



PERCEPTIONS AND EXPECTATIONS OF IT SERVICE DELIVERY POST MIGRATION TO A MICROSOFT PLATFORM AT A UNIVERSITY OF TECHNOLOGY IN SOUTH AFRICA

by

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DECLARATION

I, Nerina Reddy declare that this dissertation is a representation of my own work both in conception and execution. This work has not been submitted in any form for another degree at any university or institution of higher learning. All information cited from published or unpublished works have been acknowledged.

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“An investment in knowledge always pays the best interest”

Benjamin Franklin

ABSTRACT

The implementation of Microsoft (MS) technologies and solutions as organisational infrastructure within the higher education arena has become a popular choice both internationally and within South Africa. With benefits such as reduced costs, improved productivity and improved service delivery to both staff and students, MS technologies and solutions seem to be the preferred choice for many institutions worldwide. The Durban University of Technology (DUT) was the first university of technology in South Africa to implement all nine MS technologies simultaneously. Since migration to the MS platform in 2009, DUT staff have raised concerns regarding the new solutions, particularly with reference to aspects such as security, accessibility, and reluctance to use self-help tools to improve their IT experience. Migrating from a non-integrated system to an integrated MS platform thus resulted in IT service delivery becoming a contentious issue. .

This study discussed: the quality of IT service delivery regarding the MS infrastructure within the DUT; the types of MS technologies and solutions implemented; the resulting impact that these have had on the full time administrative and academic staff at the DUT; and their perceptions and expectations of IT service delivery. Using a mixed methods research approach and underpinned by the modified SERVQUAL framework *viz.* RATER, the quality of this service was investigated. This study yielded both positive and negative findings regarding expectations and perceptions of the quality of IT services. Results indicated that although staff were generally positive about the migration and satisfied with the resulting IT service delivery, there was room for improvement in terms of the quality of IT services offered by DUT's Information Technology Support Services Department. Based on the findings, recommendations for improved IT service delivery (ITSD) and IT service management (ITSM) were proposed. It

was also recommended that the framework deemed most suitable in the MS dominant IT infrastructure, is the MS Operations framework.

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ABBREVIATIONS USED IN THIS STUDY

AD	:	Active Directory
CAL	:	Client Access License
COBIT	:	Control Objectives for Information and Related Technology
CRM	:	Customer Relationship Management
DUT	:	Durban University of Technology
DMSM	:	Delone and McClean Success Model
eSCM-SP	:	eSourcing Capability Model for Service Providers
HE	:	Higher Education
HEI	:	Higher Education Institution
ICS	:	Information and Communication Services
ICT	:	Information and Communication Technology
ICTS	:	Information and Communication Technology Services
ILM	:	Identity Lifecycle Manager
IREC	:	Institutional Research Ethics Committee
IS	:	Information Systems
ISO	:	International Standards Organization
IT	:	Information Technology
ITIL	:	Information Technology Infrastructure Library
ITS	:	Information Technology Services
ITSD	:	Information Technology Service Delivery
ITSM	:	Information Technology Service Management
ITSS	:	Information Technology Support Staff
KSU	:	King Saud University
LAN	:	Local Area Network
LINUX	:	Linus Torvald's Uniplexed Information and Computing System
LIPA	:	Liverpool Institute of Performing Arts
MBS	:	Melbourne Business School

MOF	:	Microsoft Operations Framework
MOSS	:	Microsoft Office SharePoint Server
MSF	:	Microsoft Services Framework
MSFCS	:	Microsoft Forefront Client Security
MS	:	Microsoft
PC	:	Personal Computer
PU	:	Pace University
R2	:	Release 2
SA	:	South Africa
SCCM	:	System Centre Configuration Manager
SCOM	:	System Centre Operations Manager
SERVQual	:	Service Quality
SLA	:	Service Level Agreements
SQL	:	Structured Query Language
TCO	:	Total Cost of Ownership
TUM	:	Technical University of Munich
UoT	;	University of Technology
UNIX	:	Uniplexed Information and Computing System
WAN	:	Wide Area Network
WSUS	:	Windows Server Update Services
ZOT	:	Zone of Tolerance

APPENDICES

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CHAPTER ONE: INTRODUCTION

1.0 BACKGROUND TO THE STUDY

The Durban University of Technology's (DUT) Information Technology (IT) infrastructure underwent transformation when the Novell licensing agreement came to an end in August 2008. The university thus had to consider an alternative solution. At the end of 2008 the DUT adopted various Microsoft (MS) technologies and solutions to provide a range of integrated IT services to the DUT community; with final system implementation completed in 2009. The previous IT infrastructure consisted of Novell e-Directory and GroupWise messaging systems and supported approximately 2000 academic and administrative staff members and 22000 students.

The decision to migrate from a non-integrated system to an integrated one included an email messaging solution, MS desktop applications, anti-virus solution, domain credentials for single sign on and a document management repository. The most feasible solution, based on keeping in line with the business requirements, resulted in the simultaneous implementation of various MS technologies as the popularity of employing MS technologies in commerce and education is growing rapidly worldwide. According to the documented case studies by MS, the different types of technologies and solutions employed both in the world of commerce (Microsoft, 2012a, b) and in higher education (Microsoft, 2011a) are yielding positive results such as reduced costs, improved productivity and improved service delivery among other benefits experienced since implementation.

DUT was the first University of Technology (UoT) in South Africa (SA) to implement nine MS technologies and associated applications simultaneously. Through its implementation, the DUT attempted to greatly simplify the collaboration and communication of its employees, support a mobile and roaming workforce, ensure the security and protection of the organization's information and assets and attempt to change and/or improve the manner in which IT services were delivered using this new, integrated system. With the

previous platform, systems could not be integrated to provide these options and solutions.

1.1 MS TECHNOLOGIES

Microsoft is one of the largest companies in the world and controls 80 percent of the entire personal computer (PC) software industry, offering hundreds of products to the market and has approximately 91 000 employees worldwide (Bechtle, 2008). According to Teece (2010), MS's impact can be felt around the globe in nearly every sector that relies upon computing products and services. He adds that MS plays a role in both the corporate and educational fields and partners with companies, institutions and organisations in an effort to improve efficiency, productivity and ease daily operations. MS recognizes that small businesses rely on technology as a strategic business asset. Investing in IT helps reduce operating costs, elevate employee performance and increase business connections to clients (also referred to as customers) (Meehan, 2009). She adds that by implementing various technologies that are company specific, MS can help a company to save costs, improve financial management, promote system security, improve collaboration and boost competition.

Various MS technologies have been implemented within corporate companies and higher education institutions (HEIs) worldwide and MS has partnered with the educational sector on a global scale including South African educational institutions (Microsoft, 2011a). The MS technologies and solutions range from server and desktop technologies to suites and applications and perform a range of tasks or functions which are designed to meet specific needs for each company or HEI (Microsoft, 2011a). The different ways in which these are implemented within the commercial as well as educational arenas are discussed in detail in Chapter Two.

1.2 ADOPTION OF MS TECHNOLOGIES AT THE DUT

The migration to the MS platform at the DUT was conducted in two phases. The first phase was conducted within the staff environment and the second within the student environment. The nine MS technology streams and associated applications (which are currently the latest version releases) are listed below (for a description of each type of technology, please refer to *Appendix A1*):

- Active Directory
- Exchange Server
- SharePoint Server
- System Centre Configuration Manager
- System Centre Operations Manager
- Identity Lifecycle Manager
- Microsoft Structured Query Language (SQL)
- Forefront Client Security (for desktop machines and servers)
- MS Office suites and applications

The above were decided on as a result of informative structured workshops hosted by the MS South Africa technical team with the DUT ITSS management.

1.3 INFORMATION TECHNOLOGY SERVICES

Information technologies are an integral part of any organization, they are constantly emerging and evolving (Nevo, Nevo and Ein-Dor, 2010) and are expected to cover a wide variety of services required by users (Skyrius, 2005). IT services are knowledge-based services provided by experts, who are proficient in information technologies and systems, to clients who need technologies and systems more often for their daily work related operations. While providing these knowledge-based services, service providers obtain relevant domain knowledge from the clients and in turn, the clients expect an

influx of technical knowledge from the providing experts (Park, Lee, Lee and Truex, 2012).

The majority of the work of the IT department in any organisation centres around the delivery and support of its services. While new information systems are procured and implemented, the focus of the IT department has moved towards service delivery and service improvement (McBride, 2009). A wide variety of IT resources and capabilities are relevant to the execution of the customer service process e.g. technical IT skills and generic information technologies (Barney, Muhanna and Ray, 2005). Service providers often undergo multiple, separate diagnostic efforts, such as ISO (International Standards Organization) 9001:2000 evaluations for determining the capability of a service source. The integration of these diagnostics and service processes is critical to measuring the performance and quality of the actual service delivery (Hickey and Siegel, 2008).

1.4 IT SERVICE DELIVERY

Chen, Tsou and Huang (2009) state that service delivery is the process of applying specialized competences such as knowledge and skills to provide customer services which comprise the service itself and the service channel. The adoption of IT to enable service delivery can have a positive or a negative impact on customers' attitudes, perceptions and behaviours, and therefore may reflect well or badly on a service provider (Nazımoğlu and Özsen, 2009). They add that IT is an essential part of the customers' experience and there is clear evidence that IT is increasingly influencing and altering the way and manner in which associated IT services are being conceptualised, designed, delivered and managed.

Schumann, Wunderlich and Wangenheim (2012) state that the use of IT has led to considerable changes in the service arena where previously, close personal contacts between customers and service providers were

traditionally relied on. They add that because the infusion of different types of IT technologies have altered the manner in which IT services are now delivered, the relationship between the customer and service provider has also changed. According to Walker and Francis (2003) the process of actually delivering IT services often appears to have been designed principally with the aim of achieving operating efficiencies, productivity gains and reduced costs for the service organisation but it takes insufficient account of different needs, capabilities and concerns of different customers. They caution that this will affect service delivery negatively because the focus is not on customer satisfaction. Ojiako (2012) adds that there are indications of associated risk which may create difficulties for managing IT service delivery and these difficulties may negatively impact the customer's service experience if not adequately addressed.

Wiguno (2011) states that IT service providers need to be consistent in the level of services they provide. She adds that this is so because in evaluating service performance outcomes, customers take into account historical service encounters where dissatisfaction in past encounters might lead to customers lowering their expectation. Alternately, she indicates that satisfaction leads to customers increasing their expectation, raising the possibility that future service expectation might not be met, leading to customers being dissatisfied once again. For this reason it is vital to provide a consistent performance that meets customer expectations.

In order to deliver an acceptably good standard of IT services to customers which meet their expectations, the availability of adequate facilities and IT infrastructure in both corporate companies and technological universities to fulfil their service delivery obligations, is important. The principles of IT service delivery should remain the same and the Gap or difference between what the customer expects and actually receives should be very minimal, irrespective of whether these services are being offered and delivered within a corporate company or an HEI. In order for these Gaps to be minimal or

non-existent, the quality of IT service delivery should always remain at an exceptional level.

1.5 IT SERVICE QUALITY

The idea of service quality as a performance measure has become vital in IT service delivery. This concept originated in the field of marketing and is associated with the need for service organisations or departments to understand and measure customer expectations (Parasuraman, Zeithaml and Berry, 1985). In order for service quality to be of an acceptable standard, customers need to feel that the IT services they receive are adequate in meeting their needs, all around. According to Parasuraman *et al.* (1985) and Kang and Bradley (2002), existing research has long considered service quality as a primary determinant of user satisfaction with IT service delivery.

In a study conducted by Sun, Fang, Lim and Straub (2012), IT service delivery was reconceptualised as a bilateral, relational process between the IT staff and users because of the knowledge intensive and collaborative nature of IT service delivery. Since the primary goal of IT service provision to customers revolves around fulfilling the customer's expectations, there should be a greater focus by service providers on the quality of the service provision and what steps can be followed to ensure a good level of service quality. If customers cannot utilize IT services adequately, productivity is hampered for both the customer and organisation as well.

Over the years, the increasing dependence on IT has resulted in a growing need for the provision of IT services to be of a quality that corresponds to the objectives of the organisation as well as meeting the requirements and expectations of the customer (Zeng, 2007). Customer satisfaction in using new solutions and technologies depends highly on the type and quality of IT services they receive, once these are implemented. In order to determine this level of satisfaction, service quality

needs to be measured. In managing service quality, especially at an HEI level, it is important to understand customers' expectations, how these expectations evolve and their importance in terms of service quality measurement (Rasli, Danjuma, Yew and Igbal, 2011). SERVQUAL, a multi-item instrument, is widely used in several customer service organisations to measure service quality. It is considered to be a generic tool which can be applied to a wide range of business services (Păuna, 2012) despite the criticisms SERVQUAL has received over the years (Carman, 1990; Cronin and Taylor, 1992; Badri, Abdulla and Al-Madani, 2005; Jabnoun and Khalifa, 2005).

SERVQUAL was a result of seminal work by Parasuraman, Zeithaml and Berry in the mid nineteen-eighties, to measure ten aspects of service quality (Parasuraman *et al.*, 1985). In the early 1990's, they modified SERVQUAL to the acronym referred to as RATER to form the qualities of a service offering from a client's perspective and which focuses on five key dimensions of service quality viz. reliability, assurance, tangibles, empathy and responsiveness (Elmorshidy, 2013). Studies indicate that using the RATER form of SERVQUAL seems to have great potential as the measurement of IT service performance and is a useful model for quantitatively exploring customer service experiences in service delivery organisations (Czaplewski, Olson and Slater, 2002). RATER is a 22-item instrument used to measure customer's expectations (E) and perceptions (P) of the five RATER dimensions (Buttle, 1996). It is a more concise scale with good reliability and validity and is adaptable to fit the characteristics or certain research needs of a particular organisation (Mishra, Kumar and Singh, 2013).

The quality of IT services delivered to customers is not only dependant on skills, competences and knowledge of IT staff but also on the type of IT infrastructure in place enabling the facilitation of these services. There are different IT technologies and solutions available depending on the specific IT requirements of the organisation. MS products are quite a popular choice for

corporate companies and HEIs both internationally and within South Africa (SA) (as discussed in greater detail in Chapter Two) and as demand increases, so does its implementation.

1.6 RATIONALE FOR THE STUDY

Prior to migration, aspects of IT service delivery e.g. using real time remote options to minimize downtime were not possible. Issues such as mail archiving, sharing of documents in a document repository, managing user credentials and ensuring security efficiently and effectively, were difficult at the DUT. The expectation of migrating to the MS platform was that it would resolve these issues and improve overall service delivery and ease daily tasks. However, since the migration to the MS platform, there had been positive and negative responses and feedback from DUT staff regarding the new solutions. Due to this feedback, the researcher felt that it was necessary to conduct the study to determine what the issues were and how they could be addressed as the migration was a huge transition for the DUT. She also felt this was necessary because: DUT is the first UoT in SA to implement nine MS technologies and associated applications simultaneously and has possibly set the benchmark for other HEIs to follow; the manner in which IT support is conducted has changed slightly from the previous system; and the quality of IT service delivery has since become a contentious issue among DUT staff.

A further motivation for this study was that no previous studies have been conducted at the DUT to determine the effects of IT services post migration. Past research conducted on IT service delivery and how it was improved using various frameworks and models include: Information Technology Infrastructure Library (ITIL) (Lubambo, 2009); the Delone and McLean IS Success Model (DMSM) (DeLone and McClean, 2003); and SERVQUAL for Information Systems (Kang and Bradley, 2002; Landrum, Prybutok, Zhang and Peak, 2009). Case studies have also been conducted by MS on the

resulting impact of IT service delivery post migration to an MS platform in several international HEIs (<http://www.microsoft.com/education/en-au/resources/Pages/casestudies.aspx>). However to the best of the researcher's knowledge, no formal investigation had been conducted on the impact of IT service delivery on staff at a South African UoT post migration to an integrated MS platform.

The researcher is a desktop support consultant in the ITSS department. She has been employed in this capacity at the DUT since August 2008. In her daily interactions with academic and administrative staff in terms of providing IT service delivery in the desktop support ambit, the researcher noted that although staff were generally content with the IT infrastructure change, there were certain issues which they found disconcerting, such as :

- security (with specific reference to login credentials and data),
- accessibility (with specific reference to mobile devices) and
- reluctance to use self- help tools to improve their IT experience.

This research was concerned with customer satisfaction derived from the new MS technologies and the IT service quality received since implementation. Through this study, the researcher hoped to determine what the general consensus was regarding IT service quality in terms of what the DUT staff expected and what they actually received. She also attempted to highlight the Gaps in the quality of IT services that resulted from the migration to the MS platform. To identify these Gaps, this study was based on the modified SERVQUAL instrument referred to as the RATER model and focused on the dimensions of customer expectations rather than how the service provider could minimize the perception Gap (Elmorshidy, 2013).

1.7 RESEARCH AIMS AND OBJECTIVES

The aim of this study was to investigate the quality of IT service delivery to DUT's full time academic and administrative staff (clients), post migration of the IT systems to an MS platform.

In order to achieve the above aim, the following objectives were addressed, to:

- identify IT usage, needs, support requirements and types and functions of MS technologies and solutions implemented and used by the DUT staff;
- determine staff perceptions and expectations regarding the migration to MS solutions in terms of:
 - the problems/challenges they faced in using these solutions; and
 - the services delivered by ITSS staff.
- determine ITSS management and specialists' perceptions and expectations of the impact of the MS technologies on IT service delivery; and to
- ascertain ITSS staff perceptions of their client's needs and expectations.

It was envisaged that based on the findings of this study, recommendations would be made to the ITSS management for a suitable IT best practise guide to be followed which could contribute to further possible improvements in both IT service management (ITSM) and quality of IT service delivery (ITSD) within DUT. While the findings of this study may not be generalizable to all UoTs (given that the DUT is the only UoT in SA to implement all nine MS technologies simultaneously), it is envisaged that this study will make recommendations in terms of IT service delivery to other institutions that plan to implement or already implement all or some of the technologies.

1.8 DEMARCATION OF THE STUDY

This study was limited to the DUT's full time academic and administrative staff members, both male and female, as they were the primary users of the MS solutions. The researcher was attempting to gauge the type of service delivery currently being experienced by the staff post migration to the MS platform. The researcher limited the study to the Durban campuses only, for the following reasons:

- IT support was offered daily to DUT staff telephonically, onsite (face-to-face) and *via* remote sessions post migration at the Durban campuses, by ITSS staff based at these campuses;
- IT support was offered by Durban based ITSS staff to staff based at the Pietermaritzburg and Indumiso campuses only when required *viz.* during registration periods and to address general queries such as login issues. This was done telephonically when necessary;
- Travelling between the two campuses i.e. between Durban and Pietermaritzburg was difficult due to the limited number of ITSS personnel based at the Durban campuses; and
- The network upgrade on the Pietermaritzburg and Indumiso campuses were still in progress, therefore attempting to provide remote IT support to DUT staff based there was very difficult and almost impossible. This was due to the slow network connection speeds which often resulted in what is referred to as a 'timeout' during a remote session. Onsite support was therefore provided to the DUT staff on these campuses by the IT support staff based there.

The researcher limited the study to the DUT only as this UoT was the first to migrate to the MS platform, employing nine MS technologies and solutions simultaneously.

The scope of this research related to perceptions of DUT staff only and did not cover student perceptions. Students were excluded from this study as

ITSS support is currently not provided to students. However, the DUT is currently working on implementing policies and procedures that will include students within the ITSS support ambit in order to deliver the same support to the student community as that provided to staff.

Although the new solutions were used by both staff and students, the focus in this study was on IT service delivery to full time staff only. Part time staff were excluded from this study as the system is rarely used by these staff members due to the fact that their hours spent on campus are minimal. Full time staff are the primary users of the system, they access the system daily and are therefore able to provide the required and relevant feedback during the data gathering process.

The purpose of this research therefore, was to investigate IT service delivery and the quality of this service to the DUT full time staff, post migration to the MS platform. This study highlighted the impact of the MS technologies on IT service delivery since its implementation, from both the client's (full time DUT staff) and ITSS staffs' perspectives. The data indicating user perception and satisfaction or dissatisfaction in terms of service delivery with the implemented system were gathered *via* a survey method using questionnaires that were completed by permanent academic and administrative staff members within various academic and administrative departments across the DUT Durban campuses.

The entire ITSS team was also included in this study. Questionnaires were completed by the ITSS support staff regarding their perceptions of their clients' expectations. The ITSS staff within the specialist and management positions who were directly involved in the migration process were present to conduct onsite interviews. These staff members were based at the ML Sultan and Steve Biko campuses in Durban.

1.9 OVERVIEW OF THE STUDY

The purpose of Chapter One was to give the reader an introduction to this study and to indicate why this research was conducted. Chapters Two and Three discuss literature pertinent to this study. Discussions include: present IT service delivery from a customer's perspective within the commercial arena versus the education sector; MS technologies used in HEIs both on an international and national level with particular reference to the UoT being researched; and IT service delivery deployment.

This is followed by a detailed discussion of aspects of IT service quality in terms of the customers' perception and expectations and then the discussion moves to service quality determinants and criteria. The SERVQUAL framework is then discussed with particular reference to its role in IT as well as its modification referred to as RATER, which is used in this study. This discussion concludes with the Gap not covered or addressed by previous research.

The research methodology chapter (Chapter Four) then follows with a detailed discussion on the methodology employed for this study with particular reference to aspects such as the research design, data sources and collection, the target population and sampling, data analysis and interpretation. Chapter Five presents the results and findings of the study. The dissertation concludes with proposed recommendations to the ITSS management in Chapter Six, based on the findings of the study.

1.10 DEFINITION OF KEY TERMS

1.10.1 Service quality:

Conformance to customer specifications where customers assess the quality of a service by comparing what they want or expect to what they actually get or perceive they are getting (Berry, Parasuraman and Zeithaml, 1988).

1.10.2 Information Technology service management:

Refers to the implementation and management of quality information technology services. IT service management is performed by IT service providers through people, process and information technology (Zeng, 2007).

1.10.3 Information Technology service delivery:

The process of executing IT services using tools and processes specified in a service catalogue to achieve expected levels of service level agreements and key performance indicators. It is concerned specifically with the services offered or executed at an operational level and is about “what” you deliver to the client (Ojiako, 2012).

1.10.4 DUT domain:

A group of users on the DUT network who share a common set of shared resources, such as server disk drives and printers. It is also the identification string that defines DUT's realm of administrative autonomy, authority, or control on the Internet formed by the rules and procedures of the Domain Name System (DNS) (Rawbone, Herbert, Hancke, Jenkins and Genis, 2008).

1.10.5 SERVQUAL:

A model used to explain the customer's cognitive process of evaluating service quality which has been used to measure service

quality in a variety of service contexts (Parasuraman, Zeithaml and Berry, 1985).

1.10.6 RATER:

A modified model of the SERVQUAL instrument which forms the qualities of a service offering from a client's perspective and which focuses on five key dimensions of service quality *viz.* reliability, assurance, tangibles, empathy and responsiveness (Elmorshidy, 2013).

1.10.7 MS platform:

The underlying computer system on which application programs run. These include the hardware that performs logic operations and manages data movement in the computer and the MS operating system and applications (Vermaak, 2008).

CHAPTER TWO: IT SERVICE DELIVERY

2.0 INTRODUCTION

This chapter discusses customers' perspectives and international trends regarding IT service delivery. This is followed by a discussion on IT support and service delivery in (HEIs) both internationally and locally to indicate the perceptions of how IT affects service delivery in those institutions. A brief discussion of MS technologies employed at the DUT is then presented, followed by the MS technologies currently or already implemented in international and other local HEIs - in order to give an indication of the effect that these technologies have or have had on IT service delivery.

One of the key aspects of IT service delivery is the manner in which the service is offered to the client i.e. IT support is offered either remotely or onsite and both methods should be as equally effective in resolving any IT issues. These two types of IT service delivery are discussed. A distinction between onsite and remote IT support is highlighted with reference to what each entails and what the differences are between the two. The reasons for these types of support are also indicated.

2.1 IT SERVICE DELIVERY: THE CUSTOMER EXPERIENCE

Service is multi-dimensional in nature and utilises a range of competencies which include not only quality, design and profitability but also productivity and recently other competencies such as automation, to deliver 'zero-touch, self-managed, agile and real time' customer offerings (Ojiako, 2012). Service delivery processes can be defined as a set of integrated processes describing the 'how' of a service (Nazımoglu and Ozsen, 2009). To be effective, service is also dependent on efficacy at the confluence between people and IT. The interaction between customers and service providers is

also impacted by advances in IT which enables standardisation, and therefore, potential cost reduction for the service provider (Ojiako, 2012).

Sun *et al.* (2012) define IT service delivery as the joint application of specialized competences (knowledge and skills) in the business and the IT domains by users and their IT unit. Instead of seeing users as mere consumers of value delivered through an IT service, this conceptualization envisions users as endogenous to how IT service is delivered and as those who coproduce (rather than just receive) an IT service; they do so by exchanging and combining their business competences of the IT unit. They also highlight that IT service delivery as being a collaborative, relational nature of service and the crucial role of users in creating value during service delivery and indicate that IT services are evolving rapidly toward a new model where users and IT units will increasingly interact in co-creating services.

The relational process view of service delivery is a view that envisions service as a continuous series of social and economic processes in which one party's specialised competencies are exchanged and applied so as to create value for itself or another party. This view indicates that customers can contribute value by collaborating with service providers in such activities as requirements definition, customization and integration of goods and/or services, participation in deployment and provision of post deployment feedback (Tuli, Kholi and Baradwaj, 2007).

According to Apfel (2003), in order to manage service delivery, the following four steps should be adhered to:

- define services to be offered: a value-driven service takes a client's perspective and describes why IT exists rather than what it does. Clients are concerned primarily with services and their outcomes and should be shielded from fulfilment elements required to deliver those outcomes;

- map processes to services: identify all processes that comprise a service i.e. services should be listed followed by processes to complete them (such as ITIL);
- solve service or process dilemma: balance the three related components viz. the service (what the client wants or needs), cost to deliver and the price that customers will pay. Changing one of these has a ripple effect on the others; and
- ensure continuous process improvement: establish a process that continually improves on those already implemented and in operation: this allows for the potential for a significant enhancement of process efficiencies.

The IT department is not just a provider of products, it is also a service provider and this may indeed be its major function. The quality of the IT department's service, as perceived by its users, is therefore a key indicator of IT success (Moad, 1989; Rockart, 1982). The department's ability to supply installation assistance, product knowledge, software training and support, and online help is a factor that has an impact on the relationship between IT and users. According to Skyrius (2005), user needs are divided into simple or complex and common or special information needs and in terms of IT delivery, users prefer simple support tools and techniques which further indicates that IT service delivery can be simple yet efficient and effective (Skyrius, 2005).

IT service delivery has become an integral part of any organisation's success as IT is one of the key components if not the most vital in an organisation's overall function. The manner in which IT services are delivered are important but more specifically it's the quality of this delivery that has become a key focus of studies conducted and the documented literature. To enable and maintain a reputable and trustworthy relationship with its customers, any IT service delivery department or organisation must pride themselves in the

quality of service delivery offered and must pay careful attention to their customer's needs for further improvements and overall organisational success.

2.2 IT SERVICE DELIVERY IN COMMERCE

Sun *et al.* (2012) define IT service delivery within a customer-centric perspective as the joint application of specialised competences in the IT and business domains between the service provider and the user for the benefit of the user through such deeds, processes and performance as IT planning, development, implementation, operation and maintenance. Rapidly changing business needs demand IT solutions from their service providers to stay responsive to change. IT solutions become increasingly 'servitized' (Cusumano, and Hopkins, 2011) i.e. they are turned from products in their traditional sense toward services as they must be constantly adjusted to deliver business value to users on demand timeously. The IT solution and its delivery efforts (e.g. planning, development, operation and maintenance) become increasingly inseparable with the common mechanism of integrating knowledge in the business domain with that in the IT domain (Cusumano, 2010).

More and more service firms (such as banks and brokerage firms) are providing IT based service options to their customers. These services are expected to bring benefits such as improved product and service quality, improved customer satisfaction, higher productivity, and improved financial performance (Karimi, Somers and Gupta, 2001). Furey (1991) suggested that IT practices could help enhance customer service by increasing convenience, collecting service performance information for management use, and offering extra services. According to Walker, Craig-Lees, Hecker and Francis (2002), determining the most efficient, effective and mutually acceptable use of technology in service delivery requires the customers' perspective to be known and understood. They add that for service providers,

the main issue relates essentially to deciding if a new and available technology, presumably one that would enhance the position of the service provider, would be acceptable to customers and not detract from the overall service experience.

Technical support is a service that the IT department provides to the users and one of the most complex concerns is how to assess service quality in a proper and accurate way. Although services generally have the same characteristics, IT services have peculiarities that make their evaluation even more subjective (Freitas and Albernaz, 2012). IT services are more or less intangible, i.e. they are generally something one cannot touch or feel, although they may be associated with something physical, such as the provision of information through a computer screen or personal digital assistant (Freitas and Albernaz, 2012).

Watson, Pitt, Cunningham and Nel (1993) state that intangibility may be the cause of difficulty that users have in understanding the service offerings of IT departments. They add that although the services of these departments may have a few tangible attributes such as equipment and user manuals, the resulting user relationship problems of intangibility are significant. They also state that the services provided by the IT department are inseparable and is related to intangibility meaning that the services of the IT department are created and used simultaneously. This relationship typically characterizes most services.

According to Watson *et al.* (1993), the services of the IT department are heterogeneous and this heterogeneity entails several aspects such as:

- a variety of services are offered by IT e.g. help desk, network connection, software selection;
- the same person may need to perform a range of services (e.g. write a program, answer technical questions, document a system); and

- many IT department services are performed by people: people are only human and will not always perform consistently.

There may be variation in services where services may differ from one to another within the same department i.e. variations may occur in the service a single individual provides from day to day and from user to user (Watson *et al.*, 1993). This makes standardization and service quality extremely difficult to control but this can lead to opportunities for service customization in order to meet users' specific needs. Due to these factors, the IT department is often faced with the dilemma of providing a certain level of quality while simultaneously attempting to treat each user as a unique individual (Watson *et al.*, 1993).

Organisations are becoming increasingly dependent on IT to fulfil their corporate objectives. This increasing dependence has resulted in a growing need for IT service of a quality corresponding to the objectives of the business and which meet the requirements and expectations of the customer (Zeng, 2007). At its simplest, customer service is being influenced and revitalized by IT which is a powerful tool or enabler in the arena of customer service (Domegan, 1996).

2.2.1 An international perspective of IT service delivery in commerce

According to Carr (2003), it is an undisputed fact that IT has become the backbone in the world of commerce. He adds that IT underpins the operations of individual companies, ties together supply chains and increasingly, links businesses to the customers they serve. The adoption of technology to enable service delivery can have a positive or a negative impact on customers' attitudes, perceptions and behaviours, and may therefore reflect well or badly on a service provider (Nazımoglu and Ozsen, 2009), for example, IT service delivery at International Business Machines Corporation (IBM) has been categorised in several delivery phases. In the

engagement phase, services and products or a combination of both are provided to meet customers' requirements, and which services are to be delivered to the customer are determined. IBM has its own documents for the implementation of ITIL (Information Technology Infrastructure Library) in IT service management. In order to define or accomplish customer-specific processes there are documents covering all types of service delivery activities for any customer in any part of the world (Nazimoglu and Ozsen, 2009).

In Gordon and Gordon's (2002) study conducted relating to IT service delivery using eight multinational companies in the United States (US) and the Netherlands, basic dimensions of service delivery were identified and a model was suggested in which the structure of IT service delivery reflecting tension between business units and corporate headquarters, was proposed. The results of this pilot study suggested four areas that were important in differentiating among companies in their delivery of IT services *viz.* priority setting, standard setting, conducting operations, and developing system. Gordon and Gordon (2002) indicated in this study that the US and Dutch companies demonstrated both similarities and differences in their delivery of IT services. One similarity for example was that for both groups, IT more often allocated resources and scheduled projects at the companywide level, whereas business units had these responsibilities at the local level. US and Dutch companies displayed some differences in standard setting, with the Dutch relying on IT for setting standards and enforcing these. However, the US companies more often involved business units in enforcing standards. In contrast, Dutch companies more often gave business units some responsibility for IT operations than US companies did.

The Karimi *et al.* (2001) study based on 213 IT leaders in the financial service industry where IT has the potential to impact marketing and operations functions of firms in order to increase customer service, found that IT management practises have the potential to impact customer service. IT

creates or maintains competitive advantage to service providers and helps improve customer service. Zhu, Wymer and Chen (2002) state that solid IT management practices can potentially impact customer satisfaction ratings which may lead to increased customer retention. They add that for this reason service providers such as those in the financial services sector must define specific goals and objectives for improving client service, understand what attributes customers are looking for while using IT-based services, design IT-based services to provide clients with personalized experiences, and define metrics to be used by project managers to measure customer perceptions of the service.

Kim, Eom and Ahn (2005) state that assessing the potential for using IT strategically in customer service can be achieved by moving away from viewing customers as exploitable income sources and treating them as assets to be nurtured. They add that this view is useful for firms as a whole and for the individual business units and functions within them. They further state that in order to improve customer services, firms require a significant and higher level of general management and IT leader involvement in IT planning, organization, control, and integration.

2.2.2 A national perspective of IT service delivery in commerce

In South Africa, IT service delivery has vastly improved over the years due to IT infrastructure improvements within major organisations and businesses. In 1995 South Africa spent about 9 billion rand on IT facilities (computer hardware, telecommunications equipment and software) and 2.2 billion rand on professional services in addition to internal spending on IT staff (Hodge and Miller, 1997). According to the available literature regarding IT service delivery in South Africa, the MS technologies and products seem to be widely used in many organizations which has led to improved service delivery and productivity. One example of how MS technologies have affected service delivery is highlighted at Telkom which is an SA telecommunications

organisation. Telkom is a communications provider that offers a rich portfolio of telecommunications and IT services to residential and business customers across the continent of Africa.

Telkom wanted to speed up data access and improve response times at its 58 distributed server sites and remote locations in an effort to increase employee productivity; they therefore deployed the MS Windows Server 2012 operating system and used the BranchCache feature to deliver content to remote employees. The company thus optimized its wide area network (WAN) and reduced latency issues by using the built in features at its remote office locations to boost employee productivity; increased data and delivery speed of software updates; reduced storage requirements by eliminating storage redundancies; and boosted employee productivity by enabling data to be accessed from the primary data centre as the content is cached locally without the added cost of bandwidth (<http://www.microsoft.com/casestudies/Windows-Server-2012/Telkom-SA-SOC-Ltd/Telecom-Provider-Reduces-Network-Latency-and-Storage-Needs-with-Server-Upgrade/710000001831>).

The Sanlam Group of financial services companies in SA wanted to create a more unified collaboration and communication environment for its employees. To this end, the company began to migrate from some of its current infrastructure to MS products and technologies. In addition to MS-based email and communications, Sanlam adopted MS SharePoint Server 2010 for collaboration and team and department-based document management. Sanlam reported that its employees work together more easily, and find and share information faster, which is expected to boost overall productivity as employees are able to improve their decision-making capabilities. The company experienced IT cost savings and a reduced administrative burden through centralized management of collaboration and document management services. Developers now use the out-of-the-box functionality and a flexible, scalable environment for implementing a comprehensive, enterprise solution (<http://www.microsoft.com/casestudies>

/Microsoft-SharePoint-Server-2010/Sanlam/Financial-Company-Uses-Collaboration-Solution-to-Promote-Corporate-Unity/710000001248).

Increased customer service and improved efficiency has always been a critical business driver for Nedbank, SA. The Home Loan approval process was historically executed in a manual fashion and as a result was slower than what Nedbank desired. Manual processing made it increasingly difficult to manage and control and as such the need arose for the process to be automated using a combination of back office workflow applications extended onto Windows Mobile devices. Mint Mobile Valuations is a fixed-asset valuation system created for the home loan assessors. It enables the management and administration of valuers in the field to conduct all the daily operations required.

The assessors who are out on the road are informed of valuation requirements on their mobile devices, laptops and/or tablet PCs. Managers monitor valuers' activities in a real-time manner. The valuator is able to capture property details into the system while at the property location. The efficiency and streamlining of communication methods and travel activities has resulted in drastic cost improvements while the mobile technology kept synchronised with the South African Property Transfer Guide database (<http://www.microsoft.com/casestudies/Windows-Mobile-6.5/Nedbank/Improving-the-customer-experience-with-faster-home-loan-turn-around-times-and-making-life-easier-for-property-valuators/710000000260>).

The value associated with IT service delivery can be consequential to any commercial organisation as good service delivery will have a positive impact on productivity and profit. Poor IT service delivery as a result of inadequate infrastructure, training and skills, can have a ripple effect ultimately resulting in the organisation experiencing a loss in productivity, profit and staff morale.

2.3 IT SERVICE DELIVERY IN HIGHER EDUCATION

IT service delivery is as important in HEIs as it is within the commerce arena, therefore the same principle in terms of a good quality of service should apply irrespective of the differences between the nature of business conducted within these institutions and organisations. Although HEIs contribute to the overall functioning and throughput within the academic arena and commercial organisations are profit driven, IT service delivery should be conducted in a manner that basically achieves the same goals i.e. to complete necessary tasks in order to facilitate and promote productivity. In order to illustrate how international and local HEIs have adopted MS technologies, the sections below indicate the use of these technologies in facilitating IT service delivery and the changes they have experienced since implementation.

2.3.1 International institutions

IT customer service delivery processes in the HE sector are treated with the utmost professionalism and seriousness in terms of providing IT services to the core clients being staff and students. Several international HE institutions have measures, policies and procedures and service catalogues in place that specifically target IT service delivery and service management. In a study conducted by Newton and Harrison (2010) at the University of North Carolina (UNC) in the US, customer service initiatives were investigated to determine internal and external client needs and perceptions so that core, critical IT services could be better defined and delivered. Discovery, which is the IT services Customer Service initiative, was designed primarily to identify any Gaps that exist between internal and external client practices and perceptions in order to create strategies to close those Gaps. Discovery findings revealed that delivering exceptional customer services are vital and critical to ITS clients and the long-term success of the organization. However, there was also a broad recognition that ITSs' performance at customer

service delivery, both internally and externally, had significant room for improvement

The results from this study at the UNC revealed 61% of ITS and its clients believed that ITS must fundamentally change the culture in order to significantly and sustainably improve customer services. This culture change required an organization-wide commitment to lead, collaborate, communicate, and deliver. The wider campus community had also clearly indicated its desire for collaboration with and proper communication from ITS in order to identify and receive the right services in a cost-effective, timely, and accountable way. The goal of the ITS Customer Service Initiative was to increase acceptance of ITS as a campus IT leader, leading to a positive perception of ITS and a cost-effective approach to providing campus services. The task that was agreed upon to accomplish this goal was one that would continually build positive relationships between ITS and other campus organizations. This was mandatory to improve ITS service to the campus and change the institutional client perception of ITS.

The findings from the study conducted by Newton and Harrison (2010) revealed that ITS managers and staff at the UNC stated that delivering exceptional customer services both internally and externally, was important and would impact the long-term success of ITS as a campus provider of choice. Recommendations that were made were based on customers' requests that ITS decision making should be a more cohesive and transparent. UNC's ITS vowed to engage in targeted strategies to improve customer service in those areas identified in this study's findings such as building of relationships, developing cost-effective solutions and improving the confidence and trust of the external campus partners.

At the Deakin University (DU) in Melbourne, Australia, the Deakin E-Solutions (DeS) provides core IT services and support to the university. The Information Technology Service Department (ITSD) developed a service

charter which highlighted the type of IT service and experience to be expected, client's rights and responsibilities: the steps to be followed if the IT service standards were not met and a feedback process to inform the ITSD of how well they were performing and how they could improve their customer service. This charter would help achieve the ITSD's aim of delivering integrated services by providing and supporting a stable Information Technology (IT) environment, assisting the DU to develop new IT initiatives, directions and strategies and supporting the University to effectively utilise IT resources for teaching and research purposes (<http://deakin.edu.au/its/services/index.php>).

The University of Bristol is one of the leading universities in the UK; it is consistently ranked in the top 10 in the UK and is in the top 100 worldwide (<http://www.bristol.ac.uk/it-services/policies/it-plan.pdf>). To sustain this, the university needs high quality IT to support the whole university and enable excellence. The IT services department drafted an IT Services Plan in August 2011 when a new IT services organisation was established to provide all IT facilities and systems for the university. This plan set out their vision, mission and values, and described the contribution of IT services to the university. It set out their strategic objectives and some key actions that the university were taking to achieve them.

This plan was intended as a 'living document' which would evolve to set out the future direction for IT services and, as such, will be further developed as part of on-going consultation with IT services staff and with their key stakeholders. The core values have been established which define the type of IT service that will be offered to both staff and students. The IT services were organised into specific groups, and each group had a short statement of purpose therefore helping to achieve the global aim of the IT service delivery within the university (<http://www.bristol.ac.uk/it-services/policies/it-plan.pdf>).

At Victoria University of Wellington (VUW), Wellington, New Zealand, Information Technology Services (ITS) is the in-house IT service provider for VUW. ITS are committed to delivering technology services that are not only of a high quality but that also aid their clients in meeting their core business, teaching, learning and research objectives. The services are delivered and supported by ITS at the VUW as well as external service providers. Services for staff have been documented in order to provide VUW clients with a central point of information on ITS services and resources. All services listed are currently available and can be accessed as per the service catalogue entry (<https://itservice.victoria.ac.nz/infraproduct/infraEnterprise.aspx?LITE>).

ITS Services are grouped into three service categories:

- core IT services: services to aid the day to day functions of the university;
- application delivery services: services to manage the delivery, accessibility and stability of VUW applications such as HR, Finance and Student Management Systems; and
- project services: services to aid in the implementation of new services at VUW plus the management of major upgrades to existing services.

ITS underpins their services with specialist support teams and a central point of engagement which is the ITS service desk, for all VUW staff, to ensure the quality and continuity of services. To align with the overall strategy of the university and fully engage with their clients, ITS has adopted a partnering approach to its customer relationships (<https://itservice.Victoria.ac.nz/infraproduct/infraEnterprise.aspx?LITE>). This is based on:

- an open and constructive communication style;
- a commitment to, and promotion of, a customer service ethos;
- a proactive and shared approach to problem solving; and
- ensuring each partner understands their roles and responsibilities in relation to this agreement

(<https://itservice.Victoria.ac.nz/infraproduct/infraEnterprise.aspx?LITE>).

To ensure all these are adhered to, VUW has an IT service catalogue in place and is a description of centrally provided IT services that are available to all staff within the faculty, schools and central service units at VUW. The services described are delivered and supported by ITS. This document details the available services, instructions on gaining access to services and details on the support arrangements agreed for VUW customers utilising the services (https://itservice.victoria.ac.nz/infra_prod/infraEnterprise.aspx?LITE).

2.3.2 National institutions

The IT service delivery process within SA HEIs are not as advanced in comparison to the international HEIs, but there are adequate measures in place to ensure that IT services are delivered appropriately, timeously and professionally. Most HEIs in SA offer the standard IT services and facilities which range from the call/fault logging facilities to networking and mobile services and these departments are continuously striving to deliver these services optimally. Some institutions have procedures which they follow from the time the incident is logged to the time the support is offered and incident is resolved satisfactorily (processes and services are illustrated as per the respective university's website) while others have service policies/procedures in place to ensure that service delivery is maintained at an optimal level.

At the University of Cape Town (UCT), SA, the ICTS department developed a core ICT services catalogue and service level agreement (SLA) which took effect on the 1st of July 2008, to improve and enhance IT service delivery at the university (<http://www.icts.uct.ac.za/modules.php?name=News&file=article&sid=3000>). It is intended as a single source of information for everything one needs to know about core ICT services at UCT. The specific list of services included in the SLA was approved by the university ICT committee (UICTC) in May 2005 (<http://www.icts.uct.ac.za/modules.php?name=News&file=article&sid=3000>). The SLA is by necessity a long document that comprehensively details more than 40 services, broken down

into two main sections with the purpose of establishing a cooperative partnership between ICTS and its customers and to:

- identify clear and consistent expectations;
- outline agreed roles and responsibilities;
- deliver services that are measured, monitored, reported and reviewed for continuous improvement;
- provide mechanisms for resolving problems; and
- provide a platform to enable changes in response to new technologies, customer requirements and other opportunities.

(<http://www.icts.uct.ac.za/modules.php?name=News&file=article&sid=3000>).

This agreement outlines the broad specifications for the SLA which were developed by ICTS and a sub-committee of UICTC members. This section lists service level target definitions and principles, fundamental customer responsibilities, fundamental external constraints, support hours, escalation procedures, reporting and review schedules, and communication norms (<http://www.icts.uct.ac.za/modules.php?name=News&file=article&sid=3000>).

The Service Catalogue provides detailed information about each individual service by providing;

- a service description;
 - service level targets (availability, response or resolution KPIs);
 - who may access the service and information;
 - supplier constraints;
 - customer obligations;
 - related policies;
 - chargeable components;
 - references to documentation and training; and
 - information about how to log a fault or problem with the service
- (<http://www.icts.uct.ac.za/modules.php?name=News&file=article&sid=3000>).

At Rhodes University (RU), SA, the IT support department has developed a User Support Policy, among others, to maintain their mission of being committed to providing efficient and effective service to their clients who comprised staff and students (<http://www.ru.ac.za/informationtechnology/itdivision/policiesandprocedures/usersupportpolicy>).

With the limited personnel available for software support, a 'self-help' system is encouraged and used to educate PC users so that they are computer literate and as self-sufficient in the use of PCs as far as possible. A range of courses is offered to cover introductory aspects of the various software packages supported by Rhodes IT. Lab assistants are available at specified times during the academic term in the PC laboratories to assist students with logging in, printing and basic software problems. A student help desk is situated in the Union Lab where students will receive assistance with ResNet and private computer problems.

All staff members are entitled to IT support, however, only computers owned by Rhodes are supported (<http://www.ru.ac.za/informationtechnology/itdivision/policiesandprocedures/usersupportpolicy>). A consultant is available at the help desk during office hours and where possible, will solve the problem telephonically or *via* virtual network computing (VNC). If this is not possible, the job is entered into the problem tracking system and a consultant with the appropriate skills is allocated the job. The relevant support consultant will contact the user and attempt to solve the problem within 24 hours. Users do not phone the help desk unless a job has already been entered. Problems, which cannot be solved by the support consultant within this period, will be referred to their superior who will advise them on a course of action.

IT service delivery as highlighted above, are provided using different technologies and different policies to guide, promote and facilitate this delivery in various HEIs. The policies that govern IT service delivery in

commerce contrasts to those governing HEIs as the core clients are very different. However despite the difference in the type of customer receiving the IT service, the principle and manner in which the service is delivered should not vary. In both cases, the client should receive the same calibre of service provided by the specific service provider. At the DUT, as explained above, IT service delivery is offered *via* the MS platform. In order for this service to be provided, various technologies had to be employed.

2.4 MS TECHNOLOGIES EMPLOYED AT THE DUT

Several different conceptualizations and definitions of information technologies have previously been offered by IS scholars. One such definition being that IT is a composite made up of some combination of components such as computer hardware, software, networks, and communication technologies, workforce trained in the field, procedures, the Internet, Intranets, and communication tools with an information processing capability aimed at enabling individual, group, and organizational tasks (Ciarniene, Kumpikaite and Vienazindiene, 2011). ITs have also been defined as central and enduring elements of the IS discipline's academic core but the question remains as to how different technologies relate to each other, what attributes they share and where they differ (Nevo, *et al.*, 2010).

One major reason for doing evaluations of information systems is to take actions based on the results of the evaluation. Results from evaluations form a base of knowledge that is supposed to be used to plan and perform knowledgeable actions by individuals in the organisation (Lagsten and Goldkuhl, 2008). The DUT has implemented a range of MS technologies and solutions (including desktop applications such as the MS Office Suite and solutions such as MS Forefront Client Security [MSFCS] antivirus), as the core IT infrastructure, after an intense series of workshops during which the previous IT systems were evaluated (Rawbone *et al.*, 2008). The MS technologies and solutions identified for implementation were considered to

be business enablers for the organization's internal staff members as well as students and were defined and implemented prior to August 2009. The suggested technologies and solutions were the result of the analysis of the business requirements and critical success factors listed during the Business Requirements Workshop (Rawbone *et al.*, 2008).

Being the first UoT in SA, to implement all 9 MS technologies simultaneously, a number of factors had to be considered such as the types of technologies to be implemented, the critical success factors involved in terms of business, technology and operations which had to be carefully researched to achieve overall desired results. Upon determining the DUTs business requirements, a number of MS technologies and solutions were identified for inclusion in the platform infrastructure, (described in *Appendix A1*). By migrating from a non-integrated to an integrated MS platform, the DUT was aiming to greatly simplify the collaboration and communication of its employees, support a mobile and roaming workforce, ensure the security and protection of the organization's information and assets and take IT service delivery to a new and different level.

Since the migration to the MS platform, the manner in which IT services are delivered and the quality of these services has been affected. Since one of the primary objectives of this study is to determine how this migration has affected IT service delivery quality, the researcher felt it important to give a brief background of the reason for the migration. She also felt that highlighting both international and local institutions that have adopted MS technologies and have experienced positive changes in overall productivity as a result, was relevant in order to show that the MS platform has the ability to improve IT service delivery.

2.5 MS TECHNOLOGIES EMPLOYED AT INTERNATIONAL HEIs

As discussed below, there are many HEIs that have migrated to an MS platform with documented positive results in terms of service delivery and overall infrastructure improvement.

2.5.1 Liverpool Institute of Performing Arts (LIPA), London, UK

The institute has become one of the UK's most prominent institutions for training in performing and community arts. By 2006, addressing the issues with its technology environment had become a priority for LIPA. The migration to Windows Server 2008 R2 DataCenter with Hyper-V was planned for the summer of 2010, to minimize the impact on users. The migration was expedited by using MS System Centre Essentials 2010, which includes most of the virtualization management functionality of MS System Centre Virtual Machine Manager 2008 R2, with a user interface designed for maximum ease of use. The increased manageability that comes with MS virtualization technology has also made it possible for LIPA to manage a continually expanding environment without additional Information and Communication Technology (ICT) staff (<http://www.microsoft.com/casestudies/Microsoft-System-Center-Essentials-2010/Liverpool-Institute-for-Performing-Arts/Institute-Picks-Hyper-V-over-VMware-Doubles-Productivity-Saves-90-Percent-on-Licensing/4000008791>).

2.5.2 King Saud University (KSU), Riyadh, Saudi Arabia

Established in 1957, the KSU was the first institute of higher education in Saudi Arabia. The university's mixed desktop and server environment included hardware running the Windows, Linux, and UNIX operating systems. The Deanship of e-Transactions and Communications wanted to make progress with the university's goal for unified communications that integrate instant messaging, presence information, telephony, and

videoconferencing with voicemail and email, all in one solution for the entire campus (http://www.microsoft.com/casestudies/Case_Study_Detail.aspx?CaseStudyID=4000011472). In 2009, the university signed a MS Campus Agreement featuring the MS Enterprise Client Access License (CAL) Suite. The agreement brought together the latest MS business productivity and core server technologies under one license, providing the university with cost-effective collaboration, security, communication, and desktop management capabilities. The enterprise CAL Suite had all the technologies they wanted: MS Exchange Server for their email and unified messaging solution so that faculty and staff can access voicemail, email, and calendar information in their inbox; MS SharePoint Server technologies for their collaboration and content management platform; and MSFCS technologies for endpoint protection and anti-spam.

IT professionals in the Deanship of e-Transactions and Communications use two of the MS System Centre data centre, MS System Centre Operations Manager (SCOM) 2007 R2 and System Centre Configuration Manager (SCCM) 2007 R2. System administrators are using SCOM to monitor the university's key applications regardless of the operating system they run on. SCCM 2007 R2 is being used to deploy security updates and the windows operating system onto PCs and for reporting and software and hardware inventories. Since signing its MS campus agreement, KSU has taken significant steps toward standardizing its IT infrastructure on technologies that deliver maximum business value, which helps to bring the university's vision to reality. (<http://www.microsoft.com/casestudies/CaseStudyDetail.aspx?CaseStudyID=4000011472>).

2.5.3 Pace University (PU), New York, USA

PU is private metropolitan institute of higher education in New York (USA). Part of preparing its students to succeed in the working world includes exposing them to the tools that they will likely use in future pursuits. The

university's strategic technology plan included integrating technology. Beyond student use of technology, Pace wants its employees to use technology to improve their interactions and service to students. Until recently, however, there was no central mechanism for communicating with Pace students. PU had a range of technologies in its environment, but it increasingly turned to MS solutions to solve business problems. The university then signed a MS Campus Agreement (<http://www.microsoft.com/casestudies/Microsoft-Enterprise-CAL-Suite/Pace-University/University-Uses-Progressive-Technologies-to-Enrich-Student-Experience-Raise-Profile/710000001131>).

Pace deployed multiple MS technologies that are covered under the Enterprise CAL suite to foster communication and collaboration among faculty, staff, and students. Both educators and administrators use workgroup-specific sites in MS SharePoint Server 2010 to post and share documents, track status, and manage projects. The university also implemented a SharePoint Server 2010. When it comes to interacting with students, Pace relies on MS Exchange Server 2010, and the university's ITS staff manages approximately 5,000 faculty and staff mailboxes. University employees use the system's shared calendaring, email address distribution lists, and integration with Active Directory (AD) for single-sign-on capabilities. Pace adopted MS Office 365, including the Exchange Online component, to add students to its hybrid managed Exchange environment. Its entire population of more than 30,000 total mailbox moved to a hybrid Exchange 2010-based solution (<http://www.microsoft.com/casestudies/Microsoft-Enterprise-CAL-Suite/Pace-University/University-Uses-Progressive-Technologies-to-Enrich-Student-Experience-Raise-Profile/710000001131>).

As of June 2012, the university is using MS SCCM 2007 and MSFCS. An organization's technologies can only make a positive difference if computers and solutions work properly, therefore Pace uses a range of MS tools to manage and help safeguard its environment. Through the implementation of

such technologies, Pace is now experiencing a competitive advantage, improved staff efficiencies in using integrated MS products throughout their environment, increased employee productivity and flexibility, enhanced service to students and effective use of financial resources (<http://www.microsoft.com/casestudies/Microsoft-Enterprise-CAL-Suite/Pace-University/University-Uses-Progressive-Technologies-to-Enrich-Student-Experience-Raise-Profile/710000001131>).

2.5.4 Melbourne Business School (MBS), Melbourne, Australia

MBS's approach to data management affected the interaction staff had with applicants, students, participants, employers, alumni, donor and friends of the school, negatively. The school wanted to improve its web presence and unify departments on one data collection platform to maintain the business-like appearance that lived up to its brand message. The school underwent an intense process of organisational transformation. MS assisted MBS in the planning and implementation of the school's new system, which commenced in January 2008 (<http://www.microsoft.com/casestudies/CaseStudyDetail.aspx?Casestudyid=4000003969>). The new Customer Relationship Management (CRM) tool that was implemented, was based on MS Dynamics CRM 4.0 and MS Office SharePoint Server 2007. It utilises a MS Structured Query Language (SQL) Server 2005 legacy system with AD and MS Office 2003.

The admissions process is controlled through MBS Direct which is a web portal designed to specifically act as the external interface of the CRM system. Members of the selection committee are emailed a link to each candidate's application. The selector can add and save notes to each applicant's record in CRM. Finally after screening an invitation or rejection letter is automatically generated and emailed to each applicant. When the applicant accepts their position, another workflow creates an active account in AD. It generates a MS Office Outlook account and gives the student

access to the Office SharePoint Server 2007 based student portal, which contains pre-reading, information about campus life, online discussion groups and an events calendar (<http://www.microsoft.com/casestudies/CaseStudyDetail.aspx?casestudyid=4000003969>).

Removing the possibility of data duplication has improved the service delivery levels at MBS. By removing the risk of data entry errors and information loss during the application process, applicant information is quickly and easily processed into the school's records to ensure improved relationships with MBS's staff, students and external clients. Manual processes are now automated, resulting in streamlined workflow. Productivity has also improved across various departments. The integration of MS Dynamics CRM with the school's legacy MS Office 2003 and Outlook platforms increased the ease of administrating courses and liaising with MBS constituents. MS Dynamics CRM advanced tools are used by the marketing department to create targeted marketing lists thus leading to effective marketing campaigns (<http://www.microsoft.com/casestudies/CaseStudyDetail.aspx?casestudyid=4000003969>).

2.5.5 Technische Universität München (The Technical University of Munich), (TUM), Munich, Germany

At the Institute for Nanoelectronics at the TUM, faculty and students focus on basic research relating to the design, fabrication, and simulation of novel computing devices and innovative laser structures. For several years, the Institute had been relying on the sophisticated MS Live@edu solution as its communications infrastructure. But there were two on going challenges that the Live@edu solution was not resolving for the Institute. Most of the faculty and some of the students required more than the 10 gigabytes (GB) of email storage allocated to them under Live@edu. Faculty and students at the Institute were also avid users of MS SharePoint Server, which the Institute had deployed to facilitate collaboration and the distribution of course

materials, student and guest presentations, regencies, articles of interest, and more. While Live@edu helped the institute by reducing the burden of maintaining its email infrastructure, it was not releasing the burden of maintaining the SharePoint Server infrastructure (<http://www.microsoft.com/casestudies/Microsoft-Office-365/Technische-Universit-t-Munchen/The-Cloud-Helps-the-Institute-for-Nanoelectronics-Break-New-Ground/710000000953>).

When university personnel became aware of MS Office 365 for education and how they could gain more online storage space and when it became available in Germany, they could then take advantage of SharePoint Online. Using SharePoint Online would move the task of monitoring and maintaining the Institute's SharePoint Server-based collaboration environment to MS, which would manage that environment in the cloud. Cloud computing is the process by which a user can remotely access data and program applications—usually by use of a web browser over the Internet (Dixon Jr., 2012).

MS Office 365 for education combines the MS Office desktop suite with online versions of next-generation MS communications and collaboration services, including MS Exchange Online for email, shared calendars, and shared address books, MS Lync Online for instant messaging and online video conferencing, MS Office Web Apps for online access to MS Office files and MS SharePoint Online for collaboration and resource sharing. These applications run in data centres owned and operated by MS who also maintain the servers and the software on a day-to-day basis. Users still have access to the Exchange-based email services with the only difference being an additional 25 gigabytes (GB) of storage space (<http://www.microsoft.com/casestudies/Microsoft-Office-365/Technische-Universit-t-Munchen/The-Cloud-Helps-the-Institute-for-Nanoelectronics-Break-New-Ground/710000000953>).

2.5.6 IMC University of Applied Sciences, Krems, Austria

Founded in 1994, IMC University of Applied Sciences is an internationally renowned university based in Krems, Austria. The university's IT department supports 800 computers for 140 full-time employees, guest lecturers, classrooms, and computer labs. In 2007, IMC wanted to establish an environment where tasks, processes, and workflows worked together, and it deployed MS Office 2007 and MS Office SharePoint Server 2007 (<http://www.microsoft.com/casestudies/Microsoft-Office-Professional-Plus-2010/IMC-University-of-Applied-Sciences-Krems/University-Improves-Education-and-Administration-Processes-with-Productivity-Solution/4000008925>). With Office SharePoint Server 2007, professors stored course content such as syllabuses, tutorials, articles, and videos in document libraries shared with students. IMC deployed paperless solutions based on MS Office InfoPath 2007 and Office SharePoint Server 2007 for travel expenses, vacation approvals, and classroom availability.

In August 2010, IMC upgraded to MS Office Professional Plus 2010 and MS SharePoint Server 2010 to help improve the way it's academic staff interact with students interact with each other <http://www.microsoft.com/casestudies/Microsoft-Office-Professional-Plus-2010/IMC-University-of-Applied-Sciences-Krems/University-Improves-Education-and-Administration-Processes-with-Productivity-Solution/4000008925>). The university installed MS Office 2010 on its 800 computers and made SharePoint Server 2010 available to its 140 full-time employees and 2000 students. With Office 2010, the university is able to take advantage of its previous deployments of MS Exchange Server 2010 and MS Office Communications Server 2007 R2. The university provides access to email, calendar, tasks, and contacts to all employees and students with Exchange 2010. With Office Communications Server 2007 R2, university employees use presence indicators that display availability throughout the Office 2010 suite and can initiate instant messaging sessions to communicate quickly with colleagues.

IMC planned to upgrade to MS Lync Server 2010 in 2011 to deliver a more comprehensive communication solution. To automate its deployment of Office 2010, the university used the MS Deployment Toolkit combined with MS SCCM 2007 R2, a product designed to simplify IT management. With automated synchronization between SharePoint Server 2010 and MS SharePoint Workspace 2010, professors and students can edit course documents and lists without an Internet connection when working remotely. The university's accounting department simplified its process for collecting tuition with SharePoint Server 2010 and Office 2010.

The admissions office improved the way it collects evaluations for prospective students. Using the new InfoPath Form Web Part in SharePoint Server 2010, IMC can add the prospective student information form to its web page without any code. Prospective students complete their application form online, and the information is populated in SharePoint. IMC is taking advantage of other improvements in Office 2010 and SharePoint Server 2010. Employees find it easier to work with different applications now that the user interface is consistent across all Office 2010 applications and SharePoint Server 2010.

With the consistent user interface across all Office 2010 applications and SharePoint Server 2010, help desk calls and costs have declined. IMC has saved financially on third-party licenses. IMC employees are able to stay productive with an improved ability to work from anywhere. With SharePoint Workspace 2010, the university has improved transparency in its processes and decisions with the new solution as the Office 2010 and SharePoint 2010 solution helps both staff and students to keep track of their responsibilities (<http://www.microsoft.com/casestudies/Microsoft-Office-Professional-Plus-2010/IMC-University-of-Applied-Sciences-Krems/University-Improves-Education-and-Administration-Processes-with-Productivity-Solution/4000008925>).

From the above examples of HEIs that have adopted MS technologies and the resulting affect since its implementation, it can be stated that MS technologies are gaining popularity in revolutionising not only the universities' IT infrastructure, but also changing the way IT services are being optimized and delivered through its adoption, with benefits such as improved IT service delivery, reduced IT costs and improved productivity. It seems that the popularity is spreading to SA HEIs as well. Some institutions that have already migrated or are in the process of migrating to an MS platform are highlighted below.

2.6 MS TECHNOLOGIES EMPLOYED IN SA HEIs

Since implementation of the MS technologies and solutions at the DUT, other universities have or are beginning to follow suite. The first example is the University of the Western Cape (UWC) who were previously managing approximately 60 000 records manually. In mid-2011 they switched to an integrated document management solution, realising immediate productivity and efficiency improvements (<http://www.microsoft.com/casestudies/Microsoft-SharePoint-Server-2010/University-of-Western-Cape/UWC-turns-around-service-delivery-with-integrated-student-file-management-solution/4000011175>).

Initially, their IT system was largely manual and they relied on data capturers and third-party vendors to digitise and index all their physical records, which were stored and retrieved when needed. This database contained many inaccuracies and they were unable to get a single view of a student's records. This system had ramifications across the university, causing frustration for faculties needing to access students' academic records. To resolve these issues, they implemented a MS SharePoint 2010 Server and Kofax document imaging and capture solution that revolutionised access to student information right across the university. Integration into other IT systems was limited but the solution allowed for the surfacing of student file

information in almost any system through the use of Web services. The university's student database could be interrogated automatically to locate missing information such as identity or student numbers.

The combination of the technologies enabled delivery of a complex solution in a fairly simple manner. (<http://www.microsoft.com/casestudies/Microsoft-SharePoint-Server-2010/University-of-Western-Cape/UWC-turns-around-service-delivery-with-integrated-student-file-management-solution/4000011175>). The Web browser interface removes user apprehension, or the need for retraining, which was made familiar by designing the front-end to reflect the UWC's branding. Staff are currently extremely happy with the performance and accuracy of the system and haven't received a single complaint; these improvements also mean that they save time and money because they are now far more efficient ([http://www.microsoft.com/casestudies/Microsoft-SharePoint-Server-2010/University-of-Western-Cape / UWC-turns-around-service-delivery-with-integrated-student-file-management-solution/4000011175](http://www.microsoft.com/casestudies/Microsoft-SharePoint-Server-2010/University-of-Western-Cape/UWC-turns-around-service-delivery-with-integrated-student-file-management-solution/4000011175)).

The second example is the University of Kwazulu-Natal (UKZN) where the migration to the MS platform is currently in the planning phase. The migration project is aimed at migrating the UKZN from a Novell environment to a MS environment (initially initiated and completed at the DUT). This project is envisaged as giving new meaning and substance to UKZN's vision of being a Premier University of African Scholarship. The MS Windows Server 2008 Platform with MS other 2010 suites of products will usher in a more stable computing environment that will underpin the University's major functional and operational requirements (<http://innerweb.ukzn.ac.za/ms/Pages/Home1.aspx>).

The current complexity in the environment is due to the multiple, non-integrated, disparate delivery systems and technologies, which has resulted in an infrastructure that is expensive to manage and maintain in terms of total

cost of ownership (TCO). In addition, this results in inadequate security implementations across platforms. The purpose of the migration project is to replace GroupWise with MS Outlook and Novell Netware with MS Windows servers. The project goals are to maximize cost savings and improve network security, reliability, continuity and manageability. All archived and current e-mail in GroupWise will be available in the new e-mail program, MS Outlook, after the migration (<http://innerweb.ukzn.ac.za/ms/Pages/Home1.aspx>). According to the ICS staff at UKZN, this project will benefit staff and students by:

- increasing the capacity and reliability of the network;
- reducing service failures and improving service response time;
- reducing system hardware and operating costs and energy consumption;
- providing staff with improved electronic tools (e.g. MS Outlook); and
- expanding Web and software applications, particularly for the classroom

(<http://innerweb.ukzn.ac.za/ms/Pages/Home1.aspx>).

With the growing use of various MS products/solutions/technologies both internationally and possibly locally, it seems that more HE institutions are opting for the MS route to experience the benefits of:

- decreased costs;
- improved productivity and flexibility;
- service reliability;
- IT staff efficiencies;
- enhanced student services; and
- improved IT service management and delivery.

Customer service is the lifeblood of any organization and its importance must be the attitude of the entire organization. Employees can be trained to provide the best service possible to the customer. However, if the technology

is inadequate, customers, and employees, will quickly become disheartened and frustrated. A frustrated customer or employee can lead to lower productivity. Technology, if used properly, can help employees work more efficiently and ease customer frustrations. Technologically facilitated means of service delivery has the potential to benefit employees and management alike.

Customers can be offered additional or extended services, greater convenience and control, potentially more reliable information delivery, access to data and support services that may have previously been unavailable and the ability to conduct transactions in such a way that does not necessitate the customer visiting the service organisation or provider or vice versa (Walker *et al.*, 2002). IT service delivery can be provided either onsite i.e. physically attending to the IT issue at the client's office or the service can be provided remotely i.e. the support consultant can access the client's pc/laptop via a network connection with the required permission from the client (Clive, 2012).

The MS technologies implemented at international HEIs are done on a slightly larger scale than the SA institutions including the DUT. Comparatively speaking, some technologies are in line with those employed at the DUT (such as MS SharePoint, Office, Exchange and SCCM) and other technologies that have already been employed at an international level are still being considered at local institutions (such as MS Lync at the DUT). However the major difference is that both international and other local HEIs have implemented their respective MS technologies piecemeal whereas DUT implemented them simultaneously hence completely changing the manner in which IT services are now offered. Implementing these technologies both at an international and national level, have indicated vast improvements in various aspects of IT including the service delivery aspect. Through this study, the researcher hopes to highlight that the DUT has already achieved some of the above mentioned benefits, with specific focus on the service

delivery aspect, through its current MS technologies and solutions and the resulting IT services presently offered.

2.7 ONSITE VERSUS REMOTE IT SERVICE DELIVERY

Service management and delivery is comprised of the technology, people and process components required to meet overall business and user needs. Its purpose is the consistent design and delivery of a technology service at the right quality, cost, and operating efficiency, set by customer expectation, where the IT organization or department is the service provider. The benefits can be found in reliable and consistent delivery of IT services which leads to higher overall customer satisfaction (<http://www.technet.microsoft.com/en-us/library/bb734740.aspx>). Today, IT is being increasingly used to enable and/or enhance exchanges in different service settings, to create new and improved benefits to customers. However, technology can malfunction and its manner of use may create “technology induced hostility” in customers. This may be due to technical difficulties but may also occur because of situations in which human interaction is substituted by a use of technology (<http://www.technet.microsoft.com/en-us/library/bb734740.aspx>).

According to Walker *et al.* (2002), offering technology facilitated service delivery allows clients to have extended services, greater convenience and control and access to data and support services resulting in the ability to conduct the transaction in such a way that removes the necessity for the provider to visit the customer or vice versa. They add that there are also risks involved such as the technology enabled service delivery can frustrate and intimidate the client, depersonalise the service encounter and create a distance between the provider and the client. Forcing a possibly complex technology on a client can create hostility. It is therefore recommended that there be a balance between the operational desirability and benefits of service delivery technology and the perceptions and behavioural responses

of the client to whom the service is being provided. It is vital that their clients' perspectives should be known and understood.

Service delivery onsite poses quite different challenges than in the more controlled production environment of a dedicated service facility. In the field delivery performance entails fixing the customer's problems on site (Lehtonen, Ala-Risku and Holmstrom, 2012). Onsite IT support (also referred to as face-to-face or field support) refers to a situation where an IT professional, or team of professionals go to the client's workplace to resolve IT issues or implement new IT infrastructure. Offering onsite IT support and service delivery implies that a relationship with the IT consultant must be built on trust and a proven track record (Larry, 2010)). Onsite support refers to the fact that one or two skilled and experienced IT consultants will visit the client at the workplace and try to fix the IT problem (Clive, 2012). They can analyze and diagnose the problem and provide various solutions to them, including repair or replacement of various devices or cables.

The advantages of onsite contact should not be underestimated. Many people find it easier to deal with people this way, rather than over the phone. Having an onsite consultant may help staff build relationships with the people providing IT support, which can improve confidence in the system. Knowledge building is a positive result of face to face contact. This may enable the consultant to pick up on areas of particular importance and recurring problems, as well as to predict and prevent issues that may arise in the future. Fast response times is what all clients hope for in IT service delivery as minimal downtime implies increased productivity (Clive, 2012).

Onsite IT support allows the convenience of support at the client's office at a time that is mutually agreeable and convenient between both parties. IT consultants are equipped with the technical expertise to diagnose and resolve the incident onsite and if the hardware needs to be assessed by the hardware specialist, then the consultant ensures delivery to and from the

technical center (Patterson, 2012). Onsite IT support affords both the IT consultant and the client a learning experience and in most cases, the client is able to “fix” the problem should it arise again (e.g. reconnecting a network cable). IT consultants/technicians are often equipped with advanced diagnostic tools for complex problem solutions which may sometimes only be deployed onsite (Patterson, 2012).

Remote computer support is a term given to a comprehensive array of solutions for computer software and a few basic hardware errors. It is gaining wide exposure among regular computer and internet users as a cost efficient method to keep the computer network, or an individual desktop PC in a working condition (<http://www.computernetworksit.com.au/blog/onsite-computer-support>). Remote IT support implies that the client benefits from the help of experienced IT support personnel without it being necessary for them to be present at the client's workplace/office. It is a feature of Windows that started becoming available only in the later versions but it has now become a generic term for all kinds of remote computer support. This feature can be used to solve a computer user's problem from a distance by another person on the same network or the internet. The consultant working on the problem can see your screen at his or her terminal and can control your system with his or her mouse and keyboard. The usual online supports provided are removal of spy software and viruses, optimizing your system, any registry repair and most commonly device driver issues (<http://www.computernetworksit.com.au/blog/onsite-computer-support>).

A special software tool is necessary to be able to access the client's pc remotely and the client is required to be present when the remote sessions is started, as the IT consultant will require permission from the client, to access his or her machine. The IT support team can provide advice and instructions using this method by logging onto the client's machine to resolve the issue. The greatest advantage of remote IT support is that it can be requested anytime from anywhere and the response is very quick. The client will not

have to wait until the IT consultant has arrived to at his/her workplace. The client simply gets in touch with someone experienced from the support team (normally via the IT call center or service desk) and in a matter of minutes, the problem can be solved completely. Another good aspect of remote technical support services is an efficient application service management. The user gets support by experts who use advanced system, network monitoring and management tools to resolve computer problems belonging to any level of difficulty (<http://www.soooperarticles.com/technology-articles/support-services-articles/what-site-support-what-off-site-support-953399.html>).

Remote IT support can solve various problems, especially those that are related to software and networking. Another benefit of remote IT support is that the client has access to professional IT consulting. A chat with an experienced IT consultant can result in better decisions regarding a client's IT needs and desires. The connection between the client and the IT support consultant is also totally secure, so no third parties are involved. Remote IT support can usually offer very efficient problem resolution for minor day-to-day problems. In the time taken for a client to make a phone call or send an e-mail, an expert can take control of his or her desktop and see exactly what the client is seeing and the client is able to see exactly what the expert is doing.

In most cases this means that problems are resolved extremely quickly and without causing much disruption. In companies that are profit driven and in which time is money, remote access also tends to be a very cost effective solution. The company need not pay for a consultant to be permanently onsite, nor does the company need to cover the costs of the time the IT consultant spends travelling to and from the company. Instead the company will just pay for the service received and the time spent fixing the problem. This works for the IT consultant too, as they spend less time travelling between clients' premises or waiting around onsite with nothing to do.

Instead they can focus all their energies on efficient technical support for a greater number of clients which means they make considerable cost savings (<http://www.selfgrowth.com/articles/advantagesofremotecomputersupport.html>).

IT service delivery can be effective when provided both remotely or onsite. However, with the constant change in the IT hardware and software, many IT service providers, be it organizations, companies or HEIs, should be leaning toward offering the service remotely. The MS platform (which is Windows based and allows for the provision of IT support remotely) has simplified this process and its efficiency. Organizations as well as many HEIs employ the remote IT service facility to enhance and improve the service experience for their clients and minimize the waiting period between problem identification or indication and resolution. Clients may be slightly apprehensive with regards to receiving support remotely due to:

- lack of trust in the IT consultant;
- negative perceptions about the actual remote process; and
- lack of knowledge on what the process entails or how the service is actually delivered and other reasons.

However, if remote support is promoted effectively, it can take IT service delivery to a positively different level.

Many companies that offer remote services use either MS technologies for this service delivery or have developed their own software to facilitate delivery. A South African based company, Supima computers, offers remote assistance to its customers in South Africa, using MS server and desktop software and includes a range of services such as software updates, routine server maintenance and backup monitoring (http://www.supima.co.za/remote_support.html). Other companies still offer onsite support on a large scale e.g. UNISYS has developed the Smart-On-Site-Services which is a powerful solution for same-day or next-day branch technical support that

brings management and accountability to all site technical support requirements, however widely distributed the environment ([https://docs.google.com/viewer?a=v&q=cache:6EL4Hfy47pIJ:www.unisys.com/unisys/inc/pdf/brochures/10-0024.pdf +Smart +On-Site+Services](https://docs.google.com/viewer?a=v&q=cache:6EL4Hfy47pIJ:www.unisys.com/unisys/inc/pdf/brochures/10-0024.pdf+Smart+On-Site+Services)). Both forms of support seem to be popular depending on the type of organisation, the geographical elements such as location and more specifically, the type of IT problem at hand.

Service delivery at the DUT is currently being offered both remotely and onsite. There are still a large number of peripheral devices that are not on the network and therefore cannot be accessed *via* the network (such as local printers, IPADs and other mobile devices) so in these instances, it is necessary for the IT consultant to visit the client or vice versa. Onsite visits are also mandatory when hardware requires replacement or assessed (such as hard drives, DVD Read Only Memory (ROM) drives printers and scanners). With regard to IT issues that are software related, most of these issues can be dealt with via remote support (provided the DUT network is online i.e. the network is up). Due to the fact that most pcs and notebooks/netbooks are now on the DUT domain, the MS SCCM is able to target those machines and allow remote access to them to resolve those IT issues (software related). However as a security measure, the consultant cannot access the client's pc or laptop without being granted permission by the client first; a stringent security measure that ensures confidentiality and secure access.

2.8 SUMMARY

Service providers often undergo multiple, separate diagnostic efforts, such as ISO (International Standards Organization) 9001:2000 audits for quality management, ISO 27001 audits for security, ISO 20000 for IT service management, and eSCM-SP (eSourcing Capability Model for Service Providers) evaluations for determining the capability of a service source. The

integration of these diagnostics and service delivery processes is critical to measuring the performance and quality of service delivery. Most global service providers use processes based on the best practices from multiple standards (Hickey and Siegel, 2008). IT Service delivery can be considered as the process of applying specialized competences (knowledge and skills) to provide customer service (comprising the service itself and the service channel).

With the rapid pace of structural change in the service industry, service innovation and its relationship with firm performance have increasingly attracted the attention of both researchers and practitioners and it has been discovered that innovation orientation and IT capability are the key drivers that lead to service delivery innovation (Chen *et al.*, 2009). Although the main purpose of service delivery is to maximise customer satisfaction, the risk of dissatisfied customers is the most significant risk that affects all processes. Delay in solutions in IT delivery can have unexpected results. Thus, this risk should also be reviewed and not excluded because of assumptions. Service delivery is a topic that is related directly to the customer, and this is why it is not surprising that the most importance risk is dissatisfied customers. In this regard the requirement for success in handling service delivery risks is highlighted once again. Clients can never be given too much satisfaction; it is important is to give them what they really want or require. Therefore, detection and analysis of customers' expectations must be fully defined and understood, and the service should ultimately be provided according to these expectations (Nazımoğlu and Özsen, 2009).

This chapter highlighted aspects of IT service delivery and the manner in which changing IT technologies promote IT service delivery and support within the commercial and HE arenas and concludes with the two methods of IT service delivery. The next chapter discusses IT service quality and presents the theoretical framework of this study.

CHAPTER THREE: IT SERVICE QUALITY

3.0 INTRODUCTION

This chapter highlights service quality within the IT context. The theoretical framework of study which is SERVQual (SERVice QUALity) with specific reference to the RATER aspect, is then presented. RATER measures the five dimensions of service quality viz. reliability, assurance, tangibles, empathy and responsiveness (Czaplewski *et al.*, 2002). This framework is the most popular service quality measurement tool currently used in various industries, despite the criticisms from past studies surrounding this model. A detailed discussion on this model, its modification and criticisms are highlighted further on in this chapter.

Customer satisfaction or dissatisfaction is derived from experience with a service encounter and the comparison of that experience to a given standard (Helms and Mayo, 2008). Most managers today understand that to make a substantial impact on organizational service quality, frontline workers and customers need to be the centre of management concern (Snipes. Oswald, LaTour and Armenakis, 2005). Parasuraman *et al.* (1988) stated that service quality should follow three basic themes, namely:

- service quality is more difficult for the client to evaluate than goods quality;
- service quality perception results from a comparison of consumer expectations with actual service performance; and
- quality evaluations are not made solely on service outcome; they also involve evaluations on the process of service delivery

However, measuring service quality is a challenge because client satisfaction is determined by many intangibles. Clients are different and services are delivered according to the interaction between the customer and service provider. Efficient and effective instruments to measure service quality are

crucial for service providers to continually improve their levels of service quality; measuring the quality of service provided by IT has become crucial for IT management (Zhu, 2006).

IT is very important in running the operations in an organization. IT has a role of meeting the information needs of the business accurately, efficiently and relevantly. In education, the IT is used to gain competitive advantage in the competition among education institutions. IT will work well if the factors inside it runs well too. These factors include well-prepared infrastructure, competent human experts in their field and the appropriate software or applications that meet the needs of the organization (Amelia, Hidayanto and Hapsari, 2011).

The contribution of the IT that has been running well in an organization must be supported by the quality of services provided to its customer. The organization cannot only depend on the product quality, but also to the quality of services provided. Quality of service is important to encourage customers to repurchase products or to use services offered. Furthermore, service quality becomes very important especially in dealing with customers who require a high level of excellence. According to Amelia *et al.* (2011), there is a demand on educational institutions to become more capable of providing quality IT services to their customers. Customer satisfaction is an important goal in implementing IT, thus continuous monitoring of IT performance is required.

3.1 SERVICE QUALITY IN THE IT CONTEXT: CLIENTS' PERCEPTIONS AND EXPECTATIONS

“Service quality is a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis”
(Jiang, Klein, Parolia and Li, 2012).

During the past two decades, customer service has emerged as a strategic imperative for most firms. and service quality has been the subject of considerable interest among marketing academics and practitioners, At the same time, the increased emphasis on customer service has emerged as a key driver for IS priorities, reflecting the general recognition of the essential role IT plays in support of this process (Barney *et al.*, 2005). More and more service firms such as banks and brokerage firms are providing IT-based service options to their customers. These services are expected to bring benefits such as improved product and service quality, improved customer satisfaction, higher productivity, and improved financial performance. Service delivery via the advent of new products and options for various channels of delivery through IT applications has emerged as an important attribute in satisfying customers (Karimi *et al.*, 2001).

IT products such as software, hardware and information systems (IS) applications are part of a process of services (development and maintenance of IS applications, management of operational systems and maintenance of hardware and software) which determines client perceptions about quality. An effective service analysis of the services provided by the IT division for other organizational or client divisions should take into consideration how these clients perceive IT services (Roses, 2011). Analysing the effectiveness of IT service components is becoming increasingly important. To meet growing user demands organizations allocate high investments toward IT. However, the measures generally analyse IT effectiveness based on products rather than on services. When the service provider understands how the clients evaluate its services, it can identify how to manage these evaluations and how to influence them in a desired direction (Roses, Hoppen and Henrique, 2009).

IT now permeates most business processes within and across organizations, and IT departments are seeking ways to identify, measure and improve the services they provide to their clients. IT service quality has been identified as

one of the three pillars of IT success along with information quality and systems quality (Jia and Reich, 2013). Recent empirical evidence found that IT service quality was more strongly associated with desired organizational outcomes than was information quality or systems quality, leading to the conclusion that managers aiming to achieve the greatest organizational impact should set a high priority on IT service quality (Gorla, Somers and Wong, 2010).

IT service quality is generally improved in order to increase business performance of the service provider, in particular the efficiency of financial, technical, process, and human performance (Lepmets, Gacenga and Ras, 2012). Measures and indicators of IT service quality are categorised into four common areas viz. service quality, information system quality, process performance and customer satisfaction. Lepmets, Ras and Renault (2011) also categorize IT service quality measures into two groups:

- intrinsic measures (with sub-categories of common issue areas on IT service quality, information system quality, and process quality) and
- extrinsic measures (common issue area of customer satisfaction). The intrinsic measures can only be measured and improved by the IT service provider although they impact the customer experience. The extrinsic measures relate to customer satisfaction (e.g. through customer satisfaction surveys).

In a study conducted by Jia, Reich and Pearson (2008), the literature on IT organizational climate and construct was introduced to increase the understanding of the IT service quality phenomenon labelling this IT service climate as a predictor of IT service quality, within the IT service context. Based on this, a further study was done by Jia and Reich (2013) in which an IT service climate theory and instrument was developed to contribute to IT services management practice. This is now considered an important diagnostic tool to assist managers in improving overall IT service quality for improved customer satisfaction.

The concept of using service quality to measure the performance of IT service providers is due to the acknowledgement that the service performance can be determined by the perception of users of IT services (Amelia *et al.*, 2011). Furthermore, customers actually not only demand quality products obtained from mature processes, but they also require quality in the services they receive. Despite the existence of some best practices in IT management (e.g. ITIL and COBIT), such practices do not explicitly inform how the process of assessing the quality of IT services should be performed, or which dimensions and criteria should be taken into account (Freitas and Albernaz, 2012).

Due to the importance of IT service industries, we need to understand better how service customers evaluate IT based services and how their evaluations affect their perceptions of overall service quality of the service provider and of their own satisfaction. Since customers are the end users of IT based services and it is their perception of service quality that matters most, service providers must understand which attributes customers look for when consuming services, which factors affect customers' intentions to use IT based services and how IT based services affect customers' perceptions of service quality (Zhu *et al.*, 2002).

Berkley and Gupta (1995) highlight the requirements to deliver quality service. Stating information requirements is often considered the most neglected aspect of the information management process. One reason could be due to the high costs of IT implementation which generally focuses management's attention on the technology (hardware and software) anticipates discussion of issues concerned with the information itself. They indicate that the service delivery process is categorized into input processes and output stages where the information requirements are specified for each stage. Berkley and Gupta (1995) also reveal that due to the uncertainty and complexity introduced by the 'client', quality assurance is generally more difficult for high contact services compared to low contact services. They also

identify that executive managers are concerned with setting broad policies and goals for the organization or department and normally require cumulative information obtained from sources outside the organization. Alternately, service-delivery personnel are concerned with the execution of tasks. They require information that is generally well defined, within a small range and arising largely from internal rather than external sources.

3.2 DETERMINANTS OF SERVICE QUALITY

In order to measure customers' satisfaction with regard to different aspects related to service quality, Parasuraman, Zeithaml and Berry (1985) developed a valorization grid called SERVQUAL. This is based on the principle that customers can evaluate the quality of a company's services by comparing their own expectations and perceptions. SERVQUAL is considered to be a generic tool which can be applied to a wide range of business services and is widely used to measure service quality in various service delivery organisations/departments (Păuna, 2012). SERVQUAL's original service dimensions have been determined by Parasuraman *et al.* (1985) with subsequent modifications to the service industry (Parasuraman, *et al.*, 1988).

In the original concept of SERVQUAL, ten initial determinant factors of service quality were described (Table 3.1).

Table 3.1: Ten initial determinant factors of service quality

No	Determinant factors of service quality	Examples
1	Access	Easy and convenient access at convenient schedules; (Internet access)
2	Communication Informing customers in a language that they understand, listening to customers	Communication material adapted to the needs of individual groups (e.g. ethnical minorities)
3	Competence Holding the necessary abilities and knowledge to supply the service	All the staff must know their responsibilities and must be able to do their job
4	Courtesy Politeness, respect, staff's civility at all levels	Defined standards, correct accounting; correct carriage of tasks; keeping promises and obeying deadlines
5	Reliability Trust, credit and image	The staff must generate a feeling of trust in the relationship with their customers
6	Credibility Supplying a consistent, correct and reliable service; supplying the promised service	Defined standards, correct accounting; correct carriage of tasks; keeping promises and obeying deadlines
7	Prompt response Availability and preparation for service supply when necessary	Fast problem solving
8	Security Physical and financial security, privacy	Supplying safe services
9	Physical interface Physical aspects of service such as equipment, facilities; staff appearance	Modern equipment and facilities; uniforms for the staff
10	Understanding the customer Knowing customers' needs individually	Adjusting services whenever possible in order to satisfy individual needs

Source: Păuna. (2012: 700-701)

After intensive research (as explained further on in this chapter) by Parasuraman *et al.* (1988) these ten factors were reduced to five; further analyses have shown that some factors were tightly connected. The five determinant factors are:

Table 3.2: Modified service quality determinant factors

No	Determinant factors of service quality	Examples
1	Material goods/Tangibles	Physical facilities and available equipment, staff appearance; how easy is it to understand the communication materials
2	Reliability	Supplying the promised service safely and correctly
3	Prompt response	Helping customers and supplying a prompt service
4	Security	Transmitting a feeling of trust
5	Empathy	Offering the customer an attentive and individual service

Source: Păuna. (2012: 701)

These five dimensions were translated into 22 questions which measure both the perceptions and the expectations (see *Appendix A2*). The instrument had been designed and validated for use in a variety of service encounters as its dimensions and items represent *core* evaluation criteria that transcend specific companies and industries, as implied by the systematic, multi-stage, and iterative process that produced the instrument (Parasuraman *et al.*, 1991). For multisided services, SERVQUAL could be used by management to determine if any unit has poor service quality (indicated by a

low score); if so management can direct attention to correcting the source of customers' poor perceptions (Păuna, 2012).

3.3 CRITERIA FOR QUALITY IT SERVICE DELIVERY

Excellent service quality and high customer satisfaction is the key issue and challenge for today's service industry. Customer perception (satisfaction) and customer expectation (importance) determines the service quality performance. Questionnaires help service providers to realize their service quality performance, and the weighted average of customer satisfaction and the associated variance are commonly used indices reflecting customer expectation and customer perception (Hung, Huang and Chen, 2003).

According to Mandru, Pătraşcu, Cârstea, Popescu and Bîrsan (2011), identifying quality characteristics of a service requires the following aspects to be considered:

- most times some services are performed in the presence of customers and that creates the opportunity to immediately analyse the quality;
- services must respond to various needs of customers which means the existence of a wide variety of services types in the same category;
- similar services offered on the market help clients to make comparisons so that often the price is not an important factor in choosing the desired service;
- the service must be provide within the limits imposed by standards or other regulations; and
- staff should be able to provide quality services at the established level of quality.

From the range of issues mentioned above, it can be said that service performance involves the difference between the envisaged and real benefits, called Gaps (discussed in the next section).

In order for IT managers to improve service to customers, they need to understand how the internal functioning of the IT department affects its service quality. In other words, managers need internal measures to diagnose and predict how changes within the IT department will improve service quality. For example, after identifying a service quality shortfall (the *what*), managers also need to find the root causes (the *why*) and implement appropriate corrective actions (the *how*) (Jia *et al.*, 2008). Managers must justify new investments in IT on the basis of efficiency gains (Berkley and Gupta, 1995). The following section highlights the information requirements that are needed to deliver good quality IT services.

3.3.1 Input information

This stage comprises the following aspects in service delivery issues:

- forecasting customer demands in order to plan service capacities;
- questioning customers to gauge expected services or by relying on service histories or observations of market trends;
- setting service standards by stating customer service expectations in a way that is meaningful to employees; and
- customers who participate in the service-delivery process must be provided with all necessary instructions (Berkley and Gupta, 1995).

3.3.2 Process information

Is the information required by employees or customers while the service actually is being delivered. To ensure this, the following are important:

- service providers must possess or have access to the knowledge required to perform the service;
- order processing systems should be used to track customers or provide information on job status if service delivery times are long;

- customer security can be ensured with monitoring systems, customer databases and access to customer records; and
- quality control systems collect process data with the objective of taking corrective actions before problems are created (Berkley and Gupta, 1995).

3.3.3 Output information

The extent to which customer expectations are met is judged by output quality measures which provide ending information. Service quality measurement has lagged behind product quality measurement due to the fact that services are often produced and consumed simultaneously and services are intangible: there is no physical product to inspect. Consequently, several service organizations are unaware of the level of service they provide and of how customers perceive their service. (Berkley and Gupta, 1995). Naturally, if the service level is not assessed, there is no way it can be improved. Output quality measures comprise:

- internal quality measures;
- external quality measures;
- complaints and compliments;
- service recovery; and
- customer defections

In high customer-contact services, the ability to deliver quality services depends on the organisation's or department's capacity to collect, process and distribute information. The input function in services includes assessing customer expectations, specifying the expected service and setting corresponding service standards. Process information is that information required by employees or customers while the service is actually being delivered. Output information is used to determine whether customer expectations are met. If these processes are followed and consistently adhered to, service quality should most often be of a highly acceptable level.

3.4 SERVQUAL (SERVice QUALity): A MODEL TO MEASURE QUALITY OF SERVICE DELIVERY

As service businesses increasingly focus on the needs of small segments of customers or even individual customers, one fundamental issue is how to deliver superior value to its customers in a cost-effective way so as to ensure customer satisfaction. From service delivery standpoint, the challenge has been to manage service quality and service productivity simultaneously. As the key to reducing cost, achieving reliability, and improving productivity is to standardize the service process and product, whereas the key to ensure that customer needs are met is to customize the service offering, this challenge eventually boils down to the balance of standardization and customization of service processes and offerings (Wang, Wang, Ma and Qui, 2010).

Much research effort relating to service quality focused on the development of replicable instruments for measuring this concept reliably. From these instruments, perhaps the most popular and commonly used measure has been the SERVQUAL scale, which was originally developed by Parasuraman *et al.* (1985, 1988) and then refined by Parasuraman *et al.* (1991, 1994). The SERVQUAL scale consists of 22 items and represents five dimensions. This scale was initially applied in five service settings: credit card services, repair and maintenance of electrical appliances, retail banking; long-distance telephone services, and title brokerage.

Consequently, the scale has since been used to measure service quality in a wide variety of service areas (Ladhari, 2009). There are four distinct features of services *viz.* intangibility, heterogeneity, perishability, and inseparability which have been recognised as significant in developing the service quality construct. Service quality is 'intangible' because services are difficult to assess, as performances. Due to this intangibility, service providers can have difficulty in determining how consumers perceive their services. Services are "heterogeneous" in nature because they can differ daily, from place to place,

from producer to producer, and from customer to customer (Parasuraman *et al.*, 1985; Markovic, 2006). Services are perishable' because they cannot be sold or stored for use on a different day. Lastly, services are "inseparable" meaning that several services are simultaneously produced and consumed. Service quality can therefore be conceptualised as the 'Gap' between what consumers feel that a service should offer (their expectations) and their perceptions of the actual performance of a service (Parasuraman *et al.*, 1988).

3.4.1 The SERVQUAL scale

According to Parasuraman *et al.* (1985), customers' perceptions of service quality are influenced by five 'Gaps. Ladhari (2009) defines these 'Gaps' as follows:

- *Gap 1* represents the difference between what clients expect and the management perceptions of clients' expectations.
- *Gap 2* is the difference between management perceptions of clients' expectations and the conversion of these perceptions into service-quality specifications.
- *Gap 3* is the difference between the service actually delivered by frontline service consultant on a daily basis and the specifications set by management.
- *Gap 4* represents the difference between service delivery and what is offered in external communications to clients.
- *Gap 5* is the difference between client expectations and perceptions.

Figure 3.1 below illustrates the Gaps originally highlighted in the SERVQUAL scale (Parasuraman *et al.*, 1988).

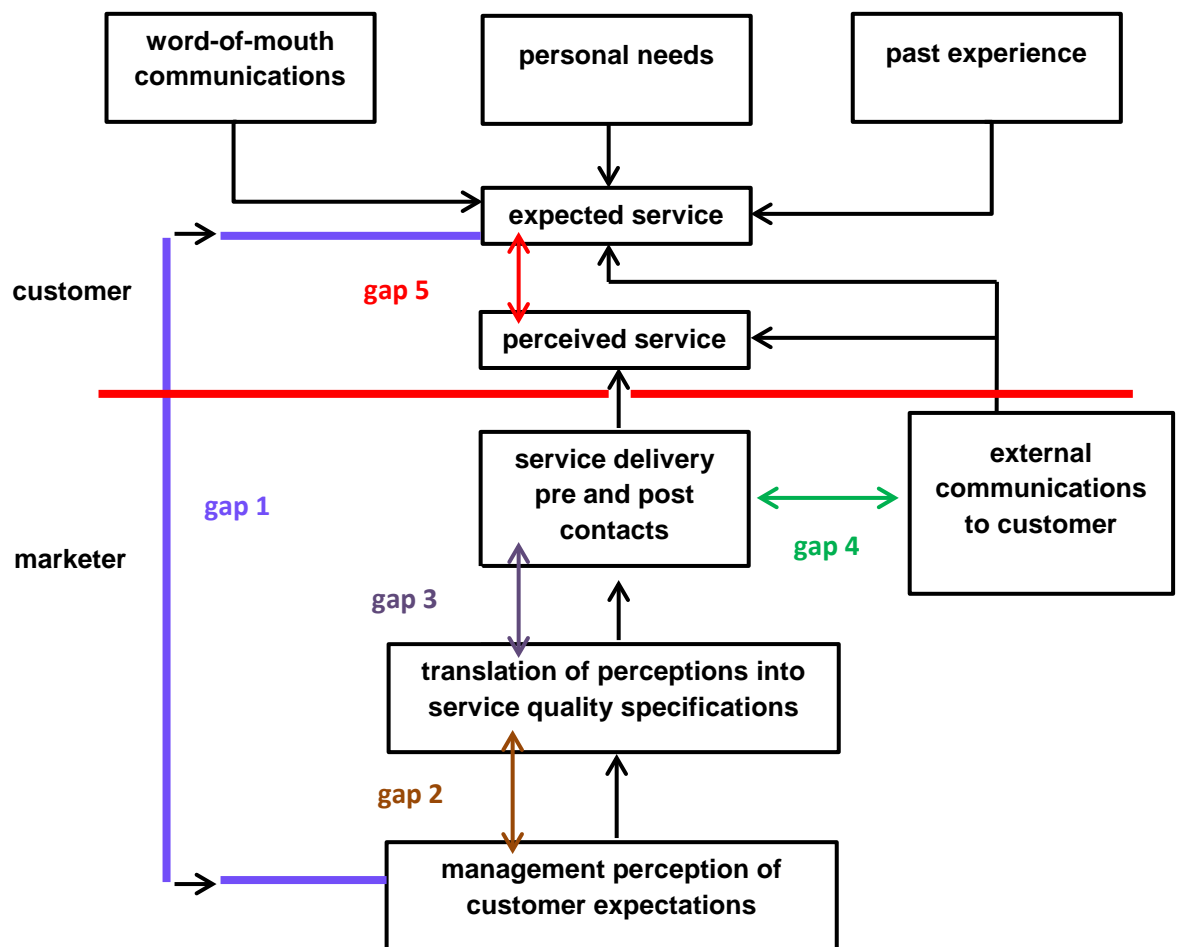


Figure 3.1: Service Quality Gap Model

Source: Adapted from Parasuraman *et al.* (1988: 36)

Parasuraman *et al.* (1985) argued that 'Gap analyses' are important for identifying discrepancies between the service provider's perceptions of service quality dimensions and the clients' perceptions of those dimensions. The SERVQUAL instrument is based on Gap 5 (Ladhari, 2009) which is defined as the quality that a consumer perceives in a service in terms of the magnitude and direction of the Gap between expected service and perceived service (Parasuraman *et al.*, 1985).

Figure 3.2 below illustrates the Gap between expected and perceived service quality (Păuna, 2012).

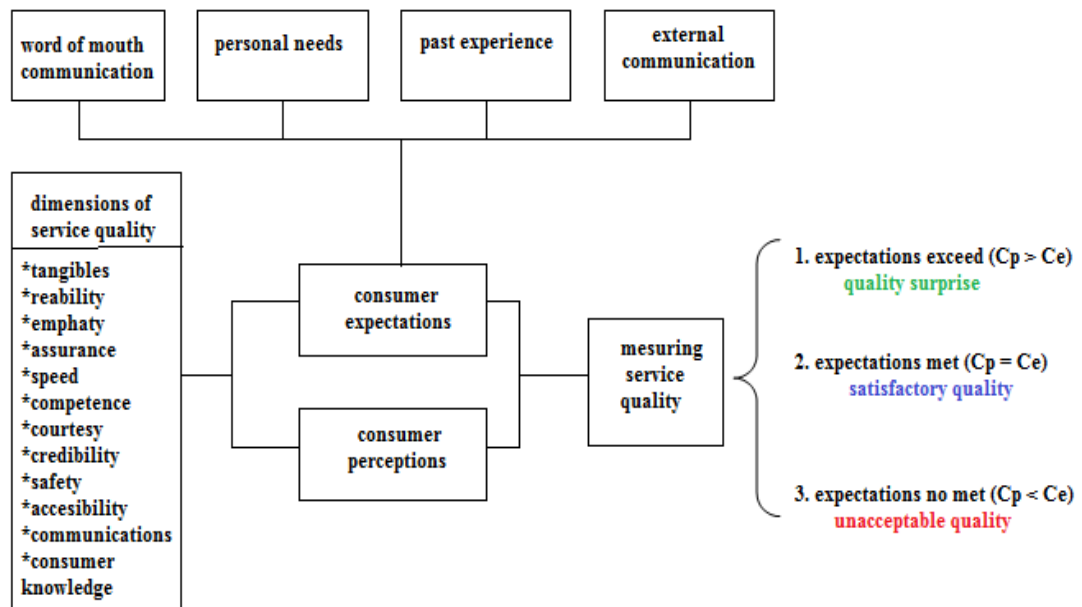


Figure 3.2: Perceived Service Quality

Source: Adapted from Parasuraman *et al.* (1985: 48)

Consumers perceive service quality as stemming from a comparison of what they feel service organisations or departments should offer (i.e. from their expectations) with their perceptions of these organisations or departments delivering the service. Perceived service quality is thus viewed as the degree and direction of the discrepancy between the customer's perceptions and expectations (Parasuraman *et al.*, 1988). Despite its growing popularity and widespread application, SERVQUAL has been subjected to a number of theoretical and operational criticisms (as discussed in Section 3.4.3). Parasuraman, Zeithaml and Berry (1991; 1994) vigorously defended the SERVQUAL model and instrument of research, while simultaneously improving it and reassessing its scale, wording and dimensions.

The expectations part received thorough examination and the changes were beneficial to the SERVQUAL theoretical and practical use. In an attempt to address some of these issues that were raised, Parasuraman *et al.* (1991) published a follow-up study which refined their previous work to derive a

simpler tool to be used in service quality assessment (as highlighted in the Section 3.4.2). This instrument is administrated twice where it is first used to measure the respondents' expectations and after the service is delivered, to measure the respondents' perceptions.

The first revision of the instrument was in done 1988, when a number of items possessing negative wording were changed into positive affirmation as it was discovered that the negative wording had an impact on how some factors were perceived, and later in 1991 the wording of all expectations changed. If the 1988 version of the research instrument tried to capture the respondents' normative expectations, the new wording focused on what customer should expect from excellent service companies. Other than that the changes included new items for tangibles and assurance substituting the original ones, and detailed wording of many perceptions item (Souca, 2011).

3.4.2 SERVQUAL modified

In the early 1990's, the SERVQUAL instrument was modified by Parasuraman, *et al.* (1991) to the acronym referred to as RATER (Elmorshidy, 2013) to form the qualities of a service offering from a client's perspective and which focuses on five key dimensions of service quality *viz.* reliability, assurance, tangibles, empathy and responsiveness. Four or five numbered items are used to measure each dimension. The instrument is administered twice in different forms, first to measure expectations and second to measure perceptions (Buttle, 1996). Studies indicate that using the RATER form of SERVQUAL seems to have great potential as the measurement of IT service performance and is a useful model for quantitatively exploring customer service experiences in service delivery organisations (Czaplewski *et al.*, 2002).

The simplified RATER model enables exploring and assessing customers' service experiences. By focusing on these five areas, service delivery can be

analysed and improved. It has been used widely by service delivery organizations and is an efficient model in helping an organization shape up their efforts in bridging the Gap between perceived and expected service (Malik and Bouguettaya, 2009). Originally, Parasuraman *et al.* (1985) concluded that consumers evaluated service quality by comparing expectations with perceptions on ten dimensions (as described in the table under Section 3.2).

When SERVQUAL was modified to the RATER acronym, these ten dimensions were subsequently collapsed into five generic service-quality dimensions, as follows:

- Tangibles (measured by four items): the appearance of physical facilities, equipment, and personnel
- Reliability (five items): the ability to perform the promised service dependably and accurately
- Responsiveness (four items): the willingness to help customers and provide prompt service
- Assurance (four items): the knowledge and courtesy of employees and their ability to inspire trust and confidence; and
- Empathy (five items): the level of caring and individualised attention the firm provides to its customers (Sharma, 2011).

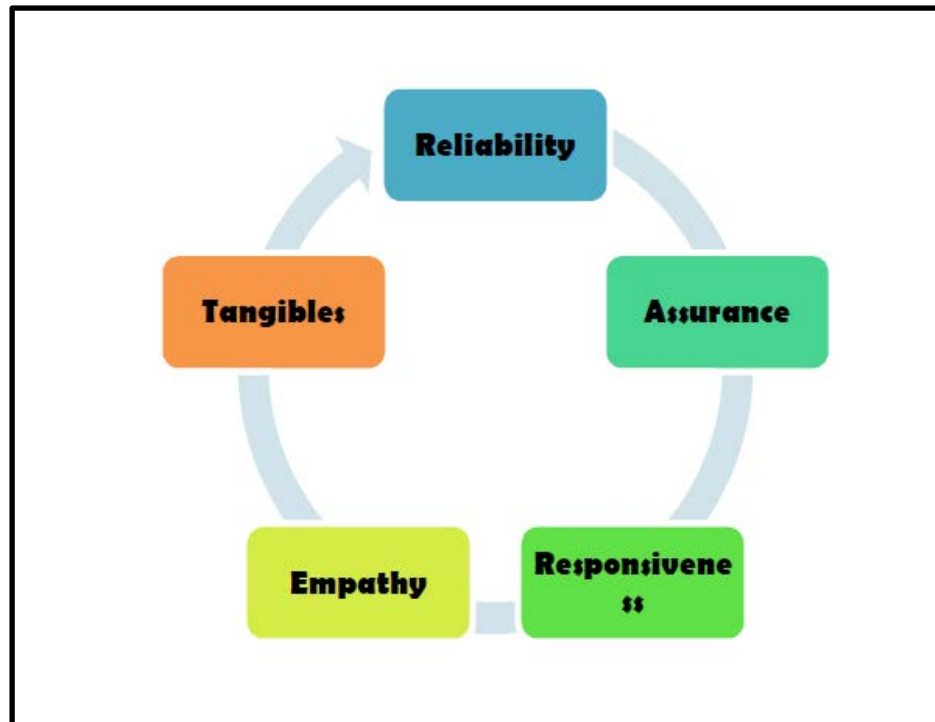


Figure 3.3: The RATER Model

Source: Adapted from Sharma. (2011: 17)

RATER is a 22-item instrument used to measure customer's expectations (E) and perceptions (P) of the five RATER dimensions (Buttle, 1996). It is a more concise scale with good reliability and validity and is adaptable to fit the characteristics or certain research needs of a particular organisation (Mishra *et al.*, 2013). Each item is measured on the basis of responses to two statements that measure the:

- the general expectations of customers concerning a service; and
- the perceptions of customers regarding the levels of service actually provided by the company within that service category.

According to Zeithaml, Parasuraman and Berry (1990), the best way to apply the RATER model is by carrying out a Gap Analysis using each of the five dimensions within the service delivery organisation. They add that this enables management to develop a plan for improving the way that the

services are provided to their customers. The RATER factors help provide specific dimensions which can be used to analyse and measure customer expectations (Malik and Bouguettaya, 2009). Honest analysis is imperative and good measurement is the key to a successful Gap analysis.

Qi (2010) states that using the RATER model allows a service quality Gap analysis to be conducted based on the following steps:

1. Design a survey questionnaire based on the RATER model. Each RATER dimension is measured using several items. The most typical service quality Gap analysis usually uses 22 items to measure the five dimensions.
2. Distribute the questionnaire to existing or potential customers to get the ratings of service satisfaction and expectation.
3. Analyse the ratings of service satisfaction and expectation to have an overview of current state and future state.
4. Analyse the differences between service satisfaction ratings and service expectation ratings. The differences are the 'Gaps'.
5. Sort the Gaps based on the differences in rating. Usually the Gap with the most significant difference is the most important one we need to close.
6. Develop an action plan to close the Gap.
7. Monitor the service quality when improvements are implemented

To do the Gap Analysis, the following must be identified in each of the five areas:

- **Future state:** the 'place' you want to be to provide exceptional service;
- **Current situation:** how you currently provide your service; and
- **Next Actions:** how you'll move from your current situation to your future state.

Once the future state and current situation of the organisation is identified, a clear strategy must be laid out to progress from the current situation to the

proposed future state. Staff must be involved in strategy planning and consistent feedback from clients to assess the changes on any perception of improved services. The RATER model, once applied honestly to an IT service delivery organisation or department, is an excellent tool to assess where an organisation/department is versus where they want to be. The data gathered allows clear strategic decisions to be made (Qi, 2010).

3.4.3 Criticisms of SERVQUAL

Since its inception, the SERVQUAL model has been widely used in several industries as a measurement of service delivery quality. Even though SERVQUAL has been applied extensively, it has been subject to several criticisms for the stability of its dimensions across contexts: perceived service quality is a second order construct depending on five first-order variables (reliability, assurance, tangibles, empathy, responsiveness) factorially determined and invariant with respect to different sectors of application (Cronin and Taylor, 1992). Even if the scientific literature provides some attempts of SERVQUAL improvement, until now, it is among the most used tool for assessing service quality (Ladhari, 2009).

Buttle (1996) identified several operational and theoretical criticisms of SERVQUAL. He argued that theoretically SERVQUAL is initiated on the basis of an expectation-disconfirmation model rather than an attitudinal model. He further added that it is not based on a well-known established economic, statistical, psychological theory or background. With regards to the Gap analysis, there are a few supports that clients evaluate service quality on the basis of perception-minus-expectation scores. SERVQUAL strongly emphasises the process of service delivery rather than the outcomes or end result of the service encounter. From an operational perspective, he indicated that consumers evaluate service quality on the basis of both standards and expectation and it is basically impossible to capture the changeability of each service quality dimension by four or five items.

Van Dyke, Kappelman and Prybutok (1997; 1999) state that the problems with the SERVQUAL instrument highlighted both empirical and conceptual issues. The conceptual issues focused on using two different instruments, one for each of two constructs (i.e. perceptions and expectations) in order to operationalize a third distinct construct (i.e. perceived service quality). They argued however that direct measurement of perceived service quality is more reliable. It was also argued regarding the uncertainty of the expectations construct as different definitions and views of the concept resulted from uncertainly defined concept. The argument was that SERVQUAL has a number of empirical problems including low reliability and unstable dimensionality.

Ladhari (2008) argued that the use of Gap scores is an incorrect method because of the lack of the supporting literature to consumers evaluating service quality in terms of perception-minus-expectation. He added that it has been recommended that service quality is more precisely and correctly evaluated by measuring only perceptions of quality. He indicated that the expectation concept is not clearly defined and can be interpreted from different perspectives resulting in the operationalization of SERVQUAL which could also lead to different interpretations. In addition, he stated that previous research suggested using perception-only scores rather than Gap scores for the overall assessment of service quality. Lastly, he emphasised that past studies and research criticise SERVQUAL for its focus on the process of service delivery instead of the result and the outcome of service encounters (Bassam and Shawi, 2011).

SERVQUAL has also been adapted through the years for various industries as a service quality measurement. In one study, a methodology able to assess service quality by means of firm-specific quality dimensions was developed. It was felt that employees' knowledge is exploited to collect the critical success factors (CSFs) of a company; subsequently, the

measurement and management of a company service quality is performed by gathering customer expectations and perceptions, according to the collected CSFs. The results of the study confirmed that employees are able to gather quality dimensions customer value and that these dimensions can be successfully employed into a flexible tool for assessing and managing service quality (Calabrese and Scoglio, 2012).

It may seem that the SERVQUAL model of evaluating service quality is not a perfect solution and the criticisms related to the theory it's based upon such as the Gap model, the methodology related to applying the SERVQUAL instrument of research and the model's dimensionality and validity have been noted, it still remains one of the most influential research instruments in researching service quality. Despite the numerous critics, the SERVQUAL instrument still continues to appeal to both academics and practitioners, irrespective of legitimate concerns about the validity of the scale.

3.5 APPLYING THE SERVQUAL INSTRUMENT IN IT

According to Landrum, Prybutok, Strutton and Zhang, (2008), IT departments previously dealt mainly with providing secondary support to other departments e.g. finance and customer services departments. The state that this concept of secondary support has since been replaced and is no longer just a function integrated into a distinct work flow; the IT department is a free standing department that provides legitimate and important internal services to other divisions or work units. The concept of using service quality to measure the performance of IT departments is due to the recognition that IT service performance can be determined or measured by the customers' perceptions of those services within an organisation (Landrum *et al.*, 2008).

Kang and Bradley (2002) state that the quality of IT services being provided then becomes essential to the management control of IT departments. They emphasize however that a growing number of managers and researchers

have turned to service quality as an alternative measure because of the continuing problems faced by organisations when measuring the performance of IT department. Although services generally have the same characteristics, IT services have peculiarities that make their evaluation even more subjective. IT services are more or less intangible, i.e. they are generally something one cannot touch or feel, although they may be associated with something physical, such as the provision of information through a computer screen or personal digital assistant.

While an IT service may have a predominantly physical outcome, for example the delivery and installation of a PC or the provision of a cable for a network connection, there are other services that may be totally intangible, such as advice and support from a help desk, IT training, consultancy, systems design, or upgrading server software (Freitas and Albernaz, 2012). Expected service is based on personal needs of the customer as well as personal and second-hand knowledge about the service provider. Perceived service is based on communications between the provider and client as well as actual service delivery. A number of service quality determinants go into the formation of perceived service performance and client expectations (Jiang *et al.*, 2012).

Many IT services are produced and consumed simultaneously. For instance, support from a helpdesk is generally provided and utilized immediately. The consequence of this is that a *bad service* cannot be perceived and avoided before it has been received by the user. A bad experience can impact the perception that the user will have the next time he uses the same service. Then, the need arises to evaluate service quality concerning the user perspective (Freitas and Albernaz, 2012). Service provided by the IT department within an organization is now considered a major component of IT success. This success in the eyes of the IT staff often has to do with their self-perception of their job performance and learning experiences. Users however evaluate performance in terms of how well their needs are satisfied.

The final evaluation of either a system or service depends solely on the criteria identified by the evaluators. Many researchers argue that IS users are the clients and are the legitimate ones to make the final judgement. User satisfaction is often the most widely adapted measure for system success in the IS literature (Jiang, Klein, Roan and Lin, 2001).

The determination of service quality is considered as a comparison process between an expected level of service and the service perceived by the user (Jiang *et al.*, 2012). Parasuraman *et al.* (1985) also define service quality as a comparison between client expectation of services and client perceptions of the service level provided. IS researchers suggest that gauging the magnitude of difference between users' expectations and perceptions provides a superior indicator of IS service quality (Pitt, Watson and Kavan, 1995). However, due to the unique features of service such as performance-oriented, intangible, heterogeneous, inseparable, and perishable, it is difficult not only to measure service quality, but also to provide the same quality of services to all customers (Yoon and Suh, 2004).

The measurement of IT service quality is critical to IT managers for evaluating and maintaining consistently high quality IT service. An effective service analysis of the services produced by the IT division for other departments or IT client divisions, should take into consideration how these clients perceive IT services. Roses, Hoppen and Henrique (2009) state that this situation requires 'a model of how the customers perceive the service quality' and SERVQUAL is a model that serves this purpose.

According to Jiang, Klein, Tesch and Chen (2003) efforts to measure IT service quality yield a plethora of problems, primarily including: what indicators yield an appropriate value for measuring the quality of a service?; and which stakeholders should provide the analysis? They add that the measurement of the quality of service may require affective judgment. A combination of measurements regarding expectations for service and

perception of that service provision allows for examination of a Gap in service delivery. They further state that such a Gap measure is a function of existing differences in expectation and performance reported by stakeholders: when perceptions exceed expectations, the stakeholders get more than they bargained for and when expectations exceed perceptions, a valuable measure would provide for examination of dimensions that led to the shortfall. One measure of service quality that some IS researchers support is SERVQUAL, an instrument designed to assess both service expectations and perceptions of deliverables (Jiang *et al.*, 2012).

Jiang, Klein and Crampton (2000) state that researchers have identified the SERVQUAL instrument and established its use in the IT context. They add that the SERVQUAL instrument is designed to provide managers with deeper insights concerning the dimensions of service quality. They also state that in order to examine the applicability of the SERVQUAL instrument in the IT setting, several empirical IT studies adapted the concept of service quality and SERVQUAL to measure IT service performance.

Kettinger and Lee (1994) applied the SERVQUAL instrument to provide more specific information about how users of IT department perceive the quality level of IT services being provided. The study speculated that the existing measures of IT performance e.g. user satisfaction, may not be comprehensive enough to capture the more detailed dimensions of service quality covered in SERVQUAL. The study concluded that SERVQUAL can provide additional focus in measuring the functional dimensions of IT service. Pitt *et al.* (1995) proposed another advantage of using SERVQUAL; because SERVQUAL is a general measure of service quality, it is well suited to benchmarking. That is, IT managers can potentially use SERVQUAL to benchmark their performance against other departments and organisations in the same industry. Pitt *et al.* (1995) and Kettinger and Lee (1999) restated that the original dimensions of service quality seem to be as applicable to the IT setting as they are to any other organisational settings.

Despite the above favourable findings for the practicability of SERVQUAL in the IT setting, there have been serious reservations regarding difference score measures and dimensionality of SERVQUAL (Van Dyke *et al.*, 1997; 1999). Indeed, although it cannot be denied that the SERVQUAL questionnaire is one of the pre-eminent instruments for measuring the quality of services as perceived by customers, and its use in IT setting has been ever-increasing, caution regarding the difference score measures and dimensionality of SERVQUAL must be exercised (Kang and Bradley, 2002). IS research models that consider service quality as a variable will typically use the difference score, the performance score, or the set of both components (Jiang *et al.*, 2012).

However there have been issues regarding the appropriateness of using the SERVQUAL instrument to measure IT service quality (similar to those regarding the use of SERVQUAL in marketing. The debate focused mainly on two aspects:

- The first issue is whether SERVQUAL is preferred
- The second is whether Gap scores (difference between performance and expectations) or direct measures of service performance should be used to measure IT service quality

According to Jiang *et al.* (2012), when considering models involving IT service quality, researchers rely on components of service expectation, perceptions of service performance, or a disconfirmation resulting from a comparison of the two.

However, for this research, the RATER form of SERVQUAL was used as it:

- highlights five areas that customers generally consider to be important when they use a service; and
- focuses on the dimensions of customer expectations rather than how the service provider can minimize the perception Gap (Elmorshidy, 2013).

The instrument was used here as a basis for data gathering and was designed according to the five RATER dimensions (adapting questions pertaining to the current state IT service delivery within the UoT). The researcher attempted to determine the Gap between customers' expectations and perceptions in terms of service quality, by using the Gap analysis technique synonymous with the RATER instrument. This analysis would; enable the current situation to be determined in terms of how the ITSS department is providing IT services to the DUT staff; enable the future state to be determined i.e. the level that should be reached to provide exceptional service; and determine the actions that would be required to move from the current to future state.

3.6 GAPS TO BE ADDRESSED

As evident from the literature above, the SERVQUAL instrument still remains the most popular tool to measure service quality in a service environment because:

- it is good at eliciting customer's views of service encounters;
- it is able to alert management to consider the perceptions of both customers and management;
- addressing the service Gaps can serve as a basis for formulating strategies in order to ensure fulfilment of expectations;
- SERVQUAL is able to identify specific areas of excellence and weakness and is able to prioritize areas of weakness;
- it provides benchmarking for organizations in the same industry; and
- SERVQUAL can trace the trend of customer relative importance, expectations and perceptions if applied periodically (Yu, 2008).

For the purpose of this study therefore, SERVQUAL is used as the theoretical framework. Since this study was concerned with the measure of customer satisfaction derived from the new MS technologies and the IT service quality received since implementation, quantitative data was gathered

via questionnaires based on the five RATER dimensions. The number of questions were slightly modified (as discussed in greater detail in Chapter Four). There have been several studies regarding service delivery in IT, IT technologies employed in industry and HE and the resulting impact on service delivery since the various technologies have been employed but to the best of the researcher's knowledge, there is no single study which combines service delivery quality in a predominantly MS environment in a South African UoT, post migration from a non-integrated to an integrated IT system. This study will attempt to address this Gap and it is hoped that the findings will assist DUT's ITSS management in identifying the shortfalls in terms of IT service delivery to staff and that the recommendations for possible improvements in certain areas of this delivery will be implemented.

3.7 SUMMARY

Using service quality to measure the performance of IT departments results from the acknowledgement that IT service performance can be measured from or determined by 'customers perceptions' of IT services within an organisation. The quality of IT services being provided is important to the management of IT departments. This means that there is a need to develop a conceptual model of IT service quality and related measurement systems. With continuing problems faced by organisations when measuring the performance of IT departments, a growing number of managers and researchers have turned to service quality as an alternative measure (Kang and Bradley, 2002).

Customer pre-determined expectation on important service elements (importance) and customer perception after service transaction (satisfaction) helps to determine the levels of customer service quality. Importance and satisfaction on service elements are two indicators applied to evaluate the corresponding service quality performance. The basic issue to improve service quality performance is determining the priorities for critical service

elements and drafting the improvement plan to enhance effectively and efficiently all the service quality levels (Hung *et al.*, 2003). As service industries and service jobs continue to expand in importance throughout the global economy, measuring service quality quickly, reliably, and accurately will mature as an increasingly important task for service providers. The quality of service delivery depends not only on IT infrastructure but also on applications and operations. A high quality IT infrastructure is only part of the equation for delivering IT service with high availability (Zeng, 2007).

This chapter discussed the determinants and criteria of service quality, which are contributing factors to how services should be conceptualised and delivered. The researcher has attempted to iterate the importance of the factors that comprise service quality and how this quality can be enhanced when these factors are not only considered but also adhered to. The analysis of the findings from this research and proposed suggestions to ITSS management at the DUT and other UoTs in SA adopting MS technologies and solutions will verify possible positive impacts from them and indicate where other improvements and/or changes in service quality can be made. The detailed discussion of SERVQUAL (and its modification resulting in the RATER instrument) in this chapter forms the basis for the framework upon which this study will further progress. The following chapter discusses, in detail, the research methodology used in this study.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.0 INTRODUCTION

Chapters Two and Three discussed the MS technologies employed at international and SA HE institutions including those currently implemented at the DUT. Aspects of IT service delivery-support both locally and internationally were highlighted with reference to customer's expectations. The theoretical framework, underpinning this study, was discussed with particular reference to its adaptation to the IT environment. Chapter 4 presents the research methodology and design pertaining to this study. The research design is discussed with regard to: the target population, the sampling approach indicating the sampling frame and design and how the data were sourced and collected. A discussion of the data collection instruments, their design, layout and administration is followed by an explanation of the preliminary framework which involved a pilot study and the analysis thereof. Ethical considerations for conducting the research are highlighted before presenting a detailed discussion of the data analysis involved in this study. The chapter concludes with a discussion of reliability and validity aspects.

4.1 RESEARCH DESIGN

According to Sekaran and Bougie (2013), research is simply the process of finding solutions to a problem after thorough study and analysis of the situational factors. They add that a research design is the arrangement of conditions for the collection, measurement and analysis of data in a manner that indicates the relevance to the research purpose which ultimately forms the conceptual structure within which the research is conducted. It includes the outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data (Dhawan, 2010).

In essence the research design constitutes the blueprint for sources and types of data collection, measurement and analysis of data and is a scheme for defining the generalizability i.e. whether obtained information can be generalised to a larger population or to different situations. (Krishnaswami and Satyaprasad, 2010). There are several types of research designs but this study is based on the mixed methods design within a qualitative and quantitative paradigm.

4.1.1 Mixed methods design

As stated by Cresswell and Clark (2011), mixed methods research is a research design with a philosophical assumption as well as methods of inquiry that guide the direction of the collection and analysis and the mixture of quantitative and qualitative approaches in many phases of the research process. Andres (2012); Bernard (2013); Ostlund, Kidd, Wengstrom and Rowa-Dewar (2011) and Weathington, Cunningham and Pittenger (2010) agree that mixed methods research takes the best of qualitative and quantitative methods and combines them.

According to Hesse-Bieber (2010) mixed methods design also takes into account whether or not the qualitative and quantitative studies are mixed sequentially (one then the other) or concurrently (at the same time). Keptner (2011) states that there is also the issue regarding at what point in the research the two interact with one another i.e. at the data collection, data analysis or interpretation stage. Terrell (2012) adds that this design allows the researcher to draw on the breadth of generalization offered by quantitative research and the depth of detailed understanding offered by qualitative research.

4.1.2 Qualitative and quantitative design

Qualitative research is an inquiry approach useful for exploring and understanding a central phenomenon (Creswell, 2009). This type of research enables the researcher to identify issues from the perspectives of the study participants and understand the interpretations as well as meanings that they give to behaviour, events or objects (Hennink, Hutter and Bailey, 2011; Johnson and Christensen, 2012). Qualitative data was gathered in this study to understand and interpret: the full time staff's expectations and perceptions of IT service delivery; the ITSS management and specialists' expectations and perceptions of the role of MS technologies in providing IT service delivery; and the ITSS support staff's perceptions of their clients' expectations. Data was gathered through open-ended questions on the questionnaires and structured interviews with ITSS specialists and management.

Quantitative research is defined by Teddlie and Tashakkori (2009) as the technique associated with gathering, analysis, interpretation and presentation of numerical data. Martin and Bridgmon (2012) add that quantitative research involves the interplay among variables after they have been operationalized; this type of research examines variables that typically vary in quantity (size, magnitude, duration or amount). The results or data obtained from these measurements are usually numerical scores that can be summarised, analysed and interpreted using standard statistical procedures (Gravetter and Forzano, 2012).

Quantitative data in this study was gathered via closed questions on the questionnaire administered to full time academic and administrative staff and on the ITSS staff questionnaire. Once the researcher identified the methods of data collection, a sample was then drawn from the target population. This population as defined by Johnson and Christensen (2012) is the larger population to whom the study is to be generalised. They further add that

generalising from a sample of individuals to the larger target population is carried out by defining the larger target population of individuals of interest and then randomly selecting a sample of individuals from this target population.

4.2 TARGET POPULATION

According to Gravetter and Forzano (2012) a population in a research study is the entire set of individuals of interest to a researcher. They add that although the entire population usually does not participate in a research study, the results from the study are generalised to the entire population. The target population for this study was all full time permanent and contract academic and administrative staff across the five Durban campuses who receive IT support on a daily basis. The selection was based on the fact that full time staff are the primary users of the system, they access the system daily and are therefore able to provide required and relevant feedback during the data gathering process. The part time staff were excluded from this study as they seldom use the system due to their working hours and therefore do not receive IT support on a daily basis. The other two campuses of the DUT viz. the Pietermaritzburg and Indumiso campuses did not form part of the study as they do not receive onsite IT support from the Durban based ITSS staff, on a daily basis. The staff on these campuses receive support from the IT support staff who are based there.

Information pertaining to the target population was obtained from the Management Information and ITSS departments at the DUT as at 31 January 2013.

- The academic and administrative staff group comprised a total number of 1316 staff members on the Durban campuses and were categorized as follows: 704 permanent administrative staff; 540 permanent academic staff; and 72 contract academic and administrative staff.

- The ITSS specialist group comprised 4 staff members who occupy the positions of: MS Exchange; Desktop Support; MS Office SharePoint Server; and MS Applications. These specialists are responsible for the related MS technologies within their ambit.
- The IT management group comprised three line managers who occupy the positions of network, client services and Integrated Tertiary Systems (ITS) managers.
- Twenty one ITSS support staff are directly involved in onsite, remote or telephonic assistance were selected. This total is comprised of; four senior and six junior desktop support staff; two service desk support staff; two MS Exchange administrators; six ITS analyst programmers and operators; and the departmental secretary who also provides service desk functions.

There were no exclusion criteria in these categories. This selection was done in the hope that the researcher would be able to gather all necessary information pertaining to the perceptions and opinions from the ITSS staff who are directly involved in maintaining the MS technologies and their views on how the technologies have impacted IT service delivery. The ITSS support staff's perceptions of their client's needs and expectations were also included in this study as the type of service delivery offered is dependent on these needs and requirements. ITSS management's perceptions of the migration to MS, were included in this study as they are directly responsible for overall functioning of the department and were also involved in the migration process. According to Sekaran and Bougie (2013), it is practically impossible to collect data from or to examine hundreds or even thousands of elements. They therefore advocate that rather than collecting data from the entire population, using a sample instead produces more reliable results.

They explain further that sampling reduces fatigue and there are less errors in data collection.

4.3 SAMPLING

Sampling is the process of selecting an adequate number of the right elements from the population in order to study of the sample and understand its properties or characteristics which enable the possibility of generalising these properties or characteristics to the population elements (Sekaran and Bougie, 2013). They add that it is therefore imperative that the right individuals, objects or events are selected as representatives for the entire population (Sekaran and Bougie, 2010). A sample is a highly representative unit from the universe or whole lot i.e. it is a part of a population or a subset from a set of units, which is provided by some process or the other, usually by a deliberate selection with the object of investigating the properties of the parent population or set (Sontakki, 2010).

Cohen, Manion and Morrison (2007) highlight that the researcher needs to make the correct judgement in terms of the four key factors in sampling which are: sample size; representatives and parameters of the sample; access to the sample and the sampling strategy to be used. Sekaran and Bougie (2013) add that the major steps in sampling are population definition, determining the sample frame, sample size and executing the sample process.

4.3.1 Sampling frame

A sampling frame is a representation (physical) of all the units/elements in the population from which the sample is drawn (Sekaran and Bougie, 2013). In other words, in order for results to be meaningful, the respondents who take the survey should be representative of the population under investigation (Jackson, 2011). Cohen *et al.* (2007) state that the sample size

depends on the purpose of the study and the nature of the population under scrutiny; a larger sample thus gives greater reliability and enables more sophisticated statistics to be used. They therefore suggest that sample size determination must also consider non response, attrition and respondent mortality i.e. some respondents will leave the study, fail to return questionnaires or return incomplete or spoiled questionnaires.

As indicated earlier, the target population comprised 1316 academic and administrative staff members in the 2013 academic year. The sampling frame focused on full time staff from all races and age groups and from various departments across the Durban DUT campuses. A sample size was chosen using the sampling without replacement option, to reduce the possibility of the same population element N being chosen into the sample S , more than once (Groves, Fowler, Couper, Lepkowski, Singer and Tourangeau, 2009). Using Sekaran and Bougie's (2013) sampling table, a sample size of 180 administrative staff and 120 academic staff was drawn. The secondary sample frame focused on the entire ITSS support team. This compliment comprised 21 staff members and the entire population was selected as the sample. The sampling design is an important aspect because with a representative sample, the researcher can be confident that the findings or results based on the sample will also hold for the target population (Jackson, 2011).

4.3.2 Sampling design

According to Vogt, Gardner and Haeffele (2012), the two main categories of sampling are probability and non-probability sampling. They state that in probability sampling, each respondent has a known probability of being selected for inclusion in the study and because the sample probabilities are known, inferential statistical techniques are used to make generalisations about the population. They also define non-probability sampling as the probability of inclusion is unknown and therefore the use of inferential

statistics is inappropriate because the sample probabilities are unknown. Blaxter (2010), states that the most widely used form of probability sampling is that of random sampling where every individual or object in the group or population has an equal chance of being chosen for the study.

There were two sampling designs used in this study. The design for the main sample was from the probability category and the type of sampling was simple random sampling. Simple random sampling is a method where the researcher selects participants for the sample so that any individual has an equal probability of being selected from the population. The intent of this type of sampling is to choose individuals to be sampled will be representative of the population (Creswell, 2009). This sampling design is best when the generalizability of the findings to the whole population is the main objective of the study (Sekaran and Bougie, 2010).

As indicated above, the sample of 300 participants were extracted from a list of 1316 full time staff members. The selection of each participant was done by creating a random number table, using the MS Excel Sampling: Data Analysis option. This method allows selection of the required number of subjects, for the sample, at random from a list of the population (sample frame). Once a random number table was generated (this table did not allow duplicate numbers), each participant from the list of 1316 staff, were selected according to each random number, until a total of 300 participants were selected (in proportion of administrative to academic staff). All departments on the Durban campuses were targeted in order to ensure that the sample was a proper representation of the full time staff population at the DUT.

The second sampling design used for ITSS staff was based on the non-probability strategy in accordance with Bernard (2013), who states that this strategy is best suited for sensitive topics. The issue of IT service delivery with regard to customers' perceptions and expectations is a sensitive and contentious issue for both the staff receiving the support and the staff

providing it. The sampling design used for the ITSS staff compliment was that of the non-probability category and the type of sampling was purposive sampling, which as defined by Sekaran and Bougie (2013), as the required information that will be obtained from a specific target group.

The researcher felt that this method was appropriate as this specific group are the only people who can provide the desired information regarding their perceptions of their clients' expectations regarding IT service delivery. Teddlie and Tashakkori (2009), state that purposive sampling involves selecting certain units based on a specific purpose, is used to generate a wealth of detail from a few cases and focuses on the depth of information that can be generated. Acknowledging this, the researcher felt that this sampling design would be appropriate for the ITSS staff. The entire ITSS support staff compliment .i.e. 21 staff members were selected and invited to participate based on the fact that this group are the only people that could provide the relevant and required information on IT support at the UoT. Once the researcher identified the appropriate design and size of the samples to be used in the study, preliminary work had to be conducted to ensure that the data collection instruments *viz.* questionnaires functioned properly before it could be administered to the respondents.

4.4 DATA SOURCES

All research involves the collection and analysis of data, whether through reading, observation, measurement, asking questions or a combination of these or other strategies (Blaxter, 2010). While deciding about the method of data collection, the researcher should keep in mind two types of data *viz.* primary and secondary. According to Gravetter and Forzano (2012), the *primary data sources* are those which are collected afresh and for the first time whereas *secondary data sources* are those which have already been collected by someone else who did not participate in the research.

The methods of collecting primary and secondary data differ since primary data are to be originally collected (Kothari, 2004) while secondary data sources are interpretations of events of that period based on primary sources (Bell, 2010). For the purpose of this study, primary data was gathered as the data required had to be fresh and original as no other study has been conducted within a UoT context or at the DUT regarding IT service delivery. Secondary data was gathered from literary sources.

4.5 DATA COLLECTION

The primary method of data collection in this study was based on the survey method *via* a questionnaire that was administered to the full time staff and the ITSS staff at the DUT. Denscombe (2010) agrees that questionnaires are at their most productive when used with large numbers of respondents and when what is required tends to be fairly straightforward information. A survey is a systematic method for gathering information from (a sample of) entities for the purposes of constructing quantitative descriptors of the attributes of the larger population of which the entities are members (Groves *et al.*, 2009).

Survey modes vary in how they communicate the questions to the respondents and in how the respondents communicate their answers to the survey researchers (Groves *et al.*, 2009). Since this study's target population was based at the Durban campuses of the DUT, personally delivered questionnaires were selected as the primary data collection instrument. The researcher felt that this method was most appropriate due to the type and level of daily interaction that she has with the staff.

4.5.1 QUESTIONNAIRE

According to Brace (2008), the role of the questionnaire is to elicit the information that is required to enable the researcher to answer the objectives of the survey. Sekaran and Bougie (2013) explain that a questionnaire is a

pre-formulated written set of questions to which respondents record their answers. These answers are usually within fairly closely defined alternatives. Both sets of questionnaires (i.e. questionnaires for DUT full time academic and administrative staff and ITSS staff) contained both open-ended and closed questions. The open-ended questions allowed the respondents to express their opinions. Standard answers were required for the closed questions.

The open-ended questions asked participants to formulate their own responses and the length of their answer was controlled by the amount of space provided on the questionnaire. Partially open-ended questions were also asked; these are similar to closed questions with the alternative of 'Other' as an option with a space for comments (Jackson, 2011). The closed questions asked the respondent to choose from a list of alternatives which could be one answer or many that best represent their beliefs. Lastly, rating scale questions namely a Likert rating scale (named after the researcher who developed it in 1932), asked the respondent to choose a number representing the direction and strength of their response i.e. to rate their level of agreement with the statement (Jackson, 2011).

4.5.1.1 Design of the questionnaire

For the data collected in a survey to be both reliable and valid, the researcher must carefully plan the survey instrument so that the correct decision is made in deciding which responses to allow (Rugg and Petre, 2006). The type of questions used and the order in which they appear may vary depending on how the survey is ultimately administered (Jackson, 2011). Simply stated a questionnaire is a list of questions which is prepared beforehand. Respondents can answer these questions either in their own words or by choosing from a set of responses that are prepared beforehand.

From both an ethical and practical viewpoint, questionnaire contained information pertaining to the purpose; confidentiality; voluntary participation;

and the researcher's contact details as advocated Neuman (2011). The instructions to the respondent in terms of how to answer the questions were made very clear Denscombe (2007) states that mistakes can invalidate the entire questionnaire. The questionnaire design was customised to be appealing to the intended audience. According to Andres (2012), pre-contact information such as cover letters and consent forms need to be designed to conform to the requirements of the ethics bodies. Both sets of questionnaires in this study therefore had an Information Letter (see *Appendices B1 and B2*) and a Consent Form (see *Appendix D*) attached. The questionnaires and all the accompanying documentation (discussed later in this chapter) conformed to the requirements of the Institutional Research Ethics Committee (IREC) of the DUT.

4.5.1.2 Layout of the questionnaire

As indicated earlier, two sets of questionnaires were designed, one for the DUT full time academic and administrative staff (see *Appendix E*) and the other for the ITSS staff who offer IT support at the DUT (see *Appendix F*). Acknowledging Johnson and Christensen (2012), the content and organisation of the questionnaires corresponded with the research objectives and typically included many questions and statements.

4.5.1.2.1 Full time staff questionnaire

The questionnaire for the DUT full time staff contained eight pages and three sections and included concise instructions on how to complete the questionnaire. Section A had 18 questions which pertained to their IT use and needs. The first four closed questions enabled the researcher to gather background information about the respondents such as whether they are academic or admin staff, the number of years employed at DUT, etc. Questions 5 to 15 related to their general IT use in terms of: the number of hours spent using a pc/laptop; software applications used; aspects regarding

call logging for IT support; and how they expect IT issues to be resolved. Questions 16 to 18 contained open-ended questions relating to the MS platform and IT service delivery.

Section B adapted the modified SERVQUAL instrument (RATER) and used a Likert scale where respondents were requested to rate their levels of expectations and perceptions with regard to the type and quality of IT service delivery that they are currently receiving.

Section C was optional and requested personal information from participants (such as their name and contact details) only if they were willing to participate in a further interview where more information or clarity was required regarding their responses on the questionnaire. Participants were assured of confidentiality and were informed that once their questionnaire and Section C was given an identification number, this section would be removed before sending the questionnaire for analysis. Participants were further assured that their contact details would only be accessible by the researcher and her supervisor.

4.5.1.2.2 ITSS staff questionnaire

The questionnaire for the ITSS staff involved in IT support/service delivery consisted of six pages and 27 questions. The first page gave a brief description of what the questionnaire entailed with regard to expectations and perceptions together with an example of how to complete the questionnaire. Questions 1 to 25 were based on the RATER instrument and also used a Likert scale, where the ITSS support staff were required to rate their own expectations and perceptions regarding quality and type of service delivery. Questions 26 and 27 were open-ended questions with regard to further comments in terms of IT service quality and further expectations from DUT clients. The questionnaire ended with an option for further comments. Questionnaires can be administered personally, mailed or electronically distributed (Sekaran and Bougie, 2013).

4.5.2 ADMINISTRATION OF THE QUESTIONNAIRE

Questionnaires that are mailed or electronically administered allows a wider geographical area to be covered, however the return rate is quite low which makes it difficult to determine the representativeness of the sample and any doubts that the respondent may have cannot be clarified (Sekaran and Bougie, 2013).

Surveys/questionnaires have traditionally relied on four basic data collection methods: mailing/hand delivering paper questionnaires to respondents, conducting telephonic and face- to-face interviews and administering the survey online (Groves *et al.*, 2009). Each of these methods of administration has its advantages and disadvantages. Onsite surveys may get a better response rate but they are time consuming for the researcher. Postal and email surveys are likely to have a lower response rate and possibly poorer answers because the respondent has no one available to answer questions/queries but may allow a larger number of people to be surveyed (Blaxter, 2010).

According to Andres (2012), self-administered questionnaires allow the respondent to complete the questionnaire unaided by an interviewer. Sekaran and Bougie (2010) concur that a personally administered questionnaire is a good way to collect data when the survey is confined to a local area. They add that the advantage of a personally administered questionnaire is that all completed responses can be collected in a short period of time. They state further that the researcher is able to clarify any doubts or answer any questions that the respondent may have, on the spot. The researcher is also able to introduce the research topic and motivate the respondents. However, the disadvantages are that the researcher may exhibit bias by explaining questions differently to different respondents and this type of administration may take a lot of time and effort (Sekaran and Bougie, 2013).

Based on the above, both sets of questionnaires in this study were personally administered. A further reason for choosing the personally administered method of distribution was due to the fact that the researcher offered support to the DUT staff community and wanted to add a personal touch by letting the client know that their opinion is important. Also, since the study was confined to a local area i.e. the Durban campuses of the DUT, the researcher deemed this method to be most suitable. The DUT staff questionnaire was administered to the population sample chosen for this study (as discussed under the section titled Sampling below). The ITSS staff questionnaire was administered to all IT support staff involved in service delivery i.e. 21 staff members (excluding management and ITSS specialists who underwent interviews as discussed under the section titled Structured Interviews below).

All participants i.e. the academic and administrative staff and the ITSS support staff were initially invited to participate in this study, *via* email, which contained an explanation of the study. This was then followed by the personal administration of the questionnaire. The purpose of the email was to inform participants that they were selected to participate in the study and that the researcher would be visiting each office to hand deliver the questionnaire. Each participant who was e-mailed, received a questionnaire irrespective of the fact that only approximately 60% of the participants responded to the email. The researcher deemed this necessary due to the client relationship in the work environment and in an attempt to ensure a high response rate.

An Information Letter and a Consent Form, was attached to each questionnaire and hand delivered to each participant in the main study sample (i.e. the full time academic and administrative staff and the ITSS support staff), to whom an initial email was sent. All participants were given three weeks to complete the questionnaires. In the second week, an email reminder to complete the questionnaire, by the stipulated date indicated on the Information Letter was sent to all participants. On completion of the questionnaire, the participant was required to leave the questionnaire and signed Consent Form in a box left with their departmental secretary. The

secretaries then emailed or phoned the researcher to verify that questionnaires were submitted and ready to be collected. The researcher then visited each department to personally collect all documentation. A final email was sent to all participants to thank them for their time in completing the questionnaire.

4.6 INTERVIEWS

According to Kvale (2007), an interview is a conversation that has a structure determined by the interviewer; and it is a professional interaction which becomes a careful questioning and listening approach with the purpose of gathering thoroughly tested knowledge. Interviews can be considered as the verbal equivalent of a pencil and paper survey, during which the researcher has a conversation with the respondent and the conversation has a purpose (Jackson, 2011).

According to Jackson (2011), there are three different types of interviews; structured or standardised; semi-structured; and the unstructured or unstandardized interview. For the purpose of this study the structured interviews were used.

4.6.1 Structured interviews

Jackson (2011) states that a structured (standardised) interview is somewhat formal in structure and the questions are typically asked in a specific order and there is little deviation of the wording of questions. She adds that questions are asked as they are written and there are no general questions about the interview or questions added on the spur of the moment (*see also* May, 2011). In accordance with the above, the structured interviews were conducted with the ITSS management and specialists (*see Appendices C1 and C2*) responsible for the various MS technologies, to gauge their perceptions and expectations of these MS technologies on IT service

delivery. This was done with consent from both groups (see *Appendix C3*). The structured interviews, also referred to as recording schedules (Gillham, 2005) were audio-recorded by the researcher at a location that was mutually agreed upon.

Acknowledging Kvale and Brinkman (2009) who stated that the interview session be thematized, the structured interview flowed according to the theme of the study where the interviewees were initially briefed on the study purpose, the interviewer (researcher) then asked questions which pertained to the MS technologies, the types and functions of these technologies, followed by questions on solutions and general issues regarding service delivery since the migration. The duration of each interview was approximately 30 to 40 minutes. The researcher also documented answers and additional comments. After the interviews were transcribed verbatim, a copy of the transcription was given to each participant to verify correctness of the information provided.

4.6.2 Semi-structured interviews

According to Bernard (2013), semi-structured interviews entails using an interview guide where the interviewer maintains discretion to follow leads to obtain reliable, comparable qualitative data. He further adds that using this type of interview demonstrates that the interviewer is fully in control of what is required from the interview but allows both interviewer and interviewee to follow new leads without exercising excessive control over the interviewee.

May (2011) adds that semi-structured interviews allow people to answer questions more on their own terms than the structured interview. Gillham (2010) concurs that the flexibility of the semi-structured interview makes it a very productive research tool. He cautions that the list of question topics must be pruned to those that are really essential for the study and adds that the questions asked by the researcher will be open.

The semi-structured interviews in this study would have been required only to supplement responses on the questionnaires which were either difficult to understand, incomplete or where further explanations were required for clarification (May, 2011).

4.7 PRELIMINARY WORK

Preliminary work was carried out before the questionnaires were administered for the main study. This work included a pilot study.

4.7.1 Pilot study

All data gathering instruments should be piloted to test how long it takes to complete them, to check that all questions and instructions are clear and to enable one to remove any items which do not yield usable data (Bell, 2010). He adds that the purpose of the pilot study is to get the bugs out of the instrument so that respondents in the main study will experience no difficulty in completing it. Andres (2012) adds that the purpose of this testing is to:

- ensure that the level of language used in the questions is appropriate and understandable to the audience;
- assess whether the questions are understood as intended;
- test different versions of a question; and to
- determine whether the order of questions is logical and instructions are correct

Pilot testing the questionnaires therefore enabled all necessary revisions to be made before administration to the main samples. 10% of the sample was randomly selected from the list of full time staff (using the same selection method as described in the recruitment of participants) for the pilot study as follows: 18 administrative staff (population of 180), 12 academic staff (population of 120) and 2 ITSS staff members (total staff complement: 21). The administration of the questionnaires was exactly the same as described

for the main study. These participants were then excluded from the main study.

4.7.2 Findings of the pilot study

The questionnaires' reliability scores were measured using Cronbach's alpha which is computed in terms of the average inter-correlations among the items measuring the concept: the closer the alpha is to 1, the higher the internal consistency reliability. A guideline in using this measure indicates that if a Cronbach's alpha is above 0.7 it is acceptable for the research purpose. The scores for the client questionnaire measuring four aspects of the RATER dimensions in terms of expectation and perceptions i.e. tangibles, reliability, responsiveness and empathy were high and acceptable i.e. ranged between 0.737 to 0.911.

The score for the fifth aspect being assurance, was below the norm. The possible reasons for this low score could be due to: the sample size (it was therefore expected that this would most likely improve when collecting data for the main study); and respondents selecting the same option without fully differentiating between the expectation and perception aspect of the questions (this was indicated through discussions with the respondents). However, according to the statistician this is a standard questionnaire and no modifications were required as a larger sample will alleviate the reliability score for assurance. The results are indicated below.

Table 4.1: DUT staff questionnaire scores

	E	P	Gap	P Values
Reliability	4.3	3.9	-0.4	0.0084
Assurance	4.5	4.2	-0.3	0.0020
Tangibles	3.8	3.3	-0.5	0.0829
Empathy	3.9	3.8	-0.1	0.6513
Responsiveness	4.0	3.8	-0.2	0.2443

Table 4.1 shows the scores for each of the 5 RATER dimensions measured in the DUT staff questionnaire *viz.* reliability, assurance, tangibles, empathy and responsiveness. The indicated scores for expectation (E) was higher than that of perception (P). The Gap score shows the Gap between the type of IT service the staff expect compared to their perception of what they actually receive. The difference yields the Gap score which ranges from 0.1 to 0.5. Even though some of the Gap scores look small, Gap scores for tangibles and reliability being -0.5 and -0.4 respectively are significantly different. Statistical probability (P-values) lower than 0.05 indicate that the difference between the means for expected and perceived values are significant. The p-values for reliability and assurance (0.08 and 0.02 respectively) implies that the quality IT services that clients receive is actually lower than what they expect. The magnitude of the Gap indicates the difference as indicated in the table below.

Table 4.2: ITSS staff questionnaire scores

	E	P	Gap	P Values
Reliability	5	4.4	-0.6	0.1099
Assurance	5	4.4	-0.6	0.0705
Tangibles	5	4.3	-0.7	0.1027
Empathy	5	4.3	-0.7	0.0046
Responsiveness	5	4.8	-0.2	0.1788

Table 4.2 shows the scores for each of the 5 RATER dimensions measured in the DUT staff questionnaire *viz.* reliability, assurance, tangibles, empathy and responsiveness. The scores for the ITSS staff questionnaire indicated that all of the reliability scores were high and acceptable (between 0.8 to 0.95) except for responsiveness and assurance (0.62) which are only slightly less than the acceptable value. The main reason for this was the small number of respondents in the sample (only 2 respondents). The p-values for empathy (0.004) indicate that the differences between the means for expected and perceived values are significant. Figure 4.2 above indicates

that the Gap scores are much larger for the staff respondents with only responsiveness showing a relatively small Gap. Preliminary results for qualitative data are not reflected as pilot testing of structured interviews were not carried out due to the very small number of six interviewees.

4.7.3 Ethical considerations

The term ethics as defined by Vogt *et al.* (2012), refers to good conduct toward others and also refers to the branch of philosophy that studies good and bad conduct and the moral obligations or responsibilities we have towards others. They also state that ethics is a matter of commitment to and behaviour guided by certain values. This involves making decisions and choices about which principles should apply and what kind of conduct is ethical in certain situations. They also emphasize that the norms of research ethics may be legal or moral or both. Ethical considerations are important in all stages of research from initial formulation of the research question though to design, sampling and analysis.

The conduct of ethically informed research should be a goal of all researchers as it revolves around privacy, informed consent, anonymity, secrecy being truthful and the desirability of the research. The researcher took under consideration her ethical responsibility to the participants in this study. An Information Letter and a Consent Form (see *Appendices B1, B2 and D*), were attached to both the DUT staff and ITSS staff questionnaires. The Information Letter introduced the researcher and the study, explained the aim of the research, how and why the participant was selected for the study and what was expected of the participant. The researcher's contact details were also provided if the respondent needed clarification on any issue regarding the questionnaire. The Consent Form assured the respondents of their confidentiality in participating. An Information Letter and Consent Form were also given to the ITSS management and the specialists prior to the interviews. All respondents i.e. those who completed questionnaires and

participated in interviews, were required to indicate consent/agreement /willingness to participate and their understanding of the information presented, by placing a tick in the box on the Consent Form.

Once the questionnaire was completed, the participant was required to leave the questionnaire and Consent Form with their departmental secretary from whom all documentation was collected by the researcher. This process ensured the participants' anonymity and confidentiality as the researcher did not have any knowledge of who completed the questionnaire. Both sets of questionnaires also had an optional section (see *Appendices G1 and G2*) for follow up interviews. Participants were asked to complete this section only if they were willing to participate in a semi-structured interview (as indicated on the first page of the questionnaire). This form had to be read and agreed to by the respondent. Willingness to participate was indicated by the participant completing this form and they were once again assured that this form would be removed before transcription and analysis, to ensure the anonymity and privacy. Accordingly, this section was removed by the researcher from the main questionnaire before it was sent for analysis, to ensure the participant's anonymity and confidentiality.

Ethical clearance for the questionnaires and interviews and permission to conduct the study at the DUT, was granted by the Institutional Research Ethics Committee (IREC) (see *Appendices H1 and H2*), the department of Postgraduate Research in conjunction with the Management Information department and the ITSS department (see *Appendices J1 and J2*) of the DUT.

4.8 DATA ANALYSIS

For both qualitative and quantitative data analysis, researchers go through the steps of: exploring and preparing data for analysis; analysing and representing the data; interpreting the analysis and validating the interpretations (Cresswell and Clark, 2011). According to Neuman (2011),

raw data must be systematically reorganised into a format that is easily analysed using statistics software. Qualitative analysis involves coding the data, dividing the text into small units i.e. phrases, sentences or paragraphs, assigning a label to each unit and then grouping the codes into themes (Cresswell and Clark, 2011). They add that data analysis in mixed methods research consists of analysing separately the quantitative data using quantitative methods and the qualitative data using qualitative methods; it also involves analysing both sets of information using techniques that mix the quantitative and qualitative data and results.

Since this study was conducted using the mixed methods approach, both quantitative and qualitative methods of data analysis were employed. Qualitative data analysis applied to data obtained from the open ended questions on the questionnaires and structured interview sessions. Content analysis was used for qualitative data. Sekaran and Bougie (2013) explain that content analysis systematically evaluates the symbolic contents of all forms of recorded communications, allows the researcher to analyse large amounts of textual information and systematically identify its properties such as the presence of certain words, concepts, themes or sentences. The researcher therefore worked through each transcript assigning codes, using words and numbers to specific characteristics in the text.

Quantitative data analysis is the analysis of numeric data using a variety of statistical techniques (Teddlie and Tashakkori, 2009). Bernard (2013) adds that this process is done to find and interpret patterns in this data. Quantitative data analysis applied to data gathered from the responses on the ITSS and DUT staff questionnaires. Acknowledging Cresswell and Clark (2011), the researcher converted the raw data into a form that is useful for data analysis, which means the data was scored by assigning numeric values to each response, cleaning any data entry errors and creating special variables e.g. recording items on instruments with inverted scores. This coding procedure is a set of rules stating that certain numbers must be assigned to variable attributes (Neuman, 2011). The researcher coded the

data using the MS Excel spread sheet application as this application allowed the required grid format to be maintained. Each row represented a respondent and each column a specific variable. Separate codes were assigned to each category of each variable in the study. The responses to questions were numerically coded as per answers provided and the responses to open ended questions were numerically coded according to the themes presented. Once this process was completed for both sets of questionnaires, data needed to be prepared for editing.

4.8.1 Data preparation, editing and transformation

Data preparation always involves exploration of their characteristics and structure and it is during this stage that errors and commissions are recognised and the researcher is able to develop an understanding of the comparisons and other possibilities of analysis which are likely to be productive (Swift, 2006). For qualitative data analysis, the data was organised for review or transcription from interviews into a word processing file. The researcher asked the participants to verify the transcription for accuracy. Data preparation starts with data coding. According to Sekaran and Bougie (2010), simply put, this process involves assigning a number to participant's responses to enable this information to be input into a database. All questionnaires returned in this study were assigned a number and the questions and responses were coded and input onto an Excel spread sheet. This coded data had to go through an editing process to ensure that the data keyed in was correct.

As stated by Groves *et al.* (2009), editing is the inspection and alteration of collected data prior to statistical analysis and the goal is to ensure that the data has properties intended in the original instrument design. As explained by Sekaran and Bougie (2013) data editing deals with detecting and correcting illogical, illegal or inconsistent data and omissions in the information returned by the study participants.

After the editing process, the coded data in the Excel spread sheet was input in the statistical analysis process. This process was done using the version 21 of the Statistical Package for the Social Sciences (SPSS). SPSS is a data management and analysis program designed to do statistical data analysis (Sekaran and Bougie, 2013). The results from this process of analysis produced descriptive stats such as frequencies, charts, lists and plots as well as sophisticated multivariate and inferential stats procedures such as analysis of variance (ANOVA), factor, cluster and categorical data analysis. After the collected data were captured and stored, it was carefully analysed and then presented in the form of charts and graphs using proper statistical techniques.

4.8.2 Statistical analysis

According to Calder and Sapsford (2006), a number of criteria determine the analysis approach *viz.* the amount and type of units of analysis, the number of variables, the sample design and size and the research question. Krishnaswami and Satyaprasad (2010) state that:

- statistical data analysis summarises large masses of data into an understandable and meaningful form (referred to as descriptive statistics); makes exact descriptions possible;
- facilitates identification of the causal factors underlying complex phenomena;
- enables reliable inferences to be drawn from observational data (where data is collected and analysed in order to predict or make inferences about situations that were not measured in full); and
- helps make estimations or generalisations from survey results

The two main types of statistics are descriptive and inferential. According to Cohen *et al.* (2007), the former describes and presents data and makes no inferences or predictions; it just reports what has been found in a variety of ways. The latter strives to make inferences and predictions based on the

gathered data and include hypotheses testing, correlations, regression and multiple regression and difference testing (e.g. t and z tests, chi square and ANOVA). Sekaran and Bougie (2013) state that descriptive statistics are provided by frequencies (such as bar and pie charts), measures of central tendency (such as mean, media and mode) and dispersion (such as range, variation and standard deviation. They add that in a study that contains many variables, it is interesting to see the relationship between the variables and the nature, direction and significance of the bivariate relationship of the variables. According to Bernard (2013) bivariate analysis involves looking at the association between pairs of variables and trying to understand how those associations work. The bivariate analysis in SPSS was carried out using t tests. The researcher used both descriptive and inferential statistics in this study.

4.8.2.1 Descriptive statistics

Acknowledging Krishnaswami and Satyaprasad (2010), descriptive statistics were used by the researcher to report the DUT staffs' rating on the IT service quality and satisfaction and staff demographics. With reference to Sekaran and Bougie (2013), the frequencies were measured based on percentage calculations (simple asymmetric measure of association in which the extent of how one phenomenon implies the other is estimated) to show the scales of:

- staff perceptions and expectations of the quality dimension in terms of the adapted RATER instrument with regards to each statement; and
- ITSS staff perceptions of clients' expectations with regard to the quality of service that DUT staff expect from the service provider.

Measures of central tendency were also used to test the value of both the DUT and ITSS staff expectations and perceptions of the quality dimension to enable the Gap scores on the perception and expectation scales to be investigated, with regard to each of the thirty and twenty five modified service

quality attributes and the five related service dimensions on both sets of questionnaires.

4.8.2.2 Inferential statistics

According to Sekaran and Bougie (2013) a Pearson correlation matrix shows the direction, significance and strength of the bivariate relationships among all variables that were measured. Cohen *et al.* (2007) add that when two variables or sets of data fluctuate in the same direction a positive relationship exists (+1.0 shows a perfect positive correlation between 2 factors. A negative affect is when an increase in one variable is accompanied by a decrease in another (-1.0 represents perfect negative correlation) Correlation between the respondent's expectations and perceptions of service quality and each quality dimension (i.e. reliability, responsiveness, assurance, empathy and tangibles) were tested with the intention of: establishing whether these service dimensions influence each other; and to determine if the respondents' expectations and perceptions were influenced based on the five dimensions of service.

The traditional approach to reporting a result requires a statement of statistical significance. A p-value is generated from a test statistic. A significant result is indicated with " $p < 0.05$ ". These values are highlighted with a * (see *Appendix K*). A test for normality indicated that the data was not normally distributed. A suitable test was chosen to determine whether the differences were significant. The Wilcoxon signed-rank test is the nonparametric test equivalent to the dependent t-test. As the Wilcoxon signed-ranks test does not assume normality in the data, it can be used when this assumption has been violated and the use of the dependent t-test is inappropriate. It is used to compare two sets of scores that come from the same participants (see *Appendix L*). This can occur when we wish to investigate any change in scores from one time point to another, or when individuals are subjected to more than one condition

<https://statistics.laerd.com/spss-tutorials/wilcoxon-signed-rank-test-using-spss-statistics.php>).

All of the p-values for the respective expectation and perception pairs have values less than 0.001. This is less than the level of significance and implies that the difference between Expectations and Perceptions were statistically significant.

4.8.2.3 The Chi square test

According to Connor-Linton (2010), the chi-square test is a nonparametric test of the statistical significance of a relation between two nominal or ordinal variables and because it is less “demanding” about the data it will accept, it can be used in a wide variety of research contexts. He adds that the chi-square is applied most commonly to frequency results reported in bivariate tables, and interpreting bivariate tables is crucial to interpreting the results of a chi-square test.

The Chi square test was performed to determine whether there was a statistically significant relationship between the variables (rows versus columns). The null hypothesis states that there is no association between the two. The alternate hypothesis indicates that there is an association. The table summarises the results of the chi square tests (see *Appendix K*). For example: The p-value between ‘The ITSS department has up-to-date equipment (IP telephones, netbooks, notebooks, printers, etc.) and software’ and ‘Gender’ is 0.007 (which is less than the significance value of 0.05). This means that there was a significant relationship between the variables i.e. the gender of a respondent did play a role in terms of “the ITSS department having up-to-date equipment (IP telephones, netbooks, notebooks, printers, etc.) and software”.

All values without an * (or p-values more than 0.05) did not have a significant relationship between variables. For example the p-value between 'the ITSS department's physical facilities are visually appealing and aligned with the type of services provided' and 'number of years using a pc at work' which was 0.36 (which is greater than the significance value of 0.05). This means that there was no significant relationship between the variables i.e. number of years spent using a pc at work was not related to whether the ITSS department's physical facilities were visually appealing and aligned with the type of services provided.

4.8.3 Data interpretation

According to Johnson and Christensen (2013), once data has been collected, analysed and validated, the researcher can begin interpreting the data. They also add that the qualitative and quantitative data can be interpreted separately or together in the case of a mixed method study, depending on the research rationale and purpose. Mixed methods data interpretation entails looking across the quantitative results and qualitative findings to make an assessment of how the information addresses the mixed methods question in study (Creswell and Clark, 2011; Palinkas, Aarons, Horwitz, Chamberlain, Hurlburt and Landsverk, 2011).

According to Creswell and Clark (2011), data interpretation enables the researcher to interpret the meaning of the results/findings once they are presented. They add that in quantitative data analysis, the results are compared with the initial research questions to determine how the questions were answered in the study. It also means results are compared with explanations or predictions from previous research studies and theories. In this study, the researcher represented the findings in statements summarizing the statistical results. Tables were used to report results related to inferential and descriptive questions. Results were also presented in a visual form using bar graphs and pie charts.

According to Cohen *et al.* (2007), qualitative interpretation involves making sense of the data in terms of the participants' definitions of situations and noting the patterns, themes, regularities and categories that emerge. This process allows multiple interpretations of qualitative data to be made. In this study, data was organised into frequently mentioned phrases to discover patterns and relationships in the data. Descriptive data together with comments made by the researcher were also used. This data was then displayed in an organised and condensed manner using graphs, diagrams and charts to facilitate the drawing of conclusions.

4.9 INSTRUMENT RELIABILITY AND VALIDITY

Two concerns of the researcher when collecting data by means of a measuring instrument are the validity and reliability of the instrument (Glenn, 2010). Validity refers to whether a measuring instrument measures what it claims to measure (Jackson, 2011). Gravetter and Forzano (2012) add that the reliability of a measurement procedure is the stability or consistency of the measurement which is computed by taking several measurements on the same subjects and further state that if the same individuals are measured under the same conditions, identical (or nearly identical) measurements are produced. Hence the two most important aspects of precision are reliability and validity.

Hussein (2009) adds that in mixed methods research, triangulation can be used to validate a data collection instrument and this validation is ensured by attaining the same results. Sekaran and Bougie (2013) explain that triangulation is a technique often associated with mixed methods research and the researcher can be more confident in the result if the use of different methods of sources leads to the same result. They add that there are different kinds of triangulation *viz.* method, data, researcher and theory triangulation.

Data triangulation was used in this study. This was done by gathering data from DUT staff and ITSS support staff *via* questionnaires and from the ITSS management and specialists *via* structured interviews. The data from the questionnaires and interviews were then triangulated in the analysis in order to produce greater insight than would be gained by a single method. The researcher felt that triangulation was appropriate for this study for three reasons: firstly for confirmatory purposes i.e. to confirm if data collection instruments were appropriate for measuring the concept of perception and expectation in IT service delivery: secondly to increase the researcher's in-depth understanding of the phenomenon under investigation and thirdly to increase the credibility or trustworthiness of the findings of this research.

4.9.1 Reliability

Sekaran and Bougie (2013) define reliability as a test of how consistently a measuring instrument measures whatever concept it is measuring. Cohen *et al.* (2007) explain that reliability in quantitative research is a synonym for dependability, consistency and replication over time, over instruments and over groups of respondents is concerned with precision and accuracy. According to Drost (2011) the typical methods to estimate test reliability are: test-retest reliability, alternative forms, split-halves, inter-rater reliability, and internal consistency. There are three main concerns in reliability testing: equivalence, stability over time, and internal consistency.

In this study the researcher used the internal consistency measure to verify reliability of the test components. Drost (2011) emphasizes that internal consistency measures consistency within the instrument and questions how well a set of items measures a particular behaviour or characteristic within the test. For a test to be internally consistent, estimates of reliability are based on the average inter-correlations among all the single items within a test. The most popular method of testing for internal consistency is coefficient alpha (Cohen *et al.*, 2007). Coefficient alpha was popularised by Cronbach

(1951) who recognised its general usefulness and as a result, it is often referred to as *Cronbach's alpha* (Sekaran and Bougie, 2010).

This is a reliability coefficient that shows how well the items in a set are positively correlated to one another. Cronbach's alpha is computed in terms of the average inter-correlations among the items measuring the concept: the closer the alpha is to 1, the higher the internal consistency reliability (Sekaran and Bougie, 2013). A guideline in using this measure indicates that if a Cronbach's alpha is above 0.7 it is acceptable for the research purpose. Tables 4.3 and 4.4 below reflect the Cronbach's alpha score for all the items that constituted the questionnaires. All of the sections within both sets of questionnaires have Cronbach's alpha values that exceed the minimum recommended value of 0.7. This indicates a high (overall) degree of acceptable, consistent scoring for this research.

Table 4.3: Reliability scores: DUT staff questionnaire

	Cronbach's Alpha	
	Expectations	Perceptions
Tangibles	.857	.805
Reliability	.919	.894
Responsiveness	.901	.902
Assurance	.934	.909
Empathy	.902	.898
Overall	.971	.963

Table 4.4: Reliability scores: ITSS staff questionnaire

	Cronbach's Alpha
Reliability	.973
Responsiveness	.951
Assurance	.977
Empathy	.963
Tangibles	.927
Overall	.991

4.9.2 Validity

Drost (2011) states that validity is concerned with the meaningfulness of research components and indicates that there are four types of validity that researchers should consider: statistical conclusion validity, internal validity, construct validity, and external validity. According to Jackson (2011) validity is measured by using correlation coefficients. She adds that there is no established criterion for the strength of the validity coefficient but what is important is that they are statistically correct at the .05 or .01 level which means that the results are most likely not due to chance. She states further that validity may be checked by asking the respondent about the same issue but using a different form of question wording and then comparing the answers. This method allows comparability between responses; it is uniform in structure and its deployment may often be associated with particular forms of expertise.

Descriptive and interpretive validity were used with regard to the qualitative data gathered in this study. According to Johnson and Christensen (2012), descriptive validity refers to accuracy in descriptive reporting such as describing people's behaviour, events, settings etc. and this is important as this description is a major objective. They add that Interpretive validity is the

degree to which the participant's viewpoints, thoughts, feeling and experiences are accurately understood and allows the researcher to understand things from the participant's perspectives and to provide a valid account of these perspectives.

Descriptive validity was achieved by using a digital recorder to provide an accurate record of what the interviewees expressed and to verify particular statements that were made. Interpretive validity was gained through understanding the interviewees' perspectives in terms of what they see and feel i.e. by understanding and portraying their "inner/subjective world" (Johnson and Christensen, 2012) as indicated by their intentions, viewpoints, feelings and experiences.

Correlational and regression analysis were used to determine the predictive validity of the survey instrument in this study. As per Cohen *et al.* (2007), the former enables two or more scores to be collected on the same group of subjects and then computes correlation coefficients. The latter enables the researcher to predict the value of one variable when the values of the other variable is known or assumed: it is a way of modelling the relationship between variables. Pearson's correlation coefficient r is the most widely used where r is interpreted such that a value of 1 indicates a perfect association but is a highly unlikely result which causes concern. A correlation of around 0.8 would indicate a strong association (Calder and Sapsford, 2006). Pearson's correlation matrix was used to analyse the correlation among the five factors (being reliability, responsiveness, assurance, empathy and tangibles) as well as the correlation between these factors and the overall service quality variable.

This study used the construct validity test to verify how well the results obtained from the use of the measure fit the theories around which the test was designed (Sekaran and Bougie, 2013). Validity was established using factor analysis based on the idea that if things we observe are correlated with each other, they must have some underlying variable and this analysis is a

set of techniques for identifying and interpreting these underlying variables (Bernard, 2013).

Factor analysis is a statistical technique whose main goal is data reduction (Greasley, 2008). A typical use of factor analysis is in survey research, where a researcher wishes to represent a number of questions with a small number of hypothetical factors (Johnson and Christensen, 2013). The principle component analysis was used as the extraction method, and the rotation method was Varimax with Kaiser Normalization (Bernard, 2013). This is an orthogonal rotation method that minimizes the number of variables that have high loadings on each factor. It simplifies the interpretation of the factors. Factor analysis showed inter-correlations between variables (Martin and Bridgmon, 2012).

Items of questions that loaded similarly, imply measurement along a similar factor. In the client questionnaire, an examination of the content of items loading at or above 0.5 (and using the higher or highest loading in instances where items cross-loaded at greater than this value) effectively measured along the various components. For the ITSS staff questionnaire, all of the variables loaded perfectly along a single dimension each. This means that the dimensions measured what it set out to measure. (For a more detailed information on factor analysis pertaining to this study, refer to *Appendices I1 and I2*)).

4.10 SUMMARY

This study was conducted within a mixed methods paradigm using a quantitative inferring design together with a qualitative foundation. Questionnaires and structured interviews were used as data collection instruments, to collect both qualitative and quantitative data to address the research objectives. The data source was primary in nature as all analysis of gathered data was done based on the new data collected and not on

secondary data (data previously analysed by any other study). Simple random sampling and purposive sampling were used in this study. Once the pilot study was conducted to ensure that the data gathering instruments were both reliable and valid, the questionnaires were then personally administered to the study's population sample for the main study as well as the staff compliment of the ITSS department who are directly involved in IT service delivery. Ethical clearance was also sought from the appropriate committee to ensure that the research was conducted within the ethical boundaries. The following chapter presents the study's findings.

CHAPTER FIVE: RESEARCH FINDINGS

5.0 INTRODUCTION

Chapter Four discussed the research methodology that applied to this study in terms of the research design, target population, sampling design and method, data sources and collection, design and administration of the questionnaires as well as the interviews conducted. Following this, the preliminary work was discussed together with the findings from the pilot study. The data analysis for this study was then discussed in detail, followed by a discussion regarding validity and reliability.

This chapter presents the results and discusses the findings obtained from the questionnaires and interviews in this study. The DUT staff (also referred to as clients) questionnaire (*Appendix E*) was the primary tool used to collect data. This data were analysed using version 21.0 of SPSS. Quantitative data are presented as descriptive statistics in the form of graphs, pie charts and cross tabulations. Inferential techniques include the use of correlations and chi square test values; which were interpreted using the p-values, as both sets of questionnaires yielded a large amount of usable data. Qualitative data were summarised to highlight similarities and differences and identify patterns in the data. The patterns were coded into categories thereby identifying conceptual themes (Harding, 2013).

Both sets of questionnaires and structured interviews yielded a fair amount of useable data thus the researcher organised the findings into the following sections in order to present the data in a consolidated manner. The academic and administrative staff questionnaire, yielded quantitative data and were categorised as follows: biographical details; IT usage and needs; IT support requirements and challenges; and SERVQUAL (RATER) dimension analysis. The ITSS staff questionnaire consisted primarily of SERVQUAL (RATER) dimension analysis based on ITSS staff perceptions of their clients' needs and expectations. Both sets of questionnaires also yielded qualitative data

from open-ended questions regarding overall IT service delivery post migration to MS.

A total of 270 questionnaires were personally administered to the full time academic and administrative staff at the Durban campuses of the DUT. This total was derived from the initial sample of 300 staff from which 30 were selected for the pilot study and then eliminated from the main study. Despite several attempts *via* email, telephone calls and personal visits to the DUT staff to encourage them to return their completed questionnaires, only 214 questionnaires were returned, which yielded a 79.2 % response rate. Some staff indicated they were too busy to complete the questionnaires, others had misplaced the questionnaires, while others just did not respond. 20 academic and 28 administrative staff indicated in the optional section of their questionnaires that they were willing to participate in follow-up semi-structured interviews if required. However, these interviews were not conducted as no further information was required because the answers on the questionnaires were adequately and clearly provided and did not need to be supplemented by additional information.

From the total of 19 questionnaires administered to the ITSS staff, 18 were returned (this total was derived from the initial sample of 21 ITSS staff from which 2 were selected for the pilot study and eliminated for the main study) which yielded a 94.7% response rate. All questionnaires were reviewed and considered appropriate and complete for data analysis. None of the ITSS staff indicated a willingness to participate in interviews.

5.1 QUANTITATIVE DATA

The primary research instrument (academic and administrative staff questionnaire) consisted of 113 items, with a level of measurement at a nominal or ordinal level. The questionnaire was divided into the following sections:

Section A:

- Biographical data;
- IT usage and needs; and
- IT support requirements post migration

Section B:

- SERVQUAL dimension analysis of the five RATER dimensions *viz.* reliability, responsiveness, assurance, empathy and tangibles.

The aim was to determine the staffs' perceptions and expectations regarding: the migration to MS solutions in terms of the problems and challenges they face in using these solutions; and the services delivered by ITSS staff post migration which aligns with meeting objective one of this study.

The secondary research instrument (ITSS staff questionnaire) consisted of 28 items based on the SERVQUAL dimensions in terms of the five RATER dimensions as listed above. The aim was to gain an understanding of the ITSS staffs' perceptions of their clients' needs and expectations which aligns with meeting objective four of this study.

5.2 BIOGRAPHICAL DATA

5.2.1 Age and gender

This section summarises the biographical characteristics of the respondents and describes the gender distribution by age. The total ratio of males to females was approximately 1:1 (42.7%: 57.3%). Within the age category of less than 20 years, there were 0 male and 3 female respondents. The category of males and females in this age group formed 0% and 1.4 % of the total sample, respectively. Within the age category of 20 to 30 years, 39.1% were male and 60.9% were female. The category of males and females between the ages of 20 to 30 years formed 4.2% and 6.6% of the total sample, respectively. Within the age category of 30 to 40, 27.8% were male

and 72.2% were female. The category of males and females between the ages of 30 to 40 formed 16.5% and 32.2%, respectively.

Within the age category of 40 to 50 years, 47.8% were male and 52.2% were female. The category of males and females between the ages of 40 to 50 years formed 15.2 % and 16.9 % of the total sample, respectively. Within the age category of over 50 years, 53.1 % were male and 46.9% were female. The category of males and females over the age of 50 years formed 16.0 % and 14.1 % respectively of the total sample. The ratios of males to females within this sample indicates the various age groups that do use IT related equipment at the DUT.

The reason for a higher number of younger females in comparison to males could be due to the employment criteria in terms of the Equity requirements, at the DUT. This also falls in line with the general employment regulations regarding the Economically Active Population (EAP) within South Africa. According to the Equity act, the employment ratio of females should be higher than that of males. The Department of Labour (<http://www.labour.gov.za/DOL/downloads/documents/annual-reports/employment-equity/commission-for-employment-equity-annual-report-2012-2013/cee13report.pdf>) states that special efforts are required to increase the pool of women who are economically active, especially when they are the majority in terms of the total population and are able to make more of a contribution towards the development of the South African economy.

5.2.2 Ratio of administrative to academic staff

Respondents within this study belonged to the administrative and academic sectors within the DUT. The results yielded a ratio of 49.1% academic to 50.9% administrative full time, permanent employees. The lower ratio of academic to administrative staff is an indication of the ratio of the target population at the DUT, which was described in Chapter Four. The fact that

the number of administrative staff is slightly higher than that of academic staff, does not imply that the former requires more IT support or that they have greater IT needs than the latter. It is merely a reflection of the current employment ratio at the DUT i.e. there are more administrative staff employed compared to academic staff.

5.3 IT USAGE AND NEEDS

Figure 5.1 indicates the number of years that the respondents have worked at DUT. The researcher felt that this information would be useful as staff who have been employed at the DUT for more than 10 years would be able to indicate their IT needs and usage comparatively. They would have used the previous non-integrated IT system and the system post migration and would therefore be in a position to provide the required feedback.

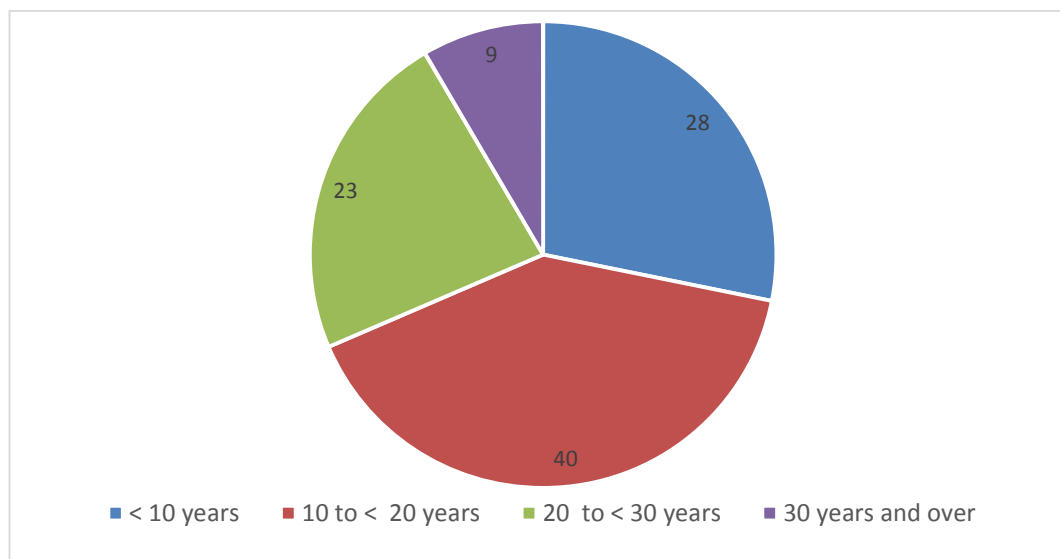


Figure 5.1 Number of years at DUT

It is noted that nearly two thirds of the respondents (63%) worked at the DUT for between 10 to 30 years and 9% for more than 30 years. In terms of the age and work experience, this is useful as the majority of respondents have been in the DUT system for a long time and were therefore in a position to provide a fairly accurate assessment of the performance of the ITSS

department. 28% were employed for less than 10 years; their assessment of the ITSS service delivery is equally as important as IT services are provided to all staff members irrespective of the years of employment.

Table 5.1 below shows the number of years and daily hours respondents have been using pcs or laptops at work.

Table 5.1: PC/laptop usage and experience

		Number of years using a PC at work				Total
		< 5 years	5 to < 10 years	10 to < 20 years	20 years and over	
How many hours on average do you spend on your pc/laptop?	Count	8	6	12	6	32
	1 to < 4 hours	25%	19%	38%	18%	100.0%
	% within How many hours on average do you spend on your pc/laptop?					
	% within Number of years using a PC at work	36%	15%	13%	10%	15%
	% of Total	4%	3%	6%	3%	16%
	Count	12	24	47	30	113
	4 to < 8 hours	11%	21%	41%	27%	100.0%
	% within How many hours on average do you spend on your pc/laptop?					
	% within Number of years using a PC at work	55%	62%	51%	52%	55%
	% of Total	7%	11%	22%	14%	54%
	Count	1	9	29	17	56
	8 to < 12 hours	2%	16%	50%	30%	100.0%
	% within How many hours on average do you spend on your pc/laptop?					
	% within Number of years using a PC at work	5%	23%	31%	30%	26%
	% of Total	1%	4%	14%	8%	27%
12 hours and more	Count	1	0	5	5	11
	% within How many hours on average do you spend on your pc/laptop?	9%	0%	45%	46%	100.0%
	% within Number of years using a PC at work	5%	0%	5%	9%	5%
	% of Total	1%	0%	2%	2%	5%
	Count	22	39	93	58	212
Total	% within How many hours on average do you spend on your pc/laptop?	10%	18%	44%	28%	100.0%
	% within Number of years using a PC at work	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	10%	18%	44%	28%	100.0%

One would assume that the more often pc/laptops are used, the less likely staff would require IT services and they would often be able solve many issues on their own, but this is not necessarily the case. It was determined that the majority of IT usage occurred between one and less than four hours and between four and less than eight hours with percentages ranging from 11% to 41%. Within these brackets, the years of using pcs/laptops ranged from 10% to 62%. It is during these hours that staff's IT needs increased irrespective of the number of years of using a pc/laptop. Within the eight to less than twelve hour and the greater than twelve hour bracket, the percentage of usage dropped to between 0% to 45% (it must be remembered that a much lower number of clients were using pcs/laptops during these hours). Within these brackets, the years of using pc/laptops ranged from 0% to 31.2% usage.

The above indicates that the clients' IT needs did not depend on the number of years or amount of experience in using a pc/laptop but rather on the number of hours spent in using the equipment. The researcher therefore believes that IT service delivery should be based on clients' IT needs irrespective of the number of years they have used pcs/laptops. IT service delivery should not be compromised due to an incorrect assumption i.e. the ITSS staff should not assume that because a client has used a pc/laptop for many years, that he/she will automatically be able to resolve an IT problem.

Respondents were asked to indicate primary reasons for using pcs/laptops. Staff at the DUT primarily indicated the following reasons: DUT work related matters; research; learning new applications; surfing the web; and entertainment/personal reasons (as indicated in Figure 5.2 below).

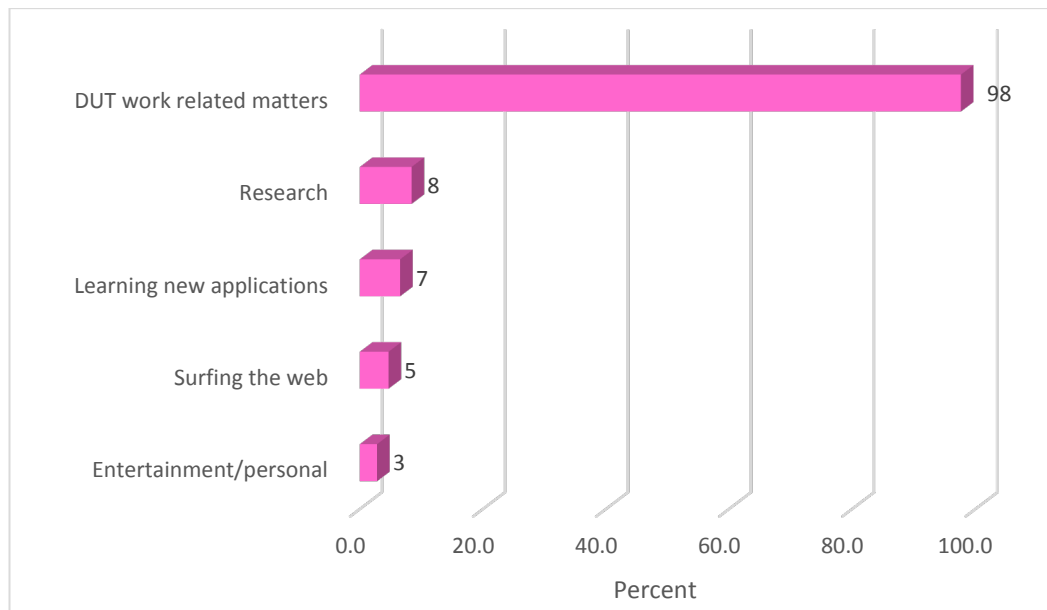


Figure 5.2: Primary use of pcs/laptops

(Multiple responses were permitted. Hence, the total does not equal 100%)

98% indicated that their main reason for using a pc/laptop was work related. Currently, IT service delivery entails primarily assisting staff during DUT's working hours which is from 8am to 4:30 pm, Monday to Friday and since DUT work related matters take precedence over any other reason for IT usage by staff, IT service delivery should always be at an optimal level to ensure that staff experience minimal to zero downtime during this period. It is vital that IT support be offered efficiently and effectively during this period as a ripple effect could be experienced if staff are unproductive resulting in issues that range from not being able to prepare lecture material and exam papers timeously and the inability to capture test and exam scores at the end of examination/test periods to issues that deal with the general administration and maintenance of the UoT as a whole, within the various levels of operation.

In order to gauge frequency of use and preference, the types of applications used were assessed. Staff responses indicated that the use of MS applications were higher in comparison to other applications such as the integrated tertiary system (ITS), Adobe software and programme specific

software which are used by certain academic departments. 82.8% used the MS Outlook email application while between 6.9% and 10.3% used Gmail and other email applications respectively. Between 6.9% and 20.7% used the various programs within the MS Office suite. 3.4% used research related software and between 5% and 7% used other applications such as the DUT's ITS application and other programme related software. Between 14.3% and 64.3% used the popular Web search engine Google, for work related purposes, while between 9.5% and 61.5 % used the Web for leisure. The primary Web browser was MS Internet Explorer which 90% of staff used as it is the front end application for the internal DUT staff portal and document repository. The staff portal is housed *via* the MS SharePoint backend technology. These figures indicate that the MS applications are more frequently used although staff do have and use other applications as indicated above.

5.3.1 Requests for ITSS services

In assessing the frequency of requests for ITSS services, it was found that DUT staff requested IT services as follows: 52.6% monthly, 3.8% daily, 8% weekly, 33% annually and 1.9% did not request IT services. A little more than half of the respondents indicated that they made requests monthly which shows that IT services are vital to the DUT staff. Annual requests came from staff who have IT laboratory technicians based in the departments and often request assistance from them. The reasons for the two lowest percentages *viz.* 1.9% and 3.8% were because staff felt that they were 'fairly IT savvy' and also did not really experience IT issues on a daily or weekly basis. These clients indicated that they did not require frequent assistance.

According to Jia (2008), in order to deliver quality service, the IT department should emphasize meeting customer needs and soliciting and addressing client feedback allows the IT department to make targeted efforts to improve its service quality. The DUT's ITSS department is a service department for

the entire DUT and the type and quality of service provision should always be of a highly acceptable standard irrespective of how seldom or frequently a request is made. The provision of IT services are mandatory, irrespective of the percentage and time frames that staff make these requests for assistance.

The HEAT call logging system is used by ITSS to log IT related calls from which calls are assigned to the respective Durban campuses. The most common methods for logging a call to request ITSS services was done *via* telephone or email. 49.1% of staff requested an IT service by sending an email to a special call logging email address which is accessed by the ITSS service desk and assigned to the appropriate senior ITSS consultant per Durban campus; 46.3% telephoned the ITSS service desk and reported the IT problem and the call was logged accordingly; 3.7% used the HEAT self-service facility *via* the staff portal where they stated specifically what issue they were experiencing. This was then also accessed and logged accordingly within the HEAT system, by the ITSS service desk. 0.9% personally visited the ITSS office to request assistance, especially in an emergency or urgent case. The request was logged by the ITSS service desk *via* the HEAT system for these walk in cases and the client was assured that assistance would be provided either on the spot or as soon as a consultant was available.

The two popular methods for call logging as indicated above were because these methods seem to yield a quicker response rate. Also staff felt that explaining the problem to the ITSS service desk or *via* an email equipped the consultant with all the necessary information to enable them to gauge exactly what issues the client was experiencing thus enabling the call to be logged accordingly and promptly.

The HEAT self-service facility is a fairly new system and staff are currently not very familiar with logging calls *via* this system hence the low percentage

in using this method of call logging. Visits to the ITSS office by clients only occurred as and when convenient and necessary for them to do so. The level of comfort in using ITSS services were rated from very comfortable to very uncomfortable. 44.1% of the respondents were very comfortable and 54.5% were comfortable. 1.4% were uncomfortable to very uncomfortable in using the services and some of the reasons were due to: lack of confidence or trust based on possible previous unfortunate experiences with ITSS services; client's ability to resolve their own issues; not receiving assistance promptly; and apprehension in allowing the ITSS consultant access to one's workspace and confidential data.

While most clients seek assistance from the ITSS department, there were also attempts by clients to solve their problems on their own as illustrated in Figure 5.3 below.

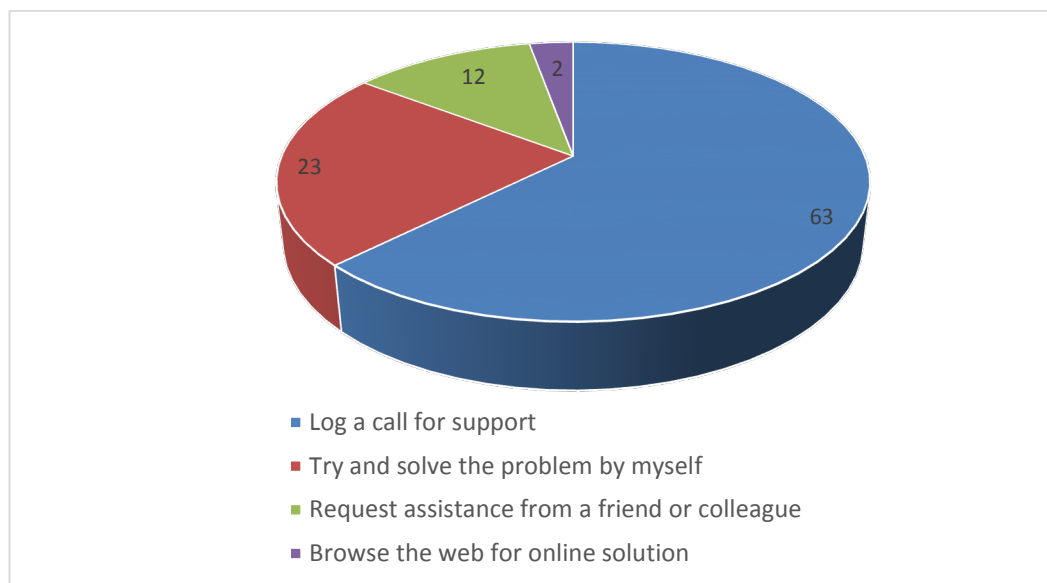


Figure 5.3: Obtaining help with IT related issues

Figure 5.3 above reflects that nearly two thirds of clients (63%) usually logged a call when they were experiencing IT related issues. 23% attempted to solve the problem themselves but in most cases, a call is logged after an unsuccessful attempt is made by the client. 12% requested assistance from a

friend or colleague who were sometimes successful in resolving a problem. The remaining 2% browsed the web for a solution. Meer (2013) warns that web browsing and downloading software normally has other implications such as malware disguised as software being downloaded to the pc/laptop. This malware program can collect personal information unbeknown to the client while he/she is downloading a so called 'fix it tool' to resolve an issue. This in turn could lead to larger problems such as corruption to the operating system and complete data loss which would ultimately lead to the client seeking IT assistance. This can be avoided if the client just initially logs a call for assistance when experiencing an IT related problem.

5.4 IT SUPPORT REQUIREMENTS POST MIGRATION TO THE MS PLATFORM

Responses to questions in this section pertained to issues regarding the type and the areas of support that clients would have preferred assistance with after migrating to the MS platform. When clients were asked in which area they would like to receive more support, they responded as follows: software, 54.2%; hardware, 17.8%; more training, 39.3%; support in all three areas, 8.9%; and no support required, 17.8%. Responses to the question regarding how the clients gained most of their knowledge in the use of pcs/laptops, were indicated as follows: trial and error, 56.5%; friends and colleagues, 56.1%; ITSS support, 37.9%; web resources, 20.6%; and reading, 15.9%. These responses indicate a cause for concern as clients preferred a trial and error basis or having consulted friends and colleagues for help because they were reluctant to initially log a call. The reasons for this apprehension were indicated by clients as being a lack of trust and confidence in ITSS ability; general unhappiness with services received and slow turnaround times in both responding to the call and resolving the issue. Based on this feedback, one can gauge that clients are reluctant to call upon ITSS services as their first option.

Furthermore, in clients' responses regarding their expectations when a call was logged, 70.6% indicated that they expected ITSS staff to be efficient and effective in providing the service and resolving the issue at hand. 67.3% indicated they expected prompt and reliable IT services; 64.5% stated they expected ITSS staff to provide the required IT service; 59.8% showed that they expected contact to be maintained until the problem was resolved; 42.1% indicated that they expected ITSS to suggest alternate solutions to prevent downtime and 39.7% expected ITSS to explain IT terminology regarding the problem at hand.

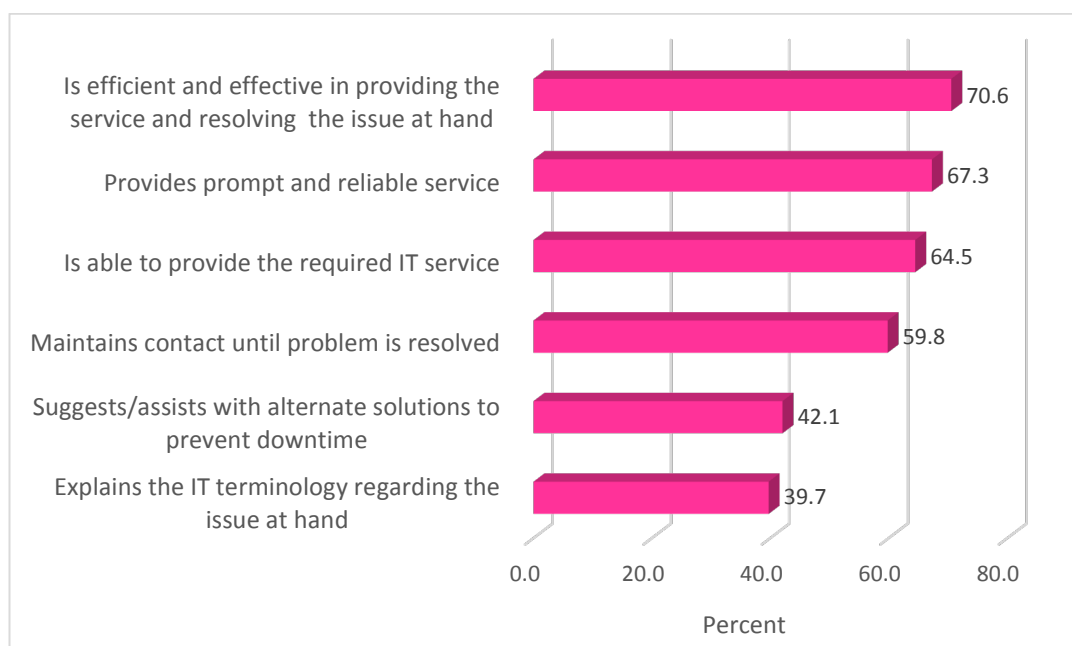


Figure 5.4: Clients expectations of ITSS services

(Multiple responses were permitted. Hence, the total does not equal 100%)

These patterns shown in Figure 5.4 above indicate that clients expected a high level of quality in IT service delivery. Providing efficient, effective, prompt and reliable IT services is key to maintaining good relationships and keeping clients satisfied. This is emphasized by Angelova and Zekiri (2011), who state that client satisfaction is said to be the outcome felt by those that have experienced a company's or department's performance that have

fulfilled their expectations. Meeting client's expectations by providing good IT support is also important in preventing unproductivity due to downtime.

Being able to provide the required service and keeping the clients informed (maintaining contact) until the issue is resolved, is key to building and maintaining healthy customer relationships which in turn promotes dependability, trust and competence with the service provider i.e. the ITSS staff. Suggesting alternate solutions and explaining IT terminology to the client relating to the IT issue at hand, reassures them that the service provider is willing to assist, is empathetic to their needs and is keen to prevent frustration and despondence that may be experienced by a dissatisfied client. Every attempt must be made to avoid a negative impact or opinions.

This is emphasized by Hansemark and Albinson (2004) who state that satisfaction is an overall customer attitude towards a service provider. They add that it is an emotional reaction to the difference between what customers anticipate and what they receive, regarding the fulfilment of a need or desire. Ramseook-Munhurrin, Naidoo and Lukea-Bhiwajeein (2009) remind us that in service encounters, employee behaviour will impact on the customers' perceptions of service quality. It is therefore crucial to understand employees' needs, demands and wishes and not only those of the customers.

The above discussions highlighted aspects that pertained to the DUT clients in terms of personal data such as age, gender and professional classification. This was followed by discussions regarding clients' IT usage and needs, requests for ITSS services and further requirements in terms of support post migration to the MS platform. The next section discusses the SERVQUAL (RATER) dimensions for the primary data gathering instrument.

5.5 SERVQUAL DIMENSION ANALYSIS OF DUT STAFF QUESTIONNAIRES

The analysis of these questionnaires pertained to responses received from DUT clients comprised of full time academic and administrative staff at the DUT Durban campuses. As described in Chapter Three, the SERVQUAL model became the most notable contribution to the measure of service quality in the 1980's and has been used in many fields to determine customer satisfaction, especially since the models construct utilises the perceptions minus expectations approach (Souca, 2011) However research showed the imperfections of the research instrument therefore requiring further analysis and reassessments by the models creators (Parasuraman *et al.*, 1988, 1991, 1994) and other researchers (Cronin and Taylor, 1992; Babakus and Boller, 1992). The SERVQUAL scale was initially composed of ten dimensions and was then condensed after further analysis and reassessments to the following five dimensions: reliability, assurance, tangibles, empathy, and responsiveness often expressed through the mnemonic, RATER (Gracia, Bakker and Grau, 2011).

RATER was used as the researcher was attempting to explore and assess clients' service experiences by focusing on the five RATER dimensions in order for IT service delivery at the DUT to be analysed and improved. The RATER factors help provide specific dimensions which can be used to analyse and measure customer expectations (Qi, 2010). As illustrated by Figure 3.3, RATER is an efficient model in helping an organization shape up their efforts in bridging the Gap between perceived and expected service and was applied in this study by carrying out the Gap analysis of the 5 dimensions (Sharma, 2011). According to Jia and Reich (2013) a positive relationship should exist between the IT department's service climate or work environment and its service behaviour, i.e. the IT service quality experienced by its customers. They indicate that customer orientation is the degree to which meeting customer needs and expectations for service quality is

emphasized. Based on this, the results of the 5 RATER dimensions tested through this questionnaire, in terms of expectation versus perception of the quality of IT service delivery, are presented and discussed.

The Gaps between expectation and perception in this study indicate where IT service delivery falls short in terms of quality and based on these shortfalls, suitable suggestions will be proposed to the ITSS management to improve the quality of IT service delivery to the UoT's clients. According to Pitt, Watson and Kavan (1995), the difference between expected service and ITs' perceived service is depicted as a Gap i.e. the discrepancy between what users expect and what they think they are getting (Refer to Figure 3.1) If IT is to address this disparity it needs some way of assessing clients' expectations and perceptions and measuring the Gap.

Figures 5.5 to 5.9 below indicate the mean scores for each statement, as well as the Gap scores (which is the difference between the expectations and perceptions) for each component. Service quality for each dimension is captured by a difference score G (representing perceived quality for that item), where:

$$G (\text{Gap}) = P (\text{perception}) - E (\text{expectation})$$

and where P and E are the average ratings of a dimension's corresponding perception and expectation statements respectively (Pitt *et al.*, 1995). An average (mean) score was used as a measure of the component. The statements in each figure are indicated on the horizontal axis e.g. Rel1 refers to the 1st statement in the reliability dimension, A3 refers to the 3rd statement in the assurance dimension, T2 refers to the 2nd statement in the tangibles dimension and so on. The mean scores are indicated on the vertical axis: expectation (E: blue bar), perception (P: green bar). The Gap scores between the E and P (G: red bar) are discussed under each dimension.

5.5.1 Reliability of ITSS services received

In this section, the clients were asked to rate the reliability of the ITSS department's services based on 6 statements.

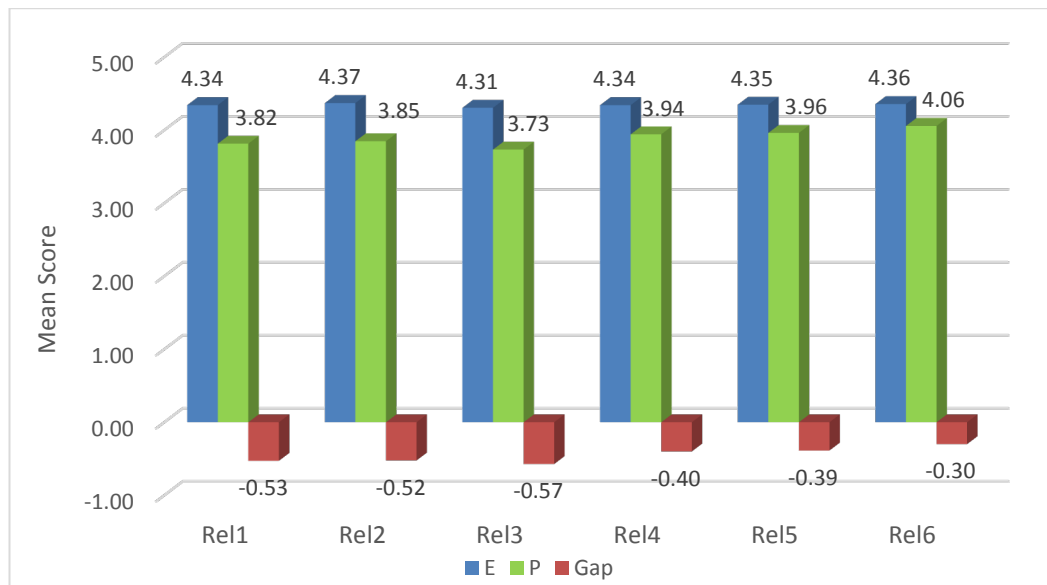


Figure 5.5: Reliability dimension score: clients

The average Gap score for this dimension was 0.45. The responses to whether the ITSS department was: often reliable and accurate (Rel1); provided its services effectively (Rel2); and provided its services timeously (Rel3) resulted in Gap scores of -0.53, -0.52 and -0.57 respectively indicating the highest Gap scores in this dimension. These scores indicated that the expectation was higher than perception of service delivery within these areas. Clients often expect services they receive to be carried out reliably, accurately and effectively within a good turnaround time. Rosa, Gama and Silva (2012) state that when a client orders a service, the organisation or department must adequately fulfil that request when this does not occur, Gaps result because the difference between clients' needs and their perception of the services received does not match. The resulting Gaps between expectations and perceptions in terms of reliability, accuracy,

effectiveness and timeous service delivery, which comprises the service, must therefore be addressed.

The responses to whether: the ITSS department's employees were trustworthy (Rel4); adequate support was received from the ITSS department to perform tasks efficiently and effectively (Rel5); and the department kept accurate records of the calls logged and completed (Rel6) resulted in Gap scores of -0.40, -0.39 and -0.30 respectively. The relatively low Gap scores in this dimension indicated that there was not a significant difference between what clients expected and what they actually received (perception) in terms of the overall reliability of the ITSS department. There was the ability to perform the promised services dependably and accurately. Reliability in service provision is a key performance indicator and IT should proactively define the appropriate processes to ensure that services are deployed properly from the start and changes are reviewed and approved before applying them during actual service operation as clients expect you will do what you say you will do each and every time ([http://www.kaseya.com/download/en-US/white_papers/EMA_Kaseya-Best Practicest-0410_WP.pdf](http://www.kaseya.com/download/en-US/white_papers/EMA_Kaseya-Best_Practicest-0410_WP.pdf)). By acting in accordance with these expectations, the client is provided with a sense of security and confidence in you personally and in the department or organisation as a whole.

5.5.2 Assurance of ITSS services received

In this section, clients were asked to rate the ITSS department in terms of whether they had the necessary knowledge, courtesy and ability to inspire trust and confidence, based on 6 statements.

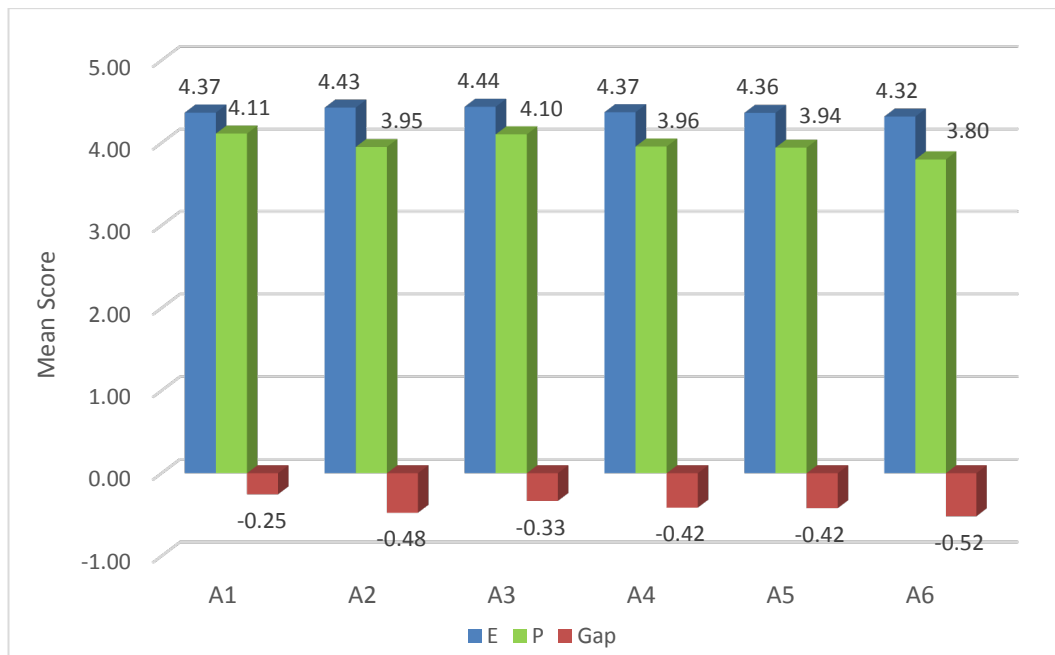


Figure 5.6: Assurance dimension score: clients

There was a relatively small Gap score between the expectation and perception for each of the questions within this dimension. The average Gap score for this dimension was 0.40. This dimension had the smallest overall Gap score and this could be due to the fact that clients were actually receiving a quality of service very close to what they expected to receive. The responses to whether the ITSS staff were presentable and well-mannered when providing a service (A1); and if they were polite, courteous and helpful (A3) resulted in Gap scores of -0.25 and -0.33 respectively. The responses to whether ITSS staff were suitably qualified in their area of expertise to enable delivery of quality IT services (A2); competent in their area of expertise (A4); and knowledgeable and confident in their area of expertise (A5) resulted in Gap scores of -0.48, and -0.42 and -0.42 respectively.

There were small differences in Gap scores in this dimension between expectations and perceptions. The small Gap scores indicated overall that clients perceived that ITSS did have adequate knowledge and ability to perform their tasks in a courteous manner which enabled clients to have confidence in the services they received. However the one exception

pertained to whether clients felt assured and secure about their data. Responses to whether clients felt assured and secure that their data was protected in any transactions with the ITSS staff (A6) resulted in a Gap score of -0.52 which was the highest Gap score in this dimension. The resulting Gap score indicated that clients did not feel completely secure and trusting that ITSS adequately assured them about their data protection during the problem solving process.

The resulting Gap score indicated that clients did not feel completely secure and that they did not trust ITSS in terms of data protection during the problem solving process. The findings suggest that there is certainly a Gap in terms of trust that must be addressed to enable ITSS staff to follow the necessary steps to backup or protect clients' data during resolution of an IT related issue. These steps must be taken as it is important to gain the clients' trust as emphasized by Montoya, Massey, and Khatri (2010) who state that providers of IT services must focus on their relationships with clients or end users because trust is at the core of this relationship as it deals with the beliefs that the IT services organization or department will fulfil its commitments.

5.5.3 Tangibles pertaining to the ITSS department and services

In this section, clients were asked questions pertaining to the physical facilities, equipment, and appearance of personnel based on 4 statements.

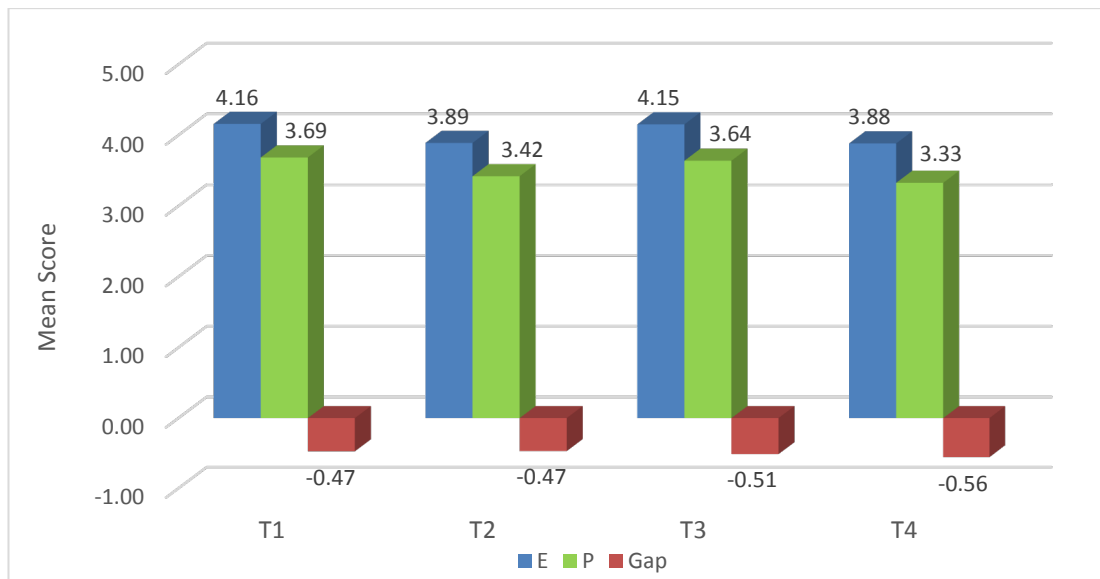


Figure 5.7: Tangibles dimension score: clients

The average Gap score in this dimension was 0.50, which was not a large Gap. The responses to whether the ITSS department had: up-to-date equipment (such as IP telephones, netbooks, notebooks, printers, etc.) and software (T1); and physical facilities which were visually appealing and aligned with the type of services provided (T2) resulted in a Gap score of 0.47 for both statements. With regard to statement T1, ITSS seemed to have kept abreast with having upgraded equipment and software according to the responses. The ITSS department underwent a small scale revamp of the offices in 2012 (with installation of latest equipment in certain facilities) to improve its appearance, in order to keep in line with the type of services offered to the DUT staff.

The responses to whether the location of the ITSS offices were easily accessible (T3) resulted in a Gap score of -0.51. The last statement (T4) which pertained to the ITSS department having visually appealing materials that aid in promoting and marketing ITSS services adequately, had the largest GAP score. Even though the Gap score is small, it must be noted that respondents identified this as being the factor that affects the Tangibles dimension the most. The responses to statements T3 and T4 indicated that

the ITSS department need to market and advertise themselves, publicise their location, adequately and promote their services effectively. This is emphasized by Zhao and Benedetto (2013) who state that although service quality measures customer satisfaction with a service actually delivered, clients' expectations must be met in terms of designing materials and facilities appropriately and training IT personnel adequately. They also add that service quality measures how well the service delivered matches client expectations, and it does take tangibles such as materials and facilities as well as personnel into account. The Gap scores indicate that this is an issue that must to be addressed.

5.5.4 Empathy provided by ITSS staff

This section investigated whether there was caring, individualized attention ITSS provided to the clients, based on 5 statements.

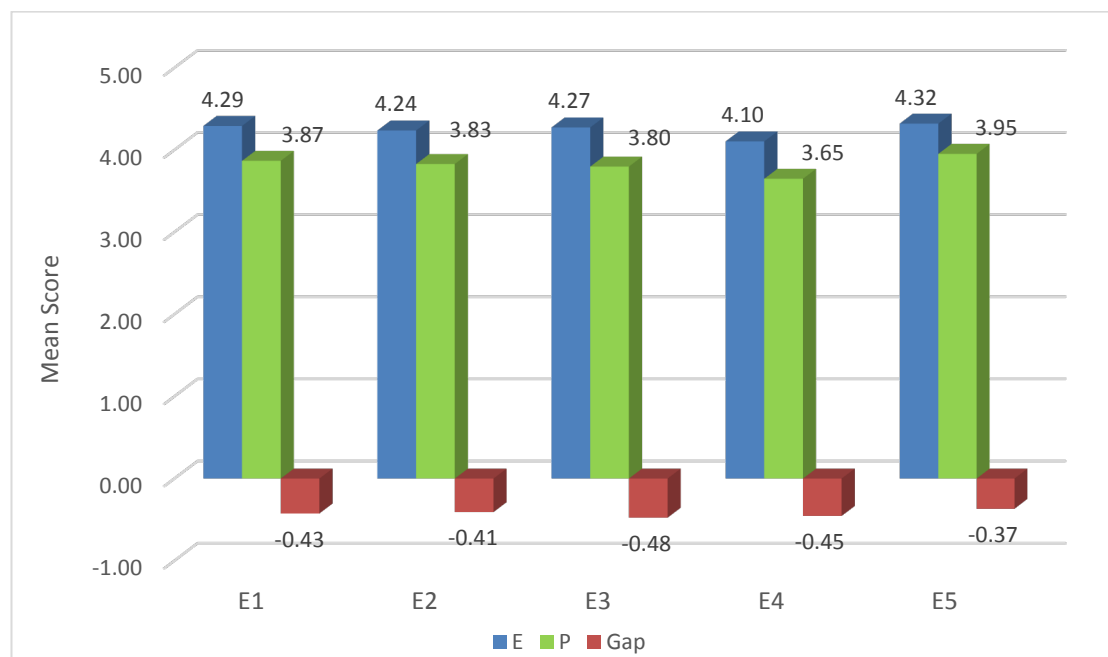


Figure 5.8: Empathy dimension score: clients

The average Gap score for this dimension was 0.45. The responses for E5 resulted in the lowest Gap score of -0.37 in this dimension. It seems that the ITSS department always made their clients feel welcome as clients actually felt the hospitality as indicated by the small Gap score. The responses to statements regarding whether: ITSS staff were sympathetic and reassuring when clients were experiencing IT related problems (E1); and the ITSS department had clients' best interest at heart (E2) resulted in Gap scores of 0.43 and -0.41 respectively. From these scores clients did feel that ITSS staff showed care and concern when providing IT support however there is always room for improvement as the Gap score indicates.

The responses to the statements that the ITSS department always attempted to attend to clients' individual needs (E4) and the ITSS department did not conform to convenient operating hours for their clients (E3) resulted in slightly higher Gap scores of -0.45 and -0.48 respectively. Clients expected more individual attention but this was not always possible. With the growing popularity of remote assistance provided to clients, it is becoming difficult to provide the required individualised onsite attention that clients expect. This is emphasized by Schumann *et al.* (2012) who state that the increase in technology-mediated service delivery does not require the service provider and client to be present simultaneously in the service production process.

However this Gap between perception and expectation, in terms of the amount of time and individualised attention given to a client, can be addressed appropriately by informing clients properly of new processes in place regarding the current provision of IT services which reduces the need for personal contact. The DUT's operational hours are set by DUT council and South African government (as the DUT is subsidised by the SA government) and cannot be changed by the ITSS management. The DUT does not operate on a 24 hour/7 day a week basis.

5.5.5 Responsiveness of ITSS staff

This section investigated whether there was a willingness to help clients and provide prompt IT service, based on 9 statements.

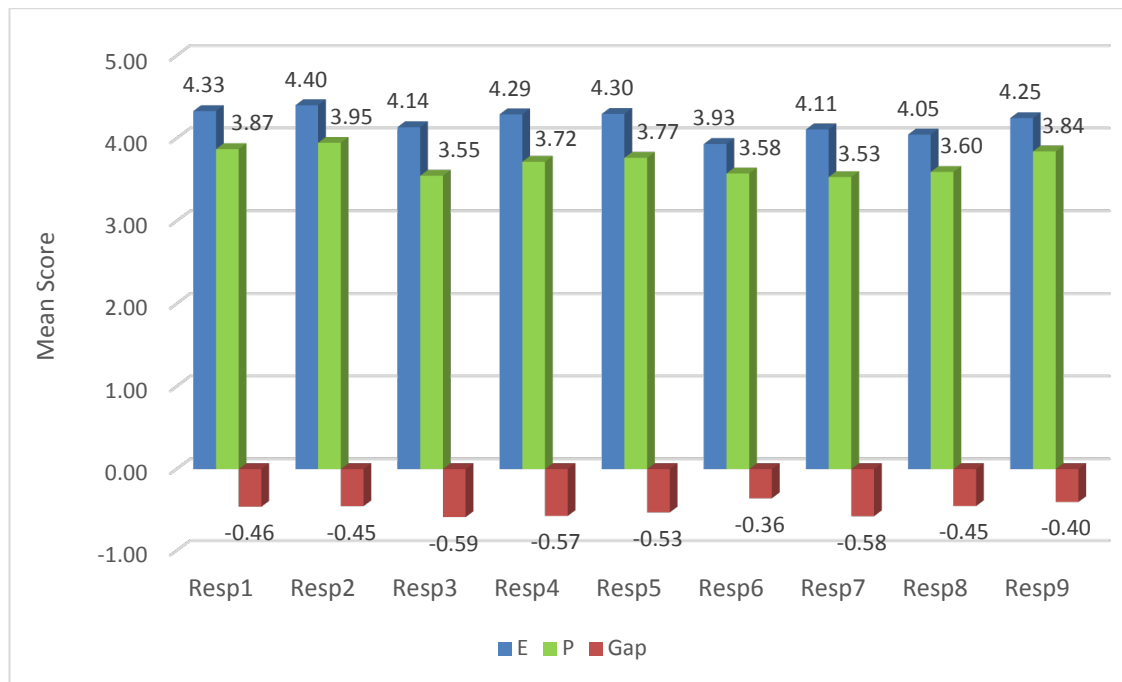


Figure 5.9: Responsiveness dimension score: clients

The average Gap score for this dimension was 0.49. The lowest Gap score was -0.36 based on the statement regarding whether employees of the ITSS department readily assisted clients with IT related issues regarding personal equipment (Resp6). Clients seemed to be satisfied with this aspect of service delivery. The response to whether the ITSS department informed clients precisely when a service would be provided (Resp3) resulted in the highest Gap score for this dimension being -0.59. Clients expected to be informed as to when they would be assisted but the resulting Gap score shows this did not occur adequately. This is a Gap that must be addressed because according to Montoya *et al.* (2010), performance is ultimately about client satisfaction, the quality of service delivery and building a relationship with clients. They add that keeping the client informed regarding provision of the

requested service ultimately impacts IT service quality and performance as well as promoting a healthy relationship between the client and service provider.

With regards to whether the ITSS department's employees: were enthusiastic when providing the required IT service (Resp1); provided the required IT service in a professional manner (Resp2); and showed initiative or "went the extra mile" to assist clients (Resp9), resulted in Gap scores of -0.46, -0.45 and -0.40 respectively. Part of providing a satisfactory service requires the service provider to be interested, keen and show initiative in assisting a client as much as possible. This not only contributes to job satisfaction, but also assures the clients that they do matter. Providing this service professionally makes the difference between being mediocre or exceptional at the quality of service delivery. The latter is what most service providers should strive to achieve. This is emphasized by Zhao, Lu, Zhang and Chau (2012) who state that that service quality is a multi-dimensional concept that is dependent on the clients' overall impression of the inferiority or superiority of the organization and its services. They add that clients have expectations before consuming a service and evaluate the actual performance after consumption and only the positive disconfirmation between the expectation and evaluation will lead to clients' satisfaction of service quality.

Previous studies found a significant and positive relationship between global job satisfaction and service quality (Snipes *et al.*, 2005). Ramseook-Munhurrin *et al.* (2009) add that in their endeavour to strengthen service quality, organisations or departments must provide employee satisfaction and a work environment conducive to positive employee behavioural intentions as motivated service providers will ultimately lead to satisfied clients. Rothbard and Wilk (2011) concur that work events lead to affective reactions, which in turn influences both employee's work attitudes and affect-driven behaviours such as employee performance. Based on the above literature, it is important that this Gap be addressed urgently for the benefit of both ITSS staff and

clients. The quality of IT service delivery is dependent on motivated, enthusiastic ITSS staff who show initiative in providing effective and efficient IT services when they experience job satisfaction.

The responses to the statements regarding whether the ITSS department's employees: responded to logged calls (Resp4); were able to resolve IT issues timeously (Resp5); and provided prompt service irrespective of their daily workload (Resp7) yielded Gap scores of 0.57, -0.53 and -0.58 respectively. Helms and Mayo. (2008), add that in service delivery, customers may experience anger and other undesirable emotions when waiting for service, dealing with unresponsive or impolite employees and service failures include the unavailability of a service, slow service, or errors in delivery. Based on Helms and Mayo, this is a Gap that should be addressed in order to improve IT service delivery response times.

Finally, the statement pertaining to employees of the ITSS department having not known what a client's specific IT needs were (Resp8) yielded a Gap score of -0.45. Although this response yielded a relatively low Gap score in comparison to other responses in this dimension, ITSS staff should have been able to correctly identify their clients' specific IT needs in order to provide a quality of IT service that matches this expectation. The findings indicate that there is an existing Gap that must to be adequately addressed. In order to provide a good quality of service, IT managers need to understand how the internal functioning of the IT department affects its service quality.

They should also ensure that they employ suitably qualified and experienced IT staff who are able to adequately identify clients' needs to ensure effective IT problem resolution. This is emphasized by Jia *et al.* (2008) who state that IT managers need internal measures to diagnose and predict how changes within the IT department will improve service quality and be able to identify variables within the IT function that have an impact on the service it provides. They add that a lack of responsiveness may have several sources (e.g. a

lack of service orientation, lack of resources, or lack of knowledge) however service quality, as an outcome variable, will become more useful to IT managers as its antecedents are identified.

IT is continuously evolving and it is vital that staff keep abreast with this changing technology whether it be in the form of training, attending courses and workshops, carrying out methods of self-evaluation, etc. This is particularly important in the service delivery ambit. The quality of IT service delivery depends on how competent and knowledgeable staff are with regards to both the technical aspects as well as providing suitable solutions to client queries. By being able to resolve IT issues efficiently and effectively, the quality of IT service delivery will undoubtedly be appreciated by clients. This could possibly lead to an almost non-existent Gap between clients' expectations and perceptions. Ultimately it must be remembered that meeting client needs involves designing customized attributes, features, and unique ways of delivering the service (Wang *et al.*, 2010).

The 5 RATER dimensions that were discussed in this section, gives an overall indication as to where there are Gaps between expectations and perceptions of IT service delivery at the DUT. The findings identified Gaps within each dimension that must be properly addressed by ITSS management to rectify the various shortfalls in the quality IT service delivery. The following section discusses the SERVQUAL dimensions for the secondary data gathering instrument.

5.6 SERVQUAL DIMENSION ANALYSIS OF ITSS STAFF QUESTIONNAIRES

This section discusses the analysis of the responses from the ITSS staff questionnaire pertaining to their perceptions of their clients' expectations. According to Bontis, Richards and Serenko (2011) employee satisfaction increases enthusiasm and engagement in customer service encounters

which in turn improves customer satisfaction. They add that employees who are satisfied in their jobs also tend to have more positive perceptions about the organization's products and services, and therefore deliver a better service. They further state that satisfied employees are more likely to perceive their work more positively, which empowers employees to use their own discretion in responding to customer needs. Bearing this in mind, this section presents and discusses the ITSS staffs' perceptions of their clients' needs. This is also done within the 5 RATER dimensions.

The ITSS staff were asked to indicate their responses by rating, on a Likert scale (as described in Chapter Four), what their perceptions of their clients' expectations were in terms of the quality of IT services they provided. The rating was also based on the 5 RATER dimensions in terms of expectation versus perception. This was done to ascertain the Gap that existed between these two aspects and to determine or identify the shortfall areas which are indicated by the Gap scores. The Gap scores were determined from the ideal of 5 which was equivalent to providing the best service level at all times.

The figures below indicate the mean scores for each statement, as well as the Gap scores which are the differences between the expectations and perceptions, for each component. These scores are also a summary of the scoring patterns for the five dimensions of the research. The mean score for each statement is indicated on the vertical axis (in blue) e.g. Rel1 refers to statement 1 under the Reliability dimension, A5 refers to statement 5 under the Assurance dimension, etc. and are represented by the blue bar. The Gap score is indicated on the horizontal axis represented by the red bar. The discussion begins with the reliability dimension.

5.6.1 Reliability of ITSS services provided

This dimension measured and discussed the ITSS staff perceptions of how reliable their clients expected them to be.

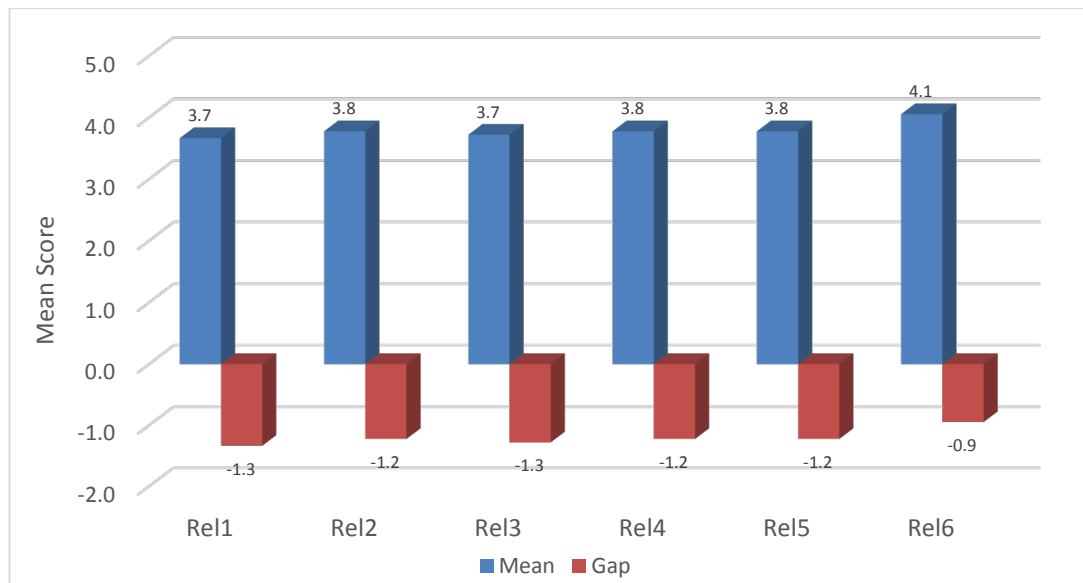


Figure 5.10: Reliability dimension score: ITSS staff

The average Gap score for this dimension was 1.2. ITSS staff believed that clients were just about satisfied with the service level associated with the reliability factor of the ITSS staff. The smallest Gap of -0.9 pertained to the timeous resolution of a problem and ITSS staff perceived that clients were generally happy that problems were resolved quickly (Rel6). The largest Gap of -1.3 related to the quality of support offered where ITSS staff perceived that clients often expected assistance beyond the initial issue at hand (Rel1 and Rel3).

The Gap scores of -1.2 for statements Rel2, Rel4 and Rel5 indicated that ITSS staff perceived that their clients expected them to be reliable, trustworthy, offer good advice beyond the satisfactory quality of support offered and to have known how to resolve the problem at hand. According to Gunawardane (2011), reliability in the service encounter seems to focus primarily on the timeliness and accuracy of the outcome as well as dependability. He adds that there is an apparent need for communication and problem solving support. The average perception score is 3.8, which is close to 4 thus corresponding to levels of agreement with the statements.

5.6.2 Assurance of ITSS services provided

This dimension measured and discussed the ITSS staff perceptions of their clients' expectations regarding the knowledge and courtesy offered by ITSS staff as well as their ability to have inspired trust and confidence.

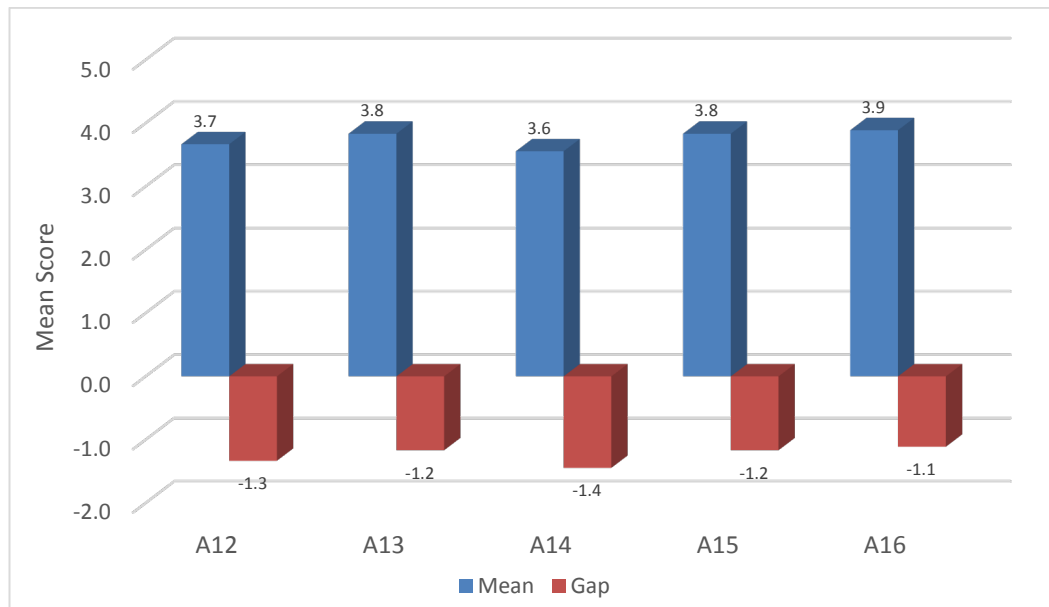


Figure 5.11: Assurance dimension score: ITSS staff

The average Gap score for this dimension was 1.2. The Gap scores of -1.2 for statements A13 and A15 indicated that ITSS staff perceived that their client's expected confidence and knowledge in their respective areas of expertise and clients wanted to be rest assured that their data was secure while in ITSS care. The smallest Gap score of -1.1 pertained to statement A16 in which ITSS staff perceived that clients expected courteous and polite service irrespective of the manner in which it was provided i.e. whether IT services were provided onsite or remotely. The largest Gap score of -1.4 referred to statement A14 where ITSS staff perceived that clients trusted that they would always receive IT support regarding any IT related issues. Statement A12 yielded a Gap score of -1.3 where ITSS staff perceived that

their clients expected them to be professional, well-mannered and presentable when providing IT services.

The scoring pattern was fairly consistent across this dimension with ITSS staff having had the same general perceptions. It must be remembered that clients want and need to trust and feel assured and confident in the ITSS staff's knowledge as well as the courtesy with which they provide the service. ITSS staff should remain committed to ensuring this, at all levels of service. This is iterated by Park *et al.* (2012) who state that to gain trust from the client, service providers need to exhibit their competence in delivering the intended services by assuring appropriate service quality during the service delivery process. The two larger Gap scores of -1.4 and -1.3 indicate that there are gaps in trust and ITSS staff conduct that will have to be addressed. This will most often guarantee user satisfaction which according to Wang and Shieh (2006), is defined as the degree of perceived quality that meets users' expectations.

5.6.3 Tangibles pertaining to the ITSS department and services provided

This dimension determined whether ITSS staff perceived the appearance of physical facilities, equipment, and personnel to be within their clients' expectations. Findings are presented and discussed.

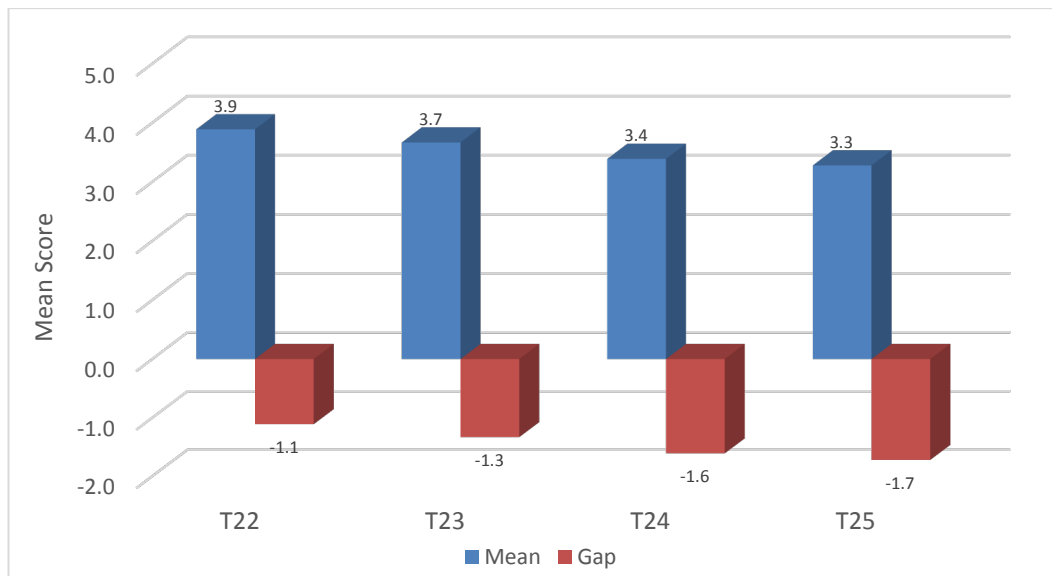


Figure 5.12: Tangibles dimension score: ITSS staff

The average Gap score for this dimension was 1.4. There is an increasing Gap pattern as illustrated in the above figure. The smallest Gap scores of -1.1 and -1.3 emerged from statements T22 and T23 respectively. These statements indicated that ITSS staff perceived that clients were generally satisfied with the ITSS department's equipment and facilities as being on par with the services offered.

The last two statements *viz.* T24 and T25 had amongst the largest Gaps across the dimensions being -1.6 and -1.7 respectively. ITSS staff perceived that their clients expected them and their work space to be to be presentable at all times. The largest Gap score of -1.7 in this dimension also aligned with the Gap score in the Tangibles dimension for the client questionnaire which revealed that the ITSS department needed to improve and sustain its 'marketability' and promote its location for easy accessibility. Since this Gap score was high within this dimension, from responses for both sets of questionnaires, there is no doubt that there is a Gap between perceptions and expectations for both clients and ITSS staff, in terms of accessibility to

and proper marketability of the ITSS department and its services, which requires addressing.

5.6.4 Empathy of ITSS services provided

This section dealt with the ITSS perceptions of the level of caring and individualised attention that they provided to their clients and whether this met the clients' expectations, or not. The findings are presented and discussed.

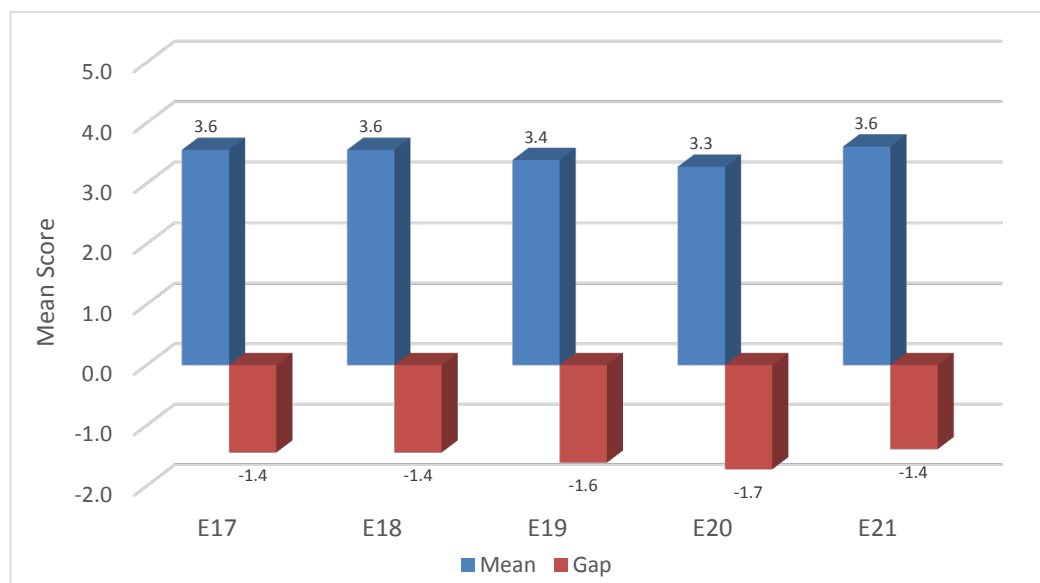


Figure 5.13: Empathy dimension score: ITSS staff

The average Gap score for this dimension was 1.5. In this dimension, statements E17, E18 and E21 had the lowest Gap score of -1.4. These were in response to the fact that ITSS staff perceived that they needed to be reassuring and empathetic to their clients' needs and expectations while having had their best interest at heart when it came to IT issues clients were experiencing. Clients expected and wanted to feel welcome at the ITSS department at all times regarding assistance with any IT issue. Makarem, Mudambi and Podoshen (2009) indicate that a good IT-enabled service

process is enhanced by a good 'human contact' process in terms of the perception of overall customer satisfaction.

This dimension had the largest Gap of -1.6 and -1.7. The major contributors to the large Gap were for statements E19 and E20 respectively. Clients expected more suitable operating hours but as mentioned earlier in this chapter, the DUT conforms to the working hours set aside by the South African government and labour law and assistance can only be provided within these hours. ITSS staff also perceived that clients expected their personal IT needs to be attended to and the large Gap score indicated that this expectation was not being met. The reasons for this were: lack of time to provide the type of attention that clients expected due to lack of personnel i.e. ITSS being short staffed as indicated in discussions under qualitative data analysis below; inadequate commitment from ITSS staff; and unrealistic demands by clients. The remaining variables had the same average scores. The Gap indicated by the lack of ITSS personnel can only be addressed by ITSS management and seems to be one that needs careful consideration, as the findings indicate that this is a problem.

5.6.5 Responsiveness of ITSS services provided

This dimension measured the ITSS staffs' perceptions of clients' expectations regarding their willingness to help clients and provide prompt service.

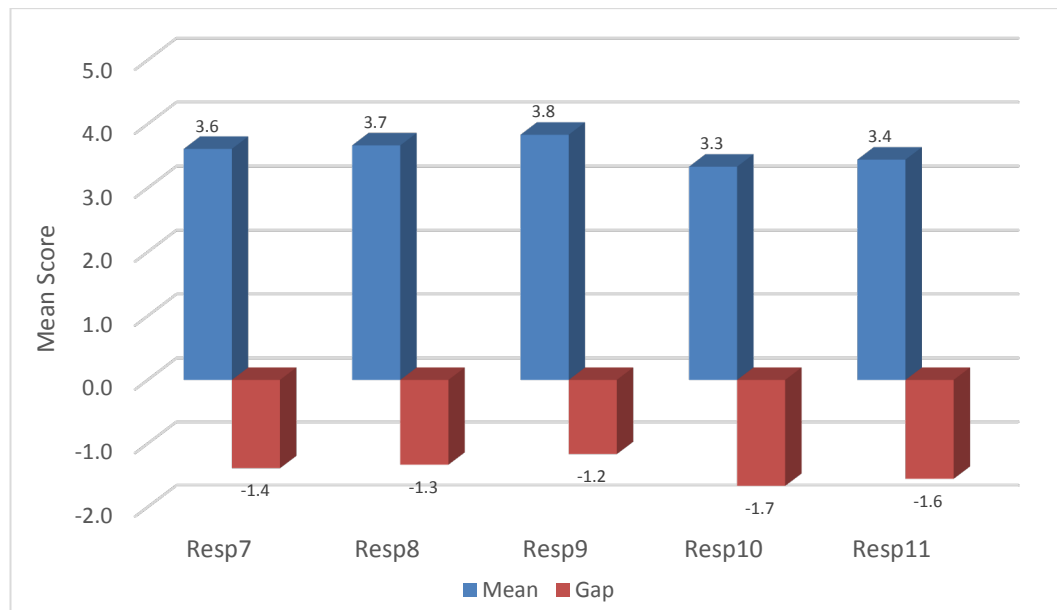


Figure 5.14: Responsiveness dimension score: ITSS staff

The average Gap score for this dimension was 1.4. The lowest Gap score pertained to statement Resp9 which was related to time resolution of problems and were also highlighted in Reliability above. Statements Resp7 and 8 yielded Gap scores of -1.4 and -1.3 respectively. ITSS staff perceived that clients expected not only for the service to be provided in a professional manner but also expected to be informed of exactly when that service would be provided.

There is greater degree of variability pertaining to the individual variables within this section. The overall average score bordered on the overall Gap being significant. The variables that contributed to the high Gap scores of -1.7 and -1.6 were the last two statements *viz.* Resp10 and Resp11. For Resp10, ITSS staff perceived that clients expected them to always know and understand what their IT needs were. This expectation is not uncommon according to Gorla (2011) who state that service quality is defined as the level of service delivered by highly knowledgeable IT service providers or experts to end users as compared to their expectations. From this response it is apparent that there is a Gap between expectation and perception which

will need to be addressed. The Gap score of -1.6 for Resp11 pertained to the issue of providing IT support to clients regarding personal equipment. The reasons for this are explained further in Section 5.7.2 under qualitative data.

Service quality is directly related to customer satisfaction and it is important to know what the clients' desires are in relation to the services they receive. This is relevant in order to fulfil their expectations of the service so Gaps between perception and expectation are reduced or eliminated completely. It is not always possible to satisfy every client at every service encounter but the ITSS staff should always strive to ensure that they show commitment in attempting to provide that high quality of service, at every service encounter.

The findings indicate that the clients felt that ITSS service provision is of a fairly acceptable standard but there are aspects which need to be improved upon as indicated by the identified Gaps that must be addressed. This is also further iterated by responses to open-ended questions analysed under the Qualitative Data section. The 5 RATER dimensions discussed in this section indicated where the Gaps lie, as discussed in each dimension, in terms of the ITSS staff's perceptions of what their clients expect in terms of IT support. The identified Gaps will need to be addressed appropriately.

The following section highlights comparisons between IT service expectations and perceptions from both the DUT clients' and ITSS staff perspectives identified in the SERVQUAL analyses for both sets of questionnaires.

5.6.6 A comparison of the DUT staff and ITSS staff SERVQUAL dimension analyses

Analyses of findings from each SERVQUAL dimension of the DUT clients and ITSS staff questionnaires indicate that there are similarities and

discrepancies between expectations and perceptions of IT service quality from both these groups. This is highlighted per dimension below.

5.6.6.1 Reliability of ITSS services

Findings in this dimension indicated higher Gaps where clients actually expected accurate, effective and timeous service delivery but they felt that this was not adequately provided and therefore expected improvement. ITSS staff perceived in addition to this, that clients expected further assistance beyond the initial IT issue for which assistance was requested. They also perceived that clients expected to not only be provided with reliable services but to also be offered good sound IT advice regarding IT issues as well. Although clients indicated general satisfaction with efficiency, trustworthiness and dependability of IT services received, they expected the reliability of service turnaround times to be improved. However, ITSS staff perceived that clients were generally satisfied and expected no further improvements in this aspect of IT service reliability. A slight discrepancy exists between clients' expectations and ITSS perceptions of these expectations regarding the issue of clients always receiving reliable IT services.

5.6.6.2 Assurance of ITSS services

Findings in this dimension indicated the matter of trust was a common issue from both clients' expectations and ITSS perceptions of these expectations. There was a discrepancy between clients being generally satisfied with aspects such as conduct, knowledge and confidence displayed by ITSS staff during service delivery and ITSS staff perceptions that clients expected a better quality of service in these areas. The other common issue was the trust aspect within assurance of IT services delivery for which clients expected improvement and ITSS staff also perceived that clients expected this improvement.

5.6.6.3 Tangibles of the ITSS department and services

Findings from this dimension indicated that there was a common issue in terms of insufficient or inadequate marketability of and accessibility to the ITSS department and services. This was also indicated by ITSS staffs' perceptions of what the clients expected regarding this issue. Although clients indicated that they were generally satisfied with the IT resources available to perform IT services, they expected the location of the ITSS department and its services to be properly advertised. ITSS staff also perceived that their clients expected well managed and presentable work areas such as offices and workstations. This was purely an ITSS perception of what they thought their clients expected but ITSS should always ensure a neat, tidy and presentable work area as this would indicate to clients that the ITSS staff have pride in both their appearance and work ethic.

5.6.6.4 Empathy of ITSS services

In this dimension clients perceived that ITSS services were offered in a caring manner. The common issue was that clients expected more individualised attention and ITSS staff perceived this same expectation from clients. For reasons highlighted within this dimension, this was not always possible but recommendations for an improvement to a certain degree are explained further in Chapter Six under Section 6.4.1.2. The issue of DUT's operating hours was another common issue in the findings within this dimension but unfortunately this is beyond the control of the ITSS department as explained earlier. This may only change if the operating hours for all HEIs within SA are reviewed and changed by the HE minister in accordance with SA labour laws. This will certainly be on par with other HEIs internationally but may not be particularly suitable for SA.

5.6.6.5 Responsiveness of ITSS services

The findings within this dimension identified a common issue regarding the expectation by clients of being informed precisely when an IT service for which a call was logged, would be delivered. A discrepancy was indicated pertaining to the issue of assisting clients with personal IT related equipment. Findings revealed that clients were somewhat satisfied with this aspect of service delivery but ITSS staff perceived that their clients expected more assistance in this area. This discrepancy existed due to the uncertainty in this area of service delivery as mentioned in earlier discussions.

Individual ITSS support staff had differing opinions as to whether to assist or not as priority was given to DUT IT assets and assisting clients with personal IT equipment within DUT operating hours did not formally fall within the scope of IT services. ITSS staff also indicated that there were differing views in this regard as there was inconsistency from ITSS management in terms of whether personal IT support should be offered or not. Clients may have perceived that they received adequate support in this area but ITSS staff perhaps perceived that they could have offered more but due to the confusion and uncertainty within this “grey” area, ITSS staff indicated that they were hesitant to inform clients.

Findings also revealed a discrepancy regarding prompt IT service and timeous resolution of IT problems. Clients expected this area of service delivery to be better but ITSS perceived that their clients did already receive this quality of service. Another common discrepancy was with regard to ITSS staff possessing adequate knowledge of correct problem resolution. Clients perceived this aspect of service delivery as being satisfactory, however ITSS staff perceived that clients expected them to be more knowledgeable and have sufficient skills for correct problem identification and proper resolution.

All discrepancies and common issues identified in the comparisons between clients' perceptions and expectations and ITSS staffs' perception of clients' expectations pertained to certain aspects of the quality IT service delivery offered by ITSS staff and received by DUT clients. These common issues and discrepancies or Gaps indicated in each dimension and further highlighted in the comparisons above, must be addressed by ITSS management in order to improve the overall IT service quality at the DUT. Recommendations to try and resolve these issues are therefore suggested in the following chapter. The following section discusses the analysis of qualitative data in this study.

5.7 QUALITATIVE DATA

Qualitative data were gathered from open-ended questions and structured interviews. Responses from the questions on both sets of questionnaires pertained to:

- Clients' opinions regarding the migration to the MS platform, issues or challenges they faced in using the MS solutions and their opinion on the type of IT service delivery they have received since the move to MS;
- Clients' general views of ITSS staff and further expectations of service delivery at the DUT post migration and;
- ITSS staff perceptions and opinions of the quality of service delivery they provide and clients further expectations (positive and negative).

A total of 6 structured interviews were conducted with ITSS management and specialists and each question per transcript was summarised to enable the researcher to reduce the data to a form in which the main points could be identified. This summary also enabled the researcher to make comparisons between the interviews in order to extract the most relevant data from responses to overlapping or common questions that were asked among the

ITSS managers and specialists (Harding, 2013). The coding, categorisation and summarisation of data from both open-ended questions and interviews allowed themes to emerge, which are discussed accordingly. This section aligns with meeting objectives two and three in this study.

5.7.1 Theme 1: Challenges experienced by DUT staff and their expectations regarding the MS solutions

Three open ended questions were posed to clients. These questions allowed them an opportunity to air their views regarding their opinions on migrating to the MS platform; the challenges they faced in using the MS solutions; and opinions on IT service delivery post migration. These responses were coded as categories and then analysed accordingly. The percentages of the responses are presented in each category.

From opinions regarding the migration to MS, the following categories emerged: 56.2% of the respondents felt that the migration was a good decision especially to keep abreast with changing technology. Between 6.1% and 18.2% indicated that the MS platform is more productive; efficient and user friendly; between 0.5% and 14% felt that the transition was seamless with minimal problems and between 0.5% and 4.1% stated that the migration was initially inconvenient but the system had improved. 2.5% preferred the old system. Between 0.5% and 1.7% claimed the new system to be very accessible and between 0.8% and 1.4% felt that they still required continuous, in-depth training. 0.8% expressed issues and concerns with regard to: data security and data loss; network security; and the fact that they felt that this platform is expensive to maintain due to the continuous updates required.

Based upon these findings, the researcher was quite surprised and did not expect a higher positive response rate regarding the migration. 56.2% of respondents agreed that it was a good decision. Clients indicated that their

initial reaction to the migration as well as the perception immediately after the migration was very negative, fraught with apprehension and uncertainty even though they stated that they were well informed of this changeover during information briefing sessions and workshops held several months prior to the migration. Rangriz (2011) agrees that IT can have a positive organisational impact if it is transformed into systems and applications that individuals perceive positively and use effectively. This seems to be the case at the DUT. Usage and familiarity of the MS platform, over time, has led to a change from the initial negative perception to a fairly positive one, as indicated by the 56.2% of respondents who agreed that the migration was a good decision.

From clients' opinions regarding the challenges they faced in terms of the use of the MS solutions, the following categories emerged: 37.4% felt that they experienced no challenges in using the MS solutions. 7% felt that it was challenging, they required training and updates and they had issues with the MS Outlook email facility in terms of archiving emails and off campus access to their mailbox. 4.2% felt that the network speed and access was challenging which inhibited access to emails and the document repository. 3.3% felt that the MSFCS antivirus solution was inadequate; 0.9% felt that they experienced data loss due to minimal security and 0.5% felt that the Windows operating system updates were time consuming. The above indicated that challenges faced were fairly minimal. A higher number of respondents being 37.4% experienced no challenges because they used MS applications before and/or because they indicated that they attended the training sessions that were provided immediately after the migration.

From the feedback on the quality of IT service delivery since migration to MS, the following categories emerged. Between 7.5% and 23.8% indicated that the service has improved and become prompt and between 3.3% and 9.3% stated that it had become efficient, user friendly and time saving. 5.6% indicated that onsite and remote support was handled easily, effectively and

efficiently. Between 1.4% and 4.7% said that the IT support was always good irrespective of the migration. 2.3% feel that ITSS staff still needed training in the field and 0.9% felt that there was now a great knowledge base among the ITSS staff. 1.9% felt that there was no change at all. From these figures it seems that the perception of clients regarding IT service delivery, post migration is a fairly positive one.

However the reasons that the clients indicated that more training was required or that they felt no change, was due to a slight lack of confidence in ITSS knowledge and competence. These findings suggest that there is a Gap between clients expectations and perceptions because clients expected to receive adequate training and feel confident in ITSS's ability to provide a good service, but their responses indicated that this was not adequately provided. According to Zhao and Benedetto (2013) if low levels of customer satisfaction are identified, the weak points must be identified in terms of where IT service personnel training must be focused to boost customer satisfaction. The identified Gap in terms of training ITSS staff adequately to meet clients expectations must addressed.

5.7.2 Theme 2: Improving aspects of IT service delivery

This section discusses the results for the five open-ended questions posed to clients. Responses were also coded into categories for analysis. With regards to the general opinion of ITSS services at the DUT, 27.1% of respondents felt that IT services were very good with ITSS staff always going the extra mile to assist. 17.3% said that it was satisfactory with room for improvement. 15.9% felt that ITSS staff are competent, professional and accessible. 13.6% indicated that IT service delivery was excellent and well organised. 7.9% felt that ITSS staff were helpful, efficient and friendly.

0.9% stated that; the ITSS service desk where calls are logged, must improve drastically and that ITSS have a lack of skilled personnel. 1.4% felt

that ITSS is short staffed and that could contribute to some of the issues with service delivery. Although there are small percentages in terms of responses regarding the last three issues, there are Gaps indicated in these aspects of IT service delivery which most definitely must be attended to. Although service quality measures customer satisfaction with a service, it is important that IT managers ensure that their personnel are properly trained to meet clients' expectations according to Zhao and Benedetto (2013). Employing extra IT personnel and equipping them accordingly is the responsibility of ITSS management and will need to be addressed by them.

Service providers need to constantly strive to move from good to excellent service provision and although this is sometimes a challenging request, customer satisfaction should be the primary aim. When respondents were asked which aspects of IT service delivery needed to be changed or improved, 11.7% indicated that there was no change necessary which could lead one to believe that the quality of IT service was satisfactory. However 18.7% indicated that logged calls should have been attended to efficiently and that the response or turnaround time needed to be improved. 11.7% stated that the ITSS service desk must be more efficient and effective in answering telephone calls at all times.

The issues indicated for the latter two responses reveals apparent Gaps between clients' perceptions and expectations in terms of response times and service desk functionality and it is imperative that these be addressed. The ITSS service desk is deemed by the DUT as the 'face' of ITSS and should be able to provide the required services as expected. There should be a minimal to no Gap between what clients expect and what they receive in this area of service delivery as well.

Other aspects which respondents identified as services that should be improved are indicated as follows: 4.7%: more IT support was required to provide telephonic assistance such as an expert desk facility. 4.2%: IT

support staff should make appointments and provide timeous feedback on the status of logged calls as well as having provided training for clients. 3.3%: regular updates should have been be provided with answers to FAQs and training on products and services. 2.8%: ITSS staff should have been be trained adequately to constantly improve skill development. 0.5%: satellite offices on all campuses should have been implemented to improve efficiency of service delivery. 0.9%: more experienced and knowledgeable staff should be employed and the security standards and password change system should be improved.

Despite the above figures, the overall perception of commitment to quality was positive with 76.6% of respondents in agreement and 7.0% in disagreement. The responses to opinions on ITSS conduct during service delivery resulted in the following: 21% stated generally good quality of service was experienced but there with room for improvement; 20.6 % stated helpful, polite and efficient; 19.2% stated professional, knowledgeable and well mannered; 7.5% stated friendly and accommodating and 6.1% stated good onsite and remote desktop assistance was provided. However 4.7% indicated that service delivery should be timeous and efficient with 1.9% stating that they were doubtful about ITSS's knowledge base.

In response to the questions regarding whether training should be provided to ITSS staff to further improve their service delivery skills 55.1% agreed while 37.4% disagreed. Their choices were substantiated by the following reasons: 24.3%: ITSS kept abreast with continuous changes in IT. 11.2%: ITSS staff needed to be well trained which would improve service delivery. 7.9%: ITSS staff were already efficient and provided excellent service delivery. Between 0.5% and 4.2%: ITSS staff needed to be efficient and effective in solving problems and needed to improve response times. 3.3%: ITSS staff needed to assist clearly with queries and advice. 3.3%: ITSS provided good resolution to questions and problems. 1.4%: more staff was needed to support other platforms e.g. Apple products. 1.4%: ITSS staff

needed to improve interpersonal skills. 0.5%: ITSS staff should stay committed and remain positive despite challenges.

The findings above revealed the following Gaps which require urgent attention:

- Further training of ITSS staff to improve aspects of IT service delivery such as knowledge, skills, competence, efficiency and communication;
- Training on IT related issues such as applications and procedures should be regularly provided to clients.
- Updates must be provided to clients in terms of products and services offered;
- Telephonic IT support must be drastically improved together with increased accessibility to ITSS staff and services; and
- Improving security standards of the IT system.

It is imperative that these identified Gaps be addressed because according to Park *et al.* (2012) the IT service delivery process involves an in-depth exchange of knowledge between service providers and clients and this relationship between the client and service provider is deemed extremely collaborative. They add that an essential component of the IT service relationship must be the communicative actions between IT experts and clients because IT service providers are evaluated based on how well they understand and meet their clients' needs. The above Gaps are derived from clients' needs not currently being met by IT service delivery.

5.7.3 Theme 3: IT support staffs' perceptions of IT service quality provided

This section discusses the results for the two open ended questions in the ITSS staff questionnaire. In response to the question regarding what ITSS staffs' perceptions were of the quality of IT service delivery they offered: 28%

of staff felt that they strived to provide a good service and kept clients happy. 23.8% said that their service was prompt, professional and of a good quality. 19% felt that they were very efficient. 14.3% stated that clients needed to properly identify their IT problem. 9.5% stated that they provided correct advice on any IT issue timeously, accurately and efficiently and 4.8% felt that support is executed with personal investment on borrowed time. Although ITSS staff did feel that they provided the most satisfactory service that they possibly could within the given circumstances, 22.2% stated that one of the major obstacles they faced was that there was no access to clients' offices at the required time. They added that this unavailability lead to delayed turnaround time in providing resolutions timeously and efficiently. ITSS staff also perceived their clients to have greater expectations in terms of areas in which service quality could further improve. These are indicated below.

20%: clients expected ITSS staff to identify their problem area immediately.
12%: clients expected friendly and informed services with good turnaround times despite ITSSs' workload. 8%: clients expected them to resolve every IT issue including that of their personal equipment with prompt service irrespective of whether the correct procedures were followed. According to the ITSS staff, this issue fell within a 'grey' area as the DUT work policy only covered resolving IT issues regarding DUT IT equipment.

Attending to clients' personal equipment was not covered within this policy, however clients did expect to be assisted at all times and often did not understand why there was this 'grey' area. ITSS staff did however often assist where and when they could. 8%: induction courses for new employees should be provided. 8%: clients were impatient and did not understand their workload. ITSS staff indicated that there was a staffing problem and the ratio of ITSS staff to DUT staff was well below the acceptable level. They added that the shortage of ITSS personnel affected service delivery in terms of providing efficient services within the expected time and providing more individual attention to clients due to their workload.

4% indicated that clients expected the following: ITSS staff should have provided more onsite and telephonic support; support 24 hours a day, 7 days a week; had to be experts in all areas of IT; provide prompt assistance even if it was out of the scope of expertise and should have been trustworthy and dependable, which was also indicated in the SERVQUAL analysis section. 16.7% of ITSS staff felt that clients expected them to engage in more teamwork.

The Gaps between perceptions and expectations that emerged in these findings are similar to the Gaps indicated and discussed in Section 5.7.2. Both the DUT clients and ITSS staff have common perceptions regarding IT service delivery and the findings based on their responses gathered from both quantitative and qualitative data, indicate that they expect these Gaps to be addressed and resolved.

5.7.4 Theme 4: ITSS management's perceptions and expectations of the implemented MS technologies and solutions

A total of 15 questions were posed to the ITSS management regarding their perceptions of the migration to the MS platform. Some of the questions overlapped across both interview schedules i.e. both ITSS management and specialists were asked some of the same questions in terms of perceptions and expectations of MS technologies and IT service delivery quality. According to the entire ITSS management team, the reason for the migration was because of lack of support for the existing Novell and GroupWise infrastructure as they were shrinking their services and products were becoming obsolete in the Kwazulu-Natal province. They stated during their interviews that there was a lack of forward mobility and upgrades with the old system but the new IT infrastructure would allow the DUT to keep abreast with industry standard MS technologies and solutions and change the way IT services were being delivered.

Chen and Tsou (2012) confirm that a change in IT infrastructure would enable organisations, in this case, the DUT, to deliver improved business applications and services as well as to change the way they interact and coordinate practices with clients, reflecting an appropriate implementation of IT. They add that from an IT management perspective there are key components essential to a service delivery platform, which consists of network transport functions, access control, core functions and integration services. ITSS management were expecting the migration to MS to address the above to change or improve IT service delivery at the DUT. The following discussion reveals the perceptions and expectations of the ITSS management team with regard to the above.

90% of ITSS management stated during their interview session that the initial issues experienced after the migration were training, lack of knowledge about the new platform, lack of correctly specified hardware to run platforms and resistance to change. They added that this changeover became a huge learning curve in terms of moving from a non-integrated to an integrated system as system functions were different and it required a great deal of adaptation. 80% of ITSS management handled these issues by motivating for more hardware to be purchased and more training to be conducted especially in the use of email.

70% of ITSS management said that online support, material, videos and workshops were provided to ease this transition. The client services manager added during his interview that one on one training sessions were held with clients, road shows were conducted and guideline documents were posted on the online staff portal. ITSS management stated that they also involved the ITSS specialists intensely in training on new MS platform, within various fields and the specialists had to then share their knowledge with ITSS staff once they were trained in that technology. According to 60% of the ITSS management, when the DUT staff were informed about the migration of the IT system to a MS platform, they were initially unhappy, apprehensive and

reluctant to this change. However, ITSS management said that the DUT staff had to embrace this changeover because the decision to move to an integrated MS platform was initiated by DUT's executive and financial management. ITSS management added that DUT staff were also advised that students needed to be more marketable and be taught industry standard MS technologies and applications because the MS platform had a great market share.

All of ITSS management's perceptions and expectations of the technologies chosen and implemented were generally positive. They perceived it to be the correct decision which would take DUT forward as the leading UoT to change to a MS platform and that all other UoTs looked to DUT for guidance. However after the migration, one of the negative aspects perceived by 40% of ITSS management was the issue of a lack of manpower to run each type of MS technology. The networking manager also added during his interview that there was a reluctance among the MS project technology specialists to share knowledge.

70% of ITSS management indicated during the interviews that technologies were meeting their expectations and perceptions in terms of the quality of IT service delivery especially when comparing the new MS platform to the previous system. They indicated that this was achieved by the fact that the technologies enabled good desktop support and each technology had several advantages and more capabilities as compared to the previous platform. 60% of ITSS management stated that the previous system inhibited timeous and efficient delivery of tasks e.g. there was no remote desktop support. The network manager said that the MS stack could now be synchronised across platforms thereby meeting all expectations and allowing integration to be much easier because it allowed easier task performance, reduced turnaround times and remote resolution of simple IT issues.

ITSS client services and networking management verified during the interviews that problems arose when there was no keeping abreast with latest versions of software stacks which was mandatory to prevent falling behind on the latest updates. One of the greatest challenges the ITSS management faced was a lack of personnel and proper direction from DUT management in certain decision making issues such as hardware upgrades. Despite the initial issues, the general consensus from 80% of ITSS management was that the technologies chosen were suitable as per industry standard and the overall needs assessment that was done during the MS project initiation phase identified the most suitable technologies and solutions that had to be employed. The entire ITSS management team stated that it was imperative that the new infrastructure be a proper working environment.

80% of the ITSS management also indicated during the interview sessions that their expectation and perception of the of the manner in which IT services were delivered to the DUT clients using the MS platform, reengineered ITSS operations. The ITSS networking manager stated that DUT's executive management had then revealed ITSS to be one of the top 2 departments within DUT. The ITSS client services manager perceived that DUT staff felt that very good services were provided since the migration. He verified this statement from feedback which was frequently drawn from the HEAT call logging system which indicated a great deal of high quality services that staff were enjoying. He also said that the ITSS department was of the most structured departments within the DUT and clients did not actually realise the type and quality of services offered.

The perception of this level of quality in IT service delivery was attributed to the fact that 70% of the ITSS management verified that there were operational policies in place that ensured the best hardware and software was purchased. The network manager stated during his interview that IT equipment was purchased by the DUT on an annual basis as per departmental requirements. 80% of the ITSS management said that the

standard maintained for hardware was in accordance with the operational policies and specifications set out annually by the DUT's IT steering committee. The network and client services managers added that software, operating systems and applications were of the latest technology stack, and these were kept up to date and maintained *via* the software servers such as System Centre Configuration and Operations Manager which deployed updates, applications, etc. to all machines on the DUT domain. As with IT hardware, upgrades of software also occurred when required and was also based on the current IT operational policy. This upgrade process was followed in an attempt to ensure that the DUT keeps abreast with the constant changes in IT.

However both the client services and network manager added that since the ratio of ITSS staff to DUT staff was extremely minimal, this often inhibited the provision of effectively and efficient real time support, especially remotely, across all campuses. They also indicated during their interviews that the sometimes impossible expectations of DUT clients became an issue especially when they believed that ITSS had all the required resources and a huge financial budget to provide all IT resources on demand. A further issue raised by the ITSS networking manager was that there was a shortage of up to date equipment and aspects such as the anti-virus, email spam and windows updates were not being effectively deployed to pcs and laptops on the DUT domain.

The perception by 90% of ITSS management regarding the migration was that it had a positive impact on the DUT clients and the institution. They added that the latest technologies and solutions were being used both as teaching tools for students and a tool for completion of daily tasks by DUT staff. 50% of ITSS management felt that service levels had improved drastically and most of the technologies and solutions deployed allowed staff to use these off campus as well, which meant that it made more sense to support MS.

ITSS management were also asked during interview sessions about aspects of IT service delivery that they expected to be improved. 100% of the ITSS management team recommended the following: to provide expert desk support in the same manner as the ITSS service desk on a regular basis to solve issues instantaneously; to increase the number of ITSS staff because e.g. if ITSS staff were on leave then personnel were limited and this inhibited timeous and efficient service delivery and compromised IT service quality; to cross skill ITSS staff with the MS environment and to adequately train the less skilled and junior staff.

75% of ITSS management also felt that it was mandatory to: improve communication and functioning within the ITSS department among the three sections *viz.* Client Services (CS), Information Systems Services (ISS) and Networking; to enable knowledge sharing among staff members and to keep up with the changing environment within and outside department. 50% of ITSS management perceived that the department also needed to be adequately marketed and a service catalogue needed to be disseminated more often e.g. every six months to inform clients of the ITSS services offered and finally to implement a password change system for clients to change their own passwords.

These expectations and recommendations from ITSS management are based on identified Gaps regarding aspects of IT service delivery that emerged from the analyses of the interview responses. These identified Gaps do require urgent attention as they are relevant in terms of improving IT service quality. Attempting to address these Gaps needs to start at the ITSS management level and filter down to the relevant ITSS support staff levels. ITSS management will have to implement all suggested recommendations to ensure that the necessary changes take effect. The researcher hopes that this will be achieved once the recommendations proposed by ITSS management above together with the researcher's recommendations proposed in the following chapter, are finally implemented.

5.7.5 Theme 5: ITSS specialist's perceptions and expectations of the implemented MS technologies and solutions

A total of 18 questions were posed to the ITSS specialists who were asked about: the types and functions of the MS technologies they manage; and their perceptions and their expectations of the technologies and solutions. During the interview sessions, the ITSS specialists were also asked about the reason for the migration. 100% of the ITSS specialists said that the migration was a business driver that was initiated by the vice chancellor of the DUT who requested a messaging and collaboration system that was an industry leader. They also stated that this migration was a unique instance in that the DUT was the first HEI in South Africa to go the MS platform route, successfully implementing nine technologies simultaneously in which the chosen MS stack needed to be within a self-run environment. All of the ITSS specialists verified during the interviews that the required technology update would result in scalability and uniformity because the MS technologies and solutions integrated better with converged communication technologies.

90% of the ITSS specialists stated that they faced issues such as learning their respective technology on the job. The desktop specialist added that the System Centre Configuration Manager (SCCM) which he was responsible for was a brand new technology at the time and a powerful tool which required a team to run on a large scale however he said that there was no added help offered to him. The MS Applications specialist stated during his interview that the Active Directory (AD) policies were not adhered to in terms of the workgroup and domain scenario. 50% of the ITSS specialists added that learning the technologies that were deployed, while it was in a production environment, could have severely impacted on the day to day business of the institution, if mistakes were made.

95% of the ITSS specialists handled these issues by resorting to plenty of self-study, reading and on the job learning. 80% of the ITSS specialists

indicated that they did not receive adequate backup from the Durban based MS team, who were responsible for project planning, implementation and providing necessary assistance during the project rollout time period. The MS Applications and Desktop specialists stated that some issues which should have been resolved, pertained to areas such as student laboratories which were still running a workgroup environment and some DUT staff were still not on the domain.

When the ITSS specialists were asked about their perceptions of how DUT staff initially reacted to the migration, 90% indicated that the DUT staff were pensive and apprehensive because this was a huge culture change for them in respect of introducing them to a new system. However, they added that after the information briefing sessions and workshops regarding the migration, majority of staff were perceived to be enthusiastic. The MS Exchange specialist stated during his interview that staff had initially found faults with the MS outlook email application read receipt option and signing onto the DUT domain environment. 60% of the ITSS specialists' initial perception was that staff were scared of using the new solutions but when they began to see the benefits, they were much more accepting and realised that there was now a new process of accomplishing their daily tasks. Upon using the technology for a few months after implementation, 60% of the ITSS specialists perceived that DUT clients grew accustomed to the MS solutions.

90% of the ITSS specialists expressed their expectations of the chosen technologies and solutions to be one of greater productivity at the DUT, due to the increased functionality of the technologies deployed. The Exchange and SharePoint specialists added that these business tools such as MS Exchange and MS SharePoint added great value to the university. 100% of the ITSS specialists verified during the interview sessions that the technologies that were rolled out were on the cutting edge, premier and what's referred to as 'bleeding edge' in industry. This is also iterated by Gorla *et al.* (2010) who state that excellence in IT quality involves using state-of-

the-art technology, following industry “best practice” software standards, and delivering ‘error-free’ performance. 70% of the ITSS specialists added that these business tools would prove to be both user friendly and match objectives in delivering quality solutions, business intelligent systems and services to the DUT clients as well as provide feedback to executive management.

The MS Applications and Desktop specialist’s expectations of the MS product stack as indicated during their interviews were that it would simplify administrative tasks e.g. the desktop environment would become easily manageable and the server platform would enable alerts and warnings which prevented disaster recovery. They added that the MS technologies would be easy upgrade and to integrate with other technologies. 60 % of the ITSS specialists said that unified administration and a reduction in legwork would become apparent as ITSS staff would be able to remotely login to machines to resolve issues which would improve turnaround time. They also stated that management overheads on the administration side would be eased and clients would have a greater experience using the MS platform.

When the ITSS specialists were asked about their current perceptions regarding the MS platform, 70% indicated during their interviews that their perceptions were not on par with their initial expectations. The MS Applications specialist added that management of the desktop environment was still the same as prior to the migration and applications chosen to simplify the desktop management process were not 100% functional. He stated that this was due to reasons such as the various servers were difficult to manage due to the large volumes of information and information filtering was now required and this was time consuming. He further indicated that targets were not being met as initially envisioned because not all computers or laptops were on the DUT domain. Both the MS Applications and Desktop specialists stated during interviews that this restricted the SCCM in terms of achieving its full potential as a desktop management tool. However, 90% of

the ITSS specialists did confirm during interviews that the MS collaboration platform was the best at the time of migration and the perception was that it had greatly enhanced productivity at DUT. They did however state that the technology must be upgraded when necessary to stay on the 'bleeding edge'.

In terms of comparing the previous non-integrated systems with the new MS platform, 80% of the ITSS specialists verified during their interview sessions that there was no real comparison simply because the previous platform was basically just an email system to send and receive emails. They added further that the new MS technologies allowed the institution to move from a totally unmanaged environment to an 80% managed environment, setting the foundation for future development. The Exchange and MS Applications specialists said that this platform resulted in a quantum leap in performance, connectivity and integration as the technologies were easier to manage and integrate since they were similar. They also said that solutions to problems were easier to obtain, more services were offered and the resulting quality of service delivery could be compared to first world countries. They also added that the MS platform was in a managed environment which allowed increased reporting at a better level and troubleshooting and problem solving became easier as new functionalities provided an opportunity to advance towards unified communication, such as video conferencing and instant messaging facilities all from a single interface.

When the ITSS specialists were asked about their perceptions and expectations of IT service delivery post migration to present day, 80% indicated IT service delivery had improved, from their perspective, in certain areas, since migrating to the MS platform. The MS Applications specialist stated that the centralised administration of Active Directory (AD) enabled automatic provision of AD accounts for staff by the Identity Lifecycle Manager (ILM) thereby reducing administration overheads, which was a problem previously. Idris, Olumoko and Ajemunigbohun (2013) emphasize that that an investment in quality IT systems pave the way for improved efforts in

customer service delivery where transparent service delivery becomes possible. All the ITSS specialists felt as stated during interviews that DUT clients' perceptions of current IT service quality were mixed i.e. clients were both happy and unhappy. All the ITSS specialists also added that positive feedback came from comments recorded on the service logs within the HEAT call logging system in terms of ratings.

The Desktop specialist indicated during his interview that in the desktop area, the implementation of SCCM allowed ITSS consultants to provide secure remote support to clients without leaving their workspaces, thus increasing productivity by reducing travel time to the client. He also added that SCOM provided an overview of problem areas on the backend and SCCM issued reports on the front end in terms of clients' desktops. Both the MS and desktop specialists stated that potential problems were detected before critical states were reached and that the MS platform was a much more stable environment with a mature product set that was fully redundant and allowed higher system availability with minimal downtime. 100% of the ITSS specialists stated that the MS technologies improved service delivery by providing them with tools to troubleshoot and carry out performance testing in order to detect critical states and also improve system performance.

80% of the ITSS specialists perceived that due to this improvement, there was an overall positive attitude toward the MS products. 60% of the ITSS specialists stated that skills and knowledge of latest technologies and solutions were being offered to and shared with the clients to ensure they received the best service. 50% of the ITSS specialists perceived during interviews that the availability of the ITSS service and expert desk together with remote and real time support had improved the quality of service delivery. The MS Exchange specialist perceived that a minority of the clients claimed it to be a waste of time while others saw the benefits of functionality and ease of performing daily tasks as the key issues.

90% of the ITSS specialists stated that they perceived clients as having been keen to move forward e.g. the SharePoint specialist verified during his interview that guideline documents and forms could now be stored and accessed by staff via the internal document repository which was not previously possible. 70% of the ITSS specialists stated that with MS technologies and solutions, DUT staff were on par globally in using mainstream software such as the MS Office suite after they were trained accordingly and became familiar with first world solutions and applications. They also added that the lack of certain tools and applications previously hampered the way in which services were delivered to the clients but by DUT embracing the corporate needs and meeting those through the technology upgrade, a more positive impact was a result.

85% of the ITSS specialists perceived that the major issues that staff faced in using the MS solutions were with passwords and user account lockouts. According to the MS Applications specialist the DUT's policy was to change DUT staffs' passwords every 60 days and some staff members found it difficult to remember these passwords. Both the MS Applications and Desktop specialists stated that the problem occurred because DUT staff used more than one device to access their emails and forgot to change their passwords timeously which caused those devices to lock their accounts because the device tried to authenticate to the AD and Exchange servers with an incorrect password.

The MS Exchange specialist stated during his interview that email restrictions in terms of implemented mailbox quotas, internet bandwidth restrictions and training were other issues that DUT staff faced. When the ITSS specialists were asked during their interviews about their perceptions and expectations of how their technologies enabled them to perform their tasks to facilitate IT service delivery, their responses varied. The general opinions among 80% was that this platform had eased tasks and enabled routine checks to verify system availability. The MS Applications specialist stated that the tools

allowed proactive management to determine trends, network activity and disk usage which in turn allowed opportunities to foresee possible failures because instant messaging and system alerts were possible. The desktop specialist stated that communication and collaboration happened faster e.g. with SCCM, MSFCS and Windows Server Update Services (WSUS), windows updates were delivered faster *via* a single link to MS servers and a central administrative console.

When the ITSS specialists were asked about how they perceived DUT clients' perceptions of current service quality offered by the ITSS department, 80% of the specialists stated that DUT clients' feelings were mixed i.e. staff were both happy and unhappy. The MS Applications and Desktop specialists stated that positive feedback came from comments recorded on the service logs within the HEAT call logging system in terms of ratings. However one of the major problems experienced by DUT clients was that they were unable to contact the current ITSS service desk because calls were not answered timeously. 100% of the specialists felt the quality of service delivery could greatly increase by implementing an Expert Desk i.e. by converting the current ITSS service desk into an expert desk, more ITSS support staff could be used to resolve problems at first level, thereby solving application problems the first time, every time. The Desktop specialist verified during his interview that this could be achieved by using one of the implemented technologies called SCCM remote tools. 100% of the ITSS specialists said that ITSS staff needed to realise that they were obligated to help the client as ITSS services were a core function; ITSS staff should therefore also possess an attitude to match. They added that although ITSS staff seemed to be committed to service quality in delivering IT services given the time and resources, the ITSS staff should not take 'short cuts' in performing duties. All the ITSS specialists said that ITSS staff should also be more qualified in terms of IT products and they should share their knowledge with each other.

When the ITSS specialists were asked about aspects of IT service delivery that they expected to be improved, their recommendations were as follows: 80% of the ITSS specialists stated various areas must be improved. Both the Desktop and MS Applications specialist said that the SCCM technology must be utilised to its fullest potential. The MS Applications specialist added during his interview that a password reset portal must be implemented to allow staff members to reset their own passwords. 100% of the ITSS specialists verified that the ITSS department must implement continuous staff training programs for the clients and ITSS staff, especially in communication. 100% of the ITSS specialists stated that an annual audit of the IT department should be done, specific to the quality of service delivery where a change champion or communication must be a dedicated task implemented to improve service operations. They added that ITSS accessibility to clients and turnaround time must improve and there should be an increase in ITSS personnel.

The MS Exchange, MS Applications and Desktop specialists verified during their interviews that there should be proper design configuration management in place. As the current shortfall lies not in the technology but rather in policy management, they added that if policies are followed strictly then duties could be performed well. According to McLachlan (2011), IT policies that are practical, adaptable, effective and necessary for the protection and efficient operation of the organization and the productivity of employees, but it is also important to carefully align policies with specific organizational needs and strategies. She adds however that internal communication is a critical factor in policy and process management and if employees do not understand the policies or follow the prescribed processes and procedures, policies can quickly become ineffective.

Finally all ITSS specialists recommended that to improve service delivery, the ITSS department needs to create a strong service culture that supports the organisation's goals. They added that the ITSS department needed to create a service delivery maturity model that can: serve as a diagnostic tool to help

quickly understand the current state of its quality of service; envision its target state in both the short term and the long term; and apply a combination of levels to make progress and measure results. The MS Applications and Desktop specialists recommended that this could be achieved by implementing a formal IT framework such as the Microsoft Operations Framework (MOF) Information Technology Infrastructure Library (ITIL) (Moeller, 2010) or the ISO/IEC 20000 or 38500 IT governance standard (Calder, 2008) and should not be modified to suit situation. They also recommended using questionnaires, feedback and reviews to identify clients' needs and ensure client satisfaction.

The issues and challenges faced by ITSS specialists post migration to the MS platform together with their current expectations of the technologies functions reveal that although expectations were fulfilled to an extent, there are also still aspects that can be improved as they have indicated. Positive perceptions that has emerged from ITSS specialists' opinions and expectations of how these MS technologies and solutions 'revolutionised' IT service delivery at the DUT. Although they experienced steep learning curves through on the job training, they have seemed to manage and maintain their respective technologies to enable a more advanced level of IT service delivery as compared to that which was offered prior to the migration.

The suggestions made by both the Desktop and MS applications specialists regarding deriving more functionality from the SCCM technology can possibly be achieved through implementing and following better IT processes. This could be done by having a correct framework in place to ensure better management, operations and maintenance of these and all MS technologies. The Gaps identified by the ITSS specialists between expectations and perceptions of the MS technologies and solutions to improve IT service quality can possibly be resolved by the recommendations that are proposed in the following chapter. It is hoped that this study's proposed recommendations including those suggested by the specialists will bridge

these currently existing Gaps to further improve all aspects of IT services delivered to the DUT clients.

5.7.6 A comparison of findings from ITSS management and specialists

The findings revealed similarities and differences between the above mentioned groups in terms of various aspects pertaining to the MS platform and the chosen technologies and solutions. Certain differences resulted because ITSS managements' perceptions and expectations emerged from a managerial perspective whereas those of ITSS specialists' emerged from a hands-on, practical, daily experience perspective. The former related to issues such as providing adequate training, ITSS staffing issues and resulting effects, financial restrictions and certain opinions about the hardware and software. The latter related to issues experienced in the field i.e. in a live environment.

Differences in responses also ranged from reasons for the migration to their perception and expectations of the chosen MS platform and the resulting quality of IT service delivery. According to the ITSS management, there was lack of support for the previous IT system and forward mobility and upgrades were becoming problematic. ITSS specialists stated that the decision to migrate came from senior management and the chosen MS platform would allow uniformity, collaboration and better integration. ITSS managed the initial issues post migration from a managerial perspective in terms of initiating more training and purchasing more IT equipment to handle the load. However ITSS specialists basically handled the situation *via* on the job training to really learn their respective technologies in a live environment, even though training was provided which they felt was inadequate.

Another difference between the two groups' perceptions pertained to the expectation of how the technologies were delivering what it was designed to.

Management perceived that it worked well and met expectations especially in the desktop environment regarding how applications and tasks were delivered and managed. They did indicate that issues arose in terms of keeping abreast with changes and updates of the software. However the ITSS specialists' opinions on this differed in terms of the functionality of specific technologies e.g. greater functionality from the SCCM technology was expected. They felt that it was not being used to its optimal potential which resulted in desktop management being more or less unchanged because this technology required a team to manage and operate the various components in order to achieve this full potential. The other issue was that the ADs policies were not adhered to, making provisioning and managing of user accounts on the DUT domain problematic. These issues indicated that ITSS specialists' expectations did not entirely match their perceptions but ITSS managements' expectations and perceptions in this regard seemed more or less on par.

Another difference between expectations and perceptions from both the groups emerged with regard to the manner in which IT services and its associated quality were offered post migration. ITSS management perceived that very high quality services were offered and they felt that the DUT clients perceived the same. ITSS specialists however perceived clients to be both satisfied and dissatisfied. Although ITSS specialists felt that that IT service delivery was of a better quality with the new technologies in place, they perceived that a minority of DUT clients were not in total agreement and felt it to be inconsequential.

Although there were a few differences in expectations and perceptions between ITSS management and specialists regarding all aspects of the migration, the general perception from both these groups was that every attempt was made to provide a good service, despite the challenges faced by the ITSS department as discussed in Sections 5.7.4 and 5.7.5. However all the perceived challenges, shortcomings and expectations of current IT

service delivery as well as the recommendations for improvements indicated by both ITSS management and specialists, reveal Gaps in the current quality of IT service delivery which must be properly addressed in order to improve this service at the DUT.

5.8 SUMMARY

The findings indicate that the perceptions and expectations of the quality of IT service delivery vary from the clients receiving the service to the ITSS staff providing it. The five SERVQUAL (RATER) dimensions *viz.* reliability, assurance, tangibles, empathy and responsiveness indicated a negative score or quality Gap for both sets of questionnaires. Applying the RATER form of SERVQUAL in this study revealed Gaps between clients' expectations and perceptions regarding IT services; Gaps between ITSS staffs' perception of their clients' needs and expectations regarding the quality of IT service delivery also emerged. The Gaps indicate clearly that there is definitely a need and room for improvement in the manner in which IT services are provided. Addressing these Gaps is vital and will ultimately lead to improvement in overall IT service quality. The higher Gap scores resulting from ITSS perceptions of clients' expectations reveal that although ITSS staff feel that they are offering a good quality of service, the clients on the other hand feel that there are several aspects and areas that can be improved.

The initial expectations of ITSS management and specialists were high with regard to what the various chosen technologies should deliver to meet those expectations. However expectations differ between these two groups: ITSS management felt that expectations have been met overall in terms of the technologies and solutions delivering what it was intended to. ITSS specialists feel that there are downfalls and that certain technologies are not being utilized to its full capacity, which in turn affects service delivery. However their perceptions in terms of actual service delivery post migration

are similar i.e. DUT IT services are now offered and delivered in a more effective and efficient manner and certain services that could not be offered before, are now made possible within the MS platform.

Suggestions for improvements based on existing Gaps in current IT service delivery have been made by both ITSS management and ITSS specialists, based on their differing and similar expectations and perceptions, post migration to MS. The Gaps identified from the qualitative and quantitative data analysis will assist the researcher in proposing recommendations as well as opportunities for future research in this area to the ITSS senior management in the next chapter.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.0 INTRODUCTION

“Many researchers and academicians highlight the importance of customer satisfaction. Service quality that is delivered which can meet or exceed customers’ expectations are mainly influenced by customer’s prior expectations”.

(Angelova and Zekiri, 2011).

“IT departments have long been viewed as service providers and improving service quality and client satisfaction is a concern of many IT managers”

(Jia and Reich, 2011).

The constantly changing IT arena not only means that the technology and products are evolving or advancing but also implies that the impact on the resulting IT services provided is altered as well. Good ITSD depends on good ITSM: lack of or poor ITSM impacts negatively on the quality of IT services both provided and received. Being able to provide a high quality of IT service that meets clients’ expectations at almost every service encounter, should be the primary goal for any IT service company or department. Great IT service provision emanates from happy IT service employees who experience job satisfaction. In order for this to occur, the type and quality of ITSD offered will also depend highly on successful ITSM.

Chuang (2010) states that it is vital for a service company or department to establish a quality system that can identify root-causes of unfavourable service quality and take effective remedial actions to ensure the customer’s perceived quality. He adds that root-causes signify those causes that result in the occurrence of the service failures which occurs when customer

expectations are not met and ultimately affects service quality negatively because negative responses are then received from customers.

According to Song and Letch (2012), the successful deployment of new IT systems does not occur by default and there is often a mismatch that exists between the outcomes delivered and the benefits that are promised. Since the implementation of MS technologies and solutions at the DUT, staff i.e. those who receive IT support and those who provide it, have seen and experienced both the benefits and downfalls of using the MS platform for IT service delivery across the UoT. Based on this, one of the major reasons for conducting this study was to determine the resulting quality of IT services received post migration to a new IT system at the DUT.

6.1 SUMMARY OF THE STUDY

This study highlighted the quality of IT services received by the DUT's full time academic and administrative staff post migration to an MS platform. The SERVQUAL model was used as the theoretical framework for this study. This study investigated the reasons for migrating to an integrated MS platform as well as the resulting perceptions and expectations of IT service quality from both the clients' and ITSS service providers' perspectives. The modified SERVQUAL instrument referred to as RATER was used to assess and compare perceptions with expectations of the resulting IT service quality. This was done based on the five RATER dimension viz. reliability, assurance, tangibles, empathy and responsiveness.

The impact of the MS technologies and solutions on daily IT operations to enable IT service delivery was also determined. DUT was investigated as it is the first UoT in South Africa to implement nine MS technologies simultaneously and set the benchmark for other UoTs that are planning to or are already implementing some of these technologies and solutions. The following section discusses the achievement of the objectives in this study.

6.2 ACHIEVEMENT OF OBJECTIVES

There were four main objectives initially identified at the beginning of this study and these had to be achieved to validate the reasons for conducting this research. The following is a discussion on meeting each of the four objectives.

6.2.1 Objective one: To identify IT usage, needs, support requirements and types and functions of MS technologies and solutions implemented and used by the DUT staff

A positive response was indicated by the participants with regards to the frequency and knowledge of using IT related equipment to complete their daily tasks. It was determined that IT service delivery should match the clients' needs irrespective of the duration and frequency of using such equipment. Respondents felt that service delivery should not be compromised based on incorrect assumptions but should rather be kept at an optimal level at all times irrespective of the clients' IT skills and knowledge. Findings indicated that the majority of the clients were quite comfortable in requesting ITSS services. Although a minority of clients initially took it upon themselves to solve IT related issues, they requested IT support when they were unsuccessful which implies that IT support will always be required by clients irrespective of whether they are willing to acknowledge and accept their IT needs or not.

Participants generally responded positively to IT service provision but did indicate areas that must be improved. They also indicated the types of IT support they would like to receive such as more hardware and software support as well as more training in IT related matters such as in the use of certain applications .e.g. MS Excel. They showed initiative in acquiring IT skills to resolve related IT problems. Acquiring their own IT skills could mean that clients did not trust ITSS support adequately in solving their problems

but had to eventually call on ITSS services to assist in a failed attempt to resolve the issue. The inconsistency between clients' expectations and perceptions in certain aspects of IT service delivery implies that the quality of IT service delivery must be reassessed by the ITSS department. Clients should feel confident enough to request IT services at all times.

The nine MS technologies chosen and implemented by ITSS management and managed by ITSS specialists seemed to have eased daily tasks in providing IT services as follows:

- Active Directory managed user accounts on the DUT domain with ease and efficiency;
- SCCM and SCOM enabled IT services to be delivered remotely reducing turnaround time;
- MS Exchange server allowed email accounts to be managed and provisioned;
- SharePoint enabled document storage and sharing among DUT staff;
- FCS ensured that all machines and servers were protected from viruses and external hackers;
- ILM allowed integration of staff records between the human resources (HR) and IT systems; and
- SQL formed the base on which majority of the technologies could function and the Office suites and applications allowed clients to carry out their daily work related tasks.

With regard to the MS applications used by DUT staff, the findings indicated popularity and frequency of use. This meant that DUT staff had become accustomed to the solutions and felt comfortable to use these to complete their daily tasks.

6.2.2 Objective two: To determine DUT staffs' perceptions and expectations regarding the migration to the MS platform

The majority of the clients felt that the migration was a positive move and that IT service delivery had since become prompt, efficient, friendly and time saving with only a minority indicating dissatisfaction or no change. Clients expectations versus perceptions in terms of IT services they received post migration were assessed. This was done within the 5 RATER dimensions where discrepancies were identified within each dimension therefore indicating Gaps between what clients expect and what they actually receive. These Gaps related to:

- accurate and timeous services and problem resolution including sound IT advice;
- conduct, knowledge and confidence of ITSS staff and services;
- proper marketing, advertising and tidiness of the ITSS department; and
- improved empathy in terms of more individualised attention and responsiveness of services provided by ITSS staff in terms of clients being timeously informed about services and being assisted with personal IT equipment of the ITSS department.

The resulting Gaps indicate that the quality of IT services must improve and ITSS will need to address the issues. All identified Gaps were mentioned within each dimension and it is hoped that the proposed recommendations will alleviate the issues experienced by DUT staff regarding the quality of IT services they receive.

Responses revealed issues that clients experienced initially with regard to the MS solutions that were implemented, post migration, but once they became comfortable with using the new system and applications, they experienced minimal problems. It was discovered that clients were familiar with MS applications because of prior use or because they attended the

provided training sessions post migration which made the transition easier. However clients did expect ITSS to provide adequate training on the applications and because this was not satisfactorily received, clients doubted ITSSs' competence levels. This doubt is a genuine cause for concern and implies that the ITSS department must work on measures to improve the manner in which they offer IT services in order to gain clients' confidence and trust to eliminate doubts. ITSS staff will have to follow through with methods of improving skill levels and hence become more competent in their delivery of services.

6.2.3 Objective three: To determine the ITSS management and specialists' perceptions and expectations of the impact of the MS technologies on IT service delivery

It was determined that the migration to the MS platform had both a positive and negative impact on daily IT operations as well as the delivery of IT services. The ITSS managements' responses indicated that the migration was a good decision overall and had a positive impact on DUT's IT operations and service delivery. The findings from the interviews with ITSS management indicated that there were initial issues such as resistance to change, difficulty in adapting to the new integrated IT system, apprehension from DUT staff regarding the changeover, inadequate ITSS personnel and direction from DUT's management and lack of cooperation from the MS project specialists at certain points during the migration.

According to the ITSS managements' and specialists' perceptions, the migration to the MS platform had greatly improved the quality of IT service delivery and the technologies and solutions were meeting the expectations in terms of delivering what it was meant to. The ITSS management perceived that the migration had transformed ITSS operations as DUT staff had access to the system both on and off campus. The manner in which IT services were delivered by using the new technologies and solutions had improved the

quality of IT service delivery e.g. services were delivered remotely reducing turnaround times and the latest technologies and solutions were being used both for teaching and completion of daily academic and administrative tasks. ITSS management did however indicate that further areas of service delivery needed to improve viz. implementing expert desk facilities to provide instant problem resolution, increasing ITSS staff compliment, cross skilling of ITSS staff to improve the knowledge base, sharing of information among ITSS staff to expand the knowledge base and proper advertising of the ITSS department's services. They felt strongly that by following through with these solutions, the quality of IT services would improve further.

The findings from the ITSS specialists' perceptions and expectations of the MS platform did differ slightly from that of management's. This was due to the fact that the specialists manage and maintain the various MS technologies on a daily basis and their perceptions compared to their expectations differed once these technologies and solutions were in a live environment. The findings revealed that this migration was a huge learning curve with plenty of self-study which had to be undertaken on the job because only minimal training was received in each of their respective technologies. This was one of the greatest challenges the ITSS specialists faced post migration. This challenge was coupled with a majority negative response from DUT staff who were pensive. They found faults with the solutions which initially yielded a sense of disillusionment for both the specialists and DUT staff.

The ITSS specialists had high expectations regarding the functionality of the chosen MS technologies such as ease of integration and unified and simplified administration of daily tasks which would not only lead to improved manageability and maintenance of the technologies, but would also lead to an improvement in overall IT service delivery. However they indicated that these expectations were not being met because the technologies were not being delivered as they had been promised. There were technical difficulties

in the various areas of functionality such as desktop and server management, meeting targets and managing high volumes of data.

The results revealed that ITSS staffs' perceptions regarding productivity and the quality of IT services provided to the DUT staff post migration, were positive. The IT environment had become well managed due to the integration of the various technologies which allowed better problem solving and provision of solutions. They perceived IT service quality to have greatly improved because the new technologies allowed provisioning and administration of various functions and tasks to be completed with ease and within a shorter turnaround time. They felt that the improvement had led to a positive reaction to the MS platform where services could be provided much more effectively and efficiently than before.

Although ITSS specialists indicated that the MS technologies and solutions enabled an overall improvement in IT service quality post migration, there were further suggestions for improvement such as: the implementation of self service facilities; improved accessibility to ITSS offices and staff; and an overall commitment to service quality by providing more training in areas such as communication and updating IT skills.

6.2.4 Objective four: To ascertain ITSS staff perceptions of their clients' needs and expectations

ITSS staff's perceptions of their clients' needs and expectations regarding the quality of IT service they provided were both positive and negative. The results from each of the 5 RATER dimensions indicated that there were Gaps between ITSSs' perceptions of their clients expectations in terms of the services delivered. The findings showed that although ITSS staff attempted to address all IT issues timeously, professionally and efficiently, some demands or requests were almost impossible to fulfil. One such expectation

was that services be provided all hours of the day every day of the week which could not be fulfilled due to South African labour laws.

Another such expectation was assisting DUT staff with personal IT related equipment. Since this was 'grey' area, this expectation could not always be fulfilled due to the fact that priority was given within the normal working hours to DUT equipment only. This 'grey area' resulted because ITSS staff were uncertain as to whether to assist the client with personal equipment as there was no proper decision taken by ITSS management: ITSS staff had to use their discretion in these instances. Clients also expected to be informed timeously of updates and changes to IT products and services that were being offered. This is important to prevent clients from being 'blindsided': in other words, clients would always be prepared to use these new products and services if they are adequately informed and trained. If this is not done when required, unnecessary frustration will be a result which will impact negatively on the quality of IT services.

The ITSS staff sometimes felt despondent because the DUT not only did the DUT staff expect 100% excellent service levels at every service encounter, but they also had some unrealistic expectations which were out of the control of ITSS staff such as DUT working hours. This impacted on the perception of overall service quality from both the ITSS and DUT staff's perspectives because ITSS staff felt they were providing services at an optimal level while DUT staff expected better. One of the major obstacles faced as indicated by 22% of the ITSS staff, was not having access to the client's offices when requests for IT services were made. This problem arose mainly among the academic staff because of their varying lecture work schedules. This in turn affected the perception of IT service quality received because the lack of staff availability affected service turnaround times.

On a more positive note, the findings also revealed that DUT staff felt that IT service delivery was of a fairly acceptable quality and they were happy with

the services received. They also offered suggestions for improvements such as ITSS staff attending more courses to improve skill levels, improving service delivery turnaround times and increasing the number of ITSS personnel to be able to cope with the workload. ITSS staff perceived that their clients were fairly happy with the services they received despite the suggestions for improvements.

6.3 LIMITATIONS OF THE STUDY

This study was limited to the DUT's full time academic and administrative staff members, both male and female, as they were the primary users of the MS solutions. Part time staff were excluded due to their minimal use of the system. The researcher limited the study to the Durban campuses only due to the reasons cited in Chapter One. The researcher also limited the study to the DUT only as this UoT was the first to migrate to the MS platform, employing nine MS technologies simultaneously. The scope of this research related to perceptions of DUT staff only and did not cover student issues or perceptions (as explained in Chapter One).

Personally administered questionnaires were used in this study as opposed to an online survey because the researcher provides ITSS support to the DUT staff community and she preferred to maintain the onsite contact rather than what she deemed an impersonal online survey. This personal administration did yield a fairly high response rate. The ITSS staff within the management and specialist positions, who were directly involved in the migration process and responsible for the daily operations and maintenance of the various MS technologies respectively participated in onsite interviews. These staff members were based at the ML Sultan Campus only as 90% of the hardware was housed on this campus.

The length of the questionnaire seemed to be problematic and both academic and administrative staff complained that it was too time consuming

to complete. A shorter questionnaire would perhaps have been more suitable and attracted more staff to complete and return these. However certain important questions would have had to be eliminated which would not have yielded all required data. The questionnaire attempted to gather as much information about all IT service delivery experiences, aspects and opinions from DUT administrative and academic staff, hence the length.

Including part time staff members as well as staff from the Midlands campuses *viz.* Pietermaritzburg and Indumiso could have yielded a slightly different set of results. Structured interviews or questionnaires could have been conducted with or completed by the IT support staff from these campuses to gauge their perceptions of their clients' expectations regarding the quality of services they provide on those campuses. This would have enabled the proposed recommendations for improvement to be applied to the entire DUT and not just the Durban campuses.

The research was limited to a UoT within South Africa. This could mean that any significant results that emerge from this study may not be applicable to international UoTs but could be useful or generalised to other South African UoTs who already use or plan to implement some or all of these MS technologies and solutions. Furthermore, including students in such a study could yield even more valuable feedback regarding how ITSS services can impact students' daily experiences within the computer laboratories and other IT access areas around the campuses.

The following section discusses the recommendations that will be put forward to ITSS management indicating how the quality of IT services offered at the DUT can be further improved.

6.4 RECOMMENDATIONS

According to Lucio-Nieto, Colomo-Palacios, Soto-Acosta, Popa, and Amescua-Seco (2012), IT organisations and departments recognize that IT services are strategic assets to support information and management of IT services. They also state that those IT organisations or departments that attach importance to this issue, through the implementation of best practices or frameworks for IT services, such as Information Technology Infrastructure Library (ITIL) or COBIT, have found that one of the key factors to guarantee IT service success is having suitable processes, not only for the implementation of new IT infrastructures but also for follow up and maintenance of both the infrastructure and IT services.

Stewart and Taylor (2007) explain the various tasks the IT service provider must perform since IT services move through a life cycle. These relate to: how the service should be planned for and built; the IT service and related changes should be validated, tested and deployed; events and requests regarding IT services should be handled; the basic configuration supporting the IT service should be controlled; and how operational problems should be solved. The above emphasizes the importance of implementing an IT service management framework to support and monitor IT services performance (Hu, Lu, Mojsilovic, Sharma and Squillante, 2010). The following recommendations emerge from the findings of this study.

6.4.1 Improving IT service quality at the DUT

Wilson, Zeithaml, Bitner and Gremler (2009) state that customer expectations are beliefs about service delivery that serve as standards or reference points against which performance is judged. Customers compare their perceptions of performance with these reference points when evaluating service quality. Thorough knowledge about customer expectations is critical to service providers because knowing what the customer expects is the first and

possibly most critical step in delivering a service that is of a good quality. Based on this and the findings from the results of the 5 RATER dimensions used to assess the current level of IT service quality at the DUT, the following suggestions are recommended to improve the quality of IT services within these dimensions.

6.4.1.1 Improving IT service reliability

The results discussed under this dimension in the previous chapter revealed Gaps between expectations and perceptions regarding the reliability of IT services currently received by the DUT staff. It is important for both the IT service department or organisation and individual service provider to perform and complete their promised services with an acceptable level of quality and accuracy within the given requirements established between the department and/or service provider and the customer. Reliability is important because every customer wants to know that their IT service provider will fulfil the promised services in a satisfactory manner, within those requirements.

In a study conducted by Davern and Wilkin (2010), the question of how the value contribution of IT can be accurately measured resulted in one of the research streams assessing the impact and value generated by IT, using perceptual measures. They emphasize that one such measure is the perception of end users e.g. managers and service consultants, about the quality of IT services and satisfaction with reliability and accuracy of these support services. Based on this, the DUT should implement a system or method of ensuring that reliability in the service offering is verified constantly and consistently, where each task must be completed timeously, accurately and dependably. Simply put, this means that the ITSS staff need to do what they say they will do when they are supposed to do so. In other words, commitment to the completion of the task must be exhibited at all times irrespective of whether services are offered onsite or remotely. To ensure that this happens, the client must be constantly informed by the ITSS staff

either telephonically, onsite or *via* email of the progress of the task. This communication and problem solving support indicates the ITSS staffs' flexibility and patience in attending to the clients' IT needs. This ability and willingness exhibited by ITSS staff will ensure that they are offering reliable services at each service encounter (Gunawardane, 2011).

There should also be a method of monitoring in place to also ensure that reliable services are offered. This can be achieved through having an option in place within the call logging system, HEAT, to receive feedback from DUT staff where they rate services received from ITSS. This can be done via an online survey method which can be completed once the IT related issue has been resolved. Once the call that was logged has been resolved and closed on the HEAT system, a feedback survey or a link to the online survey should be sent to that clients' email address. This survey must be as concise as possible and should be tailored to the type of request that needed resolution. All clients should be encouraged to complete this form or survey to as responses will indicate where IT service reliability can be improved.

6.4.1.2 Improving assurance, empathy and responsiveness of IT services

ITSS employees must ensure that there is adequate communication between themselves and the DUT staff from the inception of the logged call for IT assistance to completion of the task. This will assure clients that ITSS staff have their best interest at heart. ITSS management should also ensure that all ITSS staff are adequately trained in the area of communication. Due to the diverse culture within South Africa it is essential that ITSS staff be able to communicate clearly with their clients to prevent misunderstandings during the service encounter. Clear communication between both parties will promote a healthy relationship. Clients will then be assured that every service encounter will be met with both courtesy and competence in solving their IT problem which will be done by a by a well presented, well-mannered ITSS

staff member. One aspect that the findings revealed was regarding clients feeling assured that their data was protected while in ITSS care. The ITSS department need to enforce hard and fast rules regarding security of data which will improve the trust issue that clients experience with data security. There should be a document drafted that either states that a client is responsible for their own data protection and backup or that ITSS will ensure that the data is backed up and protected while in ITSS care. This document should be signed at the beginning of the task by both the ITSS staff member and the client. This document can be a hard copy which is signed onsite or an electronic copy which gets emailed to the client prior to commencing with the task. If emailed, there must be an option indicating consent and this must be emailed back to the respective ITSS staff member.

As indicated by Crawley (2012), an IT support provider's ability to empathize may be their most important ability as a member of the IT support team because empathy means providing caring and personal service. He explains that empathy entails listening for the hidden meaning in what a client is saying, acknowledging the emotion and offering caring assistance, especially when dealing with a user who is irritated, angry or emotional. He states that the IT support provider must be able to place themselves in their client's position so they can understand the client's frustration when IT services are delivered poorly. Being able to understand clients' frustrations will enable the IT support provider to deliver meaningful solutions empathetically to clients. Although clients felt that ITSS did exhibit care and concern during service delivery, findings also revealed that some staff would still prefer more individualised attention and for the ITSS staff to show initiative in 'going the extra mile' with regards to certain aspects of IT support.

Apart from informing clients adequately of the new and changing processes of offering IT support as mentioned in Section 5.5.4 in Chapter Five, ITSS should cater for the exceptions such as assisting clients with physical disabilities or the more senior clients who find using IT equipment

challenging. IT support in these cases should be offered onsite as showing empathy to the physically disabled and senior staff will make them feel more comfortable and happy to call on ITSS staff for future assistance. ITSS management should also consider increasing the number of personnel within the ITSS department to be able to cope with the daily workload so that more clients can receive the individual attention they require. This may also alleviate service delivery problems during peak university operating hours such as during registration periods.

ITSS management should ensure that ITSS staff such as those that work in the desktop support area and on the service desk are adequately trained in their area of skills to improve knowledge. This increased knowledge base will not only boost ITSS staff confidence and improve their ability to deliver good quality IT services but will also inspire trust and confidence in their clients regarding the services received because all ITSS staff are expected by clients to be experts at the services they deliver. The service desk is the first line of contact and they set the 'tone' or impression in terms of how IT services will be handled, therefore they also need to be properly trained and equipped with the required skills such as communication and general IT troubleshooting. Good teamwork among ITSS staff is also essential and this should be often encouraged not only to develop or improve the pool of IT knowledge that can be shared among them, but also to strengthen the rapport within the department.

De Jager and Du Plooy (2007), state that service to customers means customers being satisfied, delighted, urgently and properly attended to and having a cordial relationship with the service providers. They add that the service provider's willingness to respond to a problem and their responsiveness to customer's needs also contribute as key factors in service quality. ITSS staff need to respond efficiently and promptly to a logged call as IT issues need to be resolved timeously and as quickly as possible to prevent disgruntled clients which in turn delays the completion of their daily tasks. IT

service delivery needs to be efficient with almost excellent turnaround times to ensure clients' confidence, satisfaction and appreciation of IT services and support. The IT service desk can be improved by increasing its efficiency and effectiveness not only by answering clients' telephone calls timeously but by initiating or developing step-by-step instructions to resolve common incidents and posting these documentation on the already existing staff portal or emailing these directly to clients to save turnaround time.

In order to achieve improved responsiveness, the ITSS department needs to implement an internal Service Level Agreement (SLA) which is defined by the output(s) of one or more processes or interfaces designed to identify service commitments and meet the customer's expectations or a defined set of expectations where the user of the service is provided with the information necessary to understand and use the IT services (Skene, Lamanna and Emmerich, 2004). It is imperative that the SLAs contain the necessary information to use and manage the service delivery. Internal SLAs can be used between the internal ITSS department and DUT staff within other departments to clearly define the levels of service needed. (Larson, 1998; Bernard, 2007)

This will aid in ensuring that ITSS staff are responsive to clients' requests at all times therefore reducing response times and waiting periods. If an SLA is missed, DUT's IT management should not find out from a phone call from a displeased user. Likewise, users need to be informed that IT management is engaged and working toward an expedient resumption of service therefore SLAs must be constantly monitored and measured (Bernard, 2007). This can be done by visual cues that will indicate and flag help requests within the HEAT call logging system or alerts should be sent via e-mail when the SLA has been breached.

6.4.1.3 Improving IT service tangibles

The ITSS department should ensure that their location and physical facilities are appealing and in line with the services they offer. They must also ensure that these are adequately advertised and promoted among the DUT staff community. Barber and Scarcelli (2010) state that a customer's satisfaction and loyalty are realized not only through the delivery of exceptional services but additionally through the physical environment which plays a key role in the delivery process. They add that providing good service quality has been seen as essential to service providers' efforts to market themselves. As a service department within the UoT, clients need to know where they are based and the types of services that are offered. This can be achieved by posting out their already existing IT policy and procedure manual frequently either to each department electronically or through the DUT pin board or internal staff portal which is accessible to every staff member.

Other marketing materials such as pamphlets or brochures can be designed and developed by the DUT's in-house publishing or Corporate Affairs Departments. This can be done with the ITSS's department's approval which should sufficiently advertise the ITSS department and its associated services to the DUT community. Advertising of services offered can also be done via the UoT's internal staff portal and website on which their service catalogues, brochures or pamphlets can be made readily available online.

The UoT's operating hours, (as mentioned in Chapter Five under the Tangibles dimension), are currently set by South African government and will remain this way unless there is a change in the HE policy by the HE minister of South Africa in accordance with the SA government regarding changing all HE institution's operating hours to a 24 hour, 7 day a week basis. Therefore DUT cannot currently be a UoT that operates as such with regard to the IT support ambit. The extended operating hours apply to the DUT's libraries only, at certain periods during the academic year.

It must be remembered that IT services can be performed completely to specifications however clients may not feel that the ITSS staff member exhibited adequate reliability, assurance, empathy and/or responsiveness during that service delivery and this will negatively affect service quality assessments. It is therefore imperative that the ITSS department implement measures to ensure that the quality of the services offered are of a very good standard irrespective of the type of IT issue the client is experiencing. This will have to be done in accordance with the ITSS management's approval.

6.4.2 Implementing a suitable best practices framework for improved IT service delivery at the DUT

Iden and Eikebrokk (2013) state that the IT function should be a service organization that builds and delivers IT services that not only meets business needs. They add that the providers of IT services can no longer afford to just focus on technology and their internal organization only but must now consider the quality of the services they provide and focus on the relationship with their customers. According to Karimi *et al.* (2001) there should be appropriate IT management practices for a given level of ITs influence on customer services within an IT service delivery organisation or department.

They add that IT best practices could help enhance customer service by collecting service performance information to assist management by indicating service delivery areas that can be improved further in order to ensure consistent service quality and customer satisfaction at every service encounter. It is hoped that the recommendations proposed will lead to the improvement in IT service quality at the DUT, through the implementation and use of a suggested best practice guide which will need to be used in conjunction with an existing IT service policy.

There are several IT best practice frameworks for ITSM that are available, as mentioned earlier in this study. According to Neto and Neto (2011), these include ITIL (Information Technology Infrastructure Library) COBIT (Control

Objectives for Information and Related Technology, MOF (Microsoft Operations Framework) and ISO/IEC 20000 (International Standards Organisation).

They add that these frameworks are the enterprise's and academia's response to the challenges of management and governance of IT functioning and for the promotion and alignment between IT processes and the organization's strategic objectives. They also state that effective implementation of an IT best practices framework is a complex activity that demands planning and that normally brings significant changes in the organization and in its processes. Although each framework has a good set of standards and principles by which ITSM can be governed, the most suitable framework that is suggested, based on this study's IT infrastructure, environment and research findings, is the MOF V4.0. This recommendation is based on the fact that DUT's IT infrastructure is a predominantly MS platform.

The MS Operations Framework (MOF) is MS's structured approach to helping organisations or institutions achieve operational excellence across the entire IT Service Lifecycle (Microsoft, 2008a). MOF was originally created to give IT professionals the knowledge and processes required to align their work in managing MS platforms cost-effectively and to achieve high reliability and security (Van Bon and Dyer, 2009). The new version, MOF 4.0, was built to respond to the new challenges for IT: demonstrating IT's business value, responding to regulatory requirements and improving organizational capability. It also integrates best practices from MS Solutions Framework (MSF) (Microsoft, 2010c).

As indicated by the Figure 6.1 below, the planning and delivery phases of the migration to the MS platform at the DUT has already been completed (indicated by the yellow and green arrows).



Figure 6.1: Microsoft Operations Framework

Source: Adapted from Van Bon and Dyer. (2009: 11)

This framework also applies the PDCA (plan, do, change and act) approach and the first three actions have already been completed with the focus now shifting to the last action which is 'act'. This framework has various components in place and the entire framework can be implemented or just a component can be followed to address a subset of local problems (Microsoft , 2010b). MOF provides a common management framework for MS platform products and combines several customer request types in a single Customer Service SMF, rather than separating incident calls from operational service requests and focuses on the practical side of 'what' services can be improved and 'how' these can be done (Pultorak, Henry and Leenards, 2008).

This Customer Service SMF belongs within the Operate phase of the MOF as indicated in Figure 6.2 below.

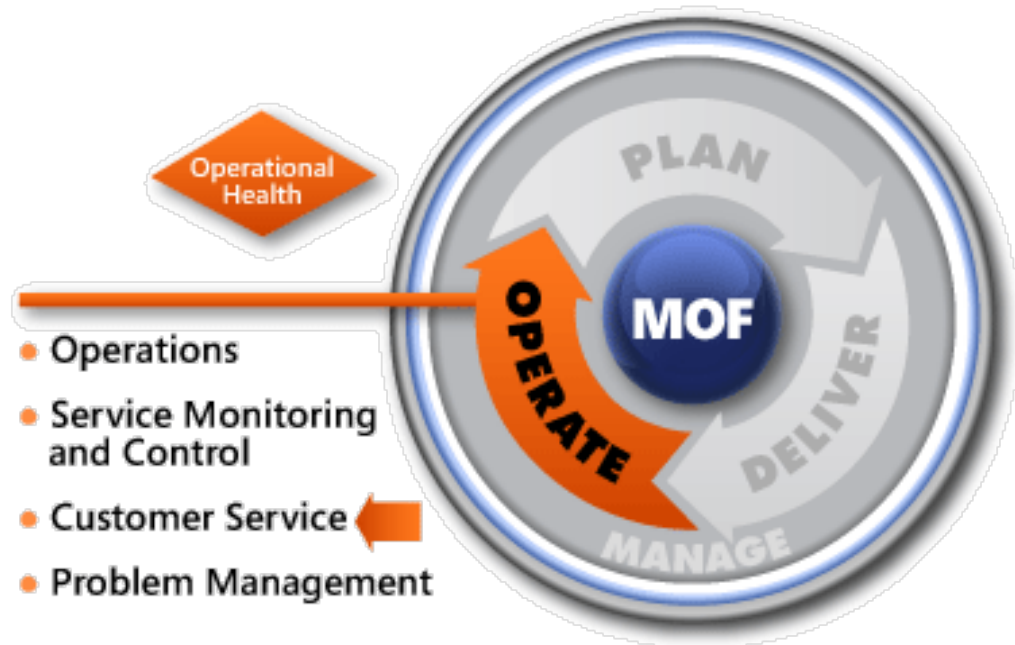


Figure 6.2: Customer Service Framework

Source: Adapted from Microsoft. (2008b: 1)

Based on Pultorak *et al.* (2008) and Microsoft, 2008b), DUT's ITSS management can follow the Customer Service SMF which is used by IT service providers involved in providing a positive experience and good customer service for IT service users, by meeting their IT needs and addressing complaints and issues that arise during the normal course of using an IT service (Microsoft, 2010b). To choose a certain outcome, goal or process as a starting point. They should then: identify the elements in the service delivery process that are most likely to require attention; identify the actions related to those elements that solve those issues; and leverage the opportunities that have the greatest positive impact on the DUT staff and ultimately on the institution. The goal will allow certain outcomes and measures specific to DUT's IT service delivery needs including those

pertaining to improved service delivery quality, to be achieved. This goal should be used to create a common focus and a concrete set of measurements to improve both management and services of IT at the UoT.

The one major advantage and reason for using MOF is that it is available at no cost from the MS corporation under the Creative Commons Attribution License to any organization or HEI worldwide. Other frameworks such as ITIL need to be purchased in order to be used. The second reason for proposing to use MOF is that it should be very suitable for and easily applicable in an MS dominant environment such as that of DUT. Finally, it offers very detailed solutions or best practices for each incident level and the various operational levels that relate to IT service delivery (Microsoft, 2008b), which will aid IT management, specialists and staff in their various areas of expertise and problem resolution.

It must be remembered however that the MOF is a reference framework and not an implementation model (Microsoft, 2010a). The documented best practices can be used within the local approach of an organisation such as DUT, provided they have developed their own process model to support their organization and technology dimensions. It has been established as per feedback from ITSS management and specialists during interview sessions, that the ITSS department does not have a process model in place. It is therefore recommended that the ITSS department develop its own process model and perhaps use this process model in conjunction with the customer service, operations and service monitoring and control SMF components within the MOF framework. This should enable the DUT's ITSS department to constantly monitor its services and further improve overall quality of IT service delivery.

6.5 IMPLICATIONS FOR FURTHER STUDY

There are aspects that arose during this study which were beyond the study's scope and therefore not discussed but should be considered for future research. As mentioned under the study's limitations, these aspects pertained to excluding the staff complement from the DUT's Midlands campuses, part time academic and administrative staff at the Durban campuses and all students. A much broader and richer range of information that gives a complete perspective of expectations and perception of the quality of IT service delivery for the entire DUT staff and student complement can be gauged by including these three groups within a study of this nature.

Once DUT policies are in place to include students within the IT support ambit, as per current planning phase, a study using the students' feedback in terms of their expectations and perceptions of IT support on campus would complement this research. This feedback could be of great assistance to the ITSS department in addressing a range of other issues that students find challenging or disconcerting regarding areas of IT services. Further research should separate and investigate students' specific IT needs in order to match those needs to the type of IT support they should be receiving. Data gathered from their responses should enable ITSS management to assist the faculties with improving IT related facilities, IT equipment and overall IT service delivery, based on students' perceptions and expectations regarding their IT needs.

Future study could yield results that should also be of value to other HEIs in South Africa whose IT infrastructure comprises MS technologies and solutions used by both staff and students. This study could be conducted to determine whether there are other possibly more recent versions and releases of MS technologies and solutions available that can combine some of the functionalities of the technologies mentioned in this study, to further

simplify and improve IT service delivery in an MS environment within not only a UoT but any HEI in SA.

6.6 CONCLUDING REMARKS

Providing efficient and effective IT services timeously, reliably and responsibly should be the aim and mission of any IT service delivery organisation or department, irrespective of whether these services are provided to internal clients only, external clients or both. The several varied IT services can often result in confusion between the perceptions and expectations of the staff receiving the service and the IT staff providing it. It is important for clients' expectations and perceptions to be on par and in order for this to occur, IT staff must make every effort to deliver great services and clients also need to be made aware or alerted to certain limitations within this service delivery process.

As eloquently stated by Passero (2010), the IT department operates behind the scenes in most organizations, that is until something goes wrong. This is where the IT department become the unsung heroes or the villains of an organization. The fact is, when it comes to technology, things can and do go wrong. This is when everyone becomes acutely aware of the IT staff and what it is that they do or do not do as perceived by the end users. It is therefore important for the ITSS department to clearly state the function of each section within the department and each staff member's role, areas of expertise and where the limitations or boundaries are regarding service provision. It is virtually impossible for IT staff to know everything about every IT aspect or issue but it is also necessary and important to attempt as far as possible to be committed to providing a good quality of service based on the existing knowledge, resources and initiative even if one is not an absolute expert his/her IT related field.

Finally, Munusamy, Chelliah and Mun (2010) state that it is important that a client experiences the 'wow effect' that only superior service can deliver. They add that establishing a professional relationship with clients empowers service providers with the knowledge of what their clients need and expect. Having an effectively good recovery process for a dissatisfied customer is not only a very important and necessary process, but will also positively affect service perception and expectations by both the clients and ITSS service providers, despite the types of IT technologies and solutions that are implemented and the types of organisations or institutions providing the IT services. The findings emanating from this study have indicated both positive and negative responses from the clients' and ITSS service providers' perspectives regarding IT services and the related quality. It is hoped that the recommendations for improvements will contribute to improved attitudes and expectations about the level of IT services at the university for both clients and ITSS service providers.

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APPENDICES

APPENDIX A1

MICROSOFT TECHNOLOGIES

Windows Server Active Directory (AD) 2008

DNS (Domain Name System) is a distributed database that represents a namespace. The namespace contains all of the information needed for any client to look up any name. Any DNS server can service queries regarding any name within its namespace. An Active Directory Namespace is a means for defining Active Directory forests, Domains, and associated objects within a Domain Name Space structure. DUT's DNS is currently dut.ac.za. All objects and components including user names, computers and servers will inherit a namespace-defined context. It is by design a highly reliable, hierarchical, distributed, and scalable database. Windows 2000 and higher operating system clients use DNS for name resolution and service location, including locating Domain Controllers for logon. This system is implemented for a single sign-on facility onto the DUT domain. Active Directory 2010 is currently implemented after being upgraded in 2012 (Osman, 2008).

Microsoft Exchange Server 2007

The Mailbox server role is the central role in an Exchange topology and is the server infrastructure that stores the actual mailboxes of the user. Therefore, Mailbox servers are often the most critical for an organization. Implemented for the MS Outlook messaging/mail system, leveraging Microsoft Exchange 2007 Enterprise Edition, up to 50 storage groups per mailbox server can be created, additionally 50 mailbox stores per mailbox server (one mailbox store per storage group). All storage groups enabled for continuous replication are limited to a single database per storage group. This includes all storage groups in a cluster continuous replication (CCR) environment, as well as any storage group enabled for local continuous replication (LCR) and/or standby continuous replication (SCR). A storage group with multiple databases for LCR or SCR cannot be enabled after a storage group is enabled with continuous replication (one cannot add a second or subsequent database to this storage group). Organizations for which messaging is business-critical often choose to design a highly available messaging system to provide this uptime.

Exchange 2007 and Exchange 2007 SP1 includes the following built-in features that can provide quick recovery, high availability, and site resilience for Exchange 2007 Mailbox servers. MS Exchange version 2012 is currently being implemented after a version upgrade in 2012 (Hietbrink, 2008).

Microsoft Office SharePoint Server (MOSS) 2010

MOSS 2007 consists of several physical servers which are grouped together and configured to perform various tasks and functions. The group of servers is called a farm and each server is configured to service various functions, when roles are separated, increased scalability and performance is achieved. The more these servers and functions are separated, the better availability and performance is achieved. MOSS 2007 being a web application, is physically installed on an Internet Information Service (IIS) web server and then accessed through a user's web browser. When a user initiates a session in order to access MOSS 2007, the user is first authenticated against Active Directory and once that is successfully performed, MOSS 2007 determines what the users' access rights to the various web objects within MOSS are. MOSS 2007 relies on Microsoft SQL Server to store the majority of its content and data. In essence, this is a document repository facility implemented for sharing/accessing documents among staff members with necessary permissions (Pheiffer, 2008).

Microsoft Systems Centre Configuration Manager (SCCM) 2007

System Center Configuration Manager (SCCM) 2007 is implemented to assist the organisation to better manage its Windows environment. This allows a centralised IT support team to be able to manage distributed users, assets and faults from a truly centralised location via remote IT support in terms of software installations and other desktop issues (discussed later in this chapter). A layered approach is used to define an SCCM hierarchical structure. By using a layered approach, information from the managed entity and SCCM infrastructure will flow upwards between layers and configuration data downwards through the layers. The central site layer contains the main administrative server at the top of the hierarchy and operates as a primary site, since it requires that child

sites are connected to it. SCCM 2007 can be configured to integrate with Active Directory allowing clients to be automatically assigned to sites and advanced clients can roam within the hierarchy and still be managed (Reddy, 2008).

Microsoft Systems Centre Operations Manager (SCOM) 2007

A Management Group is the basic functional unit of a System Centre Operations Manager implementation that can perform monitoring. Each Management Group contains a Microsoft SQL Server 2005 database server to host the Operations Manager database, a Root Management Server (RMS), one or more Operations Consoles, and the agents and other resources that are managed. It can also contain additional management servers and gateway servers, as well as Audit Collection Services (ACS) components. The Operations Manager 2007 system that is built within a management group becomes the Root Management Server (RMS). The RMS is the coordinator for health monitoring. As other management servers receive data from monitors within the management group, the RMS is responsible for validating all of the health criteria for distributed applications and services. This enables multiple management servers to receive data from all of the monitored systems within network whilst still monitoring end-to-end services simultaneously. It is important for the Operations Manager environment that adequate network connectivity is maintained for up to date and accurate error reporting. If not enough bandwidth is available, the Operations Manager agent on the monitored servers will cache the information (events, errors and performance data) until connectivity is restored. The level of availability that the defined monitoring solution requires depends on the organisation's needs. Overall availability is increased by redundancy. Thus, redundancy can require the "clustering" of applications and services to provide Central Processing Unit (CPU) redundancy, or the implementation of a Random Array of Independent Discs (RAID) solution in order to provide data redundancy (Ackerman, 2008).

Microsoft Identity Lifecycle Manager (ILM) 2007

A centralised identity lifecycle management system, represented by directory services, does not mean that all information will be contained in a central location, only that it will be

managed centrally. In a typical solution, different parts of an identity are managed by different groups within an organisation. Within DUT this is reflected through the management of staff and student records within the ITS repository, while physical resources access and collaboration is managed from the DUT IT Department. The solution for integrating the various sources of identity information found within DUT is to use a metadirectory product; in this case Microsoft Identity Lifecycle Manager 2007.

Metadirectories help create a singular view of isolated identity information stored in multiple stores. They pull user information from a variety of authoritative sources, such as Human Resources and accounting applications, e-mail directories, and Web server registration databases, and populate a directory to create this view. Most importantly, metadirectories synchronise the identity information that each authoritative source provides throughout the organisation. The capability to integrate identity information across multiple repositories, systems, and platforms is provided by Microsoft Identity Lifecycle Manager (ILM). This system allows integration of identity information from many different sources, whether they are e-mail or application directories, databases or structured text files (Steyn, 2008).

Microsoft Structured Query Language (SQL) 2005

The SQL database platform and associated infrastructure acts as the support infrastructure for MOSS, SCOM, SCCM and ILM. Its implementation focuses on providing high-availability in the production site, and facilitates disaster recovery through stand-alone Hyper-V hosted Windows servers that will be used to “Mount” the replicated SQL database copies at secondary sites, when the need arises (Martyn, 2008).

Microsoft ForeFront Client Security 2010

Microsoft Forefront is a family of line-of-business security software by Microsoft Corporation. Microsoft Forefront products are designed to help protect computer networks, network servers (such as MS Exchange and SharePoint Server) and individual devices. Client security provides three important functions:

- **Protection**—Client Security provides a single solution designed to help guard against emerging threats and other traditional attacks. Scans identify malware, such as spyware, rootkits, and viruses. Scans also assess your security state by checking for vulnerabilities such as missing software updates.
- **Control**—Client Security gives administrators the ability to determine the specific security configuration for client computers, including the frequency and type of scans, the default response to a specific threat, when to raise an alert, and how much control to give end users over scans.
- **Reporting**—Client Security prioritizes security issues by using detailed reports and alerts. Reports include current and historical trend information about threats, vulnerabilities, and computer details (<http://technet.microsoft.com/en-us/library/bb432630.aspx>).

Microsoft Suites and Applications

In computing, an office suite, sometimes called an office software suite or productivity suite, is a collection of productivity programs intended to be used by knowledge workers. The components are generally distributed together, have a consistent user interface and usually can interact with each other, sometimes in ways that the operating system would not normally allow. The MS Office Suite is a package of office productivity software released by Microsoft and is available for MS Windows and Macintosh operating systems. The latest versions of Microsoft Office Suite include MS Office 2007, 2010 and 2013 and 2008 for Mac. Over the years, Office applications have grown substantially closer with shared features such as a common spell checker and Visual Basic for Applications scripting language. MS also positions Office as a development platform for line-of-business software under the Office Business Applications brand. Office is reported to now be used by over a billion people worldwide (Elop, 2010).

Other desktop applications included in Microsoft Office suite include:

- MS Access: database manager for Windows;

- MS InfoPath: Windows application for designing and distributing rich XML-based forms;
 - MS Publisher: desktop publishing app mostly used for designing brochures, labels, calendars, greeting cards, business cards, newsletters, and postcards;
 - MS Lync: integrated communications client for conferences and meetings in real time (known as Microsoft Office Communicator in Office 2007, bundled with Professional Plus and Enterprise editions;
 - MS Project: project management software to keep track of events and to create network charts and Gantt charts, not bundled in any Office suite; and
 - MS Visio: diagram and flowcharting program not bundled in any Office suite.
- (Caposella, 2008)

APPENDIX A2: MODIFIED SERVQUAL INSTRUMENT

(Source : Parasuraman, Berry and Zeithaml, 1991)

Expectations Section

DIRECTIONS:

Based on your experiences as a customer of XYZ services, please think about the kind of service quality you would expect. Think about the kind of telephone company with which you would be pleased to do business. Please show the extent to which you think such XYZ would possess the feature described by each statement. If you feel a feature is *not at all essential* circle the number "1". If you feel a feature is *absolutely essential*, circle "7". If your feelings are less strong, circle one of the numbers in the middle. There are no right or wrong answers-all we are interested in is a number that truly reflects your feelings regarding XYZ that would deliver excellent quality of service.

Note: Each of the statements was accompanied by a 7-point scale anchored at the ends by the labels "Strongly Disagree" (= 1) and "Strongly Agree" (= 7). Intermediate scale points were not labeled. Also, the headings (TANGIBLES, RELIABILITY, etc.), shown here to indicate which statements fall under each dimension, were not included in the actual questionnaire.

TANGIBLES

- E1. XYZ has modern-looking equipment.
- E2. XYZ's physical facilities are visually appealing.
- E3. XYZ's employees are neat-appearing.
- E4. Materials associated with the service (such as pamphlets or statements) are visually appealing at XYZ.

RELIABILITY

- E5. When XYZ promises to do something by a certain time, it does so.
- E6. When you have a problem, XYZ shows a sincere interest in solving it.
- E7. XYZ performs the service right the first time.
- E8. XYZ provides its services at the time it promises to do so.
- E9. XYZ insists on error-free records.

RESPONSIVENESS

- E10. Employees of XYZ tell you exactly when services will be performed.
- E11. Employees of XYZ give you prompt service.
- E12. Employees of XYZ are always willing to help you.
- E13. Employees of XYZ are never too busy to respond to your requests.

ASSURANCE

- E14. The behavior of employees of XYZ instills confidence in customers.
- E15. You feel safe in your transactions with XYZ.
- E16. Employees of XYZ are consistently courteous with you.
- E17. Employees of XYZ have the knowledge to answer your questions.

EMPATHY

- E18 XYZ gives you individual attention.
- E19. XYZ has operating hours convenient to all its customers.
- E20 XYZ has employees who give you personal attention.
- E21 XYZ has your best interests at heart.
- E22. Employees of XYZ understand your specific needs.

Perceptions Section

DIRECTIONS:

The following set of statements relate to your feelings about XYZ service. For each statement, please show the extent to which you believe XYZ has the feature described by the statement. Once again, circling a "1" means that you strongly disagree that XYZ has that feature, and circling a "7" means that you strongly agree. You may circle any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers--all we are interested in is a number that best shows your perceptions about XYZ's service.

Note: Each of the statements was accompanied by a 7-point scale anchored at the ends by the labels "Strongly Disagree" (= 1) and "Strongly Agree" (= 7). Intermediate scale points were not labeled. Also, the headings (TANGIBLES, RELIABILITY, etc.), shown here to indicate which statements fall under each dimension, were not included in the actual questionnaire.

TANGIBLES

- PI. XYZ has modern-looking equipment.
- P2. XYZ's physical facilities are visually appealing.
- P3. XYZ's employees are neat-appearing.
- P4. Materials associated with the service (such as pamphlets or statements) are visually appealing at XYZ.

RELIABILITY

- P5. When XYZ promises to do something by a certain time, it does so.
- P6. When you have a problem, XYZ shows a sincere interest in solving it.
- P7. XYZ performs the service right the first time.
- P8. XYZ provides its services at the time it promises to do so.
- P9. XYZ insists on error-free records.

RESPONSIVENESS

- PI0. Employees of XYZ tell you exactly when services will be performed.
- P11. Employees of XYZ give you prompt service.
- P12. Employees of XYZ are always willing to help you.
- P13. Employees of XYZ are never too busy to respond to your requests.

ASSURANCE

- P14. The behavior of employees of XYZ instills confidence in customers.
- P15. You feel safe in your transactions with XYZ.
- P16. Employees of XYZ are consistently courteous with you.
- P17. Employees of XYZ have the knowledge to answer your questions.

EMPATHY

- P18. XYZ gives you individual attention.
- P19. XYZ has operating hours convenient to all its customers.
- P20. XYZ has employees who give you personal attention.
- P21. XYZ has your best interests at heart.
- P22. Employees of XYZ understand your specific needs.

APPENDIX B1



LETTER OF INFORMATION

DUT STAFF

Title of the Research Study:

Perceptions and expectations of Information Technology service delivery post migration to a Microsoft platform at a university of technology in South Africa

Principal Investigator/s/researcher:

Nerina Reddy, BTech : Information Technology

Co-Investigator/s/supervisor/s:

Professor Penny Singh : PhD : Professor D Petkov : PhD

Brief Introduction and Purpose of the Study:

The purpose of this study, is to investigate the quality of IT service delivery to DUT's full time academic and administrative staff, post-migration of Information Technology (IT) systems to a Microsoft platform. Staff perceptions and expectations will be determined with regard to: types and functions of Microsoft solutions being used by the DUT staff community and challenges faced; perceptions of the quality of IT service delivery offered by ITSS staff; ITSS management and specialists expectations and perceptions of the MS technologies on IT service delivery; and ITSS support staff perceptions on their client's (staff) needs and expectations.

Outline of the Procedures:

As a participant, you will be required to complete the questionnaire as honestly as possible. There is also an opportunity for you to provide further opinions in answering the two open-ended questions at the end of the questionnaire. Should you agree to a follow up interview, please complete section C of the questionnaire. This section will then be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure you anonymity. You will then be contacted and a mutually agreeable time and venue will be arranged. The purpose of this interview will be to collect further information if responses on the questionnaire are unclear. Please be advised that participation in this interview is also voluntary. (Please see Section C of the questionnaire).

The questionnaire consists of 8 pages in total (including interview consent) and an explanation of how to complete it is indicated on page 1. The responses to the questionnaires will be analysed using the SPSS (version 21) software and the follow up interviews (if required) will be transcribed verbatim and analysed using the latest version of NVIVO software. The results of the analyses will enable the researcher to put forward suggestions to ITSS management regarding IT service delivery quality based on how it is currently perceived and how it can be improved.

The questionnaire should take approximately 15 to 20 minutes to complete and the follow on interview (if you are willing to participate) should take about 15 minutes of your time (a date and time will be arranged as described above). You were selected as a participant using the appropriate method of sampling from the target population list as provided by the Management Information department (with prior permission gained from the Postgraduate Research Office, to access information). The primary target population (inclusion criteria) for this study is the full time academic and administrative staff on all the DUT Durban campuses (to which IT support is provided) and the exclusion criteria are the part time staff and students.

Please complete the questionnaire by the 8th August 2013 and return it to your departmental secretary from whom I will then collect all completed questionnaires. Once again, this process will ensure your anonymity and privacy.

Risks or Discomforts to the Participant:

There are no known or anticipated risks to you as a participant in this study.

Benefits:

The potential benefits of this study, to the participants and DUT as a whole, will be to derive a method of improving IT service quality as information provided on the questionnaires and in follow up semi-structured interviews, once analysed, will assist in improving this process.

The potential benefit to the researcher will be publications in accredited journals and conference papers.

Reason/s why the Participant May Be Withdrawn from the Study:

You may decide to withdraw from this study at any time, without any negative or adverse consequences, by advising the researcher, should you no longer wish to participate.

Costs of the Study:

As a participant, you will not be liable for any costs for this study nor will you receive any monetary compensation or any other remuneration

Confidentiality:

All information you provide is completely confidential. Your name will not appear in any thesis or report resulting from this study, however, with your permission anonymous quotations may be used. Only my supervisor, statistician and I will have access to the data you provide.

Persons to Contact in the Event of Any Problems or Queries:

Professor Penny Singh : Research Co-ordinator : Faculty of Accounting and Informatics.

Please contact the researcher (031 373 5657), my supervisor (031 373 5599) or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za.

General:

Participation in this study is voluntary. Further, you may withdraw from this study at any time without any negative consequences by advising the researcher. The number of participants in this study is approximately 300 DUT full time permanent and contact staff. I would like to assure you that this study has been reviewed and received ethics clearance from the Institutional Research Ethics Committee (IREC). However, the final decision regarding participation is yours. If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me on extension 5657 or by email at nerina@dut.ac.za. You can also contact my supervisor, Professor Penny Singh on extension 5599 or email her at pennysin@dut.ac.za. A copy of this letter will be provided to you.

APPENDIX B2



LETTER OF INFORMATION

ITSS STAFF

Title of the Research Study:

Perceptions and expectations of Information Technology service delivery post migration to a Microsoft platform at a university of technology in South Africa

Principal Investigator/s/researcher:

Nerina Reddy, BTech : Information Technology

Co-Investigator/s/supervisor/s:

Professor Penny Singh : PhD : Professor D Petkov : PhD

Brief Introduction and Purpose of the Study:

The purpose of this study is to investigate the quality of IT service delivery to DUT's full time academic and administrative staff, post-migration of Information Technology (IT) systems to a Microsoft platform. Staff perceptions and expectations will be determined with regard to: types and functions of Microsoft solutions being used by the DUT staff community and challenges faced; perceptions of the quality of IT service delivery offered by ITSS staff; ITSS management and specialists expectations and perceptions of the MS technologies on IT service delivery; and ITSS support staff perceptions on their client's (staff) needs and expectations.

Outline of the Procedures:

As a participant, you will be required to complete the questionnaire as honestly as possible. There is also an opportunity for you to provide further opinions in answering the two open-ended questions at the end of the questionnaire. Should you agree to a follow up interview, please complete section B of the questionnaire. This section will then be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure you anonymity. You will then be contacted and a mutually agreeable time and venue will be arranged. The purpose of this interview will be to collect further information if responses on the questionnaire are unclear. Please be advised that participation in this interview is also voluntary. (Please see Section B)

The questionnaire consists of 6 pages in total (including interview consent) and an explanation of how to complete it is indicated on page 1. The responses to the questionnaires will be analysed using the SPSS (version 21) software and the follow up interviews (if required) will be transcribed verbatim and analysed using the latest version of NVIVO software. The results of the analyses will enable the researcher to put forward suggestions to ITSS management regarding IT service delivery quality based on how it is currently perceived and how it can be improved.

The questionnaire should take approximately 10 to 15 minutes to complete and the follow up interview (if you are willing to participate) should take about 10 minutes of your time (a date and time will be arranged as described above). You were selected as a participant due to the fact that you offer IT support directly to the DUT community on the Durban campuses and the researcher felt that your opinions regarding your perception of your client's needs are vital to this study and could be invaluable in contributing to the above mentioned suggestions.

Please complete the questionnaire by the 8th August 2013 and return it to the ITSS departmental secretary from whom I will then collect all completed questionnaires. Once again, this process will ensure your anonymity and privacy.

Risks or Discomforts to the Participant:

There are no known or anticipated risks to you as a participant in this study.

Benefits:

The potential benefits of this study, to the participants and DUT as a whole, will be to derive a framework that will assist further in improving our IT service quality, as information provided on the questionnaires and in follow up semi-structured interviews, once analysed, will assist in this process.

The potential benefit to the researcher will be publications in accredited journals or conference papers.

Reason/s why the Participant May Be Withdrawn from the Study:

You may withdraw from this study at any time without any negative or adverse consequences by advising the researcher, should you no longer wish to participate.

Costs of the Study:

As a participant, you will not be liable for any costs for this study nor will you receive any monetary compensation or any other remuneration.

Confidentiality:

All information you provide is completely confidential and you will remain anonymous.

Your name will not appear in any thesis or report resulting from this study, however, with your permission anonymous quotations may be used. Only my supervisor, statistician and I will have access to the data you provide.

Persons to Contact in the Event of Any Problems or Queries:

Professor Penny Singh : Research Co-ordinator : Faculty of Accounting and Informatics.

Please contact the researcher (031 373 5657), my supervisor (031 373 5599) or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za.

General:

Participation in this study is voluntary. Further, you may withdraw from this study at any time without any negative consequences by advising the researcher. The number of participants in this study is approximately 300 DUT full time permanent and contact staff. I would like to assure you that this study has been reviewed and received ethics clearance from the Institutional Research Ethics Committee (IREC). However, the final decision regarding participation is yours. If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me on extension 5657 or by email at nerina@dut.ac.za. You can also contact my supervisor, Professor Penny Singh on extension 5599 or email her at pennysin@dut.ac.za. A copy of this letter will be provided to you.

APPENDIX C1



Structured Interview Schedule : ITSS Management

Key : R = researcher ITSS/M = ITSS Management

- 1) R : What was the reason for DUT migrating from a non-integrated to an integrated MS platform?

ITSS/M :

- 2) R : What were the initial issues/challenges faced by the ITSS department immediately after the migration to MS?

ITSS/M

- 3) R : Please describe how the ITSS management handled these issues/challenges?

ITSS/M

- 4) R : Please describe to the best of your knowledge, how the DUT staff community initially reacted to the idea of this changeover ? Why do you say so?

ITSS/M

- 5) R : What are your expectations and perceptions of the types of technologies that were chosen and implemented?

ITSS/M

- 6) R : In your opinion, how are these technologies meeting your expectations and perceptions in terms of the quality of IT service delivery by comparing the new MS platform to the previous system?

ITSS/M

- 7) R : What are your current expectations and perceptions in terms of how the MS technologies are affecting IT service delivery?

ITSS/M

- 8) R : What is your expectation and perception of the MS platform in terms of the manner in which IT services are now offered/delivered to the DUT staff community?

ITSS/M

- 9) R : What is your opinion on DUT staff perceptions regarding the quality of service currently received from the ITSS department?

ITSS/M

- 10) R : Do you think that the migration had a positive or negative impact on DUT staff in terms of the quality of IT services now offered as compared to prior to migrating to the MS platform? Please give reasons for your answer.

ITSS/M

- 11) R : What are some of the issues/problems that have been brought to your attention that staff currently face/have faced in using the MS solutions?

ITSS/M

- 12) R : What is your perception of the overall impact of the MS technologies/solution on the quality of IT service delivery ? Please elaborate.

ITSS/M

- 13) R : What are your expectations and perceptions in terms of areas of support/delivery that can possibly be improved further?

ITSS/M

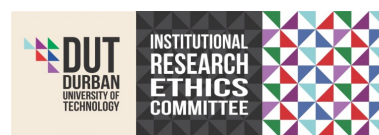
- 14) R : What suggestions for improvement would you propose?

ITSS/M

- 15) R : Is there any further comment you would like to make with regard to the quality of service delivery/support currently offered by the ITSS department to DUT staff?

ITSS/M

APPENDIX C2



Structured Interview Schedule : ITSS Specialists

Key : R = researcher ITSS/S = ITSS Specialist

- 16) R : What was the reason for DUT migrating from a non-integrated to an integrated MS platform?

ITSS/S

- 17) R : What were the initial issues/challenges you faced regarding the MS technology you manage, after the migration MS?

ITSS/S

- 18) R : Please describe how these were handled.

ITSS/S

- 19) R : Please describe to the best of your knowledge, how the DUT staff community initially reacted to the idea of this changeover ? Why do you say so?

ITSS/S

- 20) R : What are your expectations and perceptions of the types of technologies that were chosen and implemented?

ITSS/S

- 21) R : What were your expectations regarding the benefits of having implemented the various technologies and what are your current perceptions?

ITSS/S

- 22) R : In your opinion, how are these technologies meeting your expectations and perceptions in terms of the quality of IT service delivery by comparing the new MS platform to the previous system?

ITSS/S

- 23) R : What are your current expectations and perceptions in terms of how the MS technologies are affecting IT service delivery?

ITSS/S

- 24) R : Do you think that DUT staff are content with the current MS solutions that are being used almost on a daily basis? What are your perceptions in this regard?

ITSS/S

- 25) R : What is your expectation and perception of the MS platform in terms of the manner in which IT services are now offered/delivered to the DUT staff community?

ITSS/S

- 26) R : What are your expectations and perceptions with regard to how the MS technologies enable you to perform your required daily tasks to facilitate delivery of IT services?

ITSS/S

27) R : What is your opinion on DUT staff perceptions regarding the quality of service currently received from the ITSS department?

ITSS/S

28) R : Do you think that the migration had a positive or negative impact on DUT staff in terms of the quality of IT services now offered as compared to prior to migrating to the MS platform? Please give reasons for your answer.

ITSS/S

29) R : What are some of the issues/problems that have been brought to your attention that staff currently face/have faced in using the MS solutions?

ITSS/S

30) R : What is your perception of the overall impact of the MS technologies/solutions on the quality of IT service delivery ? Please elaborate.

ITSS/S

31) R : What are your expectations and perceptions in terms of areas of support/delivery that can possibly be improved further?

ITSS/S

32) R : What suggestions for improvement would you propose?

ITSS/S

33) R : Is there any further comment you would like to make with regard to the quality of service delivery/support currently offered by the ITSS department to DUT staff?

ITSS/S

APPENDIX C3



LETTER OF INFORMATION ITSS MANAGEMENT/ ITSS SPECIALISTS

Title of the Research Study:

Perceptions and expectations of Information Technology service delivery post migration to a Microsoft platform at a university of technology in South Africa

Principal Investigator/s/researcher:

Nerina Reddy, BTech : Information Technology

Co-Investigator/s/supervisor/s:

Professor Penny Singh : PhD : Professor D Petkov : PhD

Brief Introduction and Purpose of the Study:

The purpose of this study is to investigate the quality of IT service delivery to DUT's full time academic and administrative staff, post-migration of Information Technology (IT) systems to a Microsoft platform. Staff perceptions and expectations will be determined with regard to: types and functions of Microsoft solutions being used by the DUT staff community and challenges faced; perceptions of the quality of IT service delivery offered by ITSS staff; ITSS management and specialists expectations and perceptions of the MS technologies on IT service delivery; and ITSS support staff perceptions on their client's (staff) needs and expectations.

Outline of the Procedures:

Participation in this study is voluntary. Please answer all questions honestly and to the best of your knowledge. This process will involve an interview of approximately 40 minutes

duration and will take place in a mutually agreed upon location. You may decline to answer any of the interview questions if you so wish. With your permission, the interview will be audio recorded to facilitate collection of information, and later transcribed for analysis. The questions are based on various aspects of the migration to the MS platform, the technologies employed and their respective functions and your perceptions and expectations of the impact of these MS technologies on IT service delivery, since the migration.

I will send you a copy of the transcript to confirm the accuracy of our conversation and to add or clarify any points that you wish. You were selected to participate in this study as your managerial and/or specialist expertise in your various fields will allow the researcher to gather and analyse your responses and the results will contribute to suggestions that will be put forward to the ITSS directorate regarding further improvements, if any, regarding IT service delivery to the DUT staff community.

Risks or Discomforts to the Participant:

There are no known or anticipated risks to you as a participant in this study.

Benefits:

The potential benefits of this study, to the participants and DUT as a whole, will be to derive a method of improving IT service quality as information provided on the questionnaires and in follow up semi-structured interviews, once analysed, will assist in improving this process.

The potential benefit to the researcher will be publications in accredited journals and conference papers.

Reason/s why the Participant May Be Withdrawn from the Study:

You may withdraw from this study at any time without any negative or adverse consequences by advising the researcher, should you no longer wish to participate.

Costs of the Study:

As a participant, you will not be liable for any costs for this study nor will you receive any monetary compensation or any other remuneration.

Confidentiality:

All information you provide is completely confidential. Your name will not appear in any thesis or report resulting from this study, however, with your permission anonymous quotations may be used. Only my supervisor, statistician and I will have access to the data you provide.

Persons to Contact in the Event of Any Problems or Queries:

Professor Penny Singh : Research Co-ordinator : Faculty of Accounting and Informatics. Please contact the researcher (031 373 5657), my supervisor (031 373 5599) or the Institutional Research Ethics administrator on 031 373 2900.

Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za.

General:

Participation in this study is voluntary. Further, you may withdraw from this study at any time without any negative consequences by advising the researcher. The number of participants in this study is approximately 300 DUT full time permanent and contact staff. I would like to assure you that this study has been reviewed and received ethics clearance from the Institutional Research Ethics Committee (IREC). However, the final decision regarding participation is yours. If you have any questions regarding this study, or would like additional information to assist you in reaching a decision about participation, please contact me on extension 5657 or by email at nerina@dut.ac.za. You can also contact my supervisor, Professor Penny Singh on extension 5599 or email her at pennysin@dut.ac.za. A copy of this letter will be provided to you.



CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nerina Reddy about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: 035/13,
- I have also received, read and understood the above written information regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Please Tick

☐

I have read the consent form and hereby agree to participate in this study

I, Nerina Reddy herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Signature

Date

APPENDIX D



CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nerina Reddy about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: 035/13,
- I have also received, read and understood the above written information regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Please Tick

☐ I have read the consent form and hereby agree to participate in this study

I, Nerina Reddy herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Signature

Date

APPENDIX E



ITSS Service Quality Questionnaire for DUT Staff

Dear Client

Thank you for participating in this survey. This questionnaire pertains to the quality of service you receive from the DUT's Information Technology Support Services (ITSS) department. The survey consists of :

Section A : In this section there are **18 questions pertaining to you as the client and relates to your IT use and needs**. This section also contains three open-ended questions.

Section B : In this section there are **30 questions based on an amended SERVQUAL instrument and pertains to the support in terms of expectations and perceptions of the service received** . There are a further five open-ended questions allowing you the opportunity for further comments.

Section C : This is an optional section for those participants who wish to also participate in an interview if further information is required.

Please Note : . Please complete this questionnaire as accurately and honestly as possible. All data collected in this survey, will be treated with the utmost confidence, will be housed on a secure server and will be used solely for the purpose of this study.

Section A : Method to Answer :

Please select the most appropriate response by inputting required information or by marking with an X

1. Age (please select an option)

☐

< 20 years

☐

20 to < 30 years

☐

30 to < 40 years

☐

40 to < 50 years

☐

50 years +

2. Gender

Male

Female

3. Classification

Academic

Administrative

4. Number of years employed at DUT (please select an option)

☐ < 10 years ☐ 10 to < 20 years ☐ 20 to < 30 years ☐ 30 years +

5. Number of years using a PC at work (please select an option)

☐ < 5 years ☐ 5 to < 10 years ☐ 10 to < 20 years ☐ 20 years +

6. How many hours on average do you spend on your pc/laptop per day?

☐ 1 to < 4 hours ☐ 4 to < 8 hours ☐ 8 to < 12 hours ☐ 12 hours +

7. I use my pc/laptop at work primarily for (you may select more than one option)

☐ DUT work related matters ☐ Surfing the web ☐ Research ☐ Entertainment/personal ☐ Learning new applications

8. What Applications do you use on a daily basis (you may select more than one option)

EMAIL Applications : ☐ MS Outlook Email ☐ Gmail ☐ Other Email application

Productivity Software : ☐ MS Word ☐ MS PowerPoint ☐ Microsoft Excel ☐ MS Project ☐ MS Visio

☐ MS Publisher ☐ Adobe Professional ☐ SPSS ☐ Research related software

☐ Programme/subject specific software ☐ ITS

Web searches for work related purposes : ☐ Google ☐ Google Scholar ☐ Bing ☐ Other

Web searches for leisure : ☐ News ☐ Weather ☐ Entertainment ☐ Other

9. Indicate how often you request/require ITSS assistance/services (select one option only)

☐ Daily ☐ Weekly ☐ Monthly ☐ Annually ☐ Never

10. Please indicate how you most often log a call for ITSS support (select one option only)

☐ Telephonically ☐ Via email ☐ HEAT self-service facility via web ☐ Personally at the ITSS office

11. Please indicate how comfortable you feel with regard to using the ITSS support

☐ Very comfortable ☐ Comfortable ☐ Uncomfortable ☐ Very uncomfortable

If you selected the last option , please provide a reason : _____

12. If I experience IT related issues at work, I usually prefer to (select one option only)

☐ Log a call for support ☐ Try and solve the problem by myself

☐ Request assistance from a friend or colleague ☐ Browse the web for online solution

13. I would like to receive more support with regard to (you may select more than one option)

☐ Software applications ☐ Hardware issues ☐ Training ☐ None of the above ☐ All of the above

14. I gain most of my general pc/laptop knowledge via (you may select more than one option)

☐

ITSS support

☐

Training/workshops

☐

Trial and error

☐

Web resources

☐

Reading material

☐

Colleagues/friends

15. When I log a call for ITSS support, It is vital that the consultant (you may select more than one option)

☐

Explains the IT terminology regarding the issue at hand

☐

Is able to provide the required IT service

☐

Is efficient and effective in providing the service and resolving the issue at hand

☐

Maintains contact until problem is resolved

☐

Suggests/assists with alternate solutions to prevent downtime

☐

Provides prompt and reliable service

16. What is your opinion with regard to DUT migrating to a Microsoft (MS) platform?

Comment :

17. What challenges are you faced with, if any, with regard to using the MS solutions? Please explain with examples.

Comment :

18. What is your opinion on IT service delivery i.e. would you say that it has improved since migration to Microsoft? Please elaborate.

Comment :

Section B

Method to Answer

For each of the following statements, please indicate the level of service quality provided by the ITSS department, based on your experience as the client who receives this service. Please rate each service by placing a **tick (either next to or over the number)** in the appropriate box on the 5 point Likert scale, that truly reflect your feelings regarding ***expected service (what kind of service you expect to receive)*** and ***perceived service (what is your opinion/perception of the quality of the service you actually receive)*** in terms of ITSS service delivery. This section also contains four open-ended questions.

Key

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

Example

		How do you rate the service level you EXPECT?					How you rate the service level you ACTUALLY RECEIVE?				
		Strongly Disagree		Strongly Agree			Strongly Disagree		Strongly Agree		
1	The ITSS department is committed to good service	✓ 1	2	3	4	5	1	✓ 2	3	4	5
2	Services are provided timeously	1	2	✓ 3	4	5	1	2	3	✓ 4	5

			How do you rate the service level you EXPECT?					How you you rate the service level you ACTUALLY RECEIVE?				
			Strongly Disagree			Strongly Agree		Strongly Disagree			Strongly Agree	
Tangibles	19	The ITSS department has up-to-date equipment (IP telephones, netbooks, notebooks, printers, etc.) and software.	1	2	3	4	5	1	2	3	4	5
	20	The ITSS department's physical facilities are visually appealing and aligned with the type of services provided.	1	2	3	4	5	1	2	3	4	5
	21	The location of the ITSS offices are easily accessible.	1	2	3	4	5	1	2	3	4	5
	22	The ITSS department has visually appealing materials that aid in promoting/marketing ITSS services.	1	2	3	4	5	1	2	3	4	5
Reliability	23	The ITSS department is often reliable and accurate.	1	2	3	4	5	1	2	3	4	5
	24	The ITSS department provides its services effectively.	1	2	3	4	5	1	2	3	4	5
	25	The ITSS department provides its services timeously.	1	2	3	4	5	1	2	3	4	5
	26	The ITSS department's employees are trustworthy.	1	2	3	4	5	1	2	3	4	5
	27	I receive adequate support from the ITSS department to perform my tasks efficiently and effectively.	1	2	3	4	5	1	2	3	4	5
	28	The ITSS department keeps accurate records of the calls logged and completed.	1	2	3	4	5	1	2	3	4	5
Responsiveness	29	The ITSS department's employees are enthusiastic when providing the required IT service.	1	2	3	4	5	1	2	3	4	5
	30	The ITSS department's employees provide the required IT service in a professional manner.	1	2	3	4	5	1	2	3	4	5
	31	The ITSS department informs clients precisely when a service will be provided.	1	2	3	4	5	1	2	3	4	5
	32	The ITSS department's employees respond to logged calls timeously.	1	2	3	4	5	1	2	3	4	5
	33	The ITSS department's employees are able to resolve IT issues timeously.	1	2	3	4	5	1	2	3	4	5
	34	Employees of the ITSS department readily assist clients with IT related issues regarding personal equipment.	1	2	3	4	5	1	2	3	4	5
	35	I receive prompt service from The ITSS department's employees irrespective of their daily workload.	1	2	3	4	5	1	2	3	4	5
	36	Employees of the ITSS department know what my specific IT needs are.	1	2	3	4	5	1	2	3	4	5
	37	The ITSS department's employees show initiative or "go the extra mile" to assist its clients.	1	2	3	4	5	1	2	3	4	5
Assurance	38	The ITSS department's employees are always presentable and well -mannered when providing the required IT service.	1	2	3	4	5	1	2	3	4	5
	39	The ITSS staff are suitably qualified in their area of expertise which enables them to deliver quality IT support.	1	2	3	4	5	1	2	3	4	5
	40	Employees of The ITSS department are polite, courteous and helpful.	1	2	3	4	5	1	2	3	4	5
	41	The ITSS staff are competent in their area of expertise which enables them to provide quality IT service.	1	2	3	4	5	1	2	3	4	5
	42	The ITSS staff are very knowledgeable and confident regarding their respective areas of IT support.	1	2	3	4	5	1	2	3	4	5
	43	I feel self-assured and secure that my data will be protected in any transactions with the ITSS department's employees.	1	2	3	4	5	1	2	3	4	5
Empathy	44	The ITSS staff are sympathetic and reassuring when I am experiencing IT related problems.	1	2	3	4	5	1	2	3	4	5
	45	The ITSS department has my best interest at heart.	1	2	3	4	5	1	2	3	4	5
	46	The ITSS department conforms to convenient operating hours for their clients.	1	2	3	4	5	1	2	3	4	5
	47	The ITSS department always attempts to attend to my personal / individual needs.	1	2	3	4	5	1	2	3	4	5
	48	The ITSS department always makes their clients feel welcome.	1	2	3	4	5	1	2	3	4	5

49) What is your general opinion of ITSS services at DUT?

Comment :

50) What aspects of ITSS service delivery/support would you like to see improved?

Comment :

51) Do you feel that the ITSS department shows commitment in the quality of services provided?

Comment :

52) What is your opinion regarding the conduct of ITSS staff during service delivery?

Comment :

53) Do you think that further training should be provided for the ITSS support staff to improve their service delivery skills? Yes ☐ No ☐

Please give reasons for your answer :

APPENDIX G1

Section C : Contact Details

This section is completely optional

Please be advised that you are only required to complete this section if you are willing to participate in an interview. You will only be contacted for the interview if more information or clarity is required regarding your responses on this questionnaire.

Please rest assured that:

- The information you provide will remain completely confidential.
- Your personal details provided here will only be accessed by my supervisor and myself.
- This page will be removed from the main questionnaire before it is sent for analysis.

Name	
Email Address	
Contact number	

<p style="text-align: center;">Official Use Only</p> <p>Reference Number :</p>

Please note that this page will be removed before your questionnaire is sent for analysis
to ensure your anonymity and to keep your personal information confidential
THANK YOU FOR YOUR PARTICIPATION AND YOUR TIME IN COMPLETING THIS QUESTIONNAIRE

APPENDIX F



ITSS Staff Questionnaire

Dear ITSS Staff Member

Thank you for participating in this survey. This questionnaire is based on an amended SERVQUAL instrument (which used to measure service quality by a service provider/department such as ITSS). The first 25 questions pertain to **your perceptions of your client's needs (i.e. what is your opinion/view of the quality of the service you provide) and their expectations (what kind of service your clients expect) in terms of the quality of IT support/service provided.** Question 26 and 27 are an opportunity for you to add any further information which you, as a service provider, may feel is important. There is also an opportunity to provide further comments. Please rate each service according to your perception of their needs, by placing a **tick** in the appropriate box, on the 5 point Likert scale. Please complete this questionnaire as accurately and honestly as possible. Once again, please rest assured that you will remain completely anonymous and the feedback provided in this questionnaire will only be accessed by my supervisor and myself. Please complete Section B only if you are willing to participate in a follow up interview (completely voluntary) if further information may be required.

Section A : Please follow the example on how to answer the questions.

Key: 1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

No	Statement		1	2	3	4	5
1	My clients are happy with my service	My perception of clients' expectations	✓				
2	I have a friendly disposition with my clients	My perception of clients' expectations		✓			

No	Statement		1	2	3	4	5
Reliability : The ability to perform the promised service dependably and accurately							
1	I try to provide the best IT support to my clients as possible	My perception of clients' expectations					
2	My clients often expect me to offer the correct advice and support on any IT issue	My perception of clients' expectations					
3	My clients often expect me to go the "extra mile" to assist them above and beyond the initial problem at hand	My perception of clients' expectations					
4	My clients expect me to be trustworthy and dependable	My perception of clients' expectations					
5	My client expects me to be aware of the type of call logged i.e. the type of IT problem they are experiencing and how to resolve the call	My perception of clients' expectations					
6	My clients always expect me to resolve the issue timeously, accurately and efficiently	My perception of clients' expectations					
Responsiveness : Willingness to help customers and provide prompt service							
7	My clients are of the opinion that I am often well -mannered and professional when providing IT support	My perception of clients' expectations					
8	My clients expects me to inform them exactly when the service/support will be provided	My perception of clients' expectations					
9	My clients expects good turnaround time form the time the IT problem is logged to completion	My perception of clients' expectations					

No	Statement		1	2	3	4	5
10	My clients expect IT support with regards to their personal equipment	My perception of clients' expectations					
11	My clients expect me to always know what their IT needs are	My perception of clients' expectations					
Assurance : Knowledge, courtesy and ability of ITSS staff to convey trust and confidence							
12	My clients expect me to be professional, well-mannered and presentable when providing IT services	My perception of clients' expectations					
13	My clients expects me to be confident and knowledgeable in my area of IT expertise	My perception of clients' expectations					
14	My clients trust that they will always receive IT support/service regarding any IT related issues	My perception of clients' expectations					
15	My clients always expect to feel assured and confident that their data is secure and remains confidential while under my care	My perception of clients' expectations					
16	My clients expect me to be courteous and polite irrespective of whether support is offered remotely or onsite	My perception of clients' expectations					
Empathy : Providing caring, individualised service to customers							
17	My clients expect me to show empathy and reassurance when they are experiencing IT related issues	My perception of clients' expectations					
18	My clients expect me to have their best interest at heart	My perception of clients' expectations					

No	Statement		1	2	3	4	5
19	My client expects me to conform to what they perceive to be more suitable operating hours	My perception of clients' expectations					
20	My client always expects me to attend to their personal/individual IT related needs	My perception of clients' expectations					
21	My clients expect to feel welcome when they require IT support as a "walk in" customer not having initially logged a call	My perception of clients' expectations					
Tangibles : Appearance of physical facilities, equipment, personnel and communication materials							
22	My clients expect the ITSS department to have up to date equipment and software	My perception of clients' expectations					
23	My clients expect the ITSS department's physical facilities to be visually appealing and aligned with the type of services provided	My perception of clients' expectations					
24	My client expects me to be neat and presentable and my office/workspace to be tidy	My perception of clients' expectations					
25	My clients expect the ITSS department visually appealing materials that aid in promoting/marketing ITSS services	My perception of clients' expectations					

26	Please describe your perception/opinion is of the quality of IT support/service delivery you offer

27	Please describe your perception/opinion of any further expectations from your clients in terms of IT support/service delivery

Any other comments (positive or negative) that you would like to provide regarding ITSS service delivery:

APPENDIX G2

Section B: Contact Details

✳ **This section is completely optional**

Please be advised that you are only required to complete this section if you are willing to participate in an interview. You will only be contacted for the interview if more information or clarity is required regarding your responses on this questionnaire.

Please rest assured that:

- The information you provide will remain completely confidential.
- Your personal details provided here will only be accessed by my supervisor and myself.
- This page will be removed from the main questionnaire before it is sent for analysis.

Name	
Email Address	
Contact number	

<p style="text-align: center;">Official Use Only</p> <p>Reference Number :</p>

Please note that this page will be removed before your questionnaire is sent for analysis
to ensure your anonymity and to keep your personal information confidential
THANK YOU FOR YOUR PARTICIPATION AND YOUR TIME IN COMPLETING THIS QUESTIONNAIRE



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TECHNOLOGY

APPENDIX H1

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

5 May 2013

IREC Reference Number: REC 20/13

Ms N Reddy
8 Hasemere
245 Clark Road
Glenwood
4001

Dear Ms Reddy

Perceptions and expectations of Information Technology service delivery post migration to a Microsoft platform at a University of Technology in South Africa

I am pleased to inform you that Full Approval has been granted to your proposal REC 20/13.

The Proposal has been allocated the following Ethics Clearance number **IREC 035/13**. Please use this number in all communication with this office.

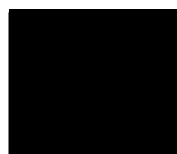
Approval has been granted for a period of one year, before the expiry of which you are required to apply for safety monitoring and annual recertification. Please use the Safety Monitoring and Annual Recertification Report form which can be found in the Standard Operating Procedures (SOP's) of the IREC. This form must be submitted to the IREC at least 3 months before the ethics approval for the study expires.

Any adverse events (serious or minor) which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC SOP's. In addition, you will be responsible to ensure gatekeeper permission.

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Please note that you may continue with validity testing and piloting of the questionnaire. Research on the proposed project may not proceed until IREC reviews and approves the final questionnaire.

Yours Sincerely



Dr D F Nause
Chairperson: IREC



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APPENDIX H2

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

20 June 2013

IREC Reference Number: **REC 20/13**

Ms N Reddy
8, Aslamere
246 Clark Road
Glenwood
4001

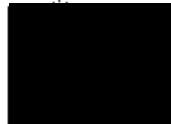
Dear Ms Reddy

Perceptions and expectations of Information Technology service delivery post migration to a Microsoft platform at a University of Technology in South Africa

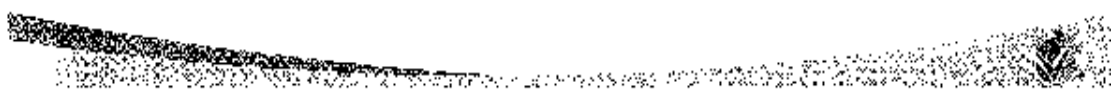
The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the questionnaire has been **APPROVED**; you may now proceed with data collection on the proposed project.

Yours Sincerely



Dr D. F. Naude
Chairperson: IREC



APPENDIX I1

Factor Analysis

Why is factor analysis important?

Factor analysis is a statistical technique whose main goal is data reduction. A typical use of factor analysis is in survey research, where a researcher wishes to represent a number of questions with a small number of hypothetical factors. For example, as part of a national survey on political opinions, participants may answer three separate questions regarding environmental policy, reflecting issues at the local, state and national level. Each question, by itself, would be an inadequate measure of attitude towards environmental policy, but *together* they may provide a better measure of the attitude. Factor analysis can be used to establish whether the three measures do, in fact, measure the same thing. If so, they can then be combined to create a new variable, a factor score variable that contains a score for each respondent on the factor. Factor techniques are applicable to a variety of situations. A researcher may want to know if the skills required to be a decathlete are as varied as the ten events, or if a small number of core skills are needed to be successful in a decathlon. You need not believe that factors actually exist in order to perform a factor analysis, but in practice the factors are usually interpreted, given names, and spoken of as real things.

Certain components divided into finer components. This is explained below in the rotated component matrix.

Coding Sheet

Tangibles	T1	The ITSS department has up-to-date equipment (IP telephones, netbooks, notebooks, printers, etc.) and software.
	T2	The ITSS department's physical facilities are visually appealing and aligned with the type of services provided.
	T3	The location of the ITSS offices are easily accessible.
	T3	The ITSS department has visually appealing materials that aid in promoting/marketing ITSS services.
Reliability	Rel1	The ITSS department is often reliable and accurate.
	Rel2	The ITSS department provides its services effectively.
	Rel3	The ITSS department provides its services timeously.
	Rel4	The ITSS department's employees are trustworthy.
	Rel5	I receive adequate support from the ITSS department to perform my tasks efficiently and effectively.
	Rel6	The ITSS department keeps accurate records of the calls logged and completed.
Responsiveness	Resp1	The ITSS department's employees are enthusiastic when providing the required IT service.
	Resp2	The ITSS department's employees provide the required IT service in a professional manner.
	Resp3	The ITSS department informs clients precisely when a service will be provided.
	Resp4	The ITSS department's employees respond to logged calls timeously.
	Resp5	The ITSS department's employees are able to resolve IT issues timeously.
	Resp6	Employees of the ITSS department readily assist clients with IT related issues regarding personal equipment.
	Resp7	I receive prompt service from The ITSS department's employees irrespective of their daily workload.
	Resp8	Employees of The ITSS department do not know what my specific IT needs are.
	Resp9	The ITSS department's employees show initiative or "go the extra mile" to assist its clients.
Assurance	A1	The ITSS department's employees are always presentable and well -mannered when providing the required IT service.
	A2	The ITSS staff are suitably qualified in their area of expertise which enables them to deliver quality IT support.
	A3	Employees of The ITSS department are polite, courteous and helpful.
	A4	The ITSS staff are competent in their area of expertise which enables them to provide quality IT service.
	A5	The ITSS staff are very knowledgeable and confident regarding their respective areas of IT support.
	A6	I feel self-assured and secure that my data will be protected in any transactions with the ITSS department's employees.
Empathy	E1	The ITSS staff are sympathetic and reassuring when I am experiencing IT related problems.
	E2	The ITSS department has my best interest at heart.
	E3	The ITSS department does not conform to convenient operating hours for their clients.
	E4	The ITSS department always attempts to attend to my personal / individual needs.
	E5	The ITSS department always makes their clients feel welcome.

		Expectations					Perceptions				
		Component					Component				
		1	2	3	4	5	1	2	3	4	5
Tangibles	T1	.330	.273	.590	.274	.038	.300	.134	.225	.686	.088
	T2	.197	.149	.745	.178	.247	.192	.134	.076	.866	.125
	T3	.240	.184	.736	.241	.134	.114	.157	.309	.659	.169
	T3	.154	.220	.761	.104	.333	.020	.182	.174	.746	.180
Reliability	Rel1	.489	.263	.541	.420	.056	.279	.206	.727	.256	.274
	Rel2	.631	.171	.499	.342	.065	.257	.201	.689	.243	.350
	Rel3	.548	.183	.488	.436	.008	.251	.295	.617	.232	.367
	Rel4	.525	.278	.493	-.011	.295	.285	.189	.603	.222	.196
	Rel5	.657	.247	.407	.163	.170	.417	.193	.392	.136	.553
	Rel6	.461	.099	.329	.236	.552	.208	.128	.283	.086	.620
Responsiveness	Resp1	.590	.159	.193	.443	.412	.348	.205	.287	.203	.609
	Resp2	.544	.162	.104	.459	.400	.429	.155	.198	.231	.585
	Resp3	.253	.243	.367	.710	.163	.221	.430	-.009	.327	.565
	Resp4	.316	.315	.302	.660	.193	.110	.487	.313	.203	.537
	Resp5	.489	.197	.307	.444	.317	.147	.474	.506	.203	.335
	Resp6	.069	.338	.296	.079	.727	.034	.701	.252	.079	.193
	Resp7	.330	.394	.275	.313	.496	.119	.615	.333	.166	.356
	Resp8	.183	.692	.242	-.053	.247	.236	.584	.230	.286	.187
	Resp9	.501	.608	.237	.111	.111	.425	.498	.506	.110	.118
Assurance	A1	.680	.421	.158	.100	.132	.468	.328	.558	.198	.001
	A2	.770	.269	.216	.226	.048	.674	.349	.300	.137	.143
	A3	.747	.265	.175	.275	.221	.739	.090	.255	.052	.343
	A4	.749	.266	.230	.252	.110	.797	.132	.218	.159	.281
	A5	.802	.284	.218	.145	.151	.789	.125	.257	.174	.233
	A6	.510	.459	.341	.244	.115	.539	.411	.180	.228	.147
Empathy	E1	.473	.624	.163	.318	.121	.558	.517	.140	.165	.169
	E2	.334	.692	.238	.291	.002	.539	.499	.204	.205	.231
	E3	.297	.571	.228	.562	.057	.425	.577	-.004	.319	.208
	E4	.128	.675	.129	.215	.305	.420	.661	.185	.054	-.019
	E5	.352	.655	.138	.385	.163	.558	.502	.173	.267	.254

With reference to the tables above:

- The principle component analysis was used as the extraction method, and the rotation method was Varimax with Kaiser Normalization. This is an orthogonal rotation method that minimizes the number of variables that have high loadings on each factor. It simplifies the interpretation of the factors.
- Factor analysis/loading show inter-correlations between variables.
- Items of questions that loaded similarly imply measurement along a similar factor. An examination of the content of items loading at or above 0.5 (and

using the higher or highest loading in instances where items cross-loaded at greater than this value) effectively measured along the various components.

It is noted that the variables that constituted certain sections loaded perfectly along one factor (colour code is the same down a column). This means that the statements (variables) that constituted this component perfectly measured the component. That is, the component measured what it was that was meant to be measured. The component for Tangibles for both Expectations and Perceptions did this.

Other variables split amongst components (notably Responsiveness) across various components or sub-themes (as indicated by the colour coding). Amongst the reasons for this are ambiguity or misinterpretations of the variables by the respondents. Individual component factor analysis yields perfect loading per component, indicating a fairly accurate measure of the components.

APPENDIX I2

CLIENT QUESTIONNAIRE : FACTOR ANALYSIS COMPONENT MATRICES

Component Matrix^a

Reliability	Component
	1
I try to provide the best IT support to my clients as possible	.932
My clients are very satisfied with the quality of IT support I provide and often expect me to offer the correct advice and support on any IT issue	.939
My clients often expect me to go the “extra mile” to assist them above and beyond the initial problem at hand	.975
My clients expect me to be trustworthy and dependable	.968
My client expects me to be aware of the type of call logged indicating the type of IT problem they are experiencing and how to resolve the call	.950
My clients always expect me to resolve the issue timeously, accurately and efficiently	.887

Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Responsiveness	Component
	1
My client is of the opinion that I am often well -mannered and professional when providing IT support	.894
My clients expects me to inform him/her exactly when the service/support will be provided	.970
My clients expects good turnaround time form the time the IT problem is logged to completion	.971
My clients expect IT support with regards to their personal equipment	.881
My clients expect me to always know what their IT needs are	.853

Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Assurance	Component
	1
My clients expect me to be professional, well-mannered and presentable when providing IT services	.946
My clients expects me to be confident and knowledgeable in my area of IT expertise	.965
My clients trust that they will always receive IT support/service regarding any IT related issues	.971
My clients always expect to feel assured and confident that their data is secure and remains confidential while under my care	.961
My clients expect me to be courteous and polite irrespective of whether support is offered remotely or onsite	.960

Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Empathy	Component
	1
My client expects me to show empathy and reassurance when they are experiencing IT related issues	.906
My clients expect me to have their best interest at heart	.953
My client expects me to conform to what they perceive to be more suitable Operating hours	.928
My client always expects me to attend to their personal/individual IT related needs	.924
My clients expect to feel welcome when they require IT support as a “walk in” customer not having initially logged a call	.966

Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Tangibles	Component
	1
My clients expect the ITSS department to have up to date equipment and software	.967
My clients expect the ITSS department's physical facilities to be visually appealing and aligned with the type of services provided	.949
My client expects me to be neat and presentable and my office/workspace to be tidy	.926
My clients expect the ITSS department visually appealing materials that aid in promoting/marketing ITSS services	.772

Extraction Method: Principal Component Analysis. a. 1 components extracted.

ITSS STAFF QUESTIONNAIRE: COMPONENT MATRICES

Component Matrix^a

Reliability	Component
	1
I try to provide the best IT support to my clients as possible	.932
My clients are very satisfied with the quality of IT support I provide and often expect me to offer the correct advice and support on any IT issue	.939
My clients often expect me to go the “extra mile” to assist them above and beyond the initial problem at hand	.975
My clients expect me to be trustworthy and dependable	.968
My client expects me to be aware of the type of call logged indicating the type of IT problem they are experiencing and how to resolve the call	.950
My clients always expect me to resolve the issue timeously, accurately and efficiently	.887

Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Responsiveness	Component
	1
My client is of the opinion that I am often well -mannered and professional when providing IT support	.894
My clients expects me to inform him/her exactly when the service/support will be provided	.970
My clients expects good turnaround time form the time the IT problem is logged to completion	.971
My clients expect IT support with regards to their personal equipment	.881
My clients expect me to always know what their IT needs are	.853

Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Assurance	Component
	1
My clients expect me to be professional, well-mannered and presentable when providing IT services	.946
My clients expects me to be confident and knowledgeable in my area of IT expertise	.965
My clients trust that they will always receive IT support/service regarding any IT related issues	.971
My clients always expect to feel assured and confident that their data is secure and remains confidential while under my care	.961
My clients expect me to be courteous and polite irrespective of whether support is offered remotely or onsite	.960

Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Empathy	Component
	1
My client expects me to show empathy and reassurance when they are experiencing IT related issues	.906
My clients expect me to have their best interest at heart	.953
My client expects me to conform to what they perceive to be more suitable Operating hours	.928
My client always expects me to attend to their personal/individual IT related needs	.924
My clients expect to feel welcome when they require IT support as a “walk in” customer not having initially logged a call	.966

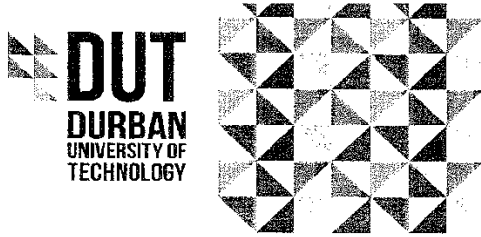
Extraction Method: Principal Component Analysis. a. 1 components extracted.

Component Matrix^a

Tangibles	Component
	1
My clients expect the ITSS department to have up to date equipment and software	.967
My clients expect the ITSS department's physical facilities to be visually appealing and aligned with the type of services provided	.949
My client expects me to be neat and presentable and my office/workspace to be tidy	.926
My clients expect the ITSS department visually appealing materials that aid in promoting/marketing ITSS services	.772

Extraction Method: Principal Component Analysis. a. 1 components extracted.

APPENDIX J1



Thursday, 21 February 2013

TO WHOM IT MAY CONCERN

Please be advised that **Ms Nerina Reddy (student number : 19152533)** is currently registered for the MTech degree in Information Technology. Her topic of research is :

Quality of Information Technology service delivery post migration to a Microsoft platform at a university of technology in South Africa.

This letter serves to confirm that she is officially granted permission by the Information Technology Support Services (ITSS) department, in which she is employed, to conduct this study/research.

Yours faithfully

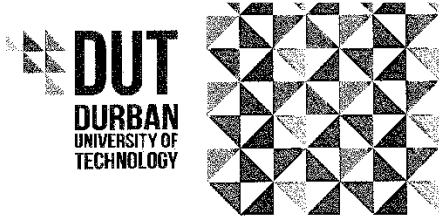


Mr Dilip D Jeena

Acting Director : ITSS Department

Durban University of Technology

APPENDIX J2



*Directorate for Research and Postgraduate Support
Durban University of Technology
Tromso Annexe, Steve Biko Campus
P.O. Box 1334, Durban 4000
Tel.: 031-3732576/7
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E-mail: moyos@dut.ac.za*

11th April 2013

Mr R Naicker
c/o Department of Management Information

Dear Mr Naicker

PERMISSION TO ACCESS INFORMATION FOR RESEARCH AT THE DUT

Ms Nerina Reddy (student number: 19152533) is currently working on her research proposal for an MTECH in Information Technology. She has been granted permission to access information for research purposes at the DUT.

Kindly grant her access to the following information:

1. A list of names of full time permanent and contract academic and administrative staff per department, per Durban campus.

Kindest regards.
Yours sincerely


PROF. S. MOYO
DIRECTOR: RESEARCH AND POSTGRADUATE SUPPORT

APPENDIX K

Pearson Chi-Square Tests

	Age	Gender	Classification	years emp	years only	age do you	Email	Productivity	Web work	Web Lethargy	perceived	in front	by	you feel	with	issues at	regard to	Comments	h. Freq. with	self you say	Comments
The ITSS department has up-to-date equipment (IP telephones, webcams, etc.)	0.451	.007*	0.152	0.847	0.067	0.418	0.219	0.78	0.255	0.594	0.398	0.875	.029*	0.814	.005*	0.876	0.146	0.796	0.756		
The ITSS department's physical facilities are visually appealing and aligned with the location of the ITSS offices are easily accessible.	0.586	0.096	0.117	0.285	.038*	0.185	0.342	0.215	0.74	0.229	0.909	0.250	0.596	0.59	0.199	0.822	0.822	0.055	0.919		
The ITSS department has visually appealing materials that aid in promoting services.	0.924	.002*	0.122	0.459	0.11	0.388	0.179	0.787	0.573	0.222	.019*	0.39	.001*	0.555	.000*	0.919	.012*	.000*	0.724		
Expectations A23-A45	0.968	0.129	0.102	0.778	0.412	0.298	.019*	0.82	0.38	0.462	0.807	0.798	0.132	0.437	0.456	0.804	0.986	.038*	0.915		
The ITSS department provides services effectively.	0.437	.046*	.002*	0.135	0.258	0.358	0.828	0.2	0.818	.000*	0.077	.000*	0.863	.000*	0.321	0.214	.001*	.000*	0.888		
The ITSS department provides services timely.	0.863	0.062	0.283	.018*	0.271	.000*	0.877	0.148	0.84	0.332	0.243	.000*	.000*	0.788	.000*	.040*	.000*	.000*	0.901		
The ITSS department's employees are trustworthy.	0.866	.002*	0.728	0.129	0.428	0.257	0.194	0.24	0.929	0.259	0.096	.041*	.015*	0.81	.000*	0.42	.002*	0.196	0.906		
I receive adequate support from the ITSS department to perform my tasks effectively.	0.404	0.177	0.845	0.155	0.384	0.214	0.808	0.576	0.715	0.174	0.363	0.886	0.348	0.209	0.109	0.822	0.138	.000*	0.59		
The ITSS department keeps accurate records of the calls logged and complete.	0.106	0.878	0.861	0.408	0.217	0.197	0.968	0.221	0.85	0.089	0.146	0.412	.008*	0.229	.019*	0.391	0.317	.038*	0.862		
The ITSS department's employees are enthusiastic when providing the required service.	0.236	0.206	0.408	0.972	.024*	.000*	0.515	0.456	0.413	0.377	0.759	0.403	.023*	.009*	.009*	0.966	0.131	.000*	0.389		
The ITSS department's employees are helpful when providing the required service.	0.183	0.057	0.89	0.941	.007*	0.448	0.963	0.129	0.572	0.252	0.354	0.292	.008*	.009*	.019*	0.960	0.209	.001*	0.8		
The ITSS department's employees provide the required IT service in a professional manner.	0.437	0.07	0.145	0.278	0.195	0.88	0.768	0.802	.002*	0.408	0.211	0.847	.008*	0.639	.028*	0.808	0.481	.005*	0.189		
The ITSS department informs clients precisely when a service will be provided.	0.847	0.083	0.181	0.313	0.309	0.401	0.89	0.347	0.489	0.947	.013*	.047*	.000*	0.7	.000*	0.344	.012*	.012*	0.771		
The ITSS department's employees respond to logged calls timely.	0.351	0.345	0.078	0.293	0.133	0.306	0.060	0.882	0.380	0.386	0.446	0.055	.013*	0.17	0.427	.009*	0.908	.040*	0.821		
The ITSS department's employees are able to resolve IT issues timely.	0.742	0.282	0.082	0.9	0.795	0.489	0.138	0.821	0.306	.038*	0.869	0.85	.044*	0.581	0.408	0.573	0.963	.048*	0.471		
Employees of the ITSS department readily assist clients with IT related issues in a timely manner.	0.437	0.849	0.885	0.123	.028*	0.578	0.861	0.892	0.67	.021*	0.907	0.395	0.264	0.365	0.888	0.826	0.583	.000*	0.275		
The ITSS department's employees are knowledgeable and confident regarding their respective areas of expertise.	0.809	0.418	0.385	0.796	0.218	0.209	0.358	0.755	0.877	0.573	0.8	0.58	.018*	0.49	0.388	0.852	0.133	.001*	0.453		
Employees of the ITSS department do not know what my specific IT needs are.	0.42	0.407	0.578	0.812	0.671	0.886	0.891	0.843	0.943	0.907	0.51	0.87	0.447	0.186	0.163	0.871	0.251	.001*	0.54		
The ITSS department's employees show initiative or "go the extra mile" to assist clients.	0.548	0.207	0.878	0.132	0.341	0.783	0.308	0.783	.024*	.000*	0.823	0.097	.031*	0.643	.000*	0.752	.000*	.002*	0.872		
The ITSS staff are suitably qualified in their area of expertise which enables them to provide the required service.	0.059	0.807	0.833	0.47	0.188	0.84	0.194	0.912	.008*	.009*	0.157	0.157	0.582	0.182	0.082	0.857	.019*	.000*	0.421		
Employees of the ITSS department are polite, courteous and helpful.	0.917	0.17	0.323	.027*	0.175	0.685	0.48	0.704	0.705	.000*	0.478	0.073	0.172	0.306	.000*	0.216	.001*	0.081	0.885		
The ITSS staff are competent in their area of expertise which enables them to provide the required service.	0.542	0.184	0.085	0.273	0.317	0.855	0.358	0.596	0.595	0.215	0.283	0.273	.008*	0.09	.001*	0.58	0.186	.002*	0.449		
The ITSS staff are very knowledgeable and confident regarding their respective areas of expertise.	0.971	0.073	0.83	0.336	0.519	0.503	0.188	0.744	0.422	0.125	0.816	0.098	.003*	0.532	.000*	0.481	.000*	.033*	0.521		
The ITSS staff are very knowledgeable and confident regarding their respective areas of expertise.	0.874	0.193	0.783	0.196	0.467	0.418	0.767	0.591	0.788	0.065	0.584	0.523	.022*	0.071	.038*	0.487	0.306	.008*	0.581		
I feel self-assured and secure that my data will be protected in any transactions.	0.403	0.207	0.886	0.228	0.072	0.587	0.83	0.877	0.089	.042*	0.717	0.338	0.123	0.185	.001*	0.196	.009*	0.239	0.796		
The ITSS staff are sympathetic and reassuring when I am experiencing IT related issues.	0.915	0.18	0.882	0.815	0.073	0.977	0.861	0.961	0.925	0.214	.000*	0.927	.000*	0.254	0.28	0.815	0.474	.002*	0.278		
The ITSS department has my best interest at heart.	0.977	0.398	0.784	0.472	0.718	0.797	0.964	0.843	0.974	0.512	.001*	0.123	.002*	0.386	.000*	0.476	.005*	0.214	0.679		
The ITSS department does not conform to convenient operating hours for their clients.	0.423	.024*	0.128	0.087	0.061	0.697	0.958	0.817	0.478	0.471	0.151	0.091	.001*	0.701	.002*	0.176	0.33	.040*	0.582		
The ITSS department always attempts to attend to my personal / individual needs.	0.583	0.074	0.885	0.248	.028*	0.87	0.2	0.809	0.282	0.288	0.819	0.105	.008*	0.83	0.78	0.829	0.075	0.238	0.549		
The ITSS department always makes their clients feel welcome.	0.878	0.589	0.782	0.701	0.25	0.488	0.434	0.881	0.882	.019*	0.124	0.857	.024*	.012*	0.367	0.228	0.187	0.421	0.388		
The ITSS department has up-to-date equipment (IP telephones, webcams, etc.)	0.178	0.783	.028*	0.702	0.303	0.744	0.221	0.884	0.28	0.511	0.803	0.825	.003*	0.537	0.837	0.812	0.345	0.072	0.488		
The ITSS department's physical facilities are visually appealing and aligned with the location of the ITSS offices are easily accessible.	0.968	0.138	0.088	0.289	0.108	0.859	0.383	0.915	0.54	0.571	0.225	0.181	.013*	0.128	0.842	0.258	0.518	.005*	0.5		
The ITSS department has visually appealing materials that aid in promoting services.	0.156	.021*	0.472	0.912	0.87	0.544	0.808	0.703	0.757	0.483	0.481	0.723	.008*	0.138	0.544	0.448	.001*	.012*	0.888		
The ITSS department provides services effectively.	0.768	0.182	0.076	0.196	0.818	0.453	0.864	0.488	0.407	0.277	0.92	0.285	.003*	0.388	0.418	0.84	0.806	.001*	0.498		
The ITSS department is often reliable and accurate.	.004*	0.389	0.149	0.281	0.325	0.938	0.985	0.585	0.901	0.299	0.112	0.718	.000*	0.808	0.184	0.882	0.725	.012*	0.402		
The ITSS department provides services timely.	0.295	0.828	.008*	0.272	0.471	0.8	0.753	0.222	0.412	0.422	0.754	0.879	.000*	0.309	0.54	.048*	0.983	.014*	0.848		
The ITSS department's employees are trustworthy.	0.409	0.207	0.183	0.485	0.142	0.453	0.14	0.127	0.808	0.218	0.754	0.279	.000*	0.081	0.105	0.535	0.773	.003*	0.894		
I receive adequate support from the ITSS department to perform my tasks effectively.	0.077	0.818	0.127	0.458	0.475	0.753	0.888	.028*	0.051	0.903	0.814	0.824	.001*	.009*	.001*	.067	.017*	.000*	0.778		
The ITSS department keeps accurate records of the calls logged and complete.	0.06	0.954	0.132	0.185	0.529	0.458	0.738	0.581	0.149	0.581	0.819	0.888	.000*	0.114	0.378	0.082	0.582	.003*	0.837		
The ITSS department's employees are enthusiastic when providing the required service.	0.588	0.27	0.187	0.108	0.576	.011*	0.137	0.759	0.983	0.235	0.901	0.42	.000*	0.288	.009*	0.153	.037*	.027*	0.806		
The ITSS department's employees provide the required IT service in a professional manner.	0.833	0.882	0.247	0.881	0.18	0.914	0.242	0.217	0.274	.042*	0.743	0.985	.000*	0.538	0.825	0.333	0.67	.034*	0.817		
The ITSS department informs clients precisely when a service will be provided.	0.354	0.933	0.884	0.729	0.554	0.437	0.978	0.257	0.858	0.155	0.18	0.928	.000*	0.315	0.117	.000*	0.486	.002*	0.349		
The ITSS department's employees respond to logged calls timely.	0.079	0.488	0.371	0.198	0.583	0.83	0.911	0.427	0.886	0.254	0.389	0.843	.000*	.018*	0.585	0.075	0.483	0.238	0.68		
The ITSS department's employees are able to resolve IT issues timely.	0.225	0.777	0.288	0.389	0.147	0.35	0.821	0.889	0.383	.041*	0.43	0.885	.000*	0.315	0.74	.000*	0.882	0.31	0.577		
Employees of the ITSS department readily assist clients with IT related issues in a timely manner.	0.137	0.449	0.483	0.24	.041*	.087	0.887	0.432	0.829	0.083	.020*	0.888	.000*	0.718	0.545	0.174	0.187	.025*	0.71		
The ITSS department's employees are knowledgeable and confident regarding their respective areas of expertise.	0.384	0.789	0.147	.009*	0.881	.047*	0.575	0.34	0.883	0.151	0.438	0.482	.003*	0.489	0.223	0.051	0.888	.049*	0.513		
Employees of the ITSS department do not know what my specific IT needs are.	0.843	.028*	0.138	0.835	0.801	.019*	0.985	0.828	0.398	0.833	0.28	0.912	.000*	0.383	0.318	0.087	0.142	.039*	0.797		
The ITSS department's employees show initiative or "go the extra mile" to assist clients.	0.842	0.38	.002*	0.432	0.791	0.419	0.488	0.254	0.885	0.913	0.089	0.583	.001*	0.544	0.41	0.819	0.375	.087	0.897		
The ITSS department's employees are helpful when providing the required service.	0.142	0.945	0.117	0.289	0.863	0.881	0.305	0.182	0.87	0.143	0.57	0.972	.000*	0.372	0.327	0.151	0.589	.048*	0.773		
The ITSS department's employees are able to resolve IT issues timely.	0.173	0.808	0.185	0.735	0.464	0.23	0.295	0.2	0.846	0.28	0.288	0.973	.000*	0.128	0.85	0.379	0.588	0.089	0.798		
The ITSS staff are suitably qualified in their area of expertise which enables them to provide the required service.	0.488	0.123	0.054	0.405	0.053	0.133	0.054	0.588	0.882	0.082	0.286	0.85	.000*	0.081	.011*	0.349	0.837	0.18	0.588		
Employees of the ITSS department are polite, courteous and helpful.	.000*	0.827	0.988	0.342	0.183	.028*	.042*	.015*	0.51	0.889	0.837	.000*	.019*	0.819	.001*	0.254	0.15	0.485	0.584		
The ITSS staff are competent in their area of expertise which enables them to provide the required service.	.002*	0.547	0.13	0.833	0.157	0.44	0.218	.024*	0.429	0.059	0.84	0.85	.000*	0.619	.010*	.001*	0.254	0.15	0.485		
The ITSS staff are very knowledgeable and confident regarding their respective areas of expertise.	.001*	0.722	0.187	0.32	0.184	0.288	0.388	0.07	0.648	0.339	0.458	0.884	.000*	0.783	.000*	.000*	.041*	.002*	0.285		
I feel self-assured and secure that my data will be protected in any transactions.	0.898	0.544	.002*	0.159	0.888	0.252	0.721	0.108	0.219	0.189	0.212	.014*	.000*	0.348	.000*	.012*	.000*	.038*	0.242		
The ITSS staff are sympathetic and reassuring when I am experiencing IT related issues.	0.445	0.883	.024*	0.548	0.859	0.218	0.827	0.142	0.887	0.294	.000*	0.498	.000*	.005*	.008*	.004*	0.888	.048*	0.807		
The ITSS department has my best interest at heart.	0.882	0.512	.004*	0.223	0.377	0.317	0.544	0.381	0.483	0.278	.000*	0.818	.000*	0.289	.017*	0.741	0.828	0.171	0.534		
The ITSS department does not conform to convenient operating hours for their clients.	0.149	0.859	0.875	0.286	0.429	0.481	0.888	0.381	0.318	0.053	0.881	0.304	.003*	0.129	0.862	0.843	0.988	0.281	0.78		

Wilcoxon Signed Ranks Test

a. Wilcoxon signed rank Test
b. Based on positive ranks.