondents perceived their organisations to be fully supportive of all the aspects of project management raised in the five questions.

Table 5.11 Test of significance for perceived importance of project management aspects

Perceived importance of Project Management	P	Z	P-value	Significance
Does your organisation use any project management methodology?	1.000	nc		***
Does your organisation use any project management tools?	1.000	nc		***
Does your organisation support and manage the distribution of best management practices?	0.923	4.90	0.0000	***
Does your organisation provide project managers with career opportunities, training and mentoring?	0.923	4.90	0.0000	***
Does your organisation require a project manager to have any formal training for this position?	0.885	3.47	0.0003	***

*** Highly significant; ** More Significant; * Significant; (blank) Not significant

Therefore, the null hypothesis is rejected for all of the five questions (where p >= 89% – the participants perceived that all aspects of project management that were raised in the five questions as well supported by their organisations).

Since more than 88% (significantly more than two-thirds) of the respondents confirmed that their organisations supported all aspects of project management that were raised in the five questions (see Appendix A – Section C of The Primary Research Instrument), this therefore provides a compelling reason to accept Hypothesis 2, which states that, “Project management is recognised as an important profession in the South African ICT sector.” Accepting Hypothesis 2, therefore, provides an answer to the second research question in this study, which seeks to establish whether project management is recognised as an important profession in the South African ICT Sector/Industry.

5.4 Summary

This chapter presented the results of this study and covered the following issues:

- The demographics profile of the participants showed that the majority of the participants were male and also white.
- The knowledge base of participants was analysed by looking at the frequency of distribution of the answers that were provided for questions given in Section B of the research questionnaire. The first hypothesis in this study was rejected, based on the results provided by the tests of significance that were carried out using the one sample Z-test for proportions. The tests of significance established that two-thirds of the respondents lacked some project management skills in some of the nine categories of skills of competencies. This confirmed some of the findings by Rwelamila (2007) that project management training programmes offered by institutions of higher learning in South Africa are skewed.
- The answers to the questions of Section C of the research questionnaire of this study that were aimed at establishing whether

organisations of participants regarded project management as an important discipline, were analysed. Once more, tests of significance were carried out using the one sample Z-test for proportions. The results of the analysis established that the second hypothesis, which states that “Project management is recognised as an important profession in the South African ICT sector,” should be accepted.

CHAPTER 6: CONCLUSIONS and RECOMMENDATIONS

6.0 Introduction

This chapter presents conclusions and recommendations based on the findings of this study, as they were presented in Chapter 5. The conclusions and recommendations are organised into the following sections: (6.1) the demographic profile of the respondents, (6.2) the knowledge base of the respondents - analysing the responses given by the respondents to the questions that were based on skills competencies mentioned in the nine categories of skills (see Appendix A – Section B of The Primary Research Instrument), (6.3) the perceived importance of project management by organisations of respondents - analysing the responses given by the respondents to questions that were aimed at establishing the perceived importance of project management by organisations (see Appendix A – Section C of The Primary Research Instrument), and (6.4) summary of recommendations.

6.1 Demographic Profile of Respondents

Chapter 6 of this study established a number of findings with regard to the respondents' demographic profile. This section discusses a number of conclusions that are based on these findings.

6.1.1 Conclusions

- The demographic profile of the respondents shows that the respondents were mostly male (61.5%) and white (53.8%) respectively. This shows that the project management discipline in the ICT sector in South Africa is still dominated by males and whites.

- The project management experience profile of the respondents indicates that almost half of the respondents (46.2%) have relatively little experience (1 - 5 years) in project management, while only 19.2% of respondents have 11 – 20 years of experience in project management. It is therefore clear that that the majority of respondents are less experienced project managers and it further indicates that the majority of projects are managed by project managers who are relatively less experienced in project management.

- The results of this study show that the majority of the respondents (92.3%) have received formal training in project management. As it was pointed out earlier on, this is a sign that organisations realise the need for providing proper training and support systems for project managers and are therefore moving away from having projects that are managed by 'accidental project managers'.

Based on the above conclusions, the following recommendations have been made.

6.1.2 Recommendations

- Organisations should strive to bring about a balance in both gender and racial demographics of their workforce through the use of employment equity policies. Not only are organisations under pressure from South African government policies to bring about a balance in gender and race, but they are under pressure from their employees too. Organisations should look beyond policies that are meant to 'force' them to have a diverse workforce, but should rather see the competitive advantages that are brought about by a diverse workforce.

- Organisations should start looking at initiating coaching and mentorship programmes to provide experience to the majority of their

project managers who are relatively less experienced. Such programmes will improve the success rate of ICT projects, as it is reported that 97% of successful projects have an experienced project manager at the helm (Standish Group, 2004). These programmes will also ensure that organisations share valuable knowledge on project management and also become learning organisations that share good project management practices. Moreover, it is said that organisations that succeed in project management 'grow' their own project managers Schwalbe (2007).

The next section discusses some key conclusions on the knowledge base of the respondents and then makes recommendations based on these conclusions.

6.2 Knowledge Base of the Respondents

This section presents conclusions that are deduced from the findings about the knowledge base of the respondents as they were presented in Chapter 6 of this study.

6.2.1 Conclusions

The results of this study show that more than 92% of respondents received formal training in project management. However, some of these respondents still lack some project management skills, as the test results of the hypothesis tests of the first hypothesis in this study revealed. The skills competencies in which respondents were found to be lacking are summarised in table 6.1.

Table 6.1 Skills that respondents lack

Categories in which respondents lack some skills	Related skills in the category that respondents lacked
Problem-Solving Expertise	Skills to manage crises, skills to manage risk, skills to assess risk.
Leadership	Expertise to make time-sensitive decisions effectively, negotiate effectively, be persuasive, skills to coach, mentor or teach.
Project Context Knowledge	Knowledge of client, knowledge of vendors, knowledge of politics or culture outside the organisation and understanding of the decision-making process outside the organisation.
People expertise	Expertise to resolve conflict, expertise to understand human nature, expertise to understand and overcome resistance to change, as well as expertise to manage stress, self and others.
Communication Expertise	Expertise to network effectively and expertise to communicate graphical information effectively.
Project Administration	Expertise to manage a budget, expertise to forecast or estimate, expertise to set performance metrics, expertise to execute performance metrics, expertise to write proposals, expertise to apply contract law.
Tools Expertise	Ability to know and use financial management tools.

In Chapter 5 of this study it was mentioned that there are a number of possibilities as to why the respondents lack such skills, and one of the possibilities could be because of the skewed project management training programmes offered by the institutions of higher learning in South Africa (Rwelamila, 2007). To help organisations address the skills competency problem, the recommendations in the next section have been suggested.

6.2.2 Recommendations

- **Project management training programmes review** - Institutions of higher learning and other institutions in South Africa that offer project management training programmes should review their programmes with the aim of bringing in a balance in the technical knowledge base and socio-cultural base content in their programmes, as it was recommended by Rwelamila (2007). Technical skills, project teamwork fundamentals and project management concepts should be integrated into the curriculum of project management programmes. This will ensure that knowledge areas and skills competencies provided in these programmes are aligned to the needs of the ICT sector/industry. Furthermore, Smith, Smarkusky and Corrigall (2008) recommended in their study that students must be provided with an environment in which to learn, apply and evolve their team and project knowledge.

- **Re-training** – The respondents should be re-trained in the areas in which they lack skills competencies. Such training should be a focused one which is aimed at addressing the skills lacking and should enable the trainees to be self-sufficient in project management. The re-training programmes will serve as supplementary courses for internal skill requirements for organisations. Organisations should keep individual development profiles so that they know who requires re-training and for which skills of competencies and therefore the training conducted will be based more on needs rather than interest only. The instructor/trainer of such programmes is expected to play a role of a mentor and students should consult with the instructor to resolve extreme difficult issues related to the skills to be acquired (Smith, Smarkusky & Corrigall, 2008). Such training should expose the trainees to ideas and concepts in the areas of concern beyond the classroom and textbook, but with an environment which enables them to learn and apply the skills that are being taught (Smith, Smarkusky & Corrigall, 2008). Moreover, organisations should provide respondents

with experiential learning opportunities for them to be successful project managers (Carbone and Gholston, 2004).

- **On-the-job training** – The ICT sector is a fast-paced industry and therefore it requires continuous, regular re-training of those who work in it. The other issue that prompts ongoing training on the part of project managers is the complex nature of the projects that managers deal with, as well as the uniqueness of projects in general. It is said that the most effective way to learn how to be a project manager is through on-the-job training (Thornberry, 1987). On-the-job training is seen as a method which provides much-needed organisational support to project managers in order for them to be successful. Such training must be aligned with business requirements and should be based on the required competencies for them to yield maximum return on investment (Carbone and Gholston, 2004). On-the-job training can be a high risk strategy, given the millions of rand that organisations spend on projects, and therefore it should be carried out under a good experienced project manager who should play the role of a mentor and a coach (Thornberry, 1987).

- **Mentoring and coaching programmes** – Some of the respondents might require advanced training in order to improve some of the skills lacking. For example, mentorship and coaching skills are generally not offered as part of a fundamental project management programme, but as part of an advanced project management training programme. Such programmes will ensure that organisations share knowledge, 'grow' their own project leaders who will not only become good project managers but also project managers that fully understand the organisational culture and will perpetuate good project management practices – promoting the same practices and procedures they themselves have been exposed to (Thornberry, 1987). Mentorship and coaching programmes can be implemented in several different forms: namely, a trainee shadowing a successful project manager, serving as

a project manager apprentice or as an assistant, and project manager simulation training (Thornberry, 1987).

The next section is aimed at discussing conclusions on the respondents' organisations with regard to their perception of the importance of project management as a discipline. It will also provide recommendations based on the conclusions reached.

6.3 Perceived Importance of Project Management

This section presents conclusions that have been reached based on the findings of the importance of project management as perceived by the respondents. These findings were presented and discussed in Chapter 6 of this study.

6.3.1 Conclusions

The test results of the hypothesis tests of the second hypothesis in this study revealed that more than 88% of the respondents confirmed that their organisations recognised project management as an important profession in the South African ICT Sector/Industry. The conclusion therefore, is that the organisations in the South African ICT Sector/Industry recognise project management as an important profession and this is a move in the right direction.

6.3.2 Recommendations

The fact that organisations in the South African ICT Sector/Industry regard project management as an important profession can be further strengthened by tangible results, such as an increase in the rate of successful projects in the ICT sector. To realise an increase in the rate of successful projects organisations should, amongst other things, take into account the

recommendations that have been made in Sections 6.1 and 6.2 of this chapter.
The next section summarises the recommendations that have been provided in this chapter.

6.4 Summary of Recommendations

Organisations should diversify their workforce both in terms of gender and race. This should not be done just to appease the concerned stakeholders, but as a way of making organisations more competitive. Furthermore, organisations should initiate coaching and mentorship programmes aimed at providing much-needed experience to the majority of their project managers who are relatively less experienced. Such programmes will also increase the pool of good experienced project managers within the organisations.

To address the issue of 'semi-trained' project managers (project managers that lack some crucial project management skills), organisations should look at implementing some of the following:

- **Review project management training programmes** - Institutions of higher learning and other institutions in South Africa that offer project management training programmes should review their programmes with the aim of bringing in a balance in the technical knowledge base and socio-cultural base content in their programmes, as recommended by Rwelamila (2007).

- **Implement focused re-training programmes** – The respondents should receive a focused training in the areas in which they lack skills competencies. Organisations should keep individual development profiles so that they know who requires re-training and for which skills competencies and therefore the training conducted will be based more on needs rather than an individual's interests only.

- **Implement on-the-job training programmes** – Using individual development profiles as well as business requirements, organisations should implement on-the-job training programmes. On-the-job training is seen as a form of providing much-needed organisational support to project managers for them to be successful project managers.
- **Implement mentoring and coaching programmes** – Organisations should implement mentorship and coaching programmes aimed at having more experienced project managers sharing their project management knowledge and other leadership skills with the less experienced project managers and thereby 'growing' their own project leaders. They will then not only become good project managers but also project managers that fully understand the organisational culture and will promote good project management practices. Mentorship and coaching programmes can be implemented in several different forms: namely, a trainee shadowing a successful project manager, serving as a project manager apprentice or as an assistant, and project manager simulation training (Thornberry, 1987).

Finally, when South African organisations in the ICT sector implement the above recommendations, that would not only be seen as accepting project management as an important discipline, but it would also be a sign that organisations are interested in improving the success rate of projects in the ICT sector in South Africa.

6.5 Further Research

This study is confined to ICT organisations listed on the Johannesburg Securities Exchange. Inclusion of more ICT organisations in similar future research studies should provide a more complete picture with regard to the knowledge base of project managers in the South African ICT Sector/Industry, as well as the perceived importance of project management as a profession in the South African ICT Sector/Industry by organisations in

this sector. Furthermore, future research studies could look at the relationship between performance levels of projects and the project managers' knowledge base in the South African ICT sector.

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APPENDIX A

Research Questionnaire

Student Researcher: Robert Hans
Research Supervisor: Professor PMD Rwelamila

CONSENT TO PARTICIPATE IN THE RESEARCH PROJECT

You are invited to take part in this research project, aimed at establishing the knowledge base of project managers in the Information and Communication Technology sector. Your participation is entirely voluntary.

CONFIDENTIALITY

No confidential information about the participants and the participant's organization will be given to anyone. The identity of both the participant and his/her organization will remain anonymous at all times when used in this research study.

Purpose of this study

The primary purpose of this research is to establish knowledge base of project managers in the South African ICT sector/Industry. The research will help the researcher, Robert Hans, obtain a Masters degree in business leadership at Unisa Graduate School of Business Leadership.

Possible risks

The researcher does not think that you should experience any great inconvenience while completing the questionnaire, as it will be done at your convenience. All that is required is the time to complete the questionnaire, which should take you about 40 – 45 minutes of your time.. It is not expected that this study will be stressful or demanding, but if any research question causes you any anxiety, please feel free to withdraw from the study.

Results of the study

If you are interested in learning the results of this study, you can indicate so in the appropriate section of the questionnaire and it will be e-mailed to you.

Your completion of this questionnaire will be regarded as evidence of your consent to participate in this study.

SECTION A – DEMOGRAPHICS

Below are questions that are about your demographical information. Please select your answer next to each question.

1. What is your gender? ☐ Female ☐

2. Years of Project Management experience? ☐ 1-5 years ☐ 6-10 years ☐ 11-20 years ☐ 21 or more years

3. What is your highest qualification? ☐ Matric ☐ degree/diploma ☐ Post-graduate ☐ Other

4. Do you have any formal training in Project Management? ☐ Yes No ☐

If yes, please specify the level of training you have:

6. Would you like to receive the results of this research? ☐ Yes No ☐

If yes, please provide a contact name and address so that these can be sent to you:

Name:

Postal address:

E-mail address:

SECTION B – YOUR SKILLS AND COMPETENCIES AS A PROJECT MANAGER

Below are a number of statements that describe the level of your competency or skill. For each statement please indicate by ticking the block that best describe the level of your competency. Please make sure you respond to each statement under all 9 Categories in this section.

Category 1 - Problem Solving Expertise

Skills to conduct business ethically	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to recognize a problem	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to manage crises	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to manage risk	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to frame a problem	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to assess risk	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to plan contingencies	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to know the escalation point	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Skills to understand and apply alternate methods	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Category 2 – Leadership Expertise

Expertise to share credit for success	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to make time sensitive decisions effectively	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to delegate and follow up effectively	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to develop and execute a project plan	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to take responsibility for failures	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to align or focus team members	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to know when to take control and when to back off	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to motivate team members	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Category 2 – Leadership Expertise (Continued)

Expertise to promote teamwork	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to lead and facilitate a meeting	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to manage group dynamics	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to be diplomatic	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to negotiate effectively	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to be persuasive	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to coach, mentor or teach	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to build esteem to others	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Category 3 – Context Knowledge

Know the goals of the project	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the scope of project	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the mission of the project	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know how project success is measured	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the available resources (funds, equipment, people, and the like)	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know oneself	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the team members	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Understand the decision making process within the organization	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known

Category 3 – Context Knowledge (Continued)

Know the client	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the goals of the organization	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the politics or culture within the organization	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Understand the workflow of the organization	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the available resources (funds, equipment, people, and the like)	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the mission of the organization	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Understand the industry in which one works	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Know the vendors	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known

Category 3 – Context Knowledge (Continued)

Know the politics or culture outside the organization (clients, vendors, other outside stakeholders)	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Understand the fields related to the project	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known
Understand the decision making process outside the organization (clients, vendors, other outside stakeholders)	☐ Poorly known	☐ Moderately known	☐ Known	☐ Well known

Please proceed to the next category on the next page

Category 4 – Analytical Expertise

Expertise to prioritize	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to capture and use knowledge	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to do research (gather information, ask the right questions, and so on)	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to use project management methodologies (process analysis, systems design, and so on)	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Please proceed to the next category on the next page

Category 5 – People Expertise

Expertise to manage expectations	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to resolve conflicts	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to understand human nature	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to understand and overcome resistance to change	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to help others achieve their goals	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to manage stress self and others	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to build consensus	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Category 6 – Communication Expertise

Expertise to listen effectively	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to effectively communicate verbally	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to effectively communicate in writing	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to deliver good and bad news effectively	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to present effectively	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to liaise among stakeholders	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to network effectively	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to effective communicate graphically	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Category 7 – Personal Characteristics

I have integrity	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am honest	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am good under pressure	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I have common sense	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am clear	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am committed	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am focused	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am results driven	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am persistent	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree

Category 7 – Personal Characteristics (Continued)

I am flexible	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I have confidence	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am proactive	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am accessible or visible	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am able to control my temper	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am fair	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I have a positive attitude	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I am resilient	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree
I have strong work ethic	☐ Strongly Disagree	☐ Disagree	☐ Agree	☐ Strongly Agree

Category 7 – Personal Characteristics (Continued)

I am disciplined ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am able to learn on the fly ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I pay attention to details ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am a realist ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am open ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I deal well with ambiguity ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am logical ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am reasonable ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I have a sense of urgency ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am charismatic ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

Category 7 – Personal Characteristics (Continued)

I have tact ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am creative ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I have high energy ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am innovative ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I have a sense of humor ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am courageous ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am patient ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I am a visionary ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I have empathy ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

I have an outlet to keep work in perspective ☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree

Category 8 – Project Administration Expertise

Expertise to create a project plan	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to set milestones or deadlines	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to manage a budget	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to set a schedule	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to manage time	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to forecast or estimate (time, budget, Expertise to resources, and the like)	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to keep records or document	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to set performance metrics	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Category 8 – Project Administration Expertise (Continued)

Expertise to execute performance metrics	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to write proposals	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
Expertise to apply contract law	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Category 9 – Tools Expertise

I have computer skills	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
I know and use project management tools	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled
I know and use financial management tools	☐ Poorly skilled	☐ Moderately skilled	☐ Skilled	☐ Highly skilled

Please proceed to the next section on the next page

SECTION C – PERCEIVED IMPORTANCE OF PROJECT MANAGEMENT

Below are a few questions on your organization. Please respond to each question by ticking the block next to the answer that best suits that question. Please make sure you respond to each question.

Does your organization use any project management methodology?	☐ No	☐ Yes	☐ Do not know
Does your organization use any project management tools and/or techniques?	☐ No	☐ Yes	☐ Do not know
Does your organization support and manage the distribution of best project management practices?	☐ No	☐ Yes	☐ Do not know
Does your organization provide project managers with career opportunities, training and mentoring?	☐ No	☐ Yes	☐ Do not know
Does your organization require a project manager to have any formal training for this position?	☐ No	☐ Yes	☐ Do not know

Thank you so much for your participation.