



**AN ANALYSIS OF INDUSTRY RELEVANCE OF ACQUIRED PROJECT MANAGEMENT  
SKILLS WITHIN A UNIVERSITY OF TECHNOLOGY**

**by**

**ANDRIES J. EIGELAAR**

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**Supervisor: A. Radford and S. Fore**

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# Keywords

**BTech Project Management** – a recognised qualification, which is aimed at providing project managers with training in key knowledge areas of Project Management

**Client / Customers** - The person or group that is the direct beneficiary of a project or service is the client / customer.

**Graduates** – those learners who gained a qualification from a tertiary or higher education institution.

**Hard skills** - the actual processes, procedures, tools and techniques, which comprise planning, organizing, monitoring and controlling

**Project Management** – is the discipline of organizing, planning and managing resources for successful completion of project goals and objectives.

**Project** - A project is a temporary structure to organize and manage work and ultimately to build a specific defined deliverable or set of deliverables

**Project Manager** - The person who has the overall responsibility for the successful planning, execution and closure of a project.

**Project team** - The project team consists of the full-time and part-time resources assigned to work on the deliverables of the project.

**Project Management Body of Knowledge (PMBOK)** - to identify that subset of the body of knowledge that is generally recognised as good practice.

**Resources** - Everything needed to complete the project, but in particular people and money.

**Requirements** - Requirements are descriptions of how a product or service should act, appear, or perform.

**Risk** - There may be potential external events that will have a negative impact on your project if they occur.

**Stakeholder** - stakeholder is anyone, internal or external to an organisation that has an interest in a project or will be affected by its deliverables.

**Soft skills** – refers to the project manager's attitudes, behaviours and relationship management through project communication.

## **Abstract**

The purpose of this study is to investigate the understanding and awareness of Project Management graduates regarding the soft and hard skills of Project Management, specifically the application of these skills in the successful outcome of projects. The research participants for this study were BTech Project Management graduates from CPUT.

This study investigates the perceptions of the critical cross-field outcomes of the BTech Project Management programme in association with the Project Management Body of Knowledge (PMBOK) with regard to hard and soft skills.

As Project Management continues to grow as a discipline; it is becoming more evident that success of the role of project managers cannot be attained with technical skills only. Hard skills are being recognized as one of the minimal requirements for a project manager. A need for excellent interpersonal or soft skills are necessary conditions for success, and although some would disagree, others advocate that these are skills that can be taught and learned rather than skills that are innate or genetic.

Considerable effort has been made in the area of hard skills processes, tools and techniques. Project Management methodologies are being developed and improved, but still a large number of projects do not deliver. Apart from hard skills, research in the area of soft skills is promising. A range of soft skills attributes required by project managers has been acknowledged.

Good Project Management requires not only knowledge of and the ability to apply technical or “science” skills, but also the softer “art” skills, which include human behaviour and interactions.

Applying the right balance or mix of art and science, which will vary for different projects, is key to successful Project Management.

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# 1. Chapter 1

## Context of Study

### Introduction

Without mastering soft skills to complement hard skills, few project managers will succeed. The study is located in the key areas of Project Management, specifically regarding soft and hard skills. It is imperative to note that Project Management is a discipline that involves planning, organizing and managing resources to successfully complete specific project goals and outcomes.

The focus of this study is to sample perceptions of a BTech Project Management program with project tools that cover hard skills, as well as project communication that covers soft skills of Project Management. The concept is that the subjects are hard skills, but the process, which links to the teaching, is a soft skill. Furthermore, the perceptions of BTech Project Management students can help to find that the on-time and on-budget focus of Project Management is in the process of change, which means that the traditional view of Project Management is not only to focus on the hard, but more so on the soft skills.

The literature review revealed that a number of researchers believe that identifying stakeholders, and understanding their needs and expectations, will ultimately lead to project success. Therefore, knowing what stakeholders want and require is critical to project success. Also, distribution of project information to all who are involved in the project is critical to project success. Project success should not only be driven by standard hard factors (time, scope, budget and quality) since soft skills in stakeholders relationships and communications will also significantly contribute to project success.

Many Project Management researchers have focused more on hard skills while ignoring soft skills of Project Management. According to Bourne (2005), the focus of researchers was more on enhancing hard skills, and the development of tools, techniques and frameworks. Development of soft skills for stakeholder and management relationships was largely ignored. The soft skills of Project Management facilitate the application of hard skills, because it is the people who realise the objectives of the projects, and not the techniques or the hardware (Bourne, 2005).

In the past, project managers were selected from a technical background, and hence hard skills dominate more in Project Management. However, there is a range of other skills and knowledge sets that are required in Project Management.

## Purpose of the Study

There has been a long standing debate in the management education community in terms of the meaning, content and context of Project Management. The BTech Project Management programme at a Western Cape University of Technology was created based on a combination of skills that are perceived as requisite for a successful project manager; however, the successful transfer of skills and attitudes has not been tested before.

By reviewing the Project Management Body of Knowledge (PMBOK), the present researcher will probe and analyse the requisite competences of a project manager in terms of hard and soft skills in relation to BTech Project Management programme at a Western Cape University of Technology. This framework was used to analyse the current BTech Project Management program at a University of Technology in the Western Cape. Current, as well as past academics and students of the BTech Project Management program were handed questionnaires to establish the needs of different skills in the workplace, and the degree to which the BTech Project Management programme succeeds in equipping graduates with the required skills.

The following BTech Project Management subjects are currently being offered at the University of Technology in the Western Cape:

- Project Research- The objective is to prepare students both as individuals and groups to understand the importance and use of research and research methodologies;
- Project Management Process- Provides the learner with the necessary background and skills to successfully plan and manage a project as a project manager;
- Project Resources- Provide the learner with the necessary background and skills to successfully resource a project and manage resources as a project manager;
- Project Accounting- To provide the student with a framework to develop, evaluate and understand the functions of Project Accounting, both in the organisation as a whole, and in project specific terms;
- Project Quality- Provides the learner with the necessary background and skills to successfully plan and manage the quality of the outcome and the project as a project manager;
- Entrepreneurship- Provides the learner with the necessary background, skills, tools and techniques to successfully establish and manage projects or when starting new ventures;

- Strategic Management- Provides the learner with a framework to develop and evaluate strategic management in the organisation; and
- Operational Research- Provides the learner with the necessary background and skills to successfully interpret management information and to take the necessary decisions when planning and managing large projects.

## **Research Questions**

A total of 125 questionnaires were distributed to graduates of the BTech Project Management program to obtain general information from respondents in terms of the qualification of Project Management. It investigated their perceptions regarding hard and soft skills of Project Management, in particular. Based on this, the research questions for this thesis were formulated as follows:

- Are the PMBOK management skills adequately covered in a BTech program at a University of Technology in the Western Cape in order to meet industry requirements?
- Are the hard and soft skills of Project Management adequately covered in a BTech program at a University of Technology in the Western Cape?
- What, if any, new information provided by graduates can inform the curriculum content within the Project Management field?

## **Significance of the Study**

There are a lot of research papers and articles on Project Management, but a study of Project Management graduates' attitudes towards the hard and soft skills relating to Project Management has not yet been undertaken in the Western Cape. Also, this research may assist Project Management students and practitioners to gain a better understanding of hard and soft skills that relate to Project Management.

## **Thesis structure**

The thesis began by providing a background to Project Management hard and soft skills. Justifications for the study were highlighted and general information about participants and limitations were presented. Chapter 2 reviews the literature and presents details of Project



Management. Chapter 2 also consider the history and development of Project Management as a discipline. Chapter 3 highlights the research methodology for this study, and presents the questionnaire that was distributed to BTech Project Management program graduates. Findings are presented in Chapters 4 and 5. The final Chapter, Chapter 6 outlines conclusions and recommendations, which are based on findings from the research data analysis. It is imperative to note that the Harvard Method of Referencing was used for this study.

## 2. Chapter 2

### Literature Review

#### Introduction

This chapter will review some of the pertinent literature in project management. This review of relevant literature will assist the study in exposing the key theories, paradigms, models, themes, concepts and issues that are central to the understanding of the conceptual framework of this study.

#### A Synopsis of the History of Project Management

According to Carayannis, Kwak, and Anbari (2003) Project Management has been practiced for thousands of years since the Egyptian era, however, it has been about half a century ago that organizations start applying systematic project management tools and techniques to complex projects. Snyder and Kline (1987) noted that the modern project management era started in 1958 with the development of CPM/PERT. Morris (1987) argues that the origin of project management comes from the chemical industry just prior to World War II. Morris (1987) further notes that the project management is clearly defined as a separate discipline in the Atlas missile program, especially in the Polaris project. Some literatures pointed the origin of project management to Henri Fayol's (1916) five functions of a manager: (1) to plan, (2) to organize, (3) to coordinate, (4) to control, and (5) to direct or command. Kerzner (1998) observes that project management is an outgrowth of systems management.

Four periods have been identified by Carayannis, Kwak and Anbari (2003) to better capture the history of modern project management: (1) prior to 1958, (2) 1958 – 1979, (3) 1980 – 1994, and (4) 1995 to present:

#### Prior to 1958: Craft System to Human Relations Administration

Carayannis, Kwak and Anbari (2003) observe that the origin of the modern project management concept started between 1900s and 1950s. During this time, technology advancement shortened the project schedule. Automobiles allowed effective resource allocation and mobility. Telecommunication system increased the speed of communication. The job specification was widely used and Henry Gantt invented Gantt chart. The job specification later became the basis of developing the Work Breakdown Structure (WBS).

## **1958-1979: Application of Management Science**

Carayannis, Kwak and Anbari (2003) contend that there were significant technology advancement between 1958 and 1979. In 1959, Xerox introduced the first automatic plain-paper copier. In the 1960s, many industries were influenced by the development of silicon chips and minicomputers. In 1969, Bell Laboratories developed programming language UNIX and computer industry started to develop rapidly. NASA's successful Apollo project earmarked a historic event of the mankind. In 1971, Intel introduced 4004, a 4-bit microprocessor, which is a foundation of the evolution of Intel's 80386, 80486, and Pentium processors in the 1990s (Carayannis, Kwak and Anbari, 2003). While many dedicated scientists developed ARPANET, Ray Tomlinson in 1972 introduced the first e-mail software. In 1975, Bill Gates and Paul Allen founded Microsoft. Carayannis, Kwak and Anbari (2003) observe that several project management software companies were founded during the 1970s including Artemis (1977), Scitor Corporation (1979), and Oracle (1977).

According to Carayannis, Kwak and Anbari (2003), between 1950 and 1979, several core project management tools including CPM/PERT, Material Requirement Planning (MRP) and others were introduced. CPM/PERT was calculated in large computer systems, and specialized programmers operated the CPM/PERT mainly for the government sector projects. The common organizations used the project office as brokers of information having small number of skilled schedulers and estimators (Vandersluis 1998).

## **1980-1994: Production Center: Human Resources**

During the 1980s and early 1990s, according to Carayannis, Kwak and Anbari (2003), the revolution of IT/IS sector shifted people from using mainframe computer to multitasking personal computer that had high efficiency in managing and controlling complex project schedules . In the mid-80s, the Internet served researchers and developers, and local area networks and Ethernet technology started to dominate network technology (Leiner et al 2000).

During the 1950s through 1970s, most computer engineers were responsible for operating the project management systems because the mainframe systems were not easy to use. Morris (1985) acknowledged the unfriendliness of the mainframe software. During the late 1970s and early 1980s, project management software for PC became widely available by a number of companies in the mid-1980s which made project management techniques more easily accessible.

## **1995-Present: Creating a new environment**

The Internet started to change virtually every business practices in the mid-1990s (Turban et Al 2000). It provided fast, interactive, and customized new medium that allowed people to browse, purchase, and track products and services online instantly. As a result, the Internet permits organizations to be more productive, more efficient, and more customer-oriented. According to Carayannis, Kwak and Anbari (2003), between 1995 and 2000, the project management community adopted internet technology to become more efficient in controlling and managing various aspects of projects. While the information technology revolutionized the traditional business practices, various industries started to adopt and to apply project management practices.

### **The Concept of Project Management**

According to the Project Management Institute (2012), Project Management is the application of knowledge, skills and techniques to execute projects effectively and efficiently. Indeed, Kwak and Anbari (2009) contend that there has been a long debate in the management education community as to whether “project management” is a practice or an academic discipline. In the R&D field, tools and techniques of project management are applied and implemented to complete complex projects successfully.

Kwak and Anbari (2009) note that in the construction engineering and management discipline, people learn and implement planning, managing, and controlling of engineering construction projects to meet the time, budget, and specifications. In the engineering field, production planning, scheduling and quantitative methods are applied to manufacturing systems to achieve higher productivity. However, Kwak and Anbari (2009) observe that when it comes to the business and management field, scholars often appear puzzled and unconvinced of the notion “project management”.

The origin, history, and evolution of project management, and its academic background, foundations, and underlying theory, have been debated and studied only to a limited extent from the management field’s academic perspective, and supporting literature is limited (Kwak and Anbari, 2009). As a result, previous research had limitations to transfer the message outside of the project management field to the broader business and management academic audience.

According to Winter M, Smith C (2006), there have been important efforts among international Project Management (PM) researchers and practitioners to identify and rethink PM, and the findings were disseminated widely within the PM community. Several other studies aimed at understanding trends in PM research and publication. Betts, M and

Lansley, P (1995) investigated papers published in International Journal of Project Management for its first 10 years and found that papers mainly reviewed practical experience and literature, contributed to interesting insights and new tools and techniques. Themistocleous and Wearne (2000) reported that cases from the construction industry remained predominant followed by the service sector in PM research, and that in terms of theory building and theoretical basis of PM, there was still a large room for improvement. Their paper concluded that the future development of PM as a discipline should be done by building and testing different research models so that a theory of PM may emerge.

Crawford et al. (2006) analyzed the trends of emphasis within PM literature by investigating two flagship PM journals, Project Management Journal and International Journal of Project Management. The paper found a reduction in focus on interpersonal issues and quality management and increased research in project evaluation, improvement, and strategic alignment. Abudayyeh et al. (2004) examined engineering and construction research trends by reviewing articles published in Journal of Construction Engineering and Management for 18 years and suggested increasing research collaboration between industry and academia.

Kloppenber and Opfer (2002) identified project management research published in articles, papers, dissertations, and government research reports since 1960. They found that emphasis moved from development and use of automated project management software and tools to risk management and earned value management and then to human resource aspects. They also determined that research focus moved from large government defense projects to commercial applications in construction, information systems, and new product development. They concluded that project management has extensive current opportunities and a bright future. Bredillet (2006) investigated management journal production on project management as reflected in EBSCO Business Source Premier Database and used co-word analysis to understand the main trends in the field. He found that these trends focus on strategic management issues, creation of value for stakeholders, technical issues, and softer issues. He concluded that project management is becoming more focused on the implementation of organizational strategy.

More recently, Anbari et al. (2008) conducted an extensive review of academic research literature on project management and organized the literature into nine major schools of thought on the basis of the key premise that drives each one. These are, according to Anbari et al. (2008): optimization, modeling, governance, behavior, success, decision, process, marketing, and contingency schools of thought. All these are key issues in understanding the concepts and role of ‘hard’ skills and ‘soft’ skills in project management.

## **‘Hard Skills’ and ‘Soft’ Skills in Project Management**

According to Gillard (2009), as the field of research surrounding project management continues to grow, it is becoming more evident that success in the role of project manager cannot be attained with a technical skill set only. Excellent interpersonal, or soft skills, are necessary requisites for success. (Gillard, 2009)

The project manager is responsible for meeting project objectives, for schedules, budgets, and assessing alternatives, for assessing risks and deciding how to accept, avoid, remove, or mitigate them, and for leading the initiative to successful completion (Baca, 2007; Di Vincenzo, 2006; Dunn, 2001; Zielinski, 2005). Managers of the functional, technical, and support departments provide personnel and technical assistance to the project manager, yet retain responsibility for their tools, training, performance evaluation, and reassignment (Jacques, Garger, & Thomas, 2008; Wellman, 2007).

A further complication of the project manager’s role stems from the multi-dimensional environment in which he functions. At the core of day-to-day operations are the project office and the project team. According to Gillard (2009), a second dimension is the intra-organization—the parent organization, user community, and contractor(s) and; a third dimension is the inter-organization—external organizations having a vested interest, or oversight authority in the project office. This complex environment presents a communication paradigm unparalleled by any other management position: The team is often large in number and consists of a multi-faceted mix of multi-disciplinary, inter-organizational, geographically disbursed members, internally employed personnel, and outsourced or contract staff; the project manager must cope with tenuous lines of authority and power; and the project manager must interact with multiple, varied groups and stakeholders inside and outside of the employing organization, often with conflicting interests relevant to the project at hand (Gillard, 2009).

As stated by Zielinski (2005), these ‘accidental’ project managers must simultaneously satisfy the needs of often finicky clients, adhere to tight deadlines, and marshal limited or sometimes nonexistent resources to get the job done--all while shepherding, motivating and cajoling a diverse universe of personalities up and down the organizational food chain. They are held accountable for project results, but often have little power over personnel or resource matters—and they must find a way to get things done without ruffling too many feathers, because the next project on the docket might involve many of the same people.

Gillard (2009) notes that responsibility without authority is yet another challenge that the project manager faces: - when team members have a dual reporting structure, the project manager may find it difficult to exert influence over the team members. Direct authority over

personnel tends to rest with the functional manager, while the project manager has little direct authority over the project team members or their managers (Black, 2006; Dunn, 2001; Jacques, Garger, & Thomas, 2008; Sy and D'Annunzio, 2005). It takes skill and finesse to lead a project to a successful conclusion given the intricacies of the job of a project manager. Thus the repeating dilemma of the skill set best suited to a successful project manager.

Authors such as Mantel and Meredith (1986) posited that some of the overriding factors leading to successful project management included technical credibility and the ability to use a systems approach for completing tasks that met performance standards on time and within planned costs.

They claimed that industrial engineers were best suited for project management ventures based on their training, experience, and educational background. Ergo, the focus of project-management training has been on the technical skills deemed essential to the position, from mastering planning or budgeting processes to cost containment and evaluating risk (Zielinski, 2005).

Bacca (2007), however, argues that because engineers who are pressed into the role of project manager often focus on technical issues while giving management aspects less credence, they fall short of relating their game plans to the overarching strategy of the organization.

Thus, while there is general agreement that a project's success or failure hinges on the abilities of the project manager, there remains a difference of opinion as to what factors are the most important indicators of an effective project manager. Some, though seemingly a declining number, still cling to the opinion that the technical expertise of the project manager is of paramount importance for success; others suggest that interpersonal or "soft" skills are the primary determinant of success; and still others hold that both technical background and leadership skills are necessary for project management success.

Sampson (2007) observes that the skills required for project management are now often divided 50/50 into traditional 'hard' skills, such as risk management and scheduling, and 'soft', people-oriented skills, such as interpersonal communication. Drossel (1980) places leadership skills on the same level as any other technical activity with which the project manager is faced and writes that project success is based on planning, establishing an effective team, feedback through team meetings, and commitment to the task at hand. Zachary (1984) also suggests a balance between the technical and leadership aspects of project management and states that the project manager's goals are to build team morale

and foster good working relations so everyone is eager to work toward a common goal-- project completion. VanIngen (2007) observes that effective project management is a balance of organizational skills and people skills. Corcoran (1997) contends that the ideal IT managers offer a blend of business and technical know-how thus an MBA is helpful, but effective IT managers also need a technical background. They should understand the complex issues and trade-offs of new technologies.

Zielinski (2005), however, points out that if one had asked project-management gurus five years ago to name the most important competencies project managers should have, most would have said technical skills. Today, argues Zielinski (2005), they'd be more inclined to place communications or negotiations acumen at the top of their lists- there's no denying the importance of technical expertise to successfully orchestrating a project. Managing an initiative's scope, cost, risk, resources and schedule are all essential skills. Indeed, the quality of up-front planning--and a project leader's skill at re-planning as project conditions change--can determine a project's fate all on its own. But in rethinking skill hierarchies, many companies have come to view these more as baseline competencies- now they regard soft skills such as communication, negotiation, conflict management and persuasion, as higher-order skills. (Zielinski, 2005)

Almost two decades earlier Posner (1987) made a similar observation and noted that the fundamental problems confronting a project manager are related to the management of people, not to the technical challenges. He further asserted that a lack of organization and management skills are the primary reasons project managers fail. Brousseau (1987) agreed with him, maintaining that flexible leadership style and well executed management are essential to successfully managed projects. He carried the argument a step further by stating that the communications and leadership skills of a project manager are more important than are the technical skills. He further suggested that these interpersonal skills should be considered by top management when selecting a project manager. Almost 20 years later the same cry is being heard.

There is seemingly a general consensus that project managers have to become great communicators. The list of additional skills and abilities contributing to project success seems endless: political savvy, an understanding of employee motivation, organizational dynamics, and team behaviour (Brandel, 2006); an ability to delegate, coordinate ideas of diverse individuals, be flexible, and deal well with risk and stress (Di Vincenzo, 2006); be results oriented, have strong interpersonal skills, understand the organization, be committed to corporate values, exercise a strong leadership style characterized by authority, responsibility, adaptability, and interface management, and be committed to control and



planning (Kerzner, 1987); be able to effectively direct teams (Sacco, 2006); planning, negotiating and consensus-building (Black, 2006); and networking (Jiang, Klein, & Chen, 2001)

Indeed, Baroudi et al. (2008) contend that the job of project managers is demanding, complex and varied, whilst requiring the juggling of several issues concurrently- thus, though traditional Project Management competencies are critical for project success, communication between team members and the entire network is vital to support a shared understanding of the project and its goals.

Hence, managing projects successfully requires an assortment of skills, including interpersonal ability, technical competencies, and cognitive aptitude, along with the capability to understand a situation and people, and then to dynamically incorporate appropriate leadership behaviours (soft and hard skills). The study by Pant, et al. (2008) categorised skills into six areas: communication, organisational, team building, leadership, coping, and technological skills.

El- Sabaa (2001) argues that the art skill (soft skills) of project managers have the greatest influence on Project Management practices, and science skills (hard skills) the least. Indeed, relationship skills balance the effectiveness of technical (hard) skills because project outcomes are achieved through people (Bourne, 2004). According to Thamhain (2004), to create the right relationships with team members and other stakeholders is one of the biggest challenges for any project manager and this requires them to develop both hard and soft skills.

Petersen and Murphree (2004) assert that soft skills are the most important skills for owner representatives on design-build projects. Tuxford (2004) contends that Project Managers are often called upon to be all things for all people and, depending on where the project is when they join, they will perform many roles during the life of a project, including Captain and leader, salesperson, counselor, facilitator, and accountant.

Rutherford (2004) argues that nothing happens without humans- therefore, the three most important competencies for project managers are planning, team building and leadership. Rutherford (2004) looks at the latter two categories, and the soft skills that are required to excel at them. Chapman (2004) observe that the blind spot in traditional management mindsets is people and the construction industry has overlooked these soft factors in risk analysis, and this has led to a serious underestimation of the risks involved in construction projects.

Bentley (2004) seminal study concluded that successful implementation of a major policy change in a New South Wales government agency required complex information system changes and multiple business adjustments and the study looks at the use of a framework known as Soft Systems Project Management (SSPMA) in order to achieve organisational change, and compares "hard" and "soft" approaches to project management.

Foti (2003) observe that project consultants continue to be in high demand, in part because most organizations still lack enterprise project management capability. Although consultants are usually judged on whether they deliver quality products on time, and provide useful analysis that leads to value-added process improvements, the most critical prerequisites to success are people skills and an understanding of the client organization's culture. Most of the project consultants cited in this article agreed that the keys to success include obtaining executive support, maintaining good communication and feedback, managing change with due sensitivity to employees' emotions, and being receptive to all stakeholder investments. Trust and confidence in a consultant develop over time, and consultants need soft skills to deliver the hard numbers that management wants.

Logue (2003) argues that when assembling a project team, project managers have to consider more than technical skills. To insure smooth, efficient team interaction, project managers must also take into account soft skills such as the personality issues. Conflict can be detrimental to project success. Consequently during the team selection and project execution phases, project managers must stress compatibility and team development through mentoring and communication.

Cunningham et al (2002) observe that projects will be more effective if their project managers involve the project team in project planning and control (PP&C). Commitment to a project can be enhanced by including team development in PP&C. Team development or human resource management includes clarity regarding roles and responsibilities, team motivation, team communication needs, and conflict management.

Belzer (2001) contends that soft skills to manage projects are 'the missing link' in respect of project success- some of these skills include communication, organisational effectiveness, leadership, problem solving and decision- making, team building, flexibility, creativity and trustworthiness.

Kondo (2007) views Project Management as an art or skill- thus, an effective project manager requires the ability to plan projects, assess project status, and identify issues of risk. These are all skills that can be learned, namely the technical skills. Kondo (2007) notes that the behavioural component of Project Management skills includes three elements: the

ability to anticipate, attention to detail and the ability to convince others- these are personal qualities, and in some way the product of related experience, are only in part teachable.

Groult (2010) states that it is vital to develop essential soft skills and embrace the change, gain experience, if necessary get qualifications, define a clear framework, encourage teamwork and cooperation, and embrace the change. Furthermore, Saladis (2010) suggests that the need for continued professional development and the enhancement of existing interpersonal (soft skills) and technical skills (hard skills) is far greater today than it has ever been.

Morreale (2008) notes that because so much money has been spent on 'hard skills' training, methods, tools, techniques, processes and procedures, surely there must have been a vast improvement in project success? According to Morreale (2008), current surveys of projects find that approximately 90% of projects fail when measured against the criteria of cost, schedule and expectations. Should this not make the most intelligent people think that maybe the 'hard skills' are not where the problem is, observes Morreale (2008). It is therefore a combination of both the hard and soft skills that help to deliver successful projects and successful project managers constantly assess themselves against the soft skills, and take whatever action is required to enhance their abilities to deliver successful projects as stated by Morreale (2008).

Burke (2007) contends that projects are performed by people and managed through people, hence it is essential to develop an organisation structure, which reflects the needs of the project (task), the needs of the project team and, as importantly, the needs of the individual.

Thus, as the field of research surrounding project management continues to grow, it is becoming more evident that success in the role of project manager cannot be attained with a technical skill set only. Technical skills are being recognized as one of the minimal requirements for a project manager. The need for excellent interpersonal, or soft skills, are necessary requisites for success, and although some would disagree, others advocate that these are skills that can be taught (and learned) rather than skills that are innate or genetic. Further, research is revealing that leading is preferable to managing a project team, and that the leadership style of the project manager directly impacts the outcome of the project. (Gillard, 2009)

### **A Brief Review of the PMI's Project Management Body of Knowledge (PMBOK)**

Gillard (2009) observes that underlying most project-management training efforts today are standards and practices created by the Project Management Institute (PMI). The group's Project Management Body of Knowledge (PMBOK), a distillation of the knowledge, skills,

tools and techniques generally accepted as best practice in the discipline, serves as a training blueprint for many business organizations and educational institutions. The PMBOK details five key processes for the effective management of most projects (initiating, planning, executing, monitoring and controlling, and closing), as well as nine supporting knowledge areas (project integration, scope, time, cost, quality, human resource, communications, risk and procurement management).

It is imperative to note that the PMBOK Guide is a recommended text in some universities offering project management education, which prompted a research study by Pant and Baroudi (2008), into how well project management literature and university education equips potential project managers in the area of human skills. The study by Pant and Baroudi (2008) note that the PMBOK Guide predominantly emphasizes the required 'hard (technical) skills' at the expense of the 'soft (human) skills'- the study further highlights the need for a balance between hard and soft skills within project management education in universities and suggests that educators within this discipline should recognize the importance of incorporating greater human skills aspects into their educational programs. (Pant & Baroudi, 2008)

Di Vincenzo (2006) points out that an individual aspiring to be a project manager should take classes that emphasize communication, should have a solid background in mathematics, and a familiarity with personal computers. He further states that the potential project manager needs to have at least a bachelor's degree, although it need not be in a business- or management-related concentration. In fact, a degree in a specific subject area is helpful for providing expertise and guidance on projects that require background knowledge.

Using the 18 separate leadership and management criteria developed for his study, Price (1993) found that the college degree most frequently held by project managers rated "Most Effective" was either in business or management. This contrasts with the types of college degrees reported by the project managers rated as "Typical" and "Least Effective" in the Price study.

And in a research initiative to explore the leadership style of graduate project management students vs. other MBA students, Jacques, Garger and Thomas (2008) found that project management students rate themselves significantly higher on the concern for people leadership style and were found to have a balance between the concern for task and concern for people leadership style vs. MBA students.

Thus, Jacques, Garger and Thomas (2008) concluded that individuals exhibiting a concern for people leadership style and those with a balance between concern for task and concern

for people leadership styles are good candidates for project management positions as well as training/education in project management.

### **An Overview of the PMI's Project Management Competency Development Framework (PMCDF)**

The PMI's Project Management Competency Development Framework (PMCDF) provides a framework for the definition, assessment, and development of project manager competence. It defines the key dimensions of competence and identifies those competencies that are most likely to impact project manager performance. It was developed to provide both individuals and organizations with guidance on how to assess, plan, and manage the professional development of a project manager who: has demonstrated the required project management knowledge, skills and experience; has passed an accredited project management examination or certification (the Project Management Professional (PMP) or an equivalent from a recognized institute) and is able to provide evidence of Performance and Personal Competencies as identified in the PMCD Framework.

According to the PMI (2012), the Project Manager Knowledge Competence relates to what the project manager knows about the application of processes, tools, and techniques for project activities while the Project Manager Performance Competence focuses on how the project manager applies project management knowledge to meet the project requirements. The Project Manager Personal Competence relates to how the project manager behaves when performing activities within the project environment; their attitudes, and core personality characteristics.

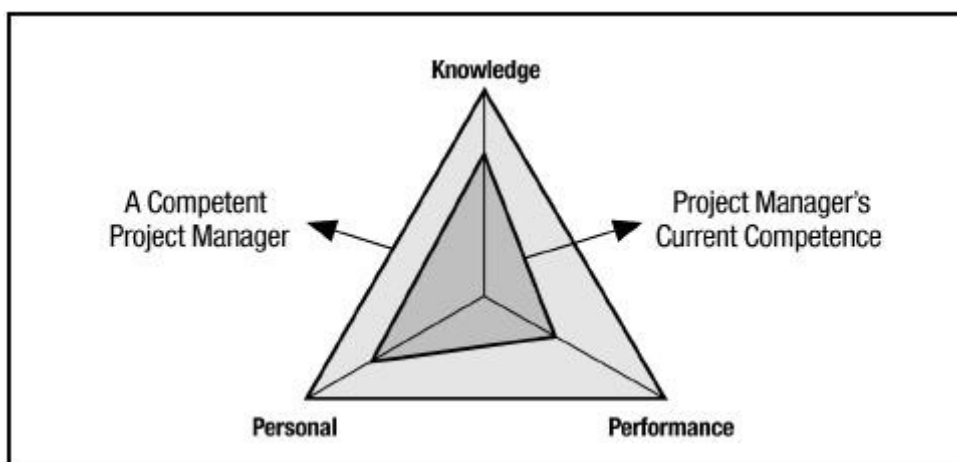


Figure 1: PMCD Framework dimensions of competence

## Performance Competencies

According to the PMCDF (2012), Performance Competence is what the project manager is able to do or accomplish by applying their project management knowledge, as illustrated in Figure 2 below:

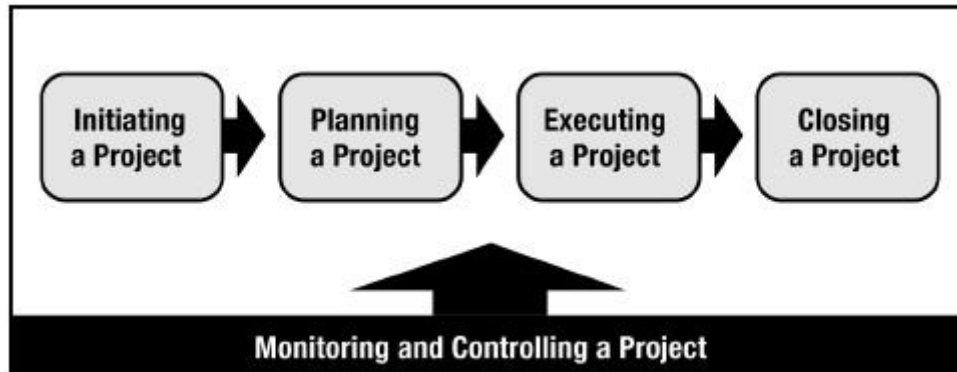


Figure 2: The Five Units of Performance Competence

## Personal Competencies

PMCDF (2012) observe that Personal Competencies are those behaviors, attitudes, and core personality characteristics that contribute to a person's ability to manage projects. Furthermore, the PMCDF note that Project Management is a people-oriented profession, therefore, it is important for a project manager to possess skills that enable an effective interaction with others.

## Six Units of Personal Competencies

According to PMCDF (2012) there are six units of personal competencies, namely, Communicating (that is, effectively exchanges accurate, appropriate, and relevant information with stakeholders using suitable methods); Leading (that is, guides, inspires and motivates team members and other project stakeholders to manage and overcome issues to effectively achieve project objectives); Managing (that is, effectively administers the project through deployment and use of human, financial, material, intellectual, and intangible resources); Cognitive Ability (that is, applies an appropriate depth of perception, discernment, and judgment to effectively direct a project in a changing and evolving environment); Effectiveness (that is, produces desired results by using appropriate resources, tools, and techniques in all project management activities and Professionalism (that is, conforms to an ethical behaviour governed by responsibility, respect, fairness, and honesty in the practice of project management). These six units of personal competencies are shown in Figure 3 below:

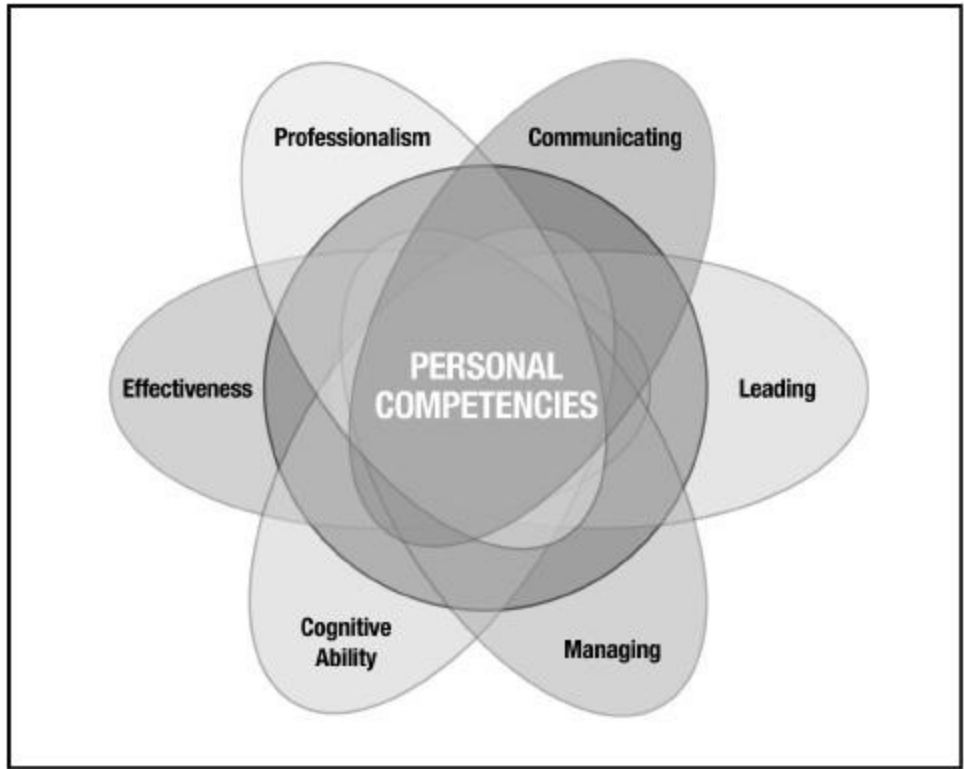


Figure 3: Personal Competencies of Project Manager

Contextually, Figure 4 below depicts the Personal Competence Units of the Project Manager:

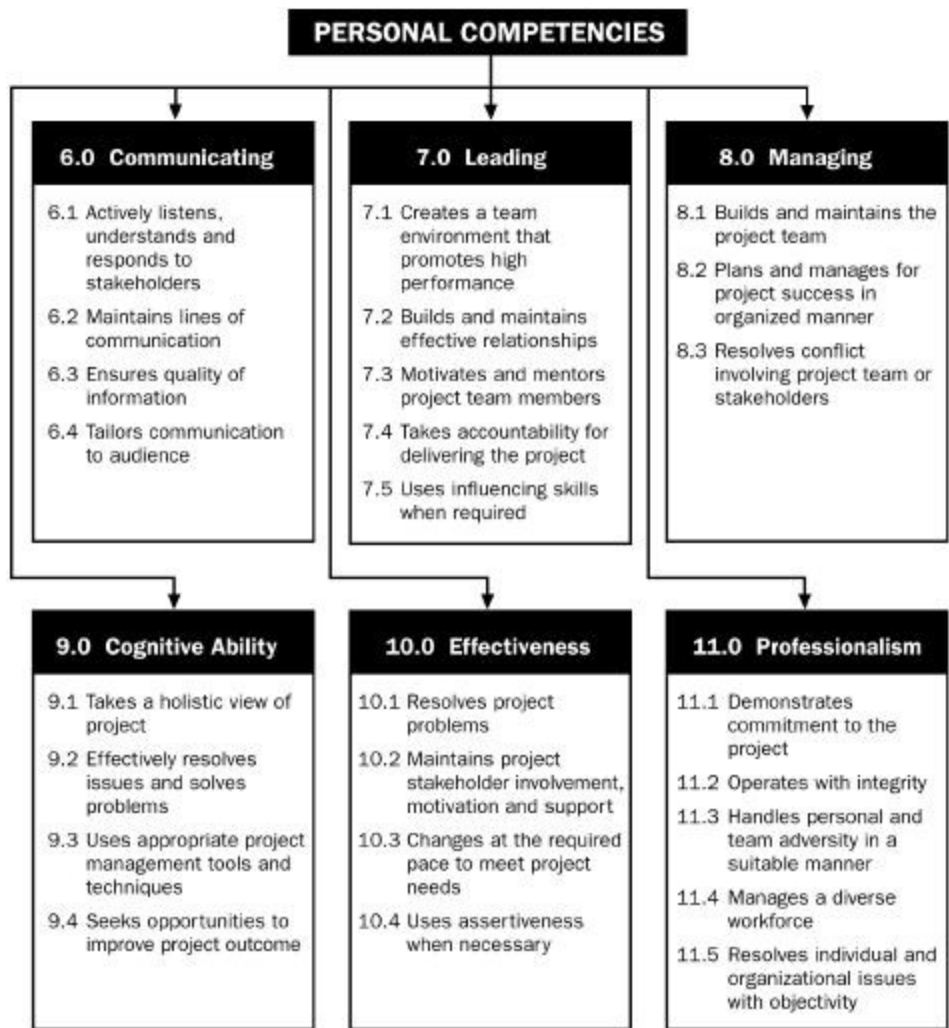


Figure 4: Personal Competence Units

## Summary

Project Management continues to grow; it is becoming more evident that success in the role of the project manager cannot be attained with technical skills only. Hard skills are being recognized as one of the minimal requirements for a project manager. The need for excellent interpersonal or soft skills are necessary conditions for success, and although some would disagree, others advocate that these are skills that can be taught and learned rather than skills that are innate or genetic.

The following chapter describes how the researcher collected data, the design of the research, methodology behind the research and the research question.



## 3. Chapter 3

### Methodology

#### Introduction

This chapter will present the methodological framework used for this study. Thus, the chapter will discuss, inter alia, the research question, the research design, data collection, and research ethics.

#### Research Question

The study aimed to investigate BTech Project Management graduates at a Western Cape University of Technology regarding their perceptions, understanding and attitudes towards soft and hard skills of Project Management.

Based on this and the literature reviewed, the research questions for this study were:

- Are the PMBOK management skills adequately covered in a BTech program at a University of Technology in the Western Cape in order to meet industry requirements?
- Are the hard and soft skills of Project Management adequately covered in a BTech program at a University of Technology in the Western Cape?
- What, if any, new information provided by the graduates can inform the curriculum content within the Project Management field?

These were the fundamental research questions that the study sought to answer, using the questionnaire as the primary instrument of data collection.

#### Research Paradigm

The research paradigm most appropriate for this study is the interpretivist paradigm in that its methodology is focused on an understanding and reconstruction of the beliefs that individual people hold (Guba and Lincoln (1994). The aim of the research is to give an in-depth study aimed to investigate and understand the BTech Project Management graduates' perceptions, understanding and attitudes towards soft and hard skills of Project Management.

According to Babbie and Mouton (2006), the in-depth description will capture the actions as they occur in contexts that are understandable to the actors themselves in order to stay true

to the meanings of the actor (Babbie and Mouton 2006:272). The phenomenological method of interpretivist paradigm will be used for a number of reasons namely:

- The main source of data will be the views and experiences of the participants themselves,
- The sampling is planned and purposive because the participants are selected because they have “lived” the experience under study,
- The use of existing literature on the subject of project management

The ontology applicable in this case study is relativist in that the realities are comprehended in the form of multiple, intangible mental constructions, as socially experienced by the participants in the study (Guba and Lincoln 1994). The epistemology is transactional and subjectivist in that the researcher and the participants are interactively linked so that the “findings” are literally created as the investigation proceeds (Guba and Lincoln 1994).

## **The Research Design**

According to Steyn, Smit, Du Toit and Strasheim (2003), a research project is a specific research investigation- a study that completes or is planned to follow stages in the research process. Steyn et al (2003) observe that 4 major phases constitute the research process, namely:

1. Formulation of Research Questions
2. Empirical Study (Data Collection)
3. Editing and Coding of Data
4. Analysis of Data and Conclusions

Different methods for the collection of primary data such as surveys, experiments, or observations are available for research (Diamantopoulos & Schlegelmilch, 1997). The type of data required will largely determine the most appropriate method to be used. In this, the researcher decided to use the survey method.

The survey method is used for the descriptive reporting and makes use of a questionnaire to identify individual differences and perceptions that cannot be observed. By means of the questionnaire, respondents provide information on their current and previous behaviour, attitudes and perceptions.

Thus, according to Isaac & Michael (1997), the survey research is used to answer questions that have been raised, to solve problems that have been posed or observed, to assess needs and set goals, to determine whether or not specific objectives have been met, to establish baselines against which future comparisons can be made, to analyze trends across time, and generally, to describe what exists, in what amount, and in what context.

Kraemer (1991) identified three distinguishing characteristics of survey research- first; survey research is used to quantitatively describe specific aspects of a given population. These aspects often involve examining the relationships among variables. Second, the data required for survey research are collected from people and are, therefore, subjective. Finally, survey research uses a selected portion of the population from which the findings can later be generalized back to the population.

In survey research, according to Priscilla A. Glasow April 2005, What is Survey Research, Fundamentals of Survey Research Methodology pp. 1-28, independent and dependent variables are used to define the scope of study, but cannot be explicitly controlled by the researcher. Before conducting the survey, the researcher must predicate a model that identifies the expected relationships among these variables. The survey is then constructed to test this model against observations of the phenomena.

Pinsonneault and Kraemer (1993) defined a survey as a means for gathering information about the characteristics, actions, or opinions of a large group of people. Surveys can also be used to assess needs, evaluate demand, and examine impact (Salant & Dillman, 1994).

According to McIntyre (1999), surveys are capable of obtaining information from large samples of the population and they are also well suited to gathering demographic data that describe the composition of the sample. Bell (1996) notes that surveys are inclusive in the types and number of variables that can be studied require minimal investment to develop and administer, and are relatively easy for making generalizations. Surveys can also elicit information about attitudes that are otherwise difficult to measure using observational techniques (McIntyre, 1999). It is important to note, however, that surveys only provide estimates for the true population, not exact measurements (Salant & Dillman, 1994).

Pinsonneault and Kraemer (1993) observe that surveys are generally unsuitable where an understanding of the historical context of phenomena is required. Bell (1996) note that biases may occur, either in the lack of response from intended participants or in the nature and accuracy of the responses that are received. Other sources of error include intentional misreporting of behaviors by respondents to confound the survey results or to hide

inappropriate behavior. In addition, respondents may have difficulty assessing their own behaviour or have poor recall of the circumstances surrounding their behavior.

A number of factors were considered to select participants for this study. This included the location and year of completion of the BTech Project Management program. The researcher gained approval and permission from the Ethics Committee at the Cape Peninsula University of Technology before distributing any questionnaires. Permission from participants in this study was also required.

The research participants for this study were BTech Project Management graduates from CPUT. The timeframe in which participants were selected was from January 2011 to December 2011. A population of 125 graduates was selected for the sample.

### **The Rationale for using the Questionnaire as the Research Instrument**

The survey method instrument used for this study is the questionnaire. A questionnaire is a document comprising a set of questions, which is sent to a large number of respondents with a view to obtaining their input and opinions on the topic of the research study. Researchers can use either structured or unstructured questionnaires. A structured questionnaire provides different options for each question, and the respondent is simply required to select and mark the applicable answer (Babbie, 1998). Unstructured questionnaires require far more cooperation on the part of the respondents since they are required to answer the questions in their own words. The use of unstructured questionnaires in a mail survey significantly reduces cooperation without providing much helpful information (Sudman & Blair, 1988). Since mail surveys tend to have the lowest response rates of all survey methods (Welman & Kruger, 1999) - it is not uncommon for them to have a response rate of 10 percent-it is therefore imperative to exercise caution in choosing questionnaires (Aaker, Kumar & Day, 1995).

In this research, the main reasons why the questionnaire was used as the method for collecting primary data included the following:

- It is a relatively cheap method
- It is relatively easy to distribute and collect questionnaires
- The majority of respondents have a type of “pen-and-pencil” job in which they could complete the questionnaire during office hours
- Saves time-a lot of information can be collected within a short period of time

- Greater possibility of anonymity
- Standardised questions simplify the coding of data
- The answering of questions can be kept impersonal

(Source: Adapted from Welman & Kruger (1999))

Although Leedy (1996) outlines general requirements for a good questionnaire, he emphasises the important role that the questions play. Here are the requirements which Leedy (1996) regards as essential to a good questionnaire:

- Instructions must be clear and unambiguous
- A cover letter must accompany the questionnaire and clearly state for what purposes the information is needed
- Questions must be clear, understandable and objective
- The questionnaire must be as short as possible
- A logical flow of questions and sections must exist
- The questionnaire must be directly related to the research problem

The design of a questionnaire plays a crucial role in the success of the research. Saunders, Lewis and Thornhill (2007) regard the following as the principal steps in the design of a questionnaire:

- Determine information goals and identify the population
- Decide which questions need to be asked
- Identify the respondents' frame of reference
- Formulate the questions
- Pretest the questionnaire
- Revise the questionnaire
- Compile the final questionnaire

Sudman & Blair (1998) provide the following guidelines on formulating good questions:

- Questions must be specific
- Use simple language
- Use words with only one meaning
- Use numbers to measure magnitudes
- Ask questions one at a time

According to Sudman & Blair (1998), these are the requirements for the design of a good questionnaire:

- Use a booklet format
- Identify the questionnaire
- Do not crowd the questions
- Use large, clear print
- Provide instructions for the completion of the questionnaire
- Do not split the questions across pages
- Pre-code all closed questions
- End the questionnaire in a proper way

In this current study, a background/ the respondents' characteristics were designed to determine respondents' age, level of studies and other experience. The questionnaire was structured into five sections; Section A to E. Section A was designed to obtain background information. Section B focused on hard and soft skills in the BTech Project Management subjects, while Section C focused on the entire BTech Project Management Program. Section D, considered the Project Management Body of Knowledge (PMBOK) and, lastly Section E dealt with the soft and hard skills of Project Management.

Most of the questions asked for a percentage, but space was provided to write comments where respondents were asked to elaborate. A copy of the questionnaire can be found as Appendix 1.

## Sampling Strategy

Purposive Sampling was used for this study. Saunders, Lewis and Thornhill (2007) describe purposive sampling as non-probability sampling procedure in which the judgment of the researcher is used to select the cases that makes up the sample. This can be done on the basis of extreme cases, heterogeneity (maximum variation), homogeneity (maximum similarity), critical cases, or typical cases. Maree (2007) note that this method of sampling is used in special situations where the sampling is done with a specific purpose in mind.

According to Denzil and Lincoln (2000), there are many advantages of carrying out purposive sampling, including that, those people who are unsuitable for the sampling study or who do not fit the bill have already been eliminated, so only the most suitable candidates remain; as the most appropriate people for the study have been selected, this process becomes a lot less time consuming; and with fewer time constraints and a more accurate subject, the costs for carrying out the sampling project are greatly reduced.

According to Denzil and Lincoln (2000), purposive sampling therefore allows the researcher to choose a group, setting and individuals who hold knowledge on the subject, as will be the case with the participants in this study. The various sampling techniques and their advantages and disadvantages are outlined below:

Technique	Descriptions	Advantages	Disadvantages
Simple random	Random sample from whole population	Highly representative if all subjects participate; the ideal	Not possible without complete list of population members; potentially uneconomical to achieve; can be disruptive to isolate members from a group; time-scale may be too long, data/sample could change
Stratified random	Random sample from identifiable groups (strata), subgroups, etc.	Can ensure that specific groups are represented, even proportionally, in the sample(s) (e.g., by gender), by selecting	More complex, requires greater effort than simple random; strata must be carefully defined

		individuals from strata list	
Cluster	Random samples of successive clusters of subjects (e.g., by institution) until small groups are chosen as units	Possible to select randomly when no single list of population members exists, but local lists do; data collected on groups may avoid introduction of confounding by isolating members	Clusters in a level must be equivalent and some natural ones are not for essential characteristics (e.g., geographic: numbers equal, but unemployment rates differ)
Stage	Combination of cluster (randomly selecting clusters) and random or stratified random sampling of individuals	Can make up probability sample by random at stages and within groups; possible to select random sample when population lists are very localized	Complex, combines limitations of cluster and stratified random sampling
Purposive	Hand-pick subjects on the basis of specific characteristics	Ensures balance of group sizes when multiple groups are to be selected	Samples are not easily defensible as being representative of populations due to potential subjectivity of researcher
Quota	Select individuals as they come to fill a quota by characteristics proportional to populations	Ensures selection of adequate numbers of subjects with appropriate characteristics	Not possible to prove that the sample is representative of designated population
Snowball	Subjects with desired traits or	Possible to include members of groups	No way of knowing whether the sample is



	characteristics give names of further appropriate subjects	where no lists or identifiable clusters even exist (e.g., drug abusers, criminals)	representative of the population
Volunteer, accidental, convenience	Either asking for volunteers, or the consequence of not all those selected finally participating, or a set of subjects who just happen to be available	Inexpensive way of ensuring sufficient numbers of a study	Can be highly unrepresentative

Table 1: Sampling Techniques: Advantages and Disadvantages (Based on Black, 2005)

It is imperative to note that this study focused on BTech and MTech Project Management program graduates- 125 BTech and MTech Project Management graduates participate in the survey.

### **Data Validity and Reliability**

Seale (1999), states that, poor studies are produced by a researcher who is blind to the consideration of the different characteristics of the research methodologies. It is for this reason that the researcher has attended to ensuring that the researcher observes the requirements of high quality research. A debate exists from the perspective of the positivist paradigm and from the realism paradigms as to when trust is achieved from research that has been undertaken (Riege 2003).

Thus, Riege (2003) states that the four design tests of construct validity, internal validity, external validity and reliability are commonly applied to the theoretical paradigm of positivism. However Riege (2003) also observes that that these four traditional design tests can be similarly used for the realism paradigm.

In addition to the four traditional design tests, Riege (2003) recommends the use of four corresponding design tests: credibility, transferability, confirmability and dependability, to enhance validity and reliability and they are defined as follows: credibility is the parallel construct to internal validity and it involves the approval of research findings by either

interviewees or peers; transferability is analogous to external validity in quantitative research and it is the test achieved when the research shows similar or different findings of a phenomenon amongst similar or different respondents or organizations; dependability is analogous to reliability in quantitative research and it is the test designed to show indications of stability and consistency in the process of inquiry by showing whether the techniques used are consistent and; confirmability is analogous to neutrality and objectivity in positivism corresponding closely to construct validity and the test assesses whether the interpretation of data is drawn in a logical and unprejudiced manner” (Riege 2003)

In essence, Riege (2003) argues that all eight design tests, traditional and corresponding are applicable to the realism paradigm and if applied to the survey method using questionnaires, (as was the case in this study) the quality, validity and reliability of case study research is enhanced. Riege (2003) also makes the distinction that the four traditional design tests are well-known from quantitative research approaches while the corresponding design tests are known to refer to more qualitative approaches.

## **Data Collection**

Data collection for this study occurred in one phase only. The questionnaire was administered by the researcher to respondents of the BTech Project Management program. A week was allowed to complete the questionnaire and returned it to the researcher. It was anticipated that the questionnaire will not take much of the respondents' time to complete.

A cover letter was distributed out with the questionnaire explaining the purpose of the study, as well as the researcher's contact details. Participation was voluntary for this study. Completion of the study was an indication of consent to participate in this study. A copy of the cover letter and questionnaire can be found as Appendix 1.

## **Research Ethics**

An ethics application was submitted to the Cape Peninsula University of Technology, Faculty of Business Research Ethics Committee. The research project was granted ethical approval (see Appendix 2).

Permission and informed consent was sought by the Program Coordinator prior to the study. This was to allow the researcher access to BTech Project Management graduates, and also to allow the graduates to take part in the study. A copy of the letter is attached as Appendix 3. Participation by the graduates was voluntary. Completion of the study is an indication of consent to participate in this study. A copy of the cover letter is attached as Appendix 1.

All findings from this study and the data that was collected were used for educational purposes. This was also discussed in the cover letter that accompanied the questionnaire. Further, all information was treated as private and anonymous. No individual participants' names were recorded or collected in this study. Also, the framework for this study was in accordance with the Cape Peninsula University of Technology Research Ethics Committees' Guidelines

Thus, the study was conducted with respect for the integrity, dignity and well-being of the research subjects. In that regard, the study ensured that all participants had given informed consent. The participants were therefore fully informed about the nature of the research, the time commitments, the topics that were covered and the risks involved. Hence, the study ensured that all participants had the intellectual capacity and psychological maturity necessary to understand their involvement in the study. The research study also ensured that participants made an autonomous decision to participate and that their involvement in the study was absolutely voluntary. The study ensured that participants were aware of their right to discontinue in the research study and no participant was in no way coerced to participate in the study. This was consistent with the four guidelines to the code of ethics as set out by Denzin and Lincoln (2000:139) namely: informed consent, deception, privacy and confidentiality and accuracy.

The study also ensured that no harm came to the participants and ensured confidentiality and anonymity. Indeed, according to Oliver (2003), in the ethics literature, confidentiality is commonly viewed as akin to the principle of privacy- to assure someone of confidentiality means that what has been discussed will not be repeated, or at least, not without permission. The notion of confidentiality and anonymity were therefore raised and discussed with all participants prior to their participation in research.

In this regard, the study ensured that the identity of all participants was protected and all the data collected was securely stored. In addition the findings of the study were reported in a manner that does not allow for the ready identification of participants. Permission was also obtained from the participants for the subsequent use of data. The study will also ensure that permission is obtained to carry out the research.

### **Data Analysis**

According to Yin (1994), data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study. Yin (1994) further proposes that a researcher should start with a general analytic strategy in order to yield priorities for what to analyze and why, by using any of four dominant analytic

techniques namely: pattern-matching, explanation-building, time-series analysis and program logic models. Thus, Boyatzis (1998) argues that the analysis is thematic analysis following a deductive approach since the theory has assisted to direct the research methodology from a position of prior knowledge before the research. A record of the findings has been given based on the questionnaire output. The analysis of the data has relied on all the relevant evidence collected in order to address the research question (Yin 1994).

A basic principle of qualitative research is that data analysis should be conducted simultaneously with data collection. According to Maxwell (2005), strategies for qualitative analysis fall into three main groups: categorizing strategies (such as coding and thematic analysis), connecting strategies (such as narrative analysis and individual case studies), and memos and displays. Maxwell (2005) observes that these methods can, and generally should, be combined.

The main categorizing strategy in qualitative research is coding. According to Maxwell (2005), this is rather different from coding in quantitative research, which consists of applying a pre - established set of categories to the data according to explicit, unambiguous rules, with the primary goal being to generate frequency counts of the items in each category.

According to Bogdan and Biklen (2006), in qualitative research, in contrast, the goal of coding is not to produce counts of things but to fracture the data and rearrange it into categories that facilitate comparison between things in the same category and between categories. These categories may be derived from existing theory, inductively generated during the research, or drawn from the categories of the people studied. Bogdan and Biklen (2006) contend that such categorizing makes it much easier for the researcher to develop a general understanding of what is going on, to generate themes and theoretical concepts, and to organize and retrieve the data to test and support these general ideas.

Thus, for this study, the questionnaire results were qualitatively analyzed to address the research questions for this study. The first step was to see if any data is missing and to clean up the data, which helped to describe and summarize trends and tendencies of this study. This helped the researcher to identify trends in the data. Analysis of the data was based on the following:

- Returned questionnaires;
- Analysis of the data;
- Graphs and tables where applicable;
- Interpretation of findings; and

- Drawing conclusions.

All collected commitments from the questionnaires were accurately documented in this study, as needed, to answer the research questions.

### Limitations of the study

Limitations could be inadequate measures and variables, lack of participants, small sample size and data collection errors. This can all relate to quantitative research limitations. The limitations or problems for this study could be the sample size, data collection, participants, or the questionnaire. This is shown in Table 1 below:

	Limitations
<b>Questionnaire</b>	<ul style="list-style-type: none"> <li>• May be difficult to understand</li> <li>• Preparation time</li> <li>• May be too technical</li> </ul>
<b>Participants</b>	<ul style="list-style-type: none"> <li>• Lack of knowledge</li> <li>• May not respond in a valid manner</li> </ul>
<b>Data Analysis</b>	<ul style="list-style-type: none"> <li>• Potential for errors</li> <li>• May not have any meaning</li> <li>• May be difficult to analyse</li> <li>• Data may be skewed</li> </ul>
<b>Sample Size</b>	<ul style="list-style-type: none"> <li>• Respondents may not represent the whole Project Management student population</li> </ul>

Table 2: Limitations of the study

### Summary

A detailed explanation of the research design, methods, data collection and analysing the data to answer the research questions were provided in this chapter. Ethical elements are essential to this study, as well as the study limitations. The data and results of the study are presented in the next chapter.

## 4. Chapter 4

### Results

#### Introduction

The purpose of this study was to determine BTech Project Management graduates' views and understanding of hard and soft skills. This study investigates respondents' education to understand their thoughts towards principles and literature within the Project Management field and industry.

The questionnaire was designed to seek information from respondents about the subjects of the BTech Project Management relating to the industry and what they think hard and soft skills are in relation to the subjects. The use of graphs and analysis of the questions would ensure that the most accurate and relevant results of this study are presented.

#### Responses

The questionnaire (Appendix 1) was handed out individually during class time to about 130 BTech Project Management students. A total of 61 responses were collected.

#### Respondents' Background / Characteristics

This section (Section A) of the questionnaire gathered information about the background of respondents. Information that was gathered included level of studies, academic background, gender and age. The background/ characteristics section revealed that there was a wide variety of different academic backgrounds such as engineers, architects, event managers and accountants. The age range varied from 20 to 41 and older years of age.

#### Hard and Soft skill Questions

Section B of the questionnaire focused on the understanding of what hard and soft skills are, according to respondents' experiences. Also, what percentage of hard and soft skills they rated their different subjects. They were also given an option to explain their answers.

The first question in this section determined respondents' perceptions of the differences between hard and soft skills. Here it was clear that only half of the respondents knew what the difference were.

The second and third question in this section determined what percentage of hard and soft skills respondents thought each BTech Project Management subject had and why.

The following graphs show the results of respondents' characteristics from Section A of the questionnaire.

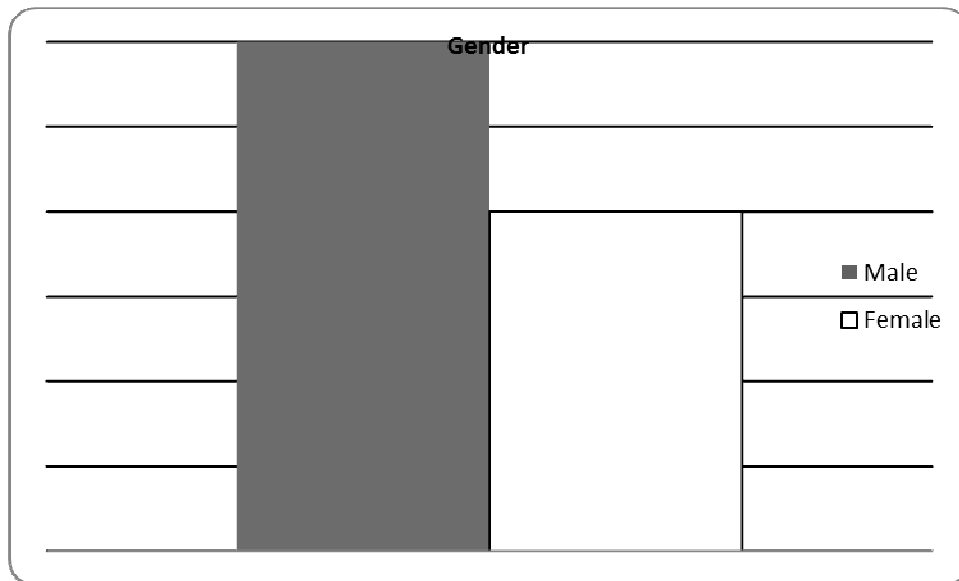


Figure 5: Respondents' gender

Project Management is a male dominated profession, but more and more females are becoming Project Managers and as shown in Figure 5, almost half of the respondents are females.

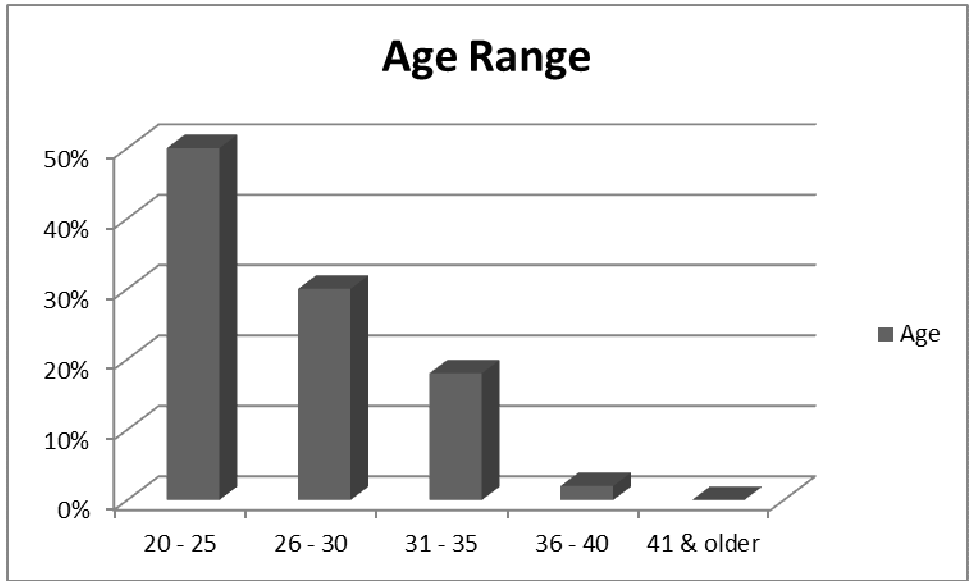


Figure 6: Respondents' age range

The student age range shown in Figure 4 varied from 20 to 41 and older.

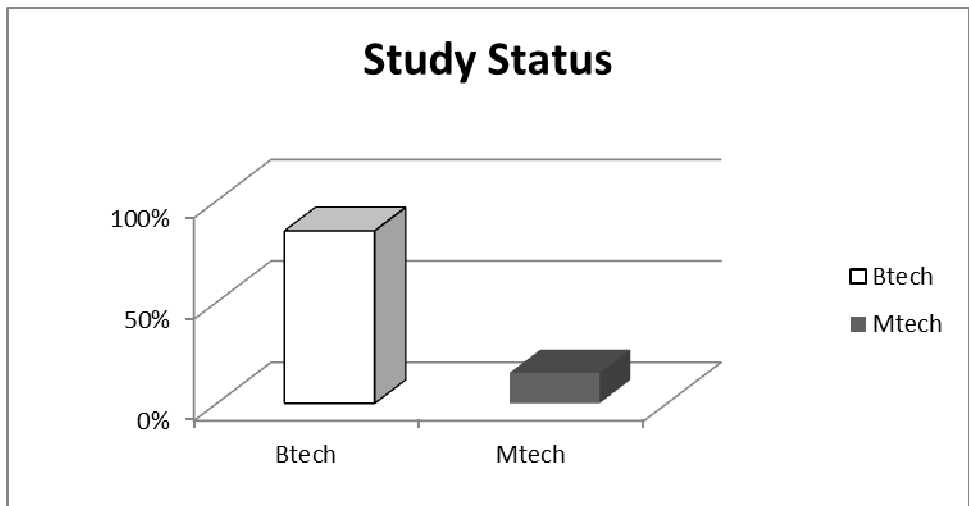


Figure 7: BTech or MTech in Project Management program

BTech students are a majority of respondents as shown in Figure 7.



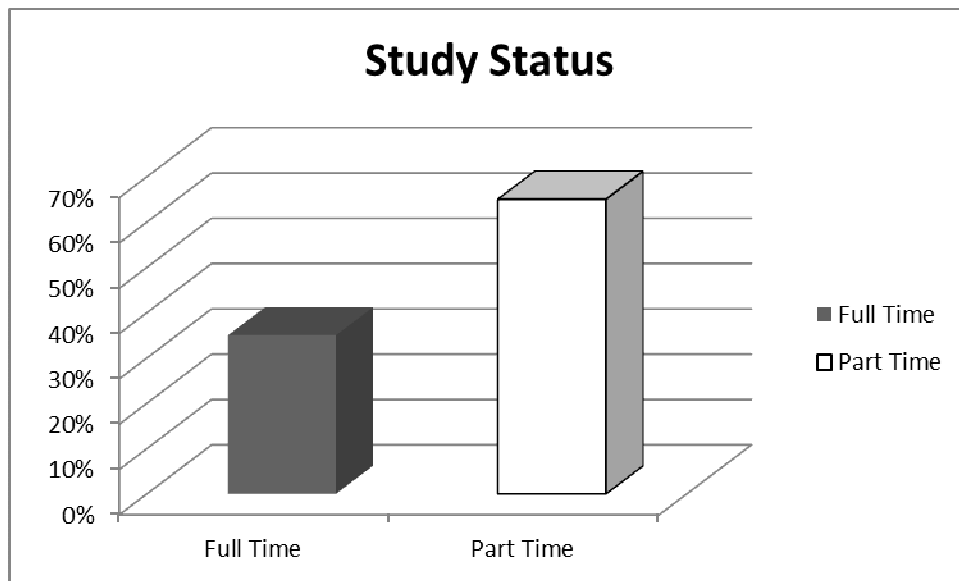


Figure 8: Full time or part time students

Figure 8 shows that part time students are more likely to be working and will have some kind of project experience. This enriched the primary data collected for this study because these part time students had both theoretical and practical exposure to the importance of soft and hard skills in project management.

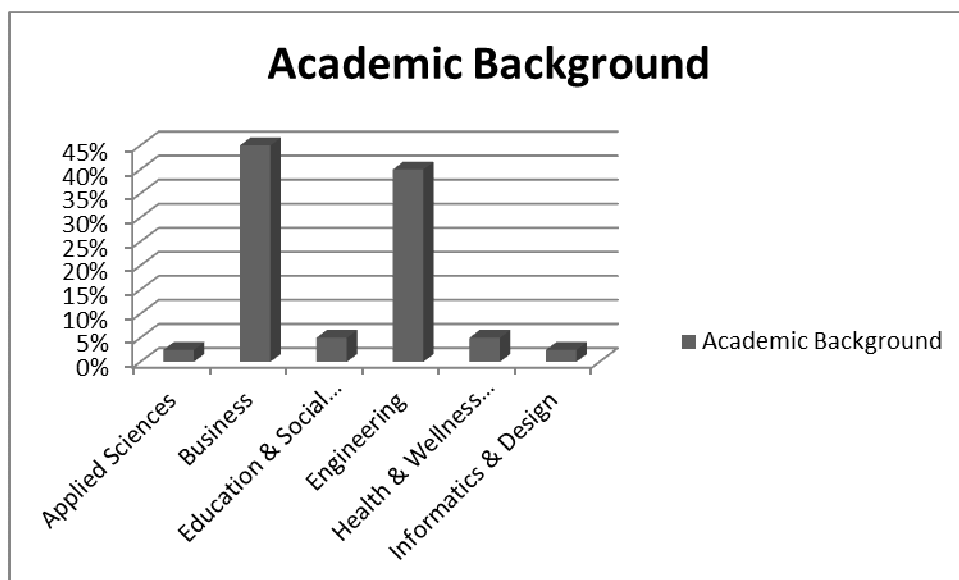


Figure 9: Academic background

There is a wide variety of academic backgrounds because of the small sample size hence the results in Figure 9 could change if further investigation is done. Business and Engineering appear dominant, as opposed to Informatics and Design.

Question 2 of the questionnaire determined the percentage of hard and soft skills for each subject. Results are shown in Figure 10.

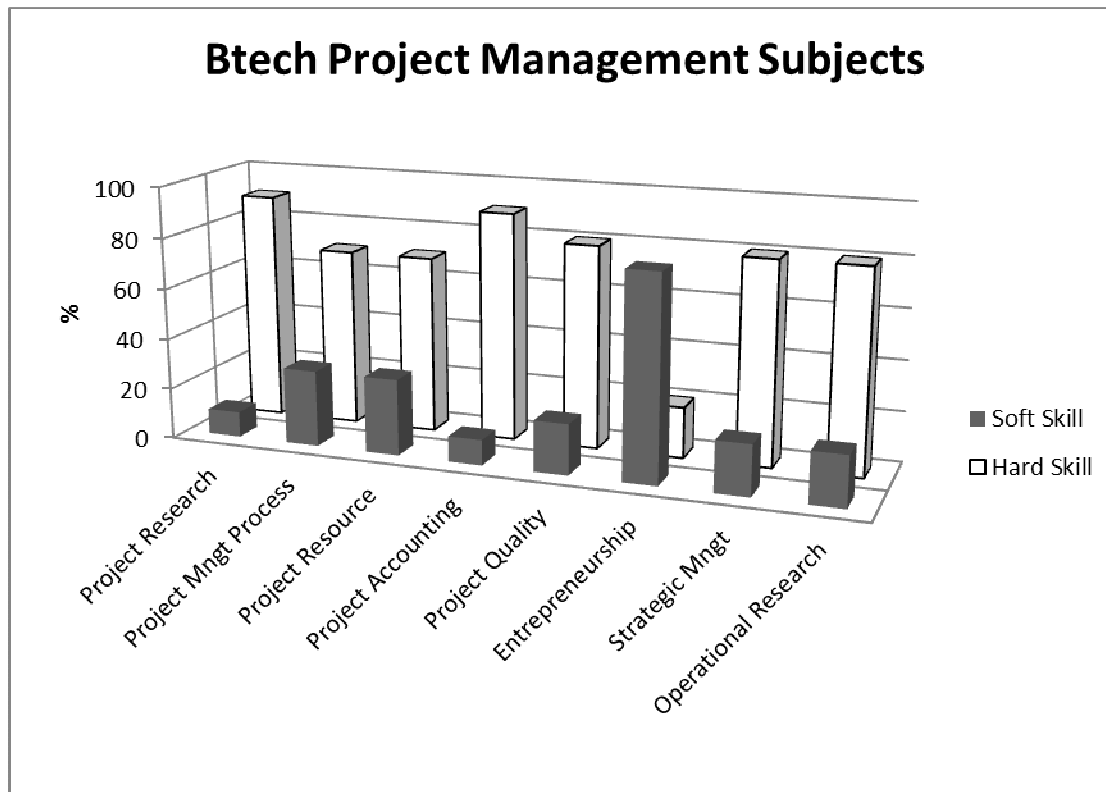


Figure 10: Percentage of Hard and soft skills of the BTech PM subjects

It is clear that the BTech Project Management Subjects comprises of more hard than soft skills. According to respondents, hard skills are more important than soft skills. This is only true for their subjects.

In Question 3 of the questionnaire respondents were asked to explain their answers in Question 2. Table 3 is only a consolidation of respondents' perceptions of hard and soft skills in each subject.

Subjects	Answers Consolidated
Project Research	Using technology is more of a Hard Skill
Project Management Process	Follow the right methodology – Hard Skills
Project Resources	Focus more on how to allocate resources – Hard Skills
Project Accounting	Methodology important – Hard Skills

Project Quality	To make sure the quality of product or service is according to standards – Hard Skills
Entrepreneurship	Interaction is key – Soft Skills
Strategic Management	Strategy - Hard Skills
Operational Research	Process important – Hard Skills

Table 3: Explanation of answers

Section C (Figure 10) determined whether the BTech Project Management program is more related to teaching hard or soft skills or both, while students were also given an opportunity to explain. Most of the respondents answered both, which actually contradicted the above findings, since most respondents' response in Section B refer to these subjects as being mainly hard skills rather than soft skills.

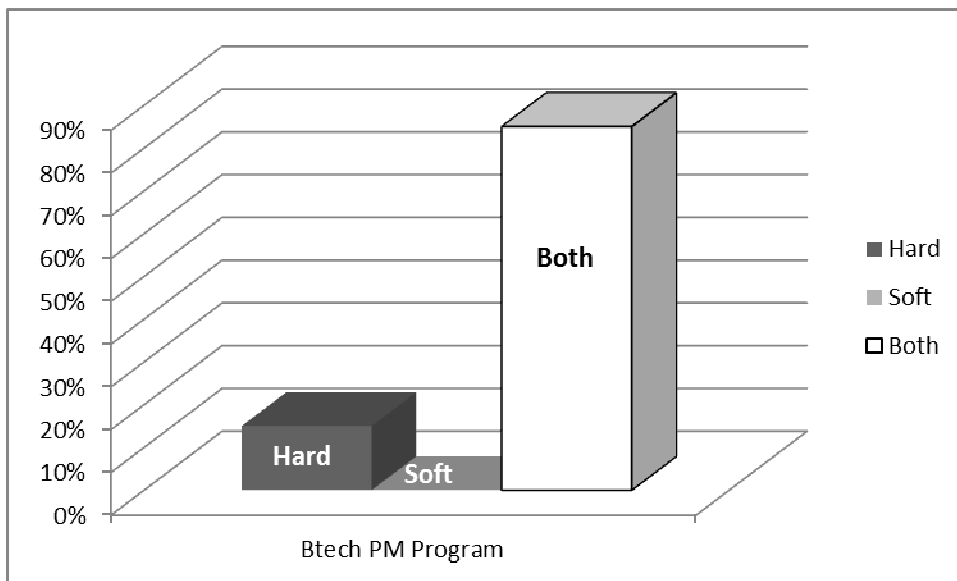


Figure 11: BTech PM Program - Hard, soft skills or both

Section D of the questionnaire determined what knowledge respondents had of Project Management Body of Knowledge (PMBOK). About 60% understood what the PMBOK was and what it stood for, while 40% did not.

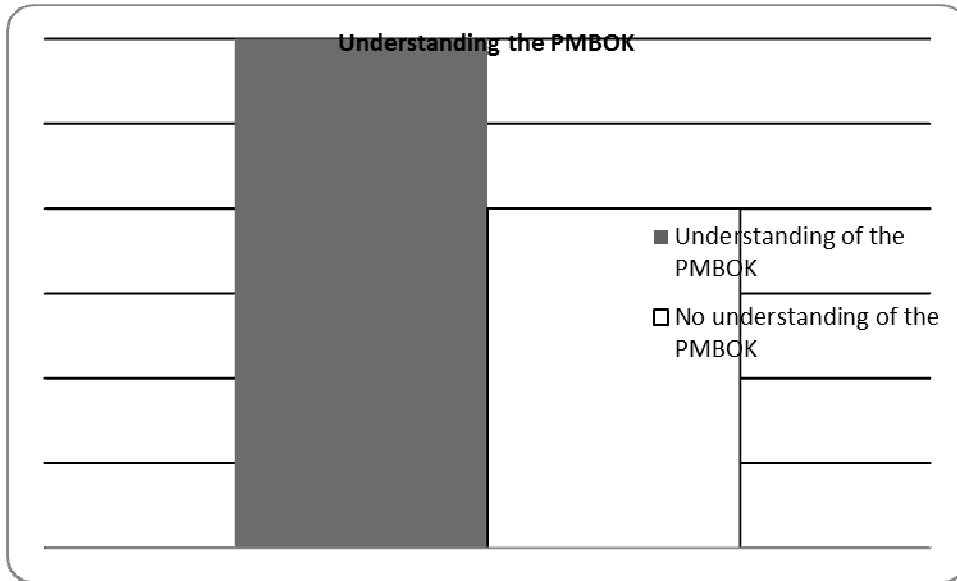


Figure 12: Understanding of the PMBOK

Question 5 of the questionnaire (Figure 12) asked if respondents knew anything about the PMBOK. It was alarming to see that so many had no understanding of what the PMBOK is.

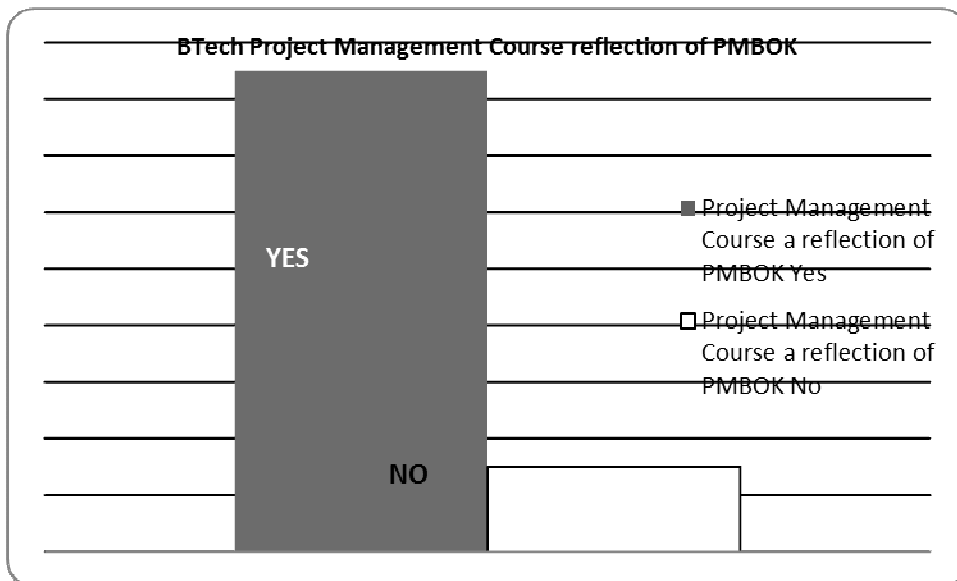


Figure 13: BTech PM course reflecting the PMBOK

Question 6 of the questionnaire sought to determine if respondents thought that the BTech PM Course is a good reflection of the PMBOK. Most respondents said (Figure 13) that the BTech PM course is a good reflection of the PMBOK.

Question 7 considered the Project Integration Management area of the PMBOK.

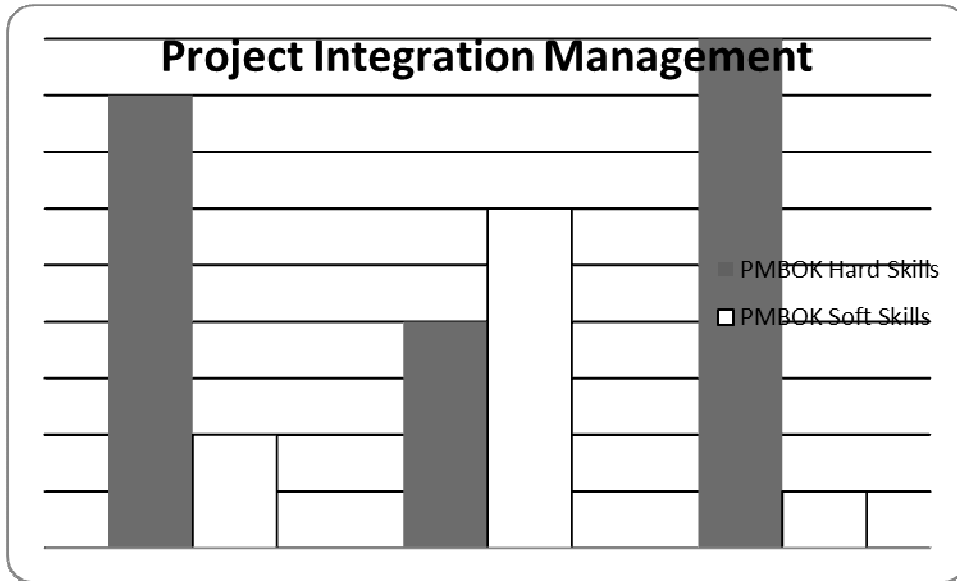


Figure 14: Project Integration Management of PMBOK

According to respondents (Figure 14), hard skills are more dominant, except for plan execution. This is consistent with the evidence from the study by Pant and Baroudi (2008) that argued that even the PMBOK Guide predominantly emphasizes the required 'hard (technical) skills' at the expense of the 'soft (human) skills'.

The last section of the questionnaire determined what percentage of Project Management practices comprise hard and soft skills, respectively. According to respondents, (Figure 15) Project Management practices 70% hard and 30% soft skills.

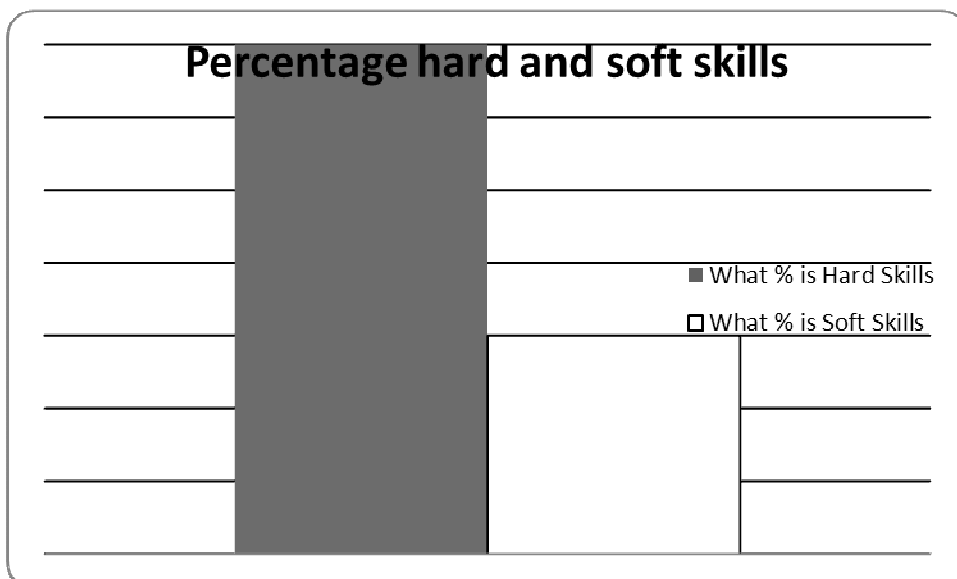


Figure 15: Percentage of hard and soft skills

## Summary

This chapter provided a presentation of information from questionnaires, which were distributed to 130 BTech Project Management students at the Cape Peninsula University of Technology, and this information was analysed. 61 questionnaires were returned. The intention was to determine BTech Project Management graduates' views and understanding of hard and soft skills associated with the Project Management industry and the Project Management program.

The background data showed that the respondents represented academic backgrounds. What was apparent from the findings was that, hard skills, as the literature suggests, are still more important than soft skills. A key finding from the analysis suggested that one requires both hard and soft skills for a project to be successful.

## 5. Chapter 5

### Discussion

#### Introduction

This chapter presents the findings from Chapter 4. This study was aimed at obtaining and studying BTech Project Management graduates' views and understanding of hard and soft skills associated with the Project Management industry. To achieve this, a sample of 130 graduates of the BTech Project Management program from the Cape Peninsula University of Technology was surveyed. This was to determine their views and attitudes regarding hard and soft skills of Project Management according to their program, and relevance within the Project Management industry.

#### Discussion- Emerging Issues, Themes and Views

There was a wide range of different qualification levels amongst respondents, which suggests that their level of understanding is important in terms of the influence that their completion of the BTech Project Management course will have on successful projects. This is supported by research that Project Management education will lead to successful projects.

What the researcher found from the results in Chapter 4 was that most respondents still believe that all their subjects, as well as Project Management, are more about hard skills to have a successful project outcome. In relation to the question if they think that PM is hard, soft or both, most respondents answered to both. Most respondents had an understanding and knowledge of the PMBOK.

Furthermore, respondents stated that PM practice is 70% hard and 30% soft skills. If one considers what respondents said about their subjects, this ratio is true, but contradicts what they said about PM to be both hard and soft skills. What was evident is that more effective soft skill programmes should be included in the programme. Indeed, VanIngen (2007) contends that effective project management is a balance of organizational skills and people skills.

As stated above, a look at the BTech Project Management program subjects will give the illusion that focus is only on hard skills. However, soft skills are as much a part of the program as the hard skills. All the subjects teach one about better communication and how to communicate better with stakeholders, contractors and clients. Hence, Di Vincenzo (2006) contends that an individual aspiring to be a project manager should take classes that

emphasize communication, should have a solid background in mathematics, and a familiarity with personal computers.

The subjects can help to teach students more about general knowledge. One can learn general knowledge in a great quantity or variety, but is of little use if it is not organised into definite plans of action and directed towards a definite end. Specialised knowledge is how to organize and use knowledge after acquiring it- in other words, knowing where to obtain knowledge when required and being able to organise that knowledge into definite plans of action. This is sometimes the missing link in education: the failure of educational institutions to teach their students how to organise and use knowledge once they have acquired it. Hence, Jacques, Garger and Thomas (2008) argue that individuals exhibiting a concern for people leadership style and those with a balance between concern for task and concern for people leadership styles are good candidates for project management positions as well as training/education in project management.

Project Management teaching and training has developed over the years. In the past, to be a good project manager one had to have a good understanding of PM tools and techniques (hard skills). Hence, all one's training and education was more likely only hard skills and not soft skills.

This means that as the literature indicated, in the past, more focus was placed on using hard skills to educate project managers and not on soft skills. This could also be why so many project failures accrued because of a lack of soft skills education. For example, communication is an important soft skill, and if the project manager cannot communicate to his/her stakeholders, how will anybody know if the project is successful or not. In addition, one can have all the hard skills in the world but if one cannot convey it in a proper manner, it is not going to help one at all. Thus, Sampson (2007) argues that the skills required for project management are now often divided 50/50 into traditional 'hard' skills, such as risk management and scheduling, and 'soft', people-oriented skills, such as interpersonal communication.

To be a good Project Manager, one should understand not only the hard skills, but also the soft skills of PM principles. Basically, the better one understands one's customers, the better one can satisfy their needs

If one considers the current PM environment, one will notice a shift from only hard to more soft skills training and teaching. According to the literature, soft skills are as important as hard skills. Some may argue that soft skills are more important in the PM environment, and must be taught in all Project Management programs. Thus, there is seemingly a general



consensus that project managers have to become great communicators. Hence, according to Brandel (2006), the list of additional skills and abilities contributing to project success include political savvy, an understanding of employee motivation, organizational dynamics, and team behaviour.

In terms of the future, a combination of hard and soft skills will ultimately lead to more project success and better project management. Therefore, in future, a combination of hard and soft skills should be taught at universities and other higher education institutes. This view is consistent with Gillard (2009) observation that as the field of research surrounding project management continues to grow, it is becoming more evident that success in the role of project manager cannot be attained with a technical skill set only- excellent interpersonal, or soft skills, are necessary requisites for success.

The Standish Group found that successful projects are delivered by experienced, skilled and knowledgeable project managers. Also, they found that a lack of experience, skill and knowledge of Project Management will lead to project failure (Bourne, 2007). According to Bourne (2007), the skills and experience that a project manager acquires through education and work experience must be balanced with people and relationship skills. Skills, knowledge and experience, according to Wideman (2000) will lead to project success. This is further highlighted by Drinkwater (2007) who states that the difference between project success and failure is the project managers' experience, knowledge and education development through the years, as well as their approach to project communication or soft skills.

Projects are people centric and the fact is that a project environment will always have elements of risk, uncertainty and conflict, according to Wideman (2000). Furthermore, the Project Management Body of Knowledge (PMBOK) reinforces the importance of Project Management education. Three areas of the PMBOK focus on soft skills: Communication Management, Integration Management and Human Resource Management. These processes should be completed by the project manager in order to deliver a successful project.

Hence it is important to learn and teach a standard form of Project Management. Not only will it benefit the industry, but also the future of operating projects successfully.

### **Limitations of the study**

A number of potential limitations prior to this study were identified. Firstly, the group of respondents did not represent the entire Project Management student population. Also, a

small sample size was used and a valid response rate for the Project Management industry was not received.

Distributing the questionnaire during class time could have led to a poor response rate (61 questionnaires out of 130). One of the key reasons for the low response rate was that respondents saw it as more work. Another consideration for the low response rate could be a lack of interest or a lack of willingness from respondents.

Or perhaps they treated it as just another questionnaire, and a better way would have been an Internet survey.

## **Summary**

This chapter discussed the study's results where a questionnaire was distributed individually to 130 BTech Project Management students at CPUT, and 61 complete questionnaires were retrieved. It appears that the BTech Project Management students understood what hard and soft skills are, and that soft skills are as important as hard skills within Project Management. Knowledge, education and experience are critical to successfully completing and delivering projects.

The results of the study support the fact that knowledge and education gained from the BTech Project Management program leads to more successful project outcomes, regardless of respondents' previous education. From the literature one can determine that Project Management education and training has changed over the years. One can look at the past, the current environment and what the future holds for Project Management.

According to the literature review project success does not merely relate to on time and on budget, but also through management of both hard and soft skills of Project Management. As shown in Figure 9, most of the respondents indicated that you need both hard and soft skills for successfully completing and implementing projects. But the respondents referred to their subjects as mainly hard skills. The contradiction could be because the questionnaire was distributed in the first part of the BTech Project Management course; so far respondents had little or no project experience. They do understand the importance of soft skills but cannot see at this stage where it fits into their subjects.

After completing the BTech Project Management course, the respondents will see where and how soft skills fits into their subjects. Because the focus in the beginning is so much on techniques and tools, you would think it is harder than soft skills. By cultivating and developing relationship in their teams, soft skills are improved and therefore the success

probability is increased. For example; working in groups to complete assignments for their respective subjects will help to develop soft skills.

We can look at it in a different way, were at the start of the BTech Project Management course respondents believe that charts, software, machines or methodologies do projects. But at the end of the course they will come to realise that people do projects, not charts, software or methodologies.

As the literature indicates these soft skills can be taught. Experience will also help with developing the proper soft skill set that will go hand-in hand with how to probably utilize the hard skills.

## 6. Chapter 6

### Conclusion

This study probed the attitudes of BTech Project Management students from the Cape Peninsula University of Technology regarding the hard and soft skills of Project Management associated with the program and the Project Management industry. Also, the study investigated what knowledge and project experience the students have regarding hard and soft skills. It is evident from the literature review that the Project Management profession is shifting and recognising the importance of both hard and soft skills, respectively.

A background overview of Project Management principles and standards, and also the Project Management Body of Knowledge (PMBOK) relating to hard and soft skills, were discussed in this study. Moreover, the study has shown that it is not only about delivery on time and on budget, but that both soft and hard skills are important to project success.

Chapters 1 and 2 showed that Project Management, in general, involved hard skills for a successful project. But the literature also showed the importance that soft skills play for project success. Hence, Di Vincenzo (2006) argues that project success depends on the ability of the project manager to delegate, coordinate ideas of diverse individuals, be flexible, and deal well with risk and stress.

The researcher examined students' views and understanding regarding the hard and soft skills of BTech Project Management. Because of the small sample size, the findings cannot be generalized to broader Project Management education programs.

From the literature review it was found that successful projects are linked to Project Management education. Also, education programs should include soft skill training in their programs. Considerable effort has been made in the area of hard skills processes, tools and techniques. Project Management methodologies are being developed and improved, but still a large number of projects do not deliver. Apart from hard skills, research in the area of soft skills is promising. A range of soft skills attributes required by project managers has been identified. The emotional intelligence framework proposed by Goleman (1998) provides a number of soft skills dimensions that can improve project success.

### Literature Review

A wide range of literature showed a changing paradigm, which is moving away from the "on time and on budget" approach in PM to the awareness and acceptance of the soft skills in PM. In Chapters 1 and 2 the typical PM paradigm for successful projects was hard skills.

Also, it was found that emerging was the importance of soft skills within Project Management.

The literature shows that a lot of focus is on the hard skills of Project Management while soft skills were mostly ignored. Modern Project Management and the role of the modern project manager also focus on people and relationship management.

### **Survey**

Consequently, the research revealed that most respondents had an understanding of hard and soft skills relating to PM. But an alarmingly high number of respondents had no understanding of the PMBOK. According to respondents, the BTech subjects focused more on hard skills and less on soft skills in PM. This concurs with the literature of past Project Management focus. Some MTech respondents' focus was 50/50 hard and soft skills. This concurs with modern PM principles.

### **Findings**

Accommodating soft skills in Project Management training programs can overcome shortcomings in existing Project Management methodologies, which supports the findings in the literature about hard and soft skills

A review of the graduate course in Project Management reflects that there is a lot that can help students to become better project managers. We can see this from answers in the questionnaires, especially students that are at the end of the program, since they understand what the process of a combination of hard and soft skills can mean to a project manager. But, while organizations are acquiring project managers, little is being done to develop the skills of project managers. Hence Kerzner (1987) contend that an effective project manager must be results oriented, have strong interpersonal skills, understand the organization, be committed to corporate values, exercise a strong leadership style characterized by authority, responsibility, adaptability, and interface management, and be committed to control and planning.

Furthermore, the literature shows that few organizations offer Project Management training programs and even fewer require internal or external certification. The concern here is that the organization is not seeing benefits from this training that it could achieve when compared with a more focused and comprehensive approach.

According to Kerzner (2003), the 16<sup>th</sup> point of Project Management maturity is to institute an all-employee training program with periodic updates based on documented lessons learned. The training of project managers is essential within this type of program.

As quoted by Sukhoo, Barnard, Eloff, Van der Poll (2011), the project manager has been likened to the maestro of an orchestra (Abramovici, 2001) - to become a maestro takes more than learning to read notes. It takes a tremendous amount of training and discipline to coordinate the efforts of all individuals who make beautiful music. 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 skills development? This is true to the findings from the questionnaire; while respondents understood what they were taught; most suggest that more experience and training is required to become a better project manager. Indeed, Sacco (2006) argues that a good project manager should be able to effectively direct project teams.

According to the literature, the industries, as well as education institutes should make a commitment to improve project manager development. The courses and training are all available. It is up to the industry and education institutes to select the right blend of learning that is aligned to the goals of the business to achieve project success. This is also true for the people in the Project Management Industry. They must also take responsibility to achieve project success.

## **Recommendations**

Based on the findings of this study, the following recommendations can be made:

- Because the study only focuses on a university in the Western Cape, further research is required on hard and soft skills regarding Project Management programmes across South Africa. Also, the focus must be on teaching people how to be project managers and not just focusing on teaching Project Management tools. Integrating real-world case studies and situations can have a significant impact on education.
- The findings from the literature and the questionnaire show that it will be useful for education institutions to incorporate soft skills, especially people skills, into their programs. This will help students to become more effective project managers. As seen from the Project Management Body of Knowledge, Project Management is not limited to certain industries but is a broader management profession. Thus, education institutions should not only focus on industries such as IT and construction but on non-traditional industries such as retail, production, and even science as well.

- The PMBOK should be an important guide to educational institutions for Project Management programs and courses. Education must not only focus on the traditional concept of, on time and on budget, but should include a more balanced and integrated approach to learn and teach soft and hard skills in subjects for the BTech Project Management program, such as Project Research, Strategic Management, Operational Research, Project Accounting, Project Resources, Project Quality, Entrepreneurship and Project Management Process.
- There is need for an extensive Baseline Survey focusing on the views of the Project Management sector in South Africa in order to establish the perceptions and thoughts of this key sector on the quality and skills-levels of project management graduates working in the sector.
- Need for a Curriculum Review Process at the University of Technology in the Western Cape to constantly evaluate and enrich the quality of the Project Management program, with some input from relevant stakeholders in the Project Management sector in South Africa. This framework can generate the 'best-practice' model for project management teaching and research in South Africa.
- To create a Project Management Consultative Forum that will act as the inter-face between Higher Education institutions and the project management sector in South Africa. This will facilitate greater value-addition and synergies between institutions that research in and teach Project Management programmes at tertiary level in South Africa with the prospective employers and practitioners in the Project Management sector.

## Summary

Project Management continues to grow. From the findings it is more evident that the success of project managers cannot be attained with hard skills only. In fact, it is evident that hard skills are being recognized as one of the minimal requirements for a project manager. This proves that a need for excellent inter-personal or soft skills is required for success, and although some would disagree, others advocate that these are skills that can be taught and learned rather than skills that are innate or genetic.

Education institutions that offer Project Management programs should provide students with the necessary skills to become more effective project manager is, and provide them with hard and, importantly, soft skills in a project environment that incorporates experimental learning and real life scenarios.

Project managers should be groomed by giving them experience and finally training them in the requisite technical skills. Good Project Management requires not only knowledge of and the ability to apply technical or “science” skills, but also the softer “art” skills, which include human behaviour and interactions.

Applying the right balance or mix of art and science, which will vary for different projects, is key to successful Project Management.



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## **APPENDIX**

### **Appendix 1 – Questionnaire**

P.O. Box 51822

Waterfront

Cape Town

8002

March 2011



Sir/Madam

#### **Project Management Questionnaire**

Dear Sir/Madam,

In order to complete my research thesis as one of the conditions of the Magister Technology Project Management graduation at the Cape Peninsula University of Technology, I would like to collect data and information about the soft and hard skills learnt or experienced whilst completing the BTech. Project Management program at the Cape Peninsula University of Technology.

Your willingness to complete the questionnaire is appreciated as the information obtained will assist the researcher to complete his Master's Business Administration in Project Management at the Cape Peninsula University of Technology.

The questionnaire has been designed in a way, which requires the minimum amount of time to complete.

All information will be treated as strictly confidential.

Enquiries regarding the questionnaire or the research project may be directed to the researcher.

AJ EIGELAAR

Researcher

Email: a3.eigelaar@gmail.com

Principal supervisor: A Radford HDHET (CPUT) 021-4603069

## A. RESPONDENTS' CHARACTERISTICS

### 1. Gender

(X)

Male	
Female	

### 2. Age

(X)

20-25	
26-30	
31-35	
36-40	
41 and above	

### 3. Level of studies

(X)

B.Tech.	
M.Tech.	

### 4. Study status

Full Time	
Part Time	

### 5. Enrolment status

1 <sup>st</sup> semester	
2 <sup>nd</sup> semester	
3 <sup>rd</sup> semester (Part Time only)	

### 6. Academic background: Faculty

Applied sciences	
Business	
Education and Social Sciences	
Engineering	
Health and Wellness Sciences	
Informatics and Design	

### 7. Department: Please specify (for example Marketing)

**B. Experience of hard and soft skills in each BTech Project Management Subject**

1. From the experience that you have gained in each subject in the BTech Project Management Course, in your own words, what is a hard skill?

.....  
.....  
.....  
.....

And what is a soft skill?

.....  
.....  
.....  
.....

2. In addition to hard and soft skills,

2.1 What percentage of Project Research 4 is a soft skill and what percentage is a hard skill? **(Example: soft skill 60% and hard skill 40%)**

.....

2.2 What percentage of Project Management Process 4 is a soft skill and what percentage is a hard skill?

.....

2.3 What percentage of Project Resources 4 is a soft skill and what percentage is a hard skill?

.....

2.4 What percentage of Project Accounting 4 is a soft skill and what percentage is a hard skill?

.....

2.5 What percentage of Project Quality 4 is a soft skill and what percentage is a hard skill?

.....

2.6 What percentage of Entrepreneurship 4 is a soft skill and what percentage is a hard skill?

.....

2.7 What percentage of Strategic Management 4 is a soft skill and what percentage is a hard skill?

.....

2.8 What percentage of Operational Research 4 is a soft skill and what percentage is a hard skill? .....

3. Please explain your answers for Question 1 from the experience and understanding of hard and soft skills that you have gained from each subject ;( **Example: soft skill 60% and hard skill 40%, because communication is more important than the tools that are used**)

3.1 Explanation for Project Research 4:

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3.2 Explanation for Project Management Process 4:

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.....  
.....

3.3 Explanation for Project Resources 4:

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.....

3.4 Explanation for Project Accounting 4:

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3.5 Explanation for Project Quality 4:

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3.6 Explanation for Entrepreneurship 4:

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3.7 Explanation for Strategic Management 4:

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3.8 Explanation for Operational Research 4:

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.....

**C. Experience of the entire BTech. Project Management Program**

4. Do you think that the critical cross-field outcomes of the entire BTech. Project Management program is more related to teaching hard or soft skills or both? Please tick from the options below.

HARD.....SOFT.....BOTH.....

4.1 If hard, explain why.

.....  
.....  
.....  
.....

4.2 If soft, explain why.

.....  
.....  
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.....

4.3 If both, explain why, and what percentage of each?

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.....  
.....

**D. Project Management Body of Knowledge (PMBOK)**

5. What is your understanding of the PMBOK (short description)?

.....

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.....  
.....

6. Do you think that the BTech. Project Management course is a good reflection of the PMBOK?

.....  
.....  
.....

6.1 If not, what would you change and why?

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6.2 What subject is better echo the PMBOK, and why?

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7. Project Integration Management area of the PMBOK - a subset of Project Management that includes processes that are required to ensure that various elements of the project are properly coordinated.

7.1 What percentage of the Project Plan Development of the Integration Management area in the PMBOK are soft skills and what are hard skills? Explain.

.....  
.....  
.....



.....  
.....  
7.2 What percentage of the Project Plan Execution of the Integration Management area in the PMBOK are soft skills, and what are hard skills? Explain.

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.....

7.3 What percentage of the integrated change control of the Integration Management area in the PMBOK are soft skills and what are hard skills? Explain.

.....  
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.....

**E. The Soft Skills and Hard Skills of Project Management**

The hard skills of Project Management relate to the actual processes, procedures, tools and techniques comprising planning, organizing, monitoring and controlling, while the soft skills relate to the project manager's attitudes and behaviours.

8. After reading the above statement, what percentage of Project Management practice do you think hard skills comprise?

.....

9. After reading the above statement, what percentage of Project Management practice do you think soft skills comprise?

.....

**If you wish to obtain the outcome of the research, please insert your email address in the space, provided below.**

**Thank you for your participation in this study.**

## Appendix 2 - Faculty of Business Research Ethics Committee



P.O. Box 1906 • Bellville 7535 South Africa • Tel: +27 21 442 6162 • Fax +27 21 447 2963  
Symphony Road Bellville 7535

Office of the Chairperson Research Ethics Committee	Faculty: <b>BUSINESS</b>
--	--------------------------

At a meeting of the Research Ethics Committee on 30 March 2011, ethics approval was granted to EIGELAAR, Andries J (202058484) for research activities related to the MTech/DTech: MTech: Business Administration – Project Management at the Cape Peninsula University of Technology.

Title of dissertation/thesis:	A perception survey on the PMBOK knowledge areas within a BTech programme at a University of Technology in the Western Cape  Supervisor: Mr A Radford
-------------------------------	---

**Comments (Add any further comments deemed necessary)**

Research activities are restricted to those detailed in the research proposal.

*Please note that the following application was submitted to the Faculty of Business Research Ethics Committee (FBREC) on 26 January 2011. The proposal was ethically acceptable in principle, but required supporting documentation and necessary corrections. The necessary documentation and corrections has been received and resubmitted.*

	30 March 2011
Signed: Chairperson: Research Ethics Committee	Date

Signed: Chairperson: Faculty Research Committee	Date

Clearance Certificate No | FBREC0003

## Appendix 3 – Permission and informed consent letter from Program Coordinator



**FACULTY OF BUSINESS**  
*Department of Management & Project Management*  
(Cape Town Campus)

24 January 2011

Dear Sir / Madam,

**Permission to use CPUt BTEch Project Management students as audience for MTech Business Administration in Project Management Research – Andries Eigelaar (Student Number: 202058484)**

This letter serves to grant permission to Andries Eigelaar to canvass the opinions of the BTEch Project Management community towards a research effort in fulfilment of the MTech Business Administration in Project Management at CPUt.

This active research takes place during the first semester of 2011. Any further requirement for access to students for the purpose as stated, should first be approved by the department.

Such research activities should not negatively impact on the lecturing and research staff of the university and should be conducted subject to the approval of the Faculty's Ethical Clearance Committee.

Yours faithfully



**MR. A. F. RADFORD**  
**PROGRAM COORDINATOR: BTECH PROJECT MANAGEMENT AND MTECH BUSINESS ADMINISTRATION IN PROJECT MANAGEMENT**  
**DEPARTMENT OF MANAGEMENT & PROJECT MANAGEMENT**  
**TEL: (021) 460 3069**

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P O Box 652 Cape Town 8000 · Kelzersgracht and Tennant Street, Zonnebloem ·  
Tel: +27 21 460 3069 · Fax: +27 21 460 3717 · Website: <http://www.cput.ac.za> · E-mail: [radforda@cput.ac.za](mailto:radforda@cput.ac.za)

## Appendix 4 – Grammarian Certificate

### GRAMMARIAN CERTIFICATE

1 February 2012

Dear Sir/Madam

This serves to confirm that I have proofread and edited the research study proposal entitled: *“An analysis of industry relevance of acquired Project Management skills at a university of technology”*, and that the candidate has been advised to make the necessary changes.

Thank you.

Yours faithfully

Shamila Sulayman

(Ms) Shamila Sulayman

Communication Lecturer

Department of Management and Project Management

Faculty of Business

Cape Peninsula University of Technology

(021) 460-3180