

Adoption of IT Systems by HR Professionals in order to enhance efficacy at the University of Fort Hare

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2010

DECLARATION AND COPYRIGHT

ADOPTION OF IT SYSTEMS BY HR PROFESSIONALS IN ORDER TO ENHANCE EFFICACY AT THE UNIVERSITY OF FORT HARE

I, Nolufefe Ngqubekile, hereby declare that this dissertation, which I have submitted for the Masters of Commerce: Information Systems degree, at the University of Fort Hare, is my own original work, that all sources used or quoted have been indicated and acknowledged by means of a comprehensive list of references, and that this dissertation was not previously submitted by me for a degree at another technikon or university.

Signature: _____

Date: _____

DEDICATION

This study is dedicated to my children, Vizikhungo and Qhawe. I love you my two little blessings and thank you for sacrificing our quality time without complaining.

This study is also dedicated to my fiancé, Xolani Ali. Thank you for always believing in me and encouraging me to achieve even more in life than what I thought possible. Your understanding through the long hours of hard work, your motivation in times when I was demotivated, and the love you have always shown me, mean more than words can say.

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ABSTRACT

This study seeks to address the adoption of Integrated Tertiary Software (ITS), ease of use of ITS and continuous usage in Human Resources Departments. The focus of this research project is User Acceptance and Continued Use of ITS within the HR Department - the case of Fort Hare University. The University is a multi - campus operation and the use of paper systems is extremely difficult. The University made a decision to invest in ITS with the objective of improving effectiveness and efficiency of services.

The nature of the problem is that ITS is partially used and it is necessary to further explore the specific influence of technological and environmental factors that may change the user's acceptance and use of this IT System. The nature of this study is Qualitative and follows an Interpretive Approach. The Research Instrument used is an in-depth questionnaire distributed and responded to by all HR Professionals at the UFH. Recommendations based on findings will be used to design the Critical Success Factors (CSFs) for the Adoption of IT Systems by HR Professionals in order to enhance efficacy at the University of Fort Hare. The CSFs can be generalized to other settings and were identified for the UFH HR Department to include:

- Implement Institutional Policies and Standardised Procedures
- Data Management
- Compulsory ITS Semester Orientation
- Monitoring and Evaluation
- Management of Change
- Communication Strategy
- Project Advocate / Champion
- Project Management
- Top Management Intervention including Technical Support

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LIST OF ACRONYMS

ASU	Actual System Use
ATU	Attitude Towards Using
BI	Behavioural Intention
CMT	Critical Mass Theory
CIOs	Chief Information Officers
CS	Computer Skills
CSFs	Critical Success Factors
DoE	Department of Education
DoL	Department of Labour
ECM	Expectation Confirmation Model
EDP	Electronic Data Processing

ERP	Enterprise Resource Planning
EE	Employment Equity
FC	Facilitating Conditions
HCI	Human Computer Interaction
HEHR	Higher Education Human Resources
HE	Higher Education
HEIs	Higher Education Institutions
HR	Human Resources
HRIS	Human Resources Information Systems
HRM	Human Resources Management
IT	Information Technology
ITS	Integrated Tertiary Software
ITIL	Information Technology Infrastructure Library
ICT	Information and Communication Technology
IS	Information System
ISD	Information System Design
LMS	Learning Management Software
MS	Management Support
PAIs	Previously Advantaged Institutions
PD	Participation Design
PDI	Previously Disadvantaged Institutions
PE	Personal Experience
PE	Perceived Enjoyment
PEU	Perceived Ease of Use
PU	Perceived Usefulness

SA	South Africa
SP	Social Pressure
SPI	Software Process Improvement
SN	Subjective Norm
SI	Social Identity
STAM	Senior Technology Acceptance and Adoption Model
TAM	Technology Acceptance Model
TC	Technology Complexity
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UFH	University of Fort Hare
UTAUT	Unified Theory of Acceptance and Use of Technology
WSP	Workplace Skills Plan

GLOSSARY

Adoption	Refers to the decision of an individual/ organization to make use of an innovation.
Attitude	Is described in literature as an individual's positive or negative feelings (evaluation effect) about performing the target behaviour.
Communication	The transition of information and understanding through the use of common symbols, which may be verbal or non-verbal.
Computer Skills	User's experience and computer training.

Change Management	A structured approach to transitioning individuals, teams or organizations from a current state to a desired future state.
Critical Mass Theory	Among the social influence models, the <i>critical mass theory</i> is concerned with the influence of other people on technology use within an organization.
Critical Success Factors	Aspects of a strategy that must be achieved to successfully meet the objectives of the project.
Diffusion	Refers to the process by which an innovation is communicated through certain channels over time among the members of a social system.
Effort Expectancy	This is the degree of ease associated with the use of the system.
Facilitation Conditions	The objective environmental factors that observers agree, make an act easy to accomplish.
Flow	The holistic sensation that people feel when they act with total involvement.
Globalisation	The norms and standards observed internationally with impact on day-to-day operations.
Image	Degree to which one perceives the use of the technology as a means of enhancing one's status within a social group.
Information System Habit Usage	This is the extent to which people tend to perform behaviours automatically because of learning.
Job Relevance	This represents an individual's perception of the degree to which the technology is applicable to their job.
Management Support	General support offered by top management.

Output Quality	This is an individual's perception of how well a system performs a task necessary to his or her job.
Participation in Information	This is a social process of bringing people together to understand different views and share decision-making in the design of a sustainable Information System (IS) that is culturally and locally specific.
Perceived Enjoyment and Fun	This represents intellectual playfulness and is defined as an individual characteristic that describes an individual's tendency to interact spontaneously, inventively and imaginatively with the computer.
Perceived Usefulness	Represents the degree to which a person believes that a particular information technology will enhance their job performance.
Perceived Ease of Use	Represents the degree to which a person believes that using the technology will be effortless.
Performance Expectancy	Represents the degree to which an individual believes that using the system will help them to attain their job performance.
Results Demonstrability	Represents tangibility of results of using the technology.
Self-Efficacy	Judgments of how well one can execute courses of action required to deal with prospective situations.
Social Identity	The knowledge that an individual belongs to certain social groups together with emotional and value significance to him of this group membership.
Social Influence	The extent to which an individual allows the opinions of others to influence their decision to use the system.
Subjective Norms	Person's perception that people who are important to them think they should or should not use the technology.

Technology Complexity	The level to which technology is thought to be difficult to understand and use.
Trust	Extent to which one is willing to ascribe good intentions to, and have confidence in the words and actions of other people or systems.
Validation	The term includes confirmation or corroboration as well as legal force confirmation.
Voluntariness	This is a moderating variable defined as the extent to which potential adopters perceive the adoption decision as non-mandatory.

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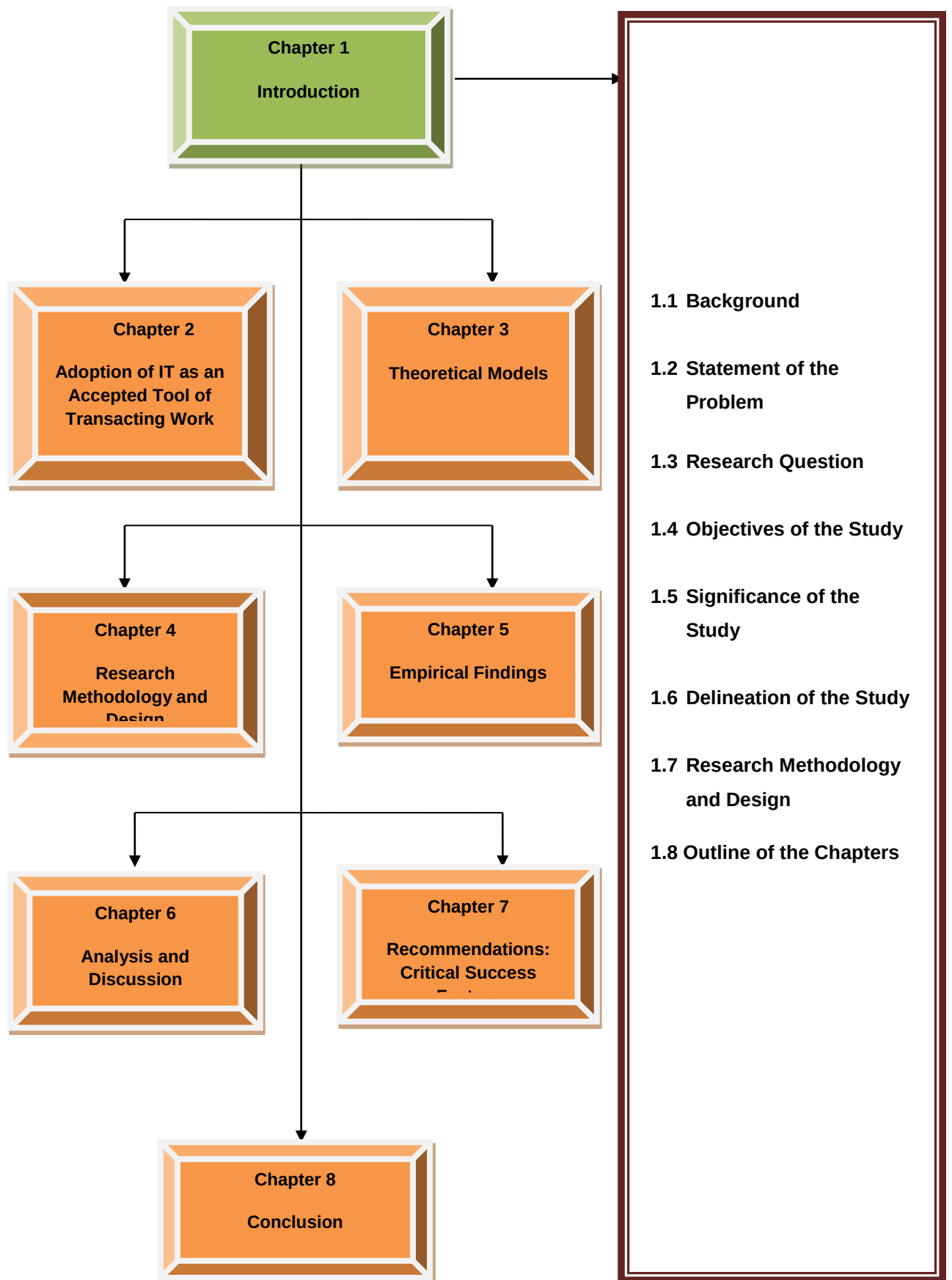
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Chapter 1 Introduction

1.1 Background

More timely and relevant information has enabled faster and higher-quality decision making as well as improved cost-efficiency. This has given Human Resources Management (HRM) an enhanced ability to manage complexity, facilitate their adaptability to dynamic environmental changes, and moderate the need to develop more specialized skills. Human Resources Professionals' ability to interpret and understand information continues to lag behind the capabilities to collect, store and present data. Information Technology (IT) can complement the work of human resource experts, thus free them to do more challenging and higher value-adding activities (Reichenberg, 2010).

Human Resources Departments handle a considerable amount of record-keeping and reporting traditionally associated with personnel administration making it an early adopter for Electronic Data Processing (EDP) (Martinsons, 2007; Townsend and Bennett, 2009). Lengnick-Hall and Maritz (as cited by Townsend and Bennett, 2009) focused on impact of IT on the contemporary HR practices. They described three key phases in the use of IT and web-based HRM: *first, a period when a web interface was used to provide information (e.g. dissemination of policy guidelines, benefits program information); second, a continuous evolution of HR towards automation of HRM procedures, where both non-HRM managers and employees generate system inputs and interact with it; and finally, a continuing transformation of the HRM function, whereby the increasing pervasiveness of HRM through its web-based technology create new opportunities for the HRM function to provide greater value to the institution.*

It is evident that well trained and motivated HR Practitioners confer a key strategic advantage to knowledge-based organizations. New generations of IT provide the tools to deliver HRM commensurate with organizational needs (Reichenberg, 2010). Townsend and Bennett (2009) concur that the adoption of technology and its continued use is critical for institutions and companies to achieve the value of the investments made in such technology. Adoption of technology is just as relevant for Higher Education Human Resource Divisions as they are expected to provide management with accurate data for decision making purposes.

The most significant challenge within many university HR departments is the adoption of Integrated Tertiary Software (ITS), ease of use of ITS and continuous usage thereof due to lack of management support and institutional policies (Yarbrough and Smith, 2007; Ngai, Law and Wat, 2008). The focus of this research project is User Acceptance and Continued Use of ITS within the HR Department at the University of Fort Hare. The University of Fort Hare is a multi-campus operation and the use of paper systems is extremely difficult. The University decided to invest in ITS with the objective of improving effectiveness and efficiency of services. ITS has become popular and it dominates in the South African Higher Education industry.

Most higher education institutions have distinctive characteristics which are understood to be significant in the manner Information Technology (IT) is adopted, used and managed, thus impacting on the value-delivery of information technology and systems. The University of Fort Hare is categorized under the previously disadvantaged institutions (PDIs). The main campus is located in an economically deprived area, Alice, with satellite campuses in East London and Bhisho. The environmental factors and computer literacy skills levels of staff, adoption and continued use of information technology need to be examined.

A Technology Acceptance Model (TAM) (Davis, 2008) and Theory of Acceptance and Use of Technology Model (UTAUT) (Venkatesh, Davis, Morris and Davis, 2003) were examined as they are used to predict and validate factors that influence technology adoption, acceptance and use. The Expectation Confirmation Model (ECM) (Thong, Hong and Tam, 2006) assumes that continued use of technology depends on three factors: user's level of satisfaction, the extent of users' confirmation of expectations, and post adoption expectation in the form of perceived usefulness was also examined. The literature, previous studies and underlying theories such as TAM are introduced in literature review chapters.

The statement of research problem, research question(s) and objective(s) were outlined. Significance of the study and more detailed literature review of the concepts central to this research project were discussed. The research design, methodology and limitations of the study were provided, and the proposed outline for the study was presented.

1.2 Statement of the Problem

ITS was purchased and made available to the University of Fort Hare HR Department, effective from 1990. The University is now in the process of implementing ITS Integrator Upgrade though the perceived usefulness and perceived ease of use is still under question. The reasons for the partial use of ITS were never investigated or validated (Johl, 2010). According to Teo (2009), the necessary facilitating conditions for adoption and the continued and optimal usage of ITS by HR Professionals may not be met.

Technical support, administration support, access to computers, insufficient bandwidth and lack of organizational support for ITS in terms of organizational policy, may also have contributed to this lack of usage (Mahmood, Hall and Swanberg, 2007; Wu, and Kuo, 2008). It is yet to be established whether the insufficient computer skills of HR Professionals influence the perception that ITS is difficult to use, or even irrelevant to HR work. Perceptions about usefulness and ease of use of technology are determinants of technology acceptance and use (Porter and Donthu, 2006; Teo, Wong and Sing, 2008).

The nature of the problem is that ITS is partially used, and it is necessary to further explore the specific influence of technological and environmental factors that may change a user's acceptance and use of this technology.

Keeping this background to the problem in mind, the research question of this study is formulated in the next subsection.

1.3 Research Question

Taking into consideration these introductory perspectives on the research problem, background and orientation, the following research questions are addressed in this study. The main research question in this study is:

What Critical Success Factors that influence the acceptance and continued use of the Integrated Tertiary Software (ITS) are used by Human Resources Department at the University of Fort Hare?

In support of the main research question, some sub-questions were addressed to further clarify the main research question. These are:

- *What facilitating environmental conditions are necessary for the acceptance and continued use of ITS?*

This research question will investigate the facilitating environmental conditions which can support or hinder adoption of ITS by University of Fort Hare HR Professionals.

- *What effect does management support and interest have on the decision to adopt the use of ITS HR Modules?*

This research question will investigate the support needed from management that is institutional policies, administrative support, commitment and level of enforcement in promoting the continued use of ITS.

- *What role does previous exposure to computer training have on the user that will help predict the likelihood of ITS HR Modules being adopted and used?*

This research question will provide an insight into the computer literacy level of HR Professionals at Fort Hare University and whether this influences the perceptions of the user's ease of use of ITS HR Modules.

With these research questions in mind, the objectives of this research project are discussed next.

1.4 Objective of the Study

The objectives of the study are:

- to produce Critical Success Factors that will influence the acceptance and continued use of ITS at the University of Fort Hare HR Department;
- to investigate the facilitating environmental conditions which can support or hinder adoption of ITS;
- to investigate the support needed from management in promoting the continued use of ITS;
- to investigate the role played by previous exposure to Information Technology on the user that will help predict the likelihood of ITS HR Modules being adopted and used; and
- to suggest ways to sustain this technology usage from initial adoption (the pilot programme) to full adoption.

Based on the formulation of the background to the study, the problem statement, objectives and research questions, the following importance and benefits of this study emerged.

1.5 Significance of the Study

Most projects and studies conducted on optimal technology use and acceptance were carried out in different environments not similar or specific to Human Resources departments within higher education institutions in emerging economies. The studies were mostly conducted in developed countries. There have been limited number of studies conducted in African countries differing in outcome, with most studies conducted in Western countries. The studies conducted in African countries showed that the main determinant for use of technology was perceived ease of use, as opposed to Western countries where perceived usefulness was the dominant criterion.

The study aimed to investigate and validate the factors promoted by the Technology Acceptance Model (TAM) which predicts technology use and acceptance. In particular, emphasis was placed on the current environment, resistance to change and user profiles, and recommendations on how to sustain the use of the ITS System were made. It examined facilitating environmental conditions such as technical support, access to computers, sufficient training, resistance to change, computer literacy skills levels and their effect on perceived usefulness, perceived ease of use, commitment and management support for an ITS System. This study added to the body of knowledge regarding the barriers to adoption of technology and development of Critical Success Factors to adoption of technology in African countries, particularly in higher education Institutions' Human Resources departments. The TAM constructs that were investigated and validated in Western countries were 'assessed' for validity in the South African context, or more specifically in the Eastern Cape context. This study recommended Critical Success Factors that can be engaged by Human Resources Departments in higher education Institutions to derive better value from IT. The next section briefly discusses the delineation of the research project, which reflects the description and demarcation for this study.

1.6 Delineation of the Study

The focus areas of the study are adoption, acceptance and continued use of such technology in HE Institutions' Human Resources departments, guided by the TAM, ECM and UTAUT. Existing literature and frameworks were used to link these focus areas. Research was limited to the University of Fort Hare HR staff. The history and characteristics of the University of Fort Hare (UFH) may have a bearing on adoption, acceptance and use of technology.

The study was conducted within the three campuses of the University of Fort Hare, namely Alice, Bisho and East London. The Alice campus is in a predominantly rural area, Bisho in a semi-urban area, and the East London campus in an urban area. The study covers ITS acceptance, use, continued use together with correlating benefits derived from the IT investment. The next section discusses the theoretical foundation of the study.

1.7 Research Methodology and Design

Leedy and Ormrod (2010) define research as “a systematic method of gathering and analysing information or data in order to enhance our understanding of the facts that we are concerned or interested in”. A case study approach was used in this study. Cresswell (2008) defined a case study as “an exploration or in-depth analysis of a *bounded system* (bounded by time and/or place) or a single or multiple case, over a period of time”. The Research Paradigm is interpretive and any research will have an underlying philosophical paradigm, a pattern or shared way of thinking to which the research is aligned. This, in turn, leads to diverse ideas as well as the kinds of research questions and processes used to find solutions (Oates, 2006). Although this study took a primarily interpretive approach, both qualitative and quantitative research methods were used.

The questionnaires were used as primary data collection method. Participants were selected because they were users or potential users of the ITS HR System. All HR staff at UFH were asked to respond to the questionnaires and data was analysed. A group of six experts were identified for the purpose of validating and refining the CSFs.

The secondary data examined in this study included a literature survey of frameworks, methodologies, journal articles, past research projects, reports, books and Internet sources. The literature survey was performed initially to determine the problem and the research objectives.

An in-depth analysis and comparison of the data collected from questionnaires was made in order to identify and categorise the responses according to the themes derived in the literature.

Additionally, Skulmoski, Hartman and Krahn (2007) added that the Delphi technique is well suited to the rigorous capture of qualitative data hence it was used in this study.

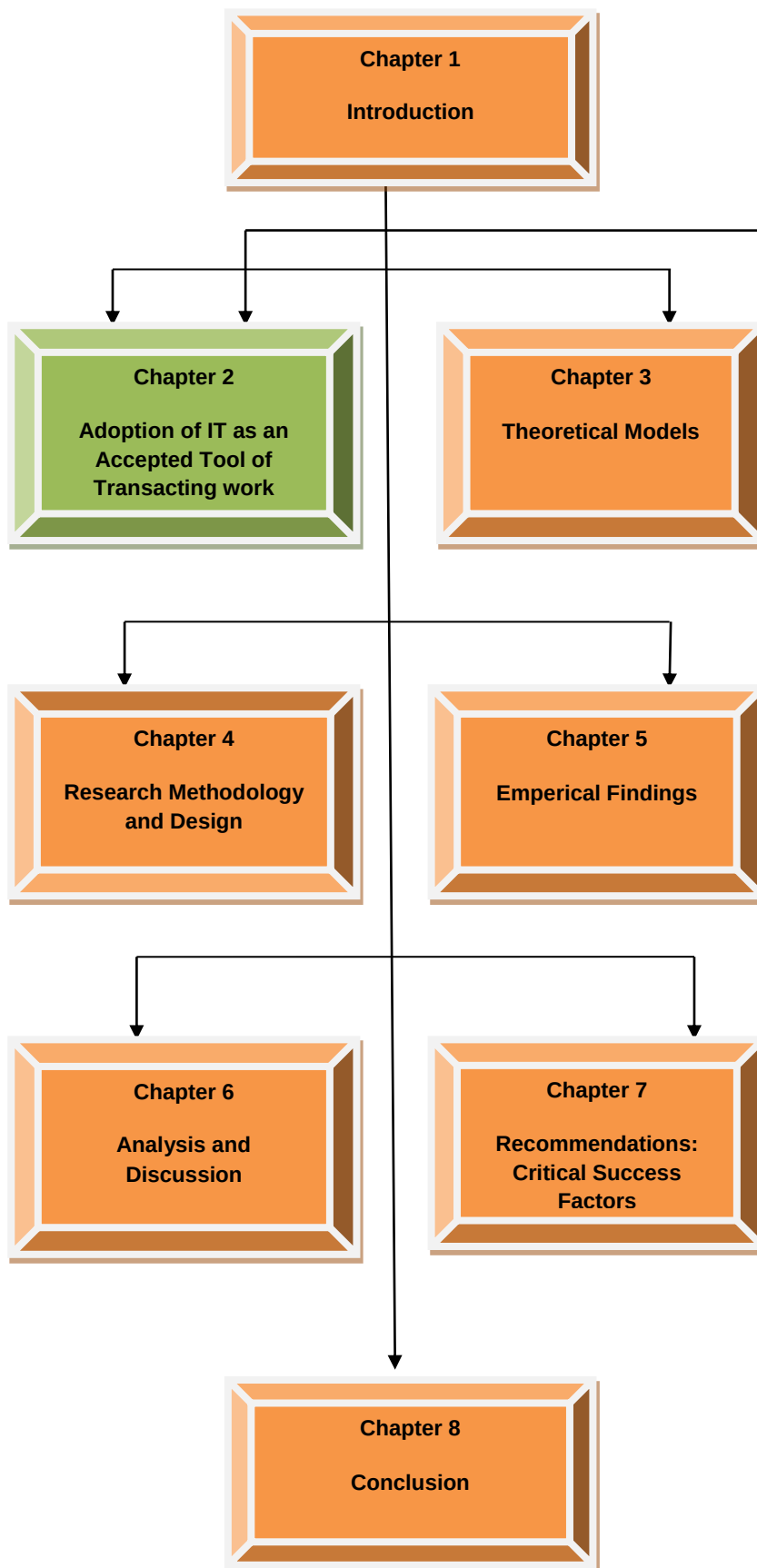
Since the ITS population is relatively unknown due to the interpretive nature of this study, the sample size of the population was relatively small. To evaluate the Critical Success Factors, the CSFs were given to a group of six experts (two from two HR departments from previously advantaged institutions; two from two HR Departments from previously disadvantaged institutions and two were CIO's from ICT Departments from two other universities) within HE for review purposes. Their comments were noted and the final CSFs were adjusted accordingly. The research methodology and design is discussed in detail in Chapter 4. The next section briefly discusses the outline of this study which reflects the structure this study has followed.

1.8 Outline of the Chapters

The **first** chapter is an introductory chapter that provides an overview of the study. A brief background, the explanation of the problem, research objective, research design, and delimitation of the study are all discussed in this chapter.

In Chapter **two**, the adoption of IT as an accepted tool of transacting work is discussed. This chapter also covers the adoption of IT in South Africa; adoption of IT in less developed countries; adoption of IT in Western countries; adoption of IT in Higher Education and adoption of IT at the University of Fort Hare. Alignment of TAM to HR Model of roles is also covered in this chapter. Chapter **three** contains the literature survey and theoretical models in which various theories and philosophies in technology adoption and continued use are discussed.

Chapter **four** discusses research design and methodology. A detailed explanation of how the study was conducted and the tools used are discussed. Chapter **five** discusses the empirical findings of the study. Chapter **six**, presents the discussion and analysis of results. In Chapter **seven**, recommendations and CSFs are discussed and presented. This chapter also seeks to establish whether the findings provide new results or concur with existing literature. In Chapter **eight**, the conclusion and suggestions for future research are discussed. Implications of the findings for the local environment and for any other stakeholders are also discussed. Conclusions were reached based on the findings, taking into consideration the limitations of the project. The next Chapter discusses the Adoption of IT as an Accepted tool of Transacting Work.



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- 2.2 Information Technology versus Integrated Tertiary Software
- 2.3 Adoption of IT in SA
- 2.4 Adoption of IT in less Developed Countries
- 2.5 Adoption of IT in Western Countries
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- 2.10 Aligning TAM to HR Model of roles
- 2.11 Conclusion

Chapter 2 Adoption of Information Technology (IT) as an Accepted Tool of Transacting Work

2.1 Introduction

This chapter attempts to answer sub-question 1 which seeks to investigate environmental conditions that can support or hinder adoption of ITS by University of Fort Hare HR Professionals. The chapter also answers sub-question 2 which seeks to investigate the support needed from management to influence the adoption of Information Technology. The technology in use in South Africa (SA) is perceived as mostly developed in Western countries and for the purposes of this study, it was necessary to explore the adoption and continued use of IT in developing countries, like SA in comparison to developed countries. The main focus of this study was the HR department at UFH in Alice (viewed as a less developed area) within higher education environment. Hence this chapter also explores the impact of adoption of technology in higher education in the context of globalization within which the University operates. Literature was used to enhance the above argument. Information Technology (IT), Integrated Tertiary Software (IS) and Information Communication and Technology (ICT) were used in this study. Although IT and ITS were used interchangeable in this study, IT refers to general perspective whereas the ITS is the specific IT system and focus of the study. The following section clarifies the difference between the two concepts used in this chapter being Information Technology (IT) and Integrated Tertiary Software (ITS).

2.2 Information Technology versus Integrated Tertiary Software

Information Technology is concerned with improvements in a variety of human and organizational problem-solving actions through the design, development, and use of technologically based systems. This includes processes that enhance the efficiency and effectiveness of information in a variety of strategic, tactical, and operational situations. Ideally, this is accomplished through critical attention to the information needs of humans in problem-solving tasks and in the provision of technological aids, including electronic communication and computer-based systems of hardware and software and associated processes.

The hardware and software of computing and communications form the basic tools for information technology. These are implemented as information technology systems through use of systems engineering processes.

While information technology and information systems engineering does indeed enable better designs of systems and existing organizations, it also enables the design of fundamentally new organizations and systems such as virtual corporations. Thus, efforts in this area include not only interactivity working with clients to satisfy present needs, but also awareness of future technological, organizational, and human concerns so as to support transition over time to new information technology-based services.

Integrated Tertiary Software (ITS) is an Enterprise Resource Planning system. ERP software is a suite of business applications such as human resources, accounting, sales or payroll. The key difference between the ERP version of these applications and the stand-alone version is integration. The applications share the same technical architecture, database, look and feel, and processing standards.

The primary feature of ITS System is that all applications share the same database and, more importantly, the same data definitions. A data element called Account has the same meaning to the human resources application as it does to financial management. Having information in a single place and format means that large organizations no longer have to gather data from multiple systems, translate it into a single format and meaning, and consolidate it in order to do reporting. The focus of this study is on adoption and acceptance of ITS within the HR Department at the University of Fort Hare and that necessitates analysis and understanding of the impact of adoption of Information Technology in South Africa, as discussed in the following section.

2.3 Adoption of Information Technology (IT) in South Africa

South Africa is undergoing transformation shaped by both socio-economic and cultural practices which are further influenced by globalization. In South Africa, as in many other countries, a digital divide exists between the technological 'haves' and 'have nots'. Computer-based commerce and web communication are indispensable tools for everyday life (for haves and for have nots, the situation is radically different). In spite of the barriers, the borders of Information and Communication Technology (ICT) seem to grow more diverse culturally, economically and educationally in SA. Hugo and Day (2010) support this view as they skillful that SA may face barriers beyond what developed countries may experience.

To counteract all common failures of well-intended, top down technology planning, Hugo and Day (2010) further proposed consolidating all resources needed to support the objectives of all stakeholders involved in economic growth and democratization of technology. Without understanding the cultural variables impacting on adoption of ICT in SA, the design of technology threatens those who use it. If technological growth does not meet the needs of the user, it will be unsuccessful (Hugo and Day, 2010). They further propose that when adapting technology, a user participation approach in South Africa should include a *cultural dimension*, failing which, we will remain at the receiving end of foreign computing developments.

Gupta (as cited by Nicholas, 2010) states that the keys to successful implementation of Information Technology are related to the following:

- Securing top management commitment
- Forming cross-functional task forces to link project management with business units carrying out an assessment exercise of hardware requirements.
- Making deployment a step-by-step introduction rather than all at once
- Starting early planning on user training and support
- Streamlining decision-making to move implementation quickly
- Being patient as IT implementation takes place

In the South African context, Littlejohn (2003) identified possible factors that would contribute to the failure of the acceptance of Information Systems:

- Not taking into account different cultures
- Underestimating the complexity of HR processes
- Different expectations from various end-users
- Long implementation time with fast managerial change
- Reluctance to provide more financial resources if the project is failing
- Failure to look for and learn from failures of past projects

This knowledge, when added to the model created by combining constructs from the Technology Acceptance Model (TAM) and Expectation Confirmation Model (ECM), assisted in predicting specifically the areas the organization should focus on when implementing IT Systems.

This necessitated the understanding of IT adoption patterns when implementing new IT or improvement to such in developing countries. The next section discusses the adoption of technology in developing countries with rich lessons that have a bearing on the adoption of technology in HR at the University of Fort Hare as it is located in SA (a less developed country).

2.4 Adoption of IT in Less Developed Countries

Less developed countries invest in IT because they realize the importance of such due to increasing globalisation and the utilization of IT. Much of the research and arguments have been confined to Western countries with limited focus on developing countries. The use of ICT has expanded during the last decade in the developing world. There has been greater penetration and use of ICT in developing countries to guide knowledge-intensive societies to ensure their economic survival in the current era of globalisation. This is relevant for the University of Fort Hare.

This shift is also critical to ensure greater transparency and for inculcating more effective monitoring and evaluation of programs and projects aimed at poverty alleviation. Use of ICT in developing countries is promoted to address social exclusion of the poor. The state governments are pushing to address the digital divide and to increasingly adopt e-governance in the rural sector, for example, through community-based networks (Puri, Byrne, Leopoldo and Quraishi, 2009). It is evident that the use of ICT is becoming increasingly used in community development programs in the third world, for example, in the HR Information Systems design sector (Puri, Byrne, Leopoldo and Quraishi, 2009).

The acceptance of technology by institutions does not automatically transfer the benefits that could only result from its effective usage. Forster and Conford (2007) and Odedra et al (as cited by Anandarajan, Igbaria and Anakwe, 2008) agreed that IT is under-utilised in developing countries and therefore does not make a significant contribution in improving the performance of organizations using them; this is relevant to the perceived lack of adoption of technology within the HR Department at the University of Fort Hare. It is important to note that the difference in cultures between developing and developed societies might suggest that IT and management practices should be adapted to suit different cultural contexts, as suggested by Hugo and Day (2010).

In addition to understanding the factors which influence technology acceptance, it is also important to examine the impact of accepting or rejecting IT from an individual or social system perspective. This is relevant for the University of Fort Hare HR Staff which is situated in a rural area within the Eastern Cape Province.

Participation of users in Information Systems Design (ISD) in developing countries brings new challenges to fostering and nurturing participation, and these challenges represent a point of departure. It was reported that users of ITS at UFH did not participate in the design of ITS HR software, and therefore it was perceived that the current HR Modules could also be a contributory factor to a negative attitude towards ITS. The literature suggested that what was important in participation was who decided what data to collect, who collected it, who interpreted the information and used the findings, and how participation could make decision making a more democratic process. In this regard, Kensing and Blomberg (2010) identified three main issues in participatory Information Systems design namely: *the politics of design, the nature of participation, and the methods, tools and techniques for carrying out design projects*. Within the developing country, these factors impacted differently owing to diversity in respective socio-economic and political situations. Ramachnadran, Kam, Chiu, Canny and Frankel (2007) supported this view based on their findings that in India and Uganda, it is necessary to thoroughly consider possibilities for technological improvements due to difficulty in understanding developing communities. Two common underlying themes emerged from these regions: firstly, local stakeholders could contribute *cultural information* relevant to design such as needs and practices through interaction with technology artifacts, and secondly, *unique social network structures* embedded within communities were crucial to the acceptance and potential adoption of technology. Based on this view, social networks should also be considered in designing ITS HR Software, specifically, the HR Modules in use within the HR Department at the University of Fort Hare. Researchers can use the cultural information they gather as a starting point for the design and deployment of new technologies that better meet local needs and practices in developing regions to enhance adoption of technology.

The studies have shown that in India, technology became an important element in the political network before being accepted. Participation in this case was initiated by the top political leadership. Although, literature revealed that in Mozambique, a mediating agency of a university played an important catalytic role in bringing about acceptance of participatory approaches to Information Systems.

Therefore, there was no single best practice applicable to all situations, as supported by Bass (2008) who proposed that participatory approaches tend to be behavioural in nature. Whereas Malmo (2009) suggested that participation should be viewed in a broader context not only in Western organisations, but should be analysed within a larger process perspective that emphasises its dynamic and political nature.

History and geography shaped access that groups and societies are given to new information and communication technologies. In ITS and not just HR related Information Systems, the voices of communities, in particular women, children and youth are not often heard, both within communities, between communities and between other levels of society (Byrne, 2008). In a sub-district in kwaZulu-Natal the concerns related to opportunity to express needs and aspirations, exchange ideas and experiences, identification and development of skills and resources, were addressed through a holistic approach to HR IS development. Some of the challenges for Information System design was the need to focus on the output as well as the process.

Attaining a common vision is fundamental if an information system is to be used, but this involves from the outset participation of different sectors and different levels of actors. Clarification of roles and responsibilities allow recognition and acceptance by duty bearers of the tasks they need to perform. This is the desire to work together. The community monitoring a system in Ukhahlamba, a municipal district in the Eastern Cape of SA, was based on an understanding that people were intelligent and knew what affected their children and their own development. Communication and participation, as well as the capacity to do so, are needed to strive towards ideal adoption of new Information Systems (Byrne, 2008). It was important to understand adoption of technology in Western countries to be in a position to test validity of such in developing countries. To understand these differences, the following section discusses the adoption of IT in Western countries.

2.5 Adoption of IT in Western Countries

In Western countries, the adoption of IT is guided by participation of future users in IS design as this was seen as a precondition for good design and increases the likelihood of integrating new system into the organisation. This view was supported by Puri et al. (2009) when he stated that participation can manifest itself in various forms such as traditional communication:

- participation of key role players;
- collective decision making;
- sharing a common vision;
- understanding between users and providers through joint participation;
- role of mediating agencies – concerns of users being taken seriously;
- capacity development-comprising of ability to use and analyse the information once the systems are in place; as well as
- ability to adapt and change the IS to suit the ever-changing context.

Puri et al. (2009) highlighted that: participation in Information System Design should be a social process of bringing people together to understand different views and share decision making so that a sustainable Information System is designed that is culturally and locally specific. This was also manifested with IS design in Western countries that was characterised by a workplace focus where it was recognised that it is ethically and morally right that workers should be involved in the development of systems affecting their working lives, but also in the recognition of the failure of the traditional technical approaches and that participation may help overcome some of these failures. However, more recent critical analysis of Participation Design (PD) suggest that while PD may be necessary, it was not sufficient by itself to ensure success of Information Systems (IS), *power and politics* in the workplace were other important determinants of success. The literature on PD and practice needed a new direction compatible with changing socio-economic situations arising from globalisation. It was perceived that linked to power and politics, acceptance of IS in the Western perspective tends to be influenced by certain factors, such as, *the underlying assumptions of the democratisation of the workforce, high literacy rates and a reasonable infrastructure* (Puri et al. 2009).

Though these assumptions were viewed as relevant in a Western context, it is unrealistic to assume that any of these assumptions can be used in a developing country context like South Africa where the University of Fort Hare is located, due to differences between these two contexts. However, this study sought to apply an interpretive approach to explore and understand the socio-economic, cultural and political context that shaped the behaviour and actions of the users of the ITS system in the context of the University of Fort Hare.

Kollmann, Kuchkertz and Breugst (2009) stated that several researchers have provided empirical evidence suggesting that an organisation's readiness was one of the most important antecedents for adoption of e-business. In addition to perceived usefulness or perceived ease of use and policy related matters, Hofstede (2007) stated that it was possible to show that national culture significantly moderated the relationship between readiness of an organisation and adoption of e-business. Power distance, masculinity, and uncertainty avoidance were found to exert a significant influence on the relationship between organisational readiness and e-business-adoption as suggested by Hofstede (2007). He further suggested that decision makers interested in e-business should consider cultural effects prior to starting new initiatives. As much as clear leadership and communication structures along with a focus on IT were suggested as remedies to compensate for potentially negative cultural effects in Western Countries, this was also true for developing countries as it was relevant to the adoption of technology within HR department at the University of Fort Hare, as revealed in the findings of this study. Study participants also confirmed that management believe that ITS is valuable for decision making and improvement of HR services.

Literature recommends that institutions of higher education need to follow global education and administration trends in technology. In this regard, it was confirmed that without successful adoption of technology, expectations will not be met. Hence this study investigated the adoption of technology in the HR Department within an institution of higher learning making it necessary to understand the adoption of Information Technology Systems in higher education generally as discussed in the next section.

2.6 Adoption of IT in Higher Education

Universities are now competing in the international arena and it has become essential for staff to adapt to change and embrace technological developments. Given the increasing importance of staff acceptance and adoption of technology, it was necessary to determine the social and psychological variables that contributed to the process of technology adoption.

It is vital to understand factors that control peoples' ability to accept technology. Van Niekerk and Maree (2003: 173) skillful with the view that "Armed with knowledge as to why people adopt or do not adopt technology, and of what motivates them to do so will facilitate the management of information technology diffusion and adoption as well as ensuring the support expected from the implementation of the new technologies".

Over the last twenty years, technology has modernized how we live, how we communicate, and how we learn. Research recommended that institutions of HE needed to follow global education and administration trends in technology and innovation (Damoense, 2003). The mergers of tertiary institutions who have characterized the tertiary sector since the turn of the century have created a platform for a revolution in the development and application of information and communication technologies. Technology is changing almost everything, from the nature of society to social practices, identities, lifestyles, interactions and leisure, to the ways that people learn and teach. Technology is undoubtedly shaping society.

Many researchers have published various theories explaining the adoption of ICT. Below, Figure 2.1 as indicated by Venkatesh et al. (2003), displays how information technology is adopted, starting with individual reactions to using IT that influence the intention to use such IT leading to the actual use of IT as an accepted tool of transacting work.

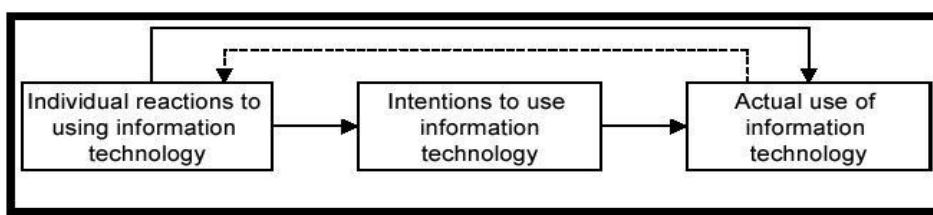


Figure: 2.1 Adoption of Information Technology (Venkatesh et al, 2003)

Institutions of HE and the research and development community in general have a central role to play in exploring and experimenting with new e-learning technologies, methodologies and techniques to support learners, teachers and administrators in e-learning and e-administration (Department of Education, 2003). It is noted that the actual usage of an IT system is mostly influenced by individual reaction to using information technology together with the intention to use such technology (Venkatesh, 2003). Durrington et al. (as cited by Van Niekerk and Maree, 2003) agreed with the view that when innovation is introduced for the first time, not everyone adopts it simultaneously and some people never adopt it.

Studies reveal that there are four competing factors in relation to the adoption of ICTs and HE transformation in South Africa (Damoense, 2003). These factors are globalization, digital divides, changes in markets and political factors, and are discussed in the following sections.

2.6.1 Globalisation

The concept of globalization as defined in the glossary is important for this study as all institutions including the UFH operate within the global environment. The impact of globalisation on adoption of technology is explored. ICT usage is inevitable and it is becoming a business imperative to progress. ICT seems to be replacing the traditional information and communication models. These changes necessitate organizations to participate in knowledge societies and economies, and it is becoming critical to shift the focus towards enhancing the computer literacy of the workforce. The forces of globalization mitigate for more urgent resolution to the divide so that South Africa and HE can emerge as a full participant in technological development. Adoption of technology at the University of Fort Hare is of importance if the University has to participate and compete in the global space. This view is supported by Damoense (2003) who said that institutions of HE need to follow global education and administration trends in technology and innovation. The next section discusses the impact of digital divides on acceptance of technology.

2.6.2 Digital Divides

This section introduces the reader to the impact of digital divides on adoption of IT as ICT Resources accessed through various ways including hardware, software and Internet connectivity across nations and within national contexts. There are numerous individual, social, cultural, economic and institutional factors that influence peoples' intention to use Information Technology and to use ICT resources at their disposal. Hugo and Day (2010) supported this view when they mentioned that the blind acceptance of imported products threatens to impose a "one size fits" all marketing strategy on South African users that will inevitably result in excluding various sectors of society from access to, and benefiting from, ICT as both a product and an agent of change. The digital divide is a reality for the University of Fort Hare as it operates a multi-campus model and also competes with other institutions across the national context, and therefore, individual, social, cultural, economic and institutional factors do affect the intention to use technology. The next section discusses the impact of market driven forces on acceptance of technology.

2.6.3 Market Driven Forces

There has been increased interest in the use of information and communication technologies, both in business and in the tertiary sector.

One of the reasons for the increased interest is the perception that ICT can contribute significantly to the relevance of universities in a knowledgeable society (Damoense, 2003). ICTs and the market are forces permeating our educational institutions, forcing them to transform.

The rise of ICT aligned to the needs of profit institutions (virtual universities), enhancing their offerings--the selling of Online courses, the use of proprietary Learning Management Software (LMS), ICT – related intellectual property issues and ITS, are examples of the increasing influence that markets have on HE globally. Damoense (2003) states that advent of mobile computing and the unprecedented advancement in manufacturing technologies has resulted in mobile microelectronic devices able to deliver more than physically larger systems were able to do less than two decades ago. Connectivity using cellular technology systems has provided a new means for the delivery of teaching and learning. The market driven forces have an impact on adoption of IT in HE which is relevant for the UFH HR Department in this study, hence the impact of transformation on higher education necessitates an understanding of the political factors involved, as discussed in the following section.

2.6.4 Political Factors

For institutions to provide the workforce with increased access to accurate HR Systems, ICT is critical and of utmost importance. It is also an ongoing debate whether electronic HR systems offer the same quality of HR information and administration compared to contact and manual records. Research shows that a greater percentage of African students (70% of total enrolment) are now enrolling in online or mixed mode programmes than in contact programmes (52% of total enrolment) (Department of Education, 2010). This transformation is due to the major drive in South Africa by the Department of Education to reshape the higher educational landscape. Education is very important for our country to eradicate the levels of illiteracy. Education is also important for the enrichment of the economy. The goal in South Africa should be to meet educational challenges through the use of available information and communication technologies. Van Niekerk and Maree (2003) skillful that the rate of technological development is forever increasing, resulting in an accelerated need to change and adapt to the dynamic context in which we find ourselves. According to Karahanna and Straub (1999), the rate of technological change does not necessarily imply a similar rate of adoption, as adoption and technology usage are dependent on the psychology of user acceptance. Hence the study of Critical Success Factors affecting adoption at UFH was conducted.

Duderstadt (2008) was of the view that, the main difference between the challenges of the eighties and the late nineties for higher education institutions is the rapid advancement of technology--a technological revolution which will continue to challenge higher education institutions in the foreseeable future. He further indicated that the rapid advancement in information technology had already impacted significantly on campus activities and necessitated a critical understanding of the sub-cultures within higher education institutions, as discussed in the next section.

2.7 Sub-cultures in Higher Education Institutions

Enforcing technology as the only means to transact work and also encouraging supervisors to lead by example in executing this culture change, can yield improved technology continued use. Lin and Ha (2009) found that technology use by supervisors and task interdependence contributed to technology use, but that organisational members from different subcultures perceive technology use by supervisors and task interdependence differently.

Information System research suggests that organizational culture influences implementation of technology, IS service quality, and IS's role in organisational learning among other things. Organisational culture is a system of artifacts, values, and assumptions, among which, artifacts are most observable and directly related to organisational behavior as defined by (Lin and Ha, 2009). They further explained one such artifact as norms, which are arrangements about what people should do and should not do in a given situation. For example, if most faculty members in an academic setting believed that it is socially desirable that technology should be used to assist teaching, this would suggest that they have a pro-technology norm.

In higher education organizations, multiple sub-cultures build up alongside professional lines such as academic and administrative sub-cultures. While administrative subcultures highlight management values such as rationality and efficiency, an academic sub-culture highlights values such as creativity and autonomy, particularly relevant to the University of Fort Hare. Administrators in managerial positions have a large spectrum of work duties and therefore, have to develop an ability to review complex organisational events and situations from a broader perspective. Their administrative work, such as problem-solving and conflict management, requires more face-to-face than mediated communication, and as a result they may use the ICT system less for their work than other faculty members.

Based on the researchers' experience, the motivation gained from observing other people using the systems is an interesting dynamic in adoption of information technology. According to Mokgabedi (2004), the following must be considered when addressing policy issues in the tertiary sector:

- To strengthen the development of comprehensive and integrated information systems
- To facilitate the development of employee information standards
- To implement security measures to safeguard the privacy of employee information inherent in electronic employee records
- To ensure that all universities have access to adequate ICT infrastructure
- To facilitate the development and implementation of a national programme
- To facilitate the development on ICT human resource strategy

The next section attempts to discuss the critical mass theory which is relevant because it explains how seeing other people using systems impacts on acceptance of similar technology.

2.8 Critical Mass Theory

According to Markus (as cited by Lin and Ha, 2009), among the social influence models, the *critical mass theory* is concerned with the influence of other people on technology use within an organization. They propose a critical mass theory that aims to clarify the diffusion of interactive media. They further argue that diffusion of an interactive medium depends on two medium properties: *universal access and interdependence*.

Markus (as cited by Lin and Ha, 2009) define universal access as the ability of a community member to reach anybody else within the community by using the interactive medium. He further refers to *interdependence* as means that the medium binds community members together in the sense that early adopters influence late adopters. Literature states that user characteristics have an influence on the use and adoption of an interactive medium. The strength of a critical mass depends less on the objective number of early users than on the perceived number of other users. Studies, further reveal that effective communication with other employees in the organisation contributes to the perceived critical mass.

Organisational members are more likely to adopt technology when they find out that certain Top Management members are among the early users.

The Top Management are highly sought-after early users who would positively affect the achievement of universal access for an interactive medium. Characteristics of a highly sought-after person in an organisation include: high status (those in leadership), expertise, and social skills. Leaders are perceived as highly sought after because of their positions in an organisation. They are certainly central nodes of the formal communication network within an organisation. In support of this view the participants at the University of Fort Hare agree that Top Management involvement and support is the key to acceptance and use of technology.

Organisational support and interventions can contribute to the achievement of universal access for an interactive medium. Markus (as cited by Lin and Ha, 2009) also argues that in order to facilitate the achievement of universal access for an interactive medium, organisations can provide training sessions for their employees to encourage their use of the technology. Recent research supports this argument. Management support and training contribute to technology use in organizations as supported by participants as an area relevant and evaluated at the University of Fort Hare. In addition, organisations should consider the following: establishing policies that force employees to adopt an interactive medium, by setting expectations, rewarding use, or penalizing the non-use of the medium, as was also agreed and proposed by HR Professionals at the University of Fort Hare. In a university with different reward structures, units with different sub-cultures may differ in whether or not and how they reward technology use and penalize non-use. The role of interdependence in success and failure of organisational technologies has been studied at length. Task interdependence refers to the degree to which a job task requires multiple individual organisational members to exchange help and resources interactively to complete the work. It influences group processes directly and moderates the effect of other factors on group process and performance (Markus as cited by Lin and Ha, 2009).

In the area of IT implementation or adoption, there are mixed findings about the direct effect of task interdependence on IT implementation or adoption. Lin and Ha (2009) find that task interdependence is significantly related to IT implementation success. However, Guimaraes et al (as cited by Lin and Ha, 2009) find no such significant direct effect. However, culture affects the extent to which task interdependence influences IT implementation and task interdependence is also socially constructed.

It is important to note that the main points in this section highlight the impact of other people, communication with others, leadership and formal communication networks as critical elements influencing technology acceptance and use.

Management support and training, establishment of policies, reward and penalty structures taking into account cultures, were also identified as contributory factors to acceptance and use of technology in organisations. It is important to note that all these factors were influential in acceptance of technology within the HR Department at the University of Fort Hare and were incorporated into the Critical Success Factors for technology acceptance within this area. The next section discusses the adoption of Information Technology at the University of Fort Hare.

2.9 Adoption of Integrated Tertiary Software (ITS) at the University of Fort Hare

A large percentage of the higher education sector (70%) in South Africa has implemented the ITS ERP administrative system known as the Integrated Tertiary Software (ITS) (Twyford, 2010). The system is customised according to the organisational specific needs. The vendor offers functional and technical support that guarantees 'best practice' procedures that can be implemented by clients, resulting in effective utilisation of the software systems. In SA the ITS system is used by over 50 institutions including: Walter Sisulu, Durban and Cape Peninsula University of Technology, Nelson Mandela Metropolitan University to mention a few. These organisations have come to the conclusion that developing in-house technology to address their institutional needs was too expensive and time consuming, hence they decided to implement ITS and adapt it to their specific needs. Many institutions have opted to implement ITS applications because this software has assisted organisations to automate and optimise their internal business processes.

According to Twyford (2010), The ITS design principles emphasise the following:

- Ease of use,
- Flexibility and efficiency,
- Quality assurance and control, and
- Optimal security compliance.

The literature reveals that when properly implemented, ITS system can (has proven to) be the most effective academic processes management tool (Lin and Ha, 2009). The ITS system supports the functions and processes of different academic and administrative systems. It includes various systems which can be separately accessed, such as student management systems; financial management systems; management information systems; iEnabler (self-service) systems; and the technical system.

ICT is being redesigned at the University of Fort Hare to operate according to an international benchmark framework such as Information Technology Infrastructure Library (ITIL). These standards have many certified practitioners and the first steps have already been taken to certify ICT staff members in these frameworks to ensure that the University ICT is managed according to international standards, and governed appropriately within a secured information environment.

The incorporation of the former Rhodes East London campus into the University of Fort Hare created a triangle of technological challenges for the Institution. As a result, the intercampus connectivity between three campuses is not yet at required levels, in terms of both quantity and quality. Bandwidth between campuses for research purposes is of utmost importance. The multi-campus operation has also created a challenge as far as paper-based administration is concerned, including HR operations. According to Integrated Tertiary Software records as cited by Twyford (2010), UFH implemented the ITS system in January 1990 with the following sub-systems: General, Student, Student Debtors, Space and Asset, Finance, Personnel and Payroll Modules. Other sub-systems were implemented later in the same year. This was all done on version 10. As new sub-systems were developed and new versions of the product suite were developed, these were implemented and upgraded without assessing adoption and actual usage which contributed to the system not being used optimally as supported by participants in this study. Hence the next section attempts to discuss the successes and challenges of IT Implementation at the University of Fort Hare.

2.9.1 Successes and Challenges of ITS Implementation at the University of Fort Hare

UFH always update their systems to the new version of the system and it is now live on Integrator 1 which supports the adoption of technology; however, continued use has never been tested. ITS functionality is constantly changing with the needs of the statutory requirement. Senior staff members at UFH have always been the key drivers in identifying areas of improvement in the system. They played an important role in the broader ITS user community and this is supported by (Lin and Ha, 2009) that Management support and training play a significant role in enhancing the adoption of new IT systems in organisations. There are issues relating to unavailability of functionality and training needed by users resulting in under utilization of ITS (Twyford, 2010). He further revealed that implications of using different applications in one environment is lack of accessibility to critical information preventing improvements on more accurate record keeping and forecasting.

This is also supported by Umarji and Seaman (2005) who say IT System implementation related issues, such as amount of learning required and compatibility of work practices, should be considered as they have a significant impact in adoption of new technology. Twyford (2010) further adds that the major challenge for any system and one which has been identified at UFH is that of maintaining data integrity.

ITS suite consists of various Modules varying from HR, finance, administration and others. According to Twyford (2010) from the HR Management perspective, the Appointments Module of the Personnel system, which is also the key driver of the Payroll system, may be said to be successful. However, it has not yet been proved if it has all the relevant reporting requirements and this needs to be further investigated. Twyford (2010) also adds that not all functionality in the Appointments Module is being fully utilized because the Equity Reporting and Skills Development Module is not yet fully utilized. The reason being that data is claimed to be incorrect. There have been at least two occasions where data clean-ups and system restructuring have taken place at UFH in the recent years. Attempts have been made by ITS to acquire other Modules of the Personnel System, and have been successfully implemented at UFH. Complete system, training has also been conducted in conjunction with the implementation exercise as well as 'ad hoc' training initiatives. Leave Module has been implemented. However, it is difficult to motivate staff to create their own access PIN numbers on the system even though there has been intense communication in this regard. Other Modules that would facilitate internal as well as statutory reporting requirements would be the Skills Development Module which has been available for a number of years but not utilised. According to Umarji and Seaman (2005), some organizational issues like visibility, transparency of the process, and reward should be considered when implementing an IT system. Personal issues like fear of adverse consequences should be addressed through providing clear and concise communication and training which improves the user's degree of control, in addition to the factors borrowed from social psychology (perceived usefulness, attitude, perceived behavioral control, a subjective norm, ease of use) influence adoption and acceptance of information technology. This is supported by Moses and Paulsen (2008) who state that people are unlikely to use technology if they are not trained thoroughly to instill confidence regarding how to use the system.

The challenge that exists with implementing any new Module or system functionality is ensuring correct 'set up' are implemented and also encouraging users to accept the change immediately.

This is always the most 'labour' and time intensive part but once completed, the savings in terms of accurate and timeous reporting are significant. Other major challenge for any system and one which has been identified at UFH is that of maintaining data correctly.

The University of Fort Hare is very committed to upgrading the ITS system, but the adoption and impact on operations in HR was never assessed, thus the reason for this case study at the UFH HR Department. The next section discusses the impact of IT on HRM Competence.

2.9.2 Impact of IT Usage on HRM Competence

IT has been cited as a critical driver of Human Resources transition from the previous focus on administrative tasks to a focus on serving as a strategic business partner. The change of focus does not only add value to the HR function but also changes the competencies that define the success of HR professionals. Ulrich (1997) cited that the Cedar HR self-service portal survey revealed that organisations using Information Technology could reduce HR transaction costs by 75% and recoup costs associated with the technology in less than two years. In an attempt to enhance the efficiency and effectiveness of the HR departments, most organizations use electronic HR systems. Technology has the potential to free up HR professionals from some of the routine tasks, giving them an opportunity to become a strategic partner focusing on organisational partnerships, change management and employee support (Ulrich, 2007). The opposite is prevalent at the University of Fort Hare because IT is not utilized optimally and other factors influencing the usage still need to be validated.

Transformation has been slow but there is evidence that the role of HR professionals is evolving. In 1998 the society for HRM studied the future-oriented competencies of HR professionals. The study revealed a set of core HR competencies, including customer focus, assessment and measurement skills and technology skills. Ulrich (1997) identified three primary domains of HR competence:

- knowledge of business,
- delivery of HR practices,
- change management, and
- technology expertise as the fourth domain necessitated by integration of IT to HR.

Even though the four areas are widely recognized as core competencies that define the HR profession, no one has examined whether adoption of information technology in HR drives change in the relative importance of these different competency domains over time.

HR professionals are expected to demonstrate expertise in adapting HR practices to changing business conditions. This strategic competence will require a combination of HR professional expertise in HR delivery and business knowledge. The impact of IT on the nature of HR work necessitates the importance of examining the impact of IT on Job Satisfaction as discussed in the next section.

2.9.3 Impact of IT Usage on Job Satisfaction

IT usage is a necessary condition for ensuring productivity payoffs from IT/IS investments. Studies have shown that there is a relationship between *perceived usefulness*, *perceived ease of use* and *enjoyment*, *social pressure* and *job satisfaction*. Studies also seem to suggest that while IT may increase productivity, it can also degrade the work and social life of those who use it. There is a correlation between system usage and job satisfaction. With office automation, managers find their jobs more enriching and the quality of work life enhanced, whereas for those who are not computer literate, automation of work is threatening (McMurtrey, McGaughey, Downey, 2009). .

Perceived usefulness affects IT usage due to reinforcement values of outcomes; perceived usefulness revealed facts of a stronger and more consistent relationship with usage than did other variables. Hofstede's (2007) dimensions of culture have considerable management implications for perceived usefulness. These dimensions examine patterns of thinking and perception that affect various aspects of employee behavior. In abstractive cultures found in regions such as North America, and Europe, people think and behave in a linear fashion using a rational cause and effect paradigm to create perceptions. In associative cultures typically found among Africans, Asians and Arabs, perceptions and behavior are often diffused, i.e. they utilize associations with events that may not have a logical basis. However, this view is in contradiction with the findings of this study where participants at the UFH confirmed that the user friendliness and impact of IT in their work has positive impact in the adoption of ITS within the department. Previous studies involving subjects from abstractive cultures have shown that perceived usefulness is positively related with system usage (Robey, 2009).

Perceived enjoyment and fun represents intellectual playfulness and is defined as an individual characteristic that describes an individual's tendency to interact spontaneously, inventively, and imaginatively with the computer.

Research indicates that individuals who experience pleasure and joy from using the computer and perceive activities involving use of IT as inherently enjoyable, apart from any anticipated improvement in performance, are likely to use it more extensively than others (Van Der Heijden, 2003). Findings from this study contradict this view as it confirmed that they find ITS to be difficult to manipulate because of fear of making mistakes, which is an indication that they are not spontaneous in their interaction with the ITS system.

Hofstede (2007) found that while perceived usefulness emerged as the major determinant of computer acceptance in the workplace, enjoyment and fun had a significant effect beyond usefulness. People are threatened by uncertainty or unstructured situations and the results of this study support this view. Hofstede further adds that playfulness raises usage. People's need to either satisfy personal aspirations or attend to group needs also has an impact on IT usage. On the other hand, with creativity as well as unstructured experimentation with computer based tasks, it could be argued that employees from high uncertainty avoidance cultures such as Nigeria, would not be motivated to perceive using the computer as enjoyment/fun.

Social pressure can affect the attitudes and behavior of individuals to varying degrees in different societies depending on the culture. Researchers maintain that the individualism-collectivism dimension is an important means of understanding the motives of human action and behavior. In highly collectivistic cultures such as Nigeria and South Africa, employees' actions are typically influenced by the expectations of people around them, especially the group they identify with. This in-group identification is typically carried over to the work environment, where social pressure from management influences the attitudes and behavior of workers. Individuals from a collectivistic culture may use IT not because of derived potential usefulness or enjoyment, but because of the perceived social pressure from their supervisors and peers. These individuals want to be perceived as being technologically sophisticated by those whom they consider important to their future well-being. The results of this study are in agreement with this view as participants agreed that people who influence their behavior think that they should use ITS system and that senior management of their institution have been helpful in using the ITS system, and this had a positive impact on the manner they interact with ITS.

Perceived ease of use may actually be a casual predecessor to perceived usefulness (Davis, 2008). In high uncertainty avoidance cultures where employees seek more structure, perceived ease of use would promote positive attitudes towards computers.

Participants in this study are in agreement with this view when they state that they find it easy to get the ITS system to do what they want it to do, for example, when management requires them to retrieve statistics on all employees that are left with 5 years to retire, they are able to extract such information without effort. Although some reported that it requires a lot of mental effort.

Computer Skills are acquired through training. Individual characteristics, such as computer skills, have been reported to play an important role in the eventual success of usage of information systems. Research as cited by Anandarajan et al. (2008), indicated that individually-based training can have no effect on improved self-efficacy and performance in a collectivistic setting, such as South Africa. The results of this study contradicts with this view as the respondents reported that their previous computer knowledge was very instrumental in assisting them to learn ITS system quicker.

Organisational factors, such as organisational support refers to a positive attitude towards IT. Top Management approval of efforts of the staff to gain access to training, access to data, system development are other examples of organizational factors that impact on IT usage which influences job satisfaction (DeLone and McLean,1992). The positive relationship between organisational support and usage of the system is documented in the literature. Where there is a reward and recognition for using IT systems, there is bound to be high usage of systems. (Fishbein and Ajzen, 1975; Forster and Cornford, 1992; Legris and Ingham, 2003).

Lack of organisational support is noted to adversely affect effective utilization of computers (Davis, 2008; Fornell, 1981). Managers who display supporting behavior show concern, consideration, and acceptance of the needs and feelings of employees. In organisations where employees are motivated to use computers, individuals are likely to perceive this as the norm and be favorably disposed towards using computers. This view is supported by the response of the participants in this study, when they agreed that their department supervisors think that using ITS is valuable for decision making and improvement of HR services, and they further agreed that this had a positive impact on their adoption of the ITS system. Studies reveal that in individualistic cultures such as USA, extensive organizational usage has a strong effect on individual usage (Igbaria, Gumaraes and Gordon, 1995; Karahanna, Evaristo and Srite, 2005). In developing countries such as Nigeria with a collectivist culture, extensive organizational system usage could be strongly associated with individual usage; however, motivating factors would be different. (i.e. availability of computers will increase exposure, more familiarity, and perceived ease of use).

Individual usage will increase the result of the organisational usage aligned with the expectations of the company, management, peers or a particular in-group that employees could identify with.

In this section the relationship between *perceived usefulness*, *perceived ease of use* and *enjoyment*, *social pressure* and *job satisfaction* were discussed. The findings of previous studies are supported by the results of the study done in the University of Fort Hare where it was found that there was a positive influence on the above mentioned factors on the adoption of technology within the HR Department. The discussed impact on Job Satisfaction makes it necessary to understand the nature of HR roles and the impact of TAM on the HR Model of roles.

2.10 Aligning TAM to HR Model of Roles

Usefulness of an IT system usability is interdependent to its purpose. Aligning the TAM model to the purpose of an HR system shows that the purpose of an HR system is perceived differently by employees who have different preferences to HR roles within the organization. Ulrich (1997) divides HR roles into four clusters. Ulrich (1997) derived his four HR roles from two dimensions:

- people versus process, and
- strategy versus operations.

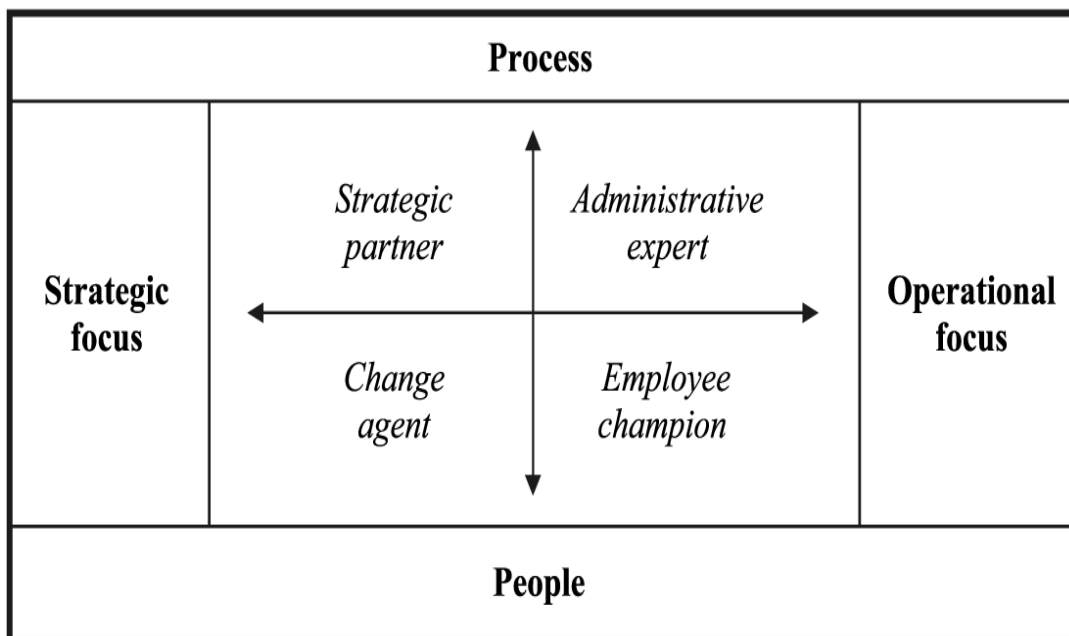


Figure: 2.2 Ulrich's HR Model of Roles (1997)

In Figure 2.2 the Ulrich (1997) model is represented. The first role is the **strategic partner**, which concerns HR strategy formulation and addresses the issue that HR processes need to be aligned with company policies. The second role is called **change agent** where HR assists the organization to change in line with long term targets and helps in developing and facilitating change management. The third role is **administrative expert** that considers a more administrative view of the HR function as the sum of transactional processes with regard to personnel and the administrative support needed by the organization in these transactions. The fourth remaining role is the **employee champion** where HR focuses on operational, short-term problem solving and support of employees and management of day-to-day matters.

There is a positive relationship between preferences for the strategic partner and change agent roles on the one hand and a positive attitude towards IT which purports that HR managers and Executives should display a positive attitude towards IT because of the possibilities it provides. The HR manager should focus on strategic HR tasks as opposed to more operational tasks (Gardner et al., 2003).

It was found at the UFH HR Department that change management and organizational support pertaining to development of IT usage policies, rewards and penalties were necessary for adoption of technology. Furthermore, individual characteristics and commitment of the users involved play a major role. However, line managers and shop-floor employees may also benefit from such a shift in tasks for HR professionals. A manager or shop-floor employee preferring the administrative expert role is expected to have a positive attitude towards IT because of expected improvement in terms of quality and efficiency. Managers and employees experience better quality and efficiency in administration due to higher degree of service delivered by the HR function. Finally, a negative effect on the attitude towards E-HRM is expected when employees or managers prefer the employee champion role. This may be caused by fear of losing personal contact with HR professionals, one of the strongest needs displayed by employees and managers who prefer an employee champion role for HR (Ulrich, 1997). This was experienced at UFH during implementation of the Online Leave System where some employees still preferred the manual leave process irrespective of the cut-off date that was set for the paper-based leave system. Even though ITS was implemented at UFH, it is clear that it has not been fully embraced judging from the number of ITS Modules not used as confirmed by the findings of the study.

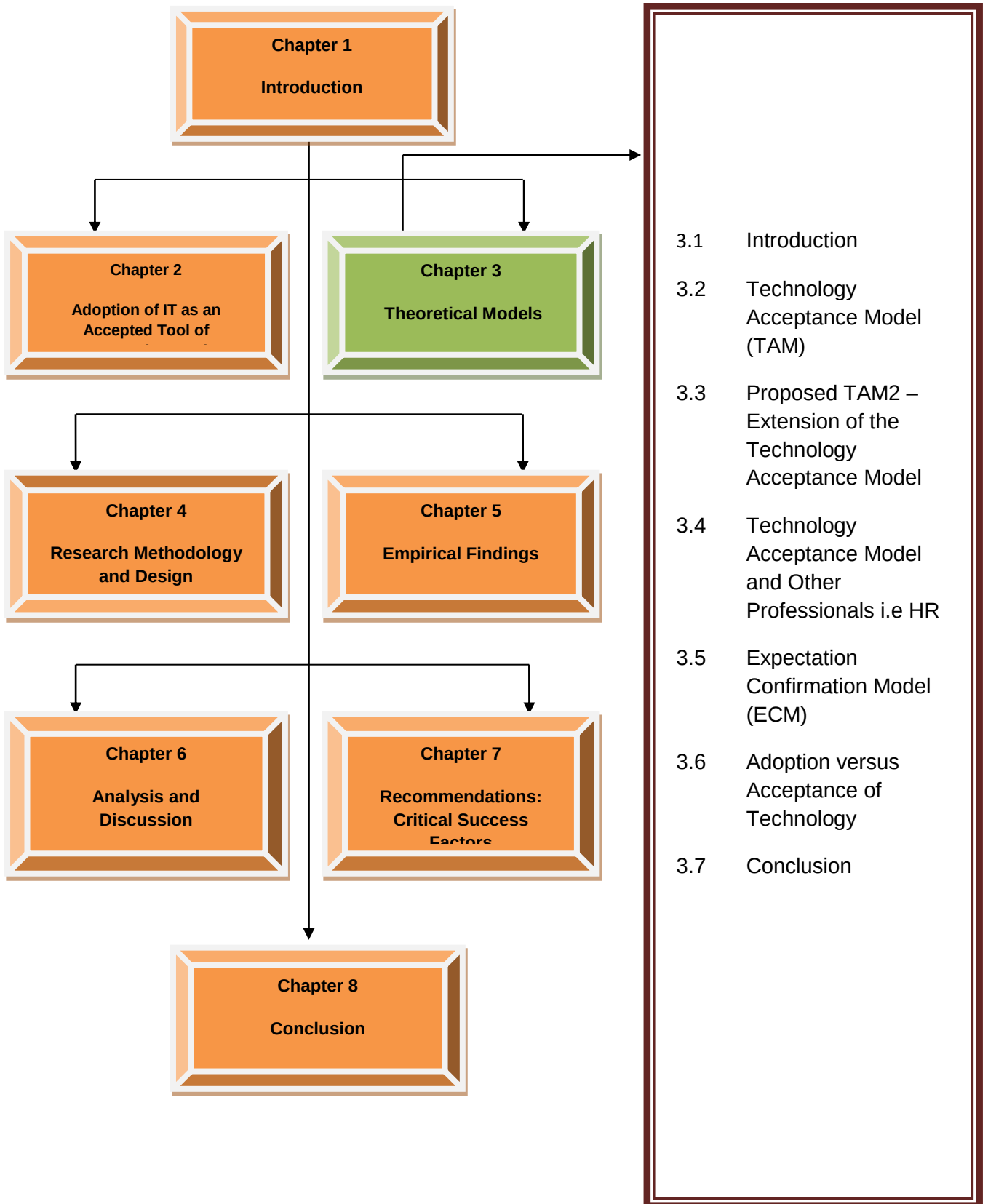
2.12 Conclusion

This chapter explored Adoption of IT in South Africa, adoption of IT in developing countries to ensure economic survival, and the Adoption of IT in Western countries with underlying assumptions of the democratization of the workforce and reasonable infrastructure. Adoption of IT in higher education and impact of globalization, digital divides, market driven forces and political factor were discussed. This chapter also addressed sub-cultures in higher education institutions and showed the influence of social networks through critical mass theory. The Adoption of IT at the University of Fort Hare as well as the successes and challenges of IT implementation at the University of Fort Hare were discussed. The impact of IT on HRM Competence, Impact of IT usage on Job Satisfaction, Aligning TAM to HR model of roles and Adoption vs acceptance of technology were also discussed.

Understanding of IT in SA is critical to understanding implementation of new IT or improvement to such in developing countries. In the South African case, participation is fostered through respect for communities and cultural heritage; the approaches used should be in consonance with the culture and this is relevant for the University of Fort Hare. To be in a position to test validity of adoption of technology in Western Countries, it is important to understand adoption of technology in developing countries, considering the differences in character. HR Professionals agree that management believes that ITS is valuable for decision making and improvement of HR services. Research recommends that institutions of higher education (HE) need to follow global education and administration trends in technology without which expectations will not be met. The motivation gained from observing other people using the systems is an interesting dynamic in the adoption of information technology. Critical Mass Theory (CMT) was discussed as relevant because it explains how seeing other people using systems impacts on acceptance of similar technology. It is important to note that factors like perceived usefulness, perceived ease of use and enjoyment, social pressure, organizational factors, computer skills and job satisfaction were reported to influence the acceptance of technology within the HR Department at the University of Fort Hare. The above factors were incorporated into the Critical Success Factors for technology acceptance within the HR Department due to the fact that though ITS was implemented at UFH, it is clear that it is not fully embraced by HR Professionals. This is judged from the number of ITS Modules unused as confirmed by the findings of the study.

The next section discusses the Theoretical Models applied in this study being the Technology Acceptance Model, Expectation Confirmation Model and Unified Theory of Acceptance and Use of Technology (UTAUT).

Umarji and Seaman (2005) supported that some organizational issues and personal issues and IT System implementation related Issues (*amount of learning required, compatibility of work practices, champions/advocates*) in addition to the factors borrowed from social psychology (*perceived usefulness, attitude, perceived behavioral control, a subjective norm, ease of use*) influence adoption and acceptance of information technology.



CHAPTER 3 Theoretical Models

3.1. Introduction

This chapter seeks to answer all 3 sub-questions as it discusses different models that have been used in literature to measure and explain user acceptance issues concerning Information Technology. Various theories and philosophies in technology adoption and continued use are discussed in this chapter. Being appreciative of users' attitudes towards technology intensify the improvement of Information Technology adoption within HR departments in higher education. Understanding HR professionals' attitudes towards information technology and the intention to use IT to administer HR work in order to enhance service delivery to management and creating an opportunity for effective decision making, strengthen the adoption of IT within HR Departments. However, there are various technology acceptance factors which need to be taken into account by universities that ensure continued use and adoption of information technology. Jones and Hubona (2005) proposed that user differences like staff seniority, age, and education level have significant direct effects on both the frequency and volume of usage and they further add that the findings of their study underscore the importance of users' individual differences and suggest that TAM's belief constructs are accurate, but incomplete predictors of usage behavior.

Therefore the following chapter discusses the different models that have been used in the literature to measure and explain user acceptance issues concerning Information Technology. These models and their respective effectiveness are discussed in this section. The Technology Acceptance Model (TAM) is discussed followed by the extended TAM Model (TAM2). The Technology Acceptance Model (TAM3) is also discussed followed by the Unified Theory of Acceptance (UTAUT) and lastly, the Expectation Confirmation Model (ECM) is discussed.

3.2. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) by Davis (2008) was derived from the Theory of Reasoned Action (TRA) of Fishbein and Ajzen (1975), and has been used to validate factors that influence acceptance, adoption and use of technology. The Technology Acceptance Model is one of the most cited theoretical frameworks (Teo, 2009). The theory focuses on attitudinal explanations of individual intentions to use a specific technology or service (Horst, Kuttschreuter and Gutteling, 2007). This study uses the TAM to analyse the HR department staff's acceptance and intention to use information technology at the University of Fort Hare.

TRA states that one's behavior and the interest to behave is a function of one's attitude towards the behavior and perceptions about the behaviour. Therefore, behaviour is the function of both attitude and belief.

User motivation can be explained by three factors: *perceived ease of use*, *perceived usefulness*, and *attitude towards using the system*.

The TAM model is an attempt to draw from the determinants of computer acceptance as shown in Figure 3.1 below:

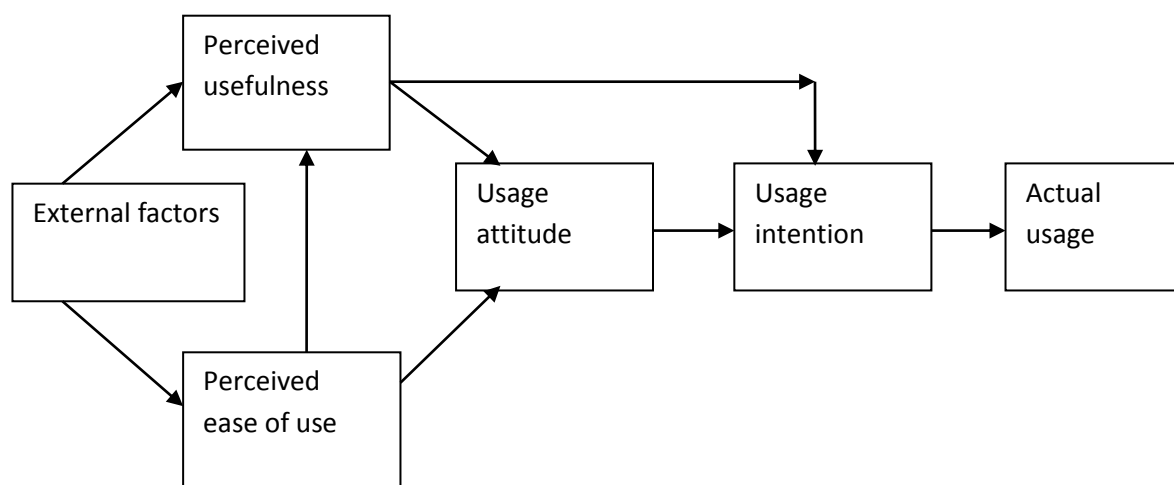


Figure 3.1: Original Technology Acceptance Model (TAM), (Davis, 1986)

TAM provides a basis which traces how external variables influence belief, attitude and intention to use. TAM posits that perceived usefulness and perceived ease-of-use affects the acceptance and use of Information Technology. PU is the extent to which people believe that the technology will help them perform their jobs better, while PEU is the degree to which a person believes that using a particular system will be free of effort (Davis, 2008). If a system is high in PU, a user believes in the existence of a positive system performance. On the other hand, a system perceived to be easier to use than another is more likely to be accepted by users. Davis (2008) further emphasised that PU and PEU are people's subjective appraisal of effort and performance and do not necessarily reflect objective reality. TAM describes the relationship between PU and PEU and user attitudes, intentions, and computer usage behavior.

According to Davis, Bagozzi, and Warsaw (2006), one's actual use of a technology is influenced directly or indirectly by the user's behavioral intention, attitude, PU and PEU of the system. According to the TAM, user characteristics have been found to impact on behavioral intention to use technology (Davis et al., 2006). The TAM specifies the causal relationships between perceived usefulness, perceived ease of use, attitude towards computer use, and behavioural intention to use technology rooted on principles adopted from (Fishbein and Ajzen, 2006).

The Theory of Reasoned Action proposes perceived ease of use and perceived usefulness to be fundamental determinants, operative in the context of computer user behavior as cited by (Teo, 2009). Both perceived usefulness and perceived ease of use jointly affect usage attitude, whilst perceived ease of use has a direct impact on perceived usefulness.

Dishaw and Strong (2009) pointed out that it is necessary to further explore the nature and specific influences of technological and usage-context factors that may alter the user's acceptance to increase external validity of the TAM. Some studies have introduced product factors such as technological complexity, user factors such as computer self-efficacy, and environmental factors such as technical or organizational support, to expand the TAM (Cheung and Huang, 2005; Hasan, 2006). Others have tested the validity of the TAM using a variety of technologies, services and environments. These include personal computers, e-mail systems, Internet, e-commerce and online shopping (Gefen, 2003; Lederer, Maupin and Sena, 2000; Zhang and Prybutok, 2009). It is against this background and using TAM as an underlying theory, that this study proposes to evaluate user acceptance and continued use of ITS among HR Staff of University of Fort Hare.

The TAM model is based on factors relating to actual system use, attitude towards using, perceived ease of use, perceived usefulness and behavioural intention. ASU is defined as the user's desirability to use the system. ATU is the result of personal and social influences (Renaud and van Biljon, 2008). Perceived ease of use of a system is the user's view that the technology is easy to work on. Perceived usefulness is the user's view that technology is helpful in assisting his/her work (Park, Lee and Cheong, 2007). Behavioural intention is the motivation to use a technology to achieve a task in the future (Wu and Kuo, 2008).

A number of studies have tested the external factors that influence technology adoption in TAM, but there is a need to investigate this in an African context within a university Human Resources Department and a need to explore the continued use of IT in an African University.

Some of the tested external factors that influence acceptance, use and adoption of TAM are listed in the table below.

Table 3.1: External Factors Affecting Acceptance, Use and Adoption

Factor	Author
Age	(Anandarajan et al, 2008; Porter & Donthu, 2006)
Education	(Porter & Donthu, 2006)
Income	(Porter & Donthu, 2006)
Race	(Porter & Donthu, 2006)
Culture	(Yaobin et al, 2008)
Concentration	(Yaobin et al, 2008)
Social Pressure (SP)	(Anandarajan et al, 2008)
Personal Experiences (good or bad) (PE)	(Horst et al, 2007)
Computer Skills (CS) (User's experience and computer training)	(Anandarajan et al, 2008)
Management Support (MS) (General support offered by top management)	(Wu et al, 2008)
Subjective Norm (SN) (User's view of whether other people important they should engage in technology use)	(Yaobin et al, 2009; Park et. al, 2007; Wu et al, 2008)
Social Identity (SI) (Knowledge that an individual belongs to certain social groups together with emotional and value significance to him of this group membership)	(Park et al, 2007)
Trust (Extent to which one is willing to ascribe good intentions to, and have confidence in the words and actions of other people or systems)	(Wu et al, 2008; Horst et. al, 2007).
Self Identity (SI) (The salient part of an actor's self which relates to a particular behaviour that reflects the extent to which an actor sees him or herself as fulfilling the criteria of any societal role)	(Park et al, 2007)

Technology Complexity (TC) (The level to which technology is thought to be difficult to understand and use)	(Teo, 2009)
Facilitating Conditions (FC) (Factors in the environment that influence a person's desire to perform a task)	(Teo, 2009)
Perceived Enjoyment (PE) (Internal motivation for use of computers)	(Anandarajan et al, 2008).
Flow (The holistic sensation that people feel when they act with total involvement)	(Yaobin et al, 2008)

The model has been used to determine technology use by university lecturers (Park et al, 2007), plus pre-service and in-service teachers (Teo et al, 2008; Teo, 2009). It has been tested in a number of cultural environments: in an African environment (Anandarajan et al, 2008 and Averweg, 2008) a Chinese cultural environment (Yaobin et al, 2008), a Malaysian environment (Teo et al, 2008) and in a Singaporean environment (Teo, 2009); however, it is the first time it has been tested in a university Human Resources Department. It has been validated in users' acceptance of instant messaging (Yaobin et al, 2008). It has been used in explaining how attitudes determine Internet usage (Porter et al, 2006). TAM has been used to predict acceptance of technology in different fields: healthcare (Wu et al, 2008), adoption of e-government (Horst et. al, 2007), education (Teo et al, 2008) and many other fields.

According to Teo (2009), teachers have a role to play in advancing the use of technology in education or appalling effect in it. He stated personal factors, such as reluctance to work with computers, and technical factors such as technological complexity. He further highlighted that the successful use of technology in teaching and learning depends on factors that significantly influence teachers' technology acceptance. He published research findings that showed perceived usefulness, attitudes towards computer use, and *computer self-efficacy* as having a direct effect on behavioural intention to use technology. He found that perceived ease of use, *technological complexity*, and *facilitating conditions* affect *behavioural intention* use directly. The study was conducted on pre-service teachers in Singapore.

A similar study has been conducted on university lecturers (Park et al, 2007). The study examined factors that influence lecturers' adoption and use of an Internet-based course management system and tested the applicability of the TAM in the context of e-learning practices in higher education. The results revealed that perceived ease of use of the system had a significant impact on perceived usefulness as the TAM suggested. Perceived usefulness was viewed to have a direct effect on behavioural intention and an indirect effect on the *actual system use*. This is supported by the findings of this study for participants agree that perceived ease of use and perceived usefulness have a positive impact on adoption of technology within the UFH HR department.

Park, Lee, and Cheong (2007) also tested the effect of *policy* on adoption and found that policy had no significant impact on adoption decision. A number of external factors have been investigated in the role they play in technology acceptance and these include: *subjective norm* and *moderation effect* (Schepers and Wetzels, 2007), *self identity* and *social identity* (Park et al, 2007), *social influence* (Lee et al, 2006), *personal experiences*, *risk perception* and *trust* (Horst et al, 2007). Presence and absence of *risk* and *trust* as determinants in technology acceptance have been cited by various studies (Horst et al, 2007).

The TAM study has yielded no significant differences across two *cultures* (Teo, Wong, and Sing, 2008) where research was conducted between Singaporean and Malaysian pre-service teachers. A study (Anandarajan et al, 2008) conducted in an African setting in Nigeria stated that perceived usefulness and perceived enjoyment have no effect on usage as opposed to findings in North America. Organizational support and social pressure had more effect on usage for Nigerian users. Studies further stated that normative and social values have more effect on users.

These findings are not in agreement with the findings of Chinese Internet users (Yaobin, Tao, and Bin, 2008). They further identified that users accepted technology because of *intrinsic motivation* (*perceived enjoyment* and *concentration*) and *extrinsic motivation*. The study was conducted mainly on high school students and undergraduate students and not on working professionals, indicating that students are more interested perhaps in the *enjoyment* aspect of usage.

Porter and Donthu, (2006) proposed that factors such as *age*, *education*, *income* and *race* have an impact on technology acceptance.

They stated that there is less Internet usage by older, less educated, minority and lower income individuals than those who are younger, highly educated, white and wealthier. They find that *race, age, education* and *income* are associated with Internet usage. Furthermore, older users need a different approach as compared to younger users. Porter and Donthu (2006) stated that older users understand the importance of Internet usage; therefore, there is no need to market technology to older users compared to younger users. In familiar environments, older users' concerns are cost and comfort and they are challenged by unfamiliar environments. Older users should be helped to overcome psychological access barriers, and the tools they use should be based on familiar devices.

Other factors that have been validated as determinants of adoption are *perceived ease of use, perceived usefulness, personal experiences, risk* and *trust* (Horst et al, 2007). They further discovered that *risk* perception, *personal experiences, perceived behavioural control* and *subjective norm* significantly predict *perceived usefulness* of technology in general. According to them, *perceived usefulness* is the main determinant of the intention to adopt technology. *Trust* was the main determinant of *perceived usefulness* and has been found to be the main determinant of *behavioural intention to use* a system together with *subjective norm*.

Schepers and Wetzels (2007) find that *subjective norm* has more effect on younger users such as students compared to older users. They further claimed that younger users are more technological ready and easily influenced by trends. The findings are in agreement with Porter and Donthu (2006). Schepers and Wetzels (2007) asserted that technology acceptance is different per culture. *Perceived usefulness* determines *intention to use* and *actual use* in Western cultures while the determinant is *ease of use* in non-western cultures.

Averweg (2008) indicated that the difference between findings of studies conducted in Western countries and countries in Africa have also been identified in a study conducted in South Africa. He established that *perceived ease of use* was the main determinant of acceptance.

The main determinant of technology acceptance in the majority of studies conducted in Western countries is *perceived usefulness*. Averweg (2008), further stated that it is important to consider the influence of local conditions on the adoption and assimilation of technologies in developing countries. The local conditions may be the cause of the differences in the findings of western countries and developing countries (Anandarajan et al, 2008).

In summary, this section explains the attitude of individual intentions to use specific technology or service using TAM. TAM was tested in a number of cultural environments including African, Chinese, Malaysian and in Singaporean. Validity of TAM has been tested in user acceptance of instant messaging and to predict acceptance of technology in different fields including healthcare, adoption of e-government, education and many other fields. Venkatesh and Davis (2009) extended the original model (TAM) to TAM2 to explain perceived usefulness and perceived ease-of-use including social influence (subjective norm, voluntary, and image), cognitive instrumental processes (job relevance, output quality, and result demonstrability) and experience. The Figure 3.2 below represents the TAM2 developed by (Venkatesh, 2000).

3.3 Proposed TAM2 – Extended Technology Acceptance Model

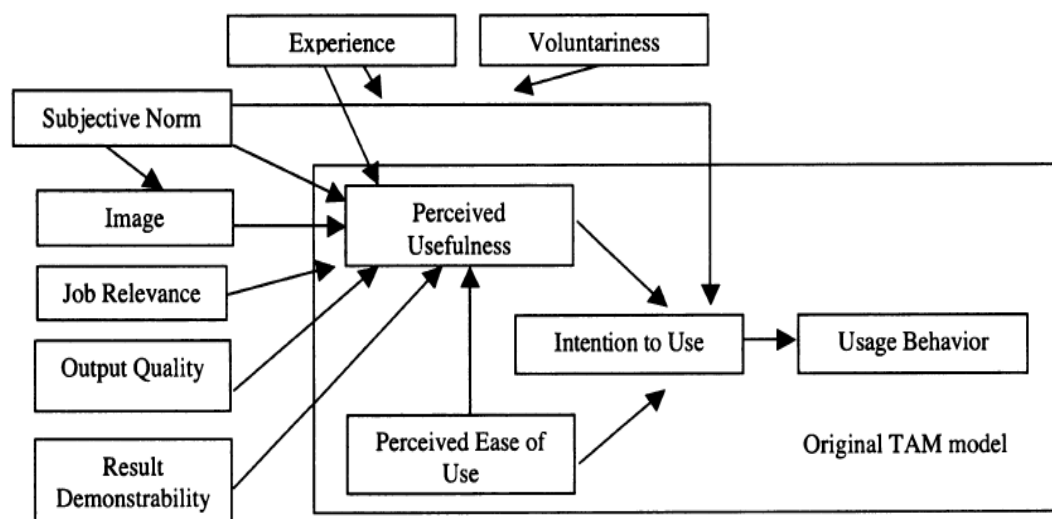


Figure 3.2: Extended TAM Model and the Improvements made in the subsequent TAM2 Model. (Venkatesh and Davis, 2009; Lee, Kozar and Larson, 2003).

TAM has been validated and applied to a diverse set of technologies and respondents have been divided on both voluntary and mandatory usage contexts (Venkatesh, 2000). Agarwal and Prasad (as cited by Venkatesh, 2000) find that in making a distinction between mandatory and voluntary usage environments, this model posits voluntariness as a moderating variable defined as “the extent to which potential adopters perceive the adoption decision to be non-mandatory”. It is considered a very reliable and robust model as it has been proven to be applicable to individuals of all levels of IT competency, gender and ages (Yarbrough and Smith, 2007). However, amongst other shortcomings, it assumes that the individual will be free to act without any boundaries.

In application however, there are several barriers that can limit the ability of an individual to use technology. These barriers include ability, time, environmental and organisational limits, resource scarcity and unconscious habits (Yarbrough and Smith, 2007). Venkatesh and Davis (2009) pointed out that some of these concepts like experience, gender and voluntariness were not included in the original TAM. Literature has indicated that for the TAM to accurately predict technology acceptance, context-specific variables must be added in order to increase the explanatory power of the model (Yarbrough and Smith, 2007). The main objective for Venkatesh to extend the original TAM was to address the limitations of the original TAM. Two additional factors which directly influenced 'perceived usefulness' were included in TAM2:

- cognitive instrumental processes (job relevance, image, output quality, result demonstrability) and
- social influence/subjective norms processes (experience and voluntariness).

The following table provides for descriptions of the additional factors:

Table 3.2: Definitions of TAM2 variables (Venketesh and Davis, 2009)

Job Relevance	Individual's perception of the degree to which the technology is applicable to their job.
Output Quality	Individual's perception of how well a system performs a task necessary to his or her job.
Result Demonstrability	Tangibility of results of using the technology.
Perceived Ease of Use	Impact on perceived usefulness.
Subjective Norm	Person's perception that people who are important to them think they should or should not use the technology.
Image	Degree to which one perceives the use of the technology as a means of enhancing one's status within a social group.
Voluntariness	Extent to which one perceives the adoption decision as non-mandatory.

Further additions to TAM2 include the use of *anchors* and *adjustments* which directly influence *perceived ease of use*. *Anchors* add concepts such as computer self-efficacy, perceptions of external control, computer anxiety, and computer playfulness to the model while 'adjustments' provide for concepts such as perceived enjoyment and objective usability (Venkatesh and Davis, 2009 and Lee, Kozar and Larson, 2003).

The ability to predict explained variance increased from 25% making use of the original model (TAM) to 40% after the extensions were included to TAM2 (Venkatesh and Davis, 2000 and Lee, Kozar and Larson, 2003).

This section explored the impact of job relevance, image, output quality, result demonstrability and experience and voluntariness of professionals. The next section provides an overview of the TAM and Other Professionals that have been conducted making use of this model.

3.4 Technology Acceptance Model and Other Professionals, i.e. HR

The TAM has been used in order to explain the acceptance of technology in many different settings and with a variety of users. Chau and Hu (2002) in their proposed framework suggest that an individual professional's decision to accept a technology can be explained or predicted by factors pertaining to:

- the individual context,
- the technological context, and
- the implementation context.

The individual context comprises essential characteristics of individual users, University of Fort Hare HR Professionals in this context. HR professionals may portray characteristics subtly different from those of end users and managers in other university functions. University of Fort Hare HR Professionals are being studied; most of these individuals have studied at UFH, but have never worked elsewhere to understand the trends in the Human Resources space. Their best practice is the reality to which they have been exposed at UFH and the kind of leadership they have been exposed to in a rural university. Within the individual context, it is important to understand individual characteristics and assess their possible effects on technology acceptance.

The technological context focuses on important characteristics, understanding that various user groups may view technology differently and are likely to concentrate their technology evaluation using different criteria.

The implementation context is the clinical setting where an individual professional provides a service to customers and collaborates with peers in service delivery.

Analysis of the implementation context require focus on important characteristics of the underlying organisational and task-performance setting that may affect professional technology acceptance decision-making.

It is interesting to note that the proposed framework differs from other research in two areas (Chau and Hu, 2002). Firstly, the framework does not include the management context, which has been considered by several studies to be essential in individual technology acceptance/adoption. Chau and Hu (2002) commented that “the power of a professional office like our HR office is to emphasize authority of a professional nature” – that is, the power of expertise. Individual HR Professionals not only control their own work, but also seek collective control of the administrative and managerial decisions that may affect them, particularly in their day to day practice and service. Peer influence may have considerable effect on individual technology acceptance in a professional setting. The implementation context conceivably encompasses both the individual and technological contexts and thus may exert an influence on them. Similarly, individual contexts may affect or be affected by the technological context. The above framework provides a useful departure point towards a systematic examination of technology acceptance.

In Figure 3.2, the TAM2 has been employed to explain and forecast on technology use in diverse disciplines such as decision sciences, management sciences, information technology and management information technology. The TAM2 has also been employed to estimate technology acceptance across various cultures. Venkatesh, Morris, Davis and Davis (2003) integrated TAM into subjective norm in order to deal with gender differences in roles of PU and PEU as determinants of technology acceptance and usage.

A subjective norm is the degree to which an individual believes that people who are important to him/her think he/she should behave in a certain way (Fishbein et al, 1975). Venkatesh and Bala (2008) further extended TAM2 to TAM3 and suggest that anchor (computer self-efficacy, perceptions of external control, computer anxiety, computer playfulness) and adjustment (perceived enjoyment, objective usability) are determinants of PEU Venkatesh and Bala (as cited in Vankatech et al, 2003). Figure 3.3 represents the TAM3 developed by Venkatesh and Davis (2008).

In this figure, computer self-efficacy acts as a determinant of PEU both before and after hands-on use and objective usability was found to be a determinant of ease of use only after direct experience with the system.

Self-efficacy is defined as judgments of how well one can execute courses of action required to deal with prospective situations (Venkatesh and Bala as cited in Vankatesh et al, 2003).

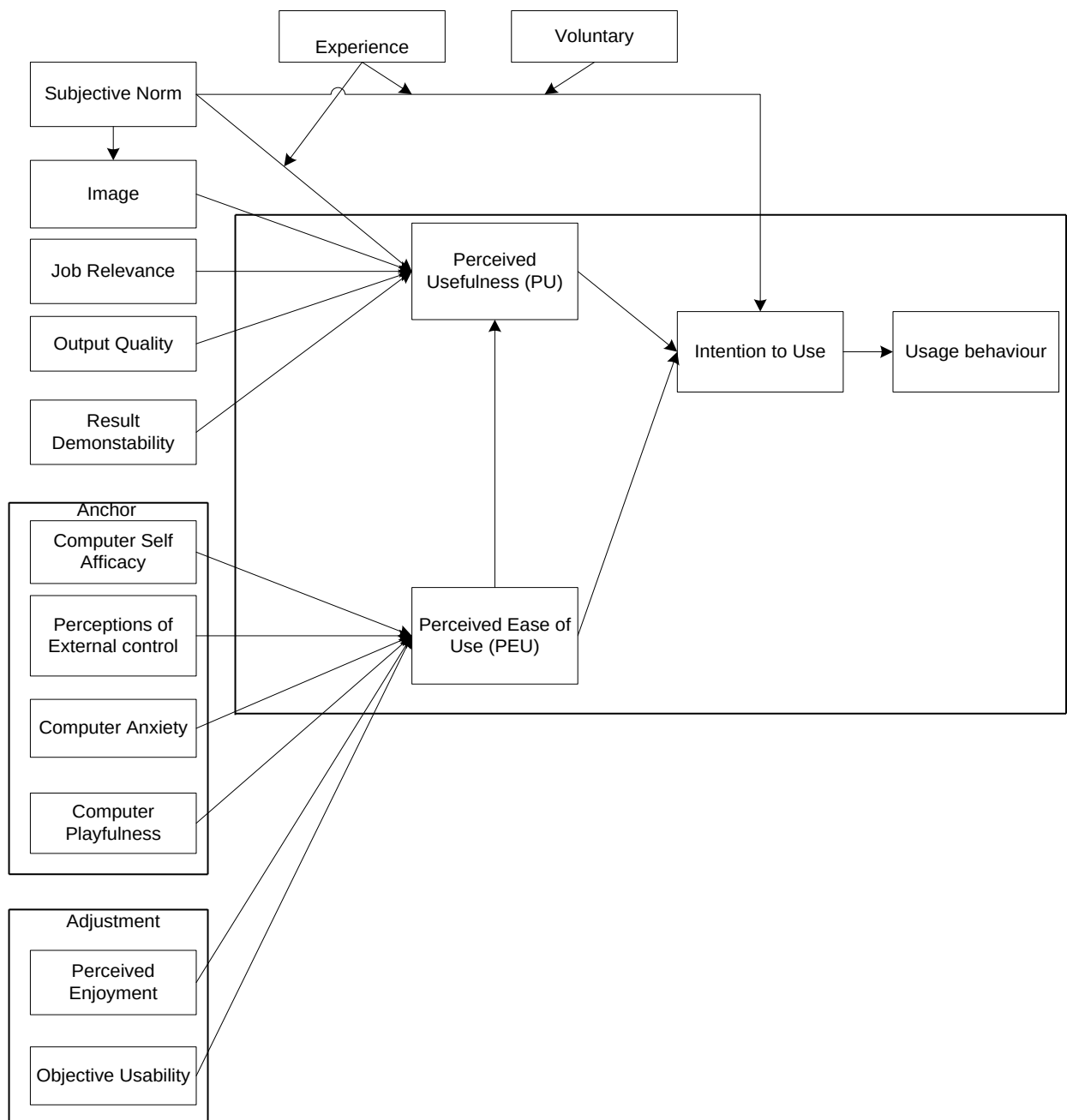


Figure 3.3: Technology Acceptance Model (TAM3), Venkatesh and Davis (2009).

However Venkatesh et al (2003) developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model through a review and consolidation of other models that earlier research employed to explain IS usage behavior. These models include all the TRA, TAM, TAM2 and TAM3 models.

TAM extended TAM3 to the (UTAUT). The UTAUT was developed through a consolidation of eight different models including the TAM. The theory itself was validated in a longitudinal study which explained 70% of technology acceptance behaviour in HR Professionals, a considerable improvement on previous models which routinely explained only 40% of acceptance (Venkatesh et al, 2003). The UTAUT is used to explain user intent to use Information Systems and the subsequent usage behaviour. The four key constructs that directly influence usage intention and behaviour are performance expectancy, effort expectancy, social influence and facilitating conditions. Aspects such as gender, age, experience and voluntariness directly impact these key constructs (Venkatesh et al, 2003). Performance expectancy represents the degree to which an individual believes that using the system will help them to attain their goals in job performance. Effort Expectancy is defined as the degree of ease associated with the use of the system. The extent to which an individual allows the opinions of others to influence their decision to use the system is called Social Influence and Facilitation Conditions. These are the objective environmental factors that observers concur that they make the act easy to accomplish (Venkatesh et al, 2003). Figure 3.4 below is a diagrammatic representation of the UTAUT model.

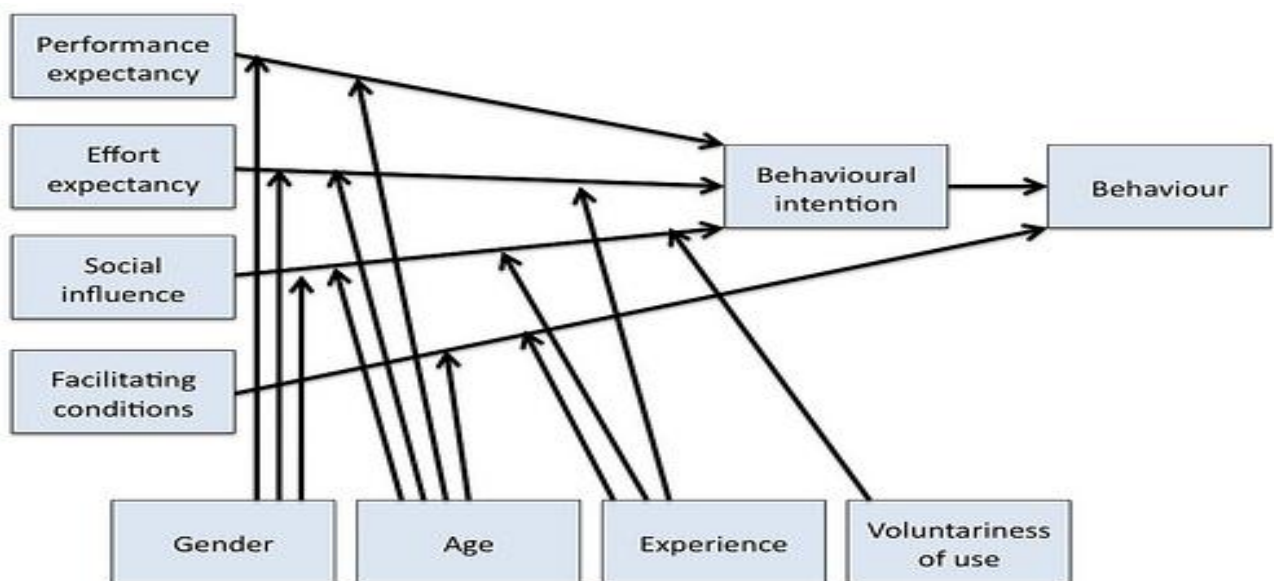


Figure 3.4: Unified Theory of Acceptance and Use of Technology (UTAUT), (Venkatesh et al, 2003).

In Figure 3.4, gender, age, experience, and voluntariness of use demonstrate an impact on the four key constructs on usage intention and behavior (Vankatesh et al, 2003). The UTAUT posits that four key constructs that the direct determinants of usage intention and behavior being:

- performance expectancy,
- effort expectancy,
- social influence, and
- facilitating conditions.

One of the key findings of the theory is the marked difference between the motivators for the adoption of technology between men and women. Men will make use of new technology based on their perception of usefulness while women will be influenced by their perception of the technology's ease of use. Age has also been shown as a contributor to the adoption of technology with older people tending to adopt new technologies more slowly than younger users (Venkatesh and Davis, 2009). A possible solution to the above situation is to include people from the start when the introduction of the new technology is planned (Mitchelle, 2009). The following table identifies some of the other key findings of the model:

Table 3.3: Summary of findings for the UTAUT model (Adapted from Venkatesh et al, 2003)

MODERATORS	EXPLANATION
Gender, Age	Effect stronger for men and younger workers
Gender, Age, Experience	Effect stronger for women, older workers, and those with limited experience.
Gender, Age, Voluntariness, Experience	Effect stronger for women, older workers, under conditions of mandatory use, and with limited experience.
Age, Experience	Effect stronger for older workers with increasing experience.

3.5 Expectation Confirmation Model (ECM)

The Technology Acceptance Model (TAM) focused on technology adoption, acceptance and use. The Expectation Confirmation Model (ECM) of IT continuance is a model for investigating continued Information Technology (IT) usage behavior. ECM focuses on the post-adoption environment, where users display an interest in continuing to use technology or to stop using technology.

Thong et al (2006) stated that until the post-adoption usage of the technology can be confirmed, it is premature to classify a technology adoption as a success.

This is true for the University of Fort Hare HR department because ITS system was implemented successfully, but adoption is still under question.

According to Thong et al. (2006), it is important that post-adoption beliefs are investigated and dealt with, because if enthusiasm over initial adoption of technology diminishes after users have gained experience, the technology will suffer from decreased use.

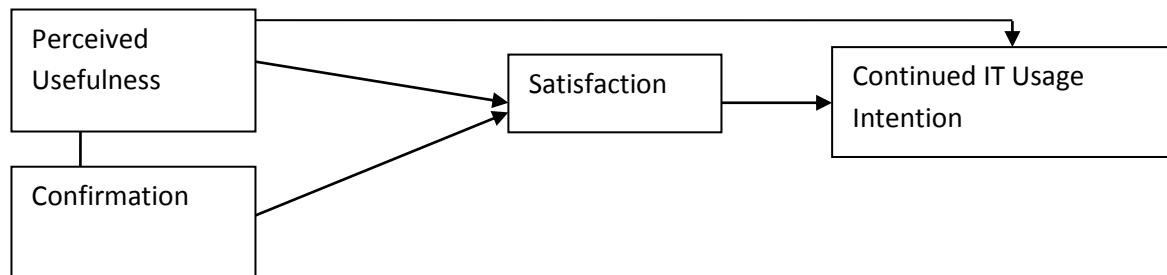


Figure 3.5: Expectation-Confirmation Model (ECM) (Thong, Hong and Tam, 2006)

The initial adoption and acceptance of IT is essential for the success of the University of Fort Hare HR Department. Future practicality of ITS system and its feasibility depend on whether the UFH HR staff continued to use it or not. The Expectation Confirmation Model (ECM) indicated that continued use depends on three factors: User's level of *satisfaction*; the extent of user's *confirmation* of expectations and post adoption expectations in the form of *perceived usefulness*, have all been confirmed in the case study of the UFH HR Department. Table 3.4 below lists factors whose effect has been investigated in continued IT usage.

Table 3.4: Factors Affecting Continued IT Usage (Bajaj et al 1998; Wu and Kuo, 2008 and Lee et al, 2006).

Factor
Perceived Ease of Use
Perceived Usefulness
Educational Level
Professional Level Skill
Skill Level
Training Level
Positive Attitude
Organizational Support /Factor
Organizational Size
IT Maturity Level
Strategic Applications Level
Past Usage
Habitual Usage
Subjective Norm

The findings of the study conducted by Thong et al. (2006) showed that an extended ECM were supportive of the original ECM. Thong et al. (2006) found that both satisfaction and post-adoption expectations, such as perceived usefulness, perceived ease of use and perceived enjoyment, were significant determinants of user continued technology usage intention. The study confirmed that the primary effect was satisfaction; users place more emphasis on confirmation of their expectations rather than on individual post adoption beliefs, in determining their levels of satisfaction.

Thong et al. (2006) realised that there was no strong association between perceived usefulness and satisfaction.

According to Mahmood et al. (2007), the factors with lowest effect on continued usage were *educational level*, *professional level*, and *training level*. Factors that were in the middle ground in terms of effect on IT continued usage were *organization size*, *IT maturity level* of the organization and *positive attitude*. Mahmood et al. (2007) revealed that the highest ranking factors are those that have the most impact on individuals while performing their daily tasks. *Usefulness*, *ease of use*, and *educational support* are the factors with the strongest effect. This section focuses on the post-adoption environment, where users display an interest in continuing to use technology or to stop using technology. Factors affecting IT usage were discussed. This necessitates understanding of the difference between Adoption vs Acceptance of Technology, as explained in the following section.

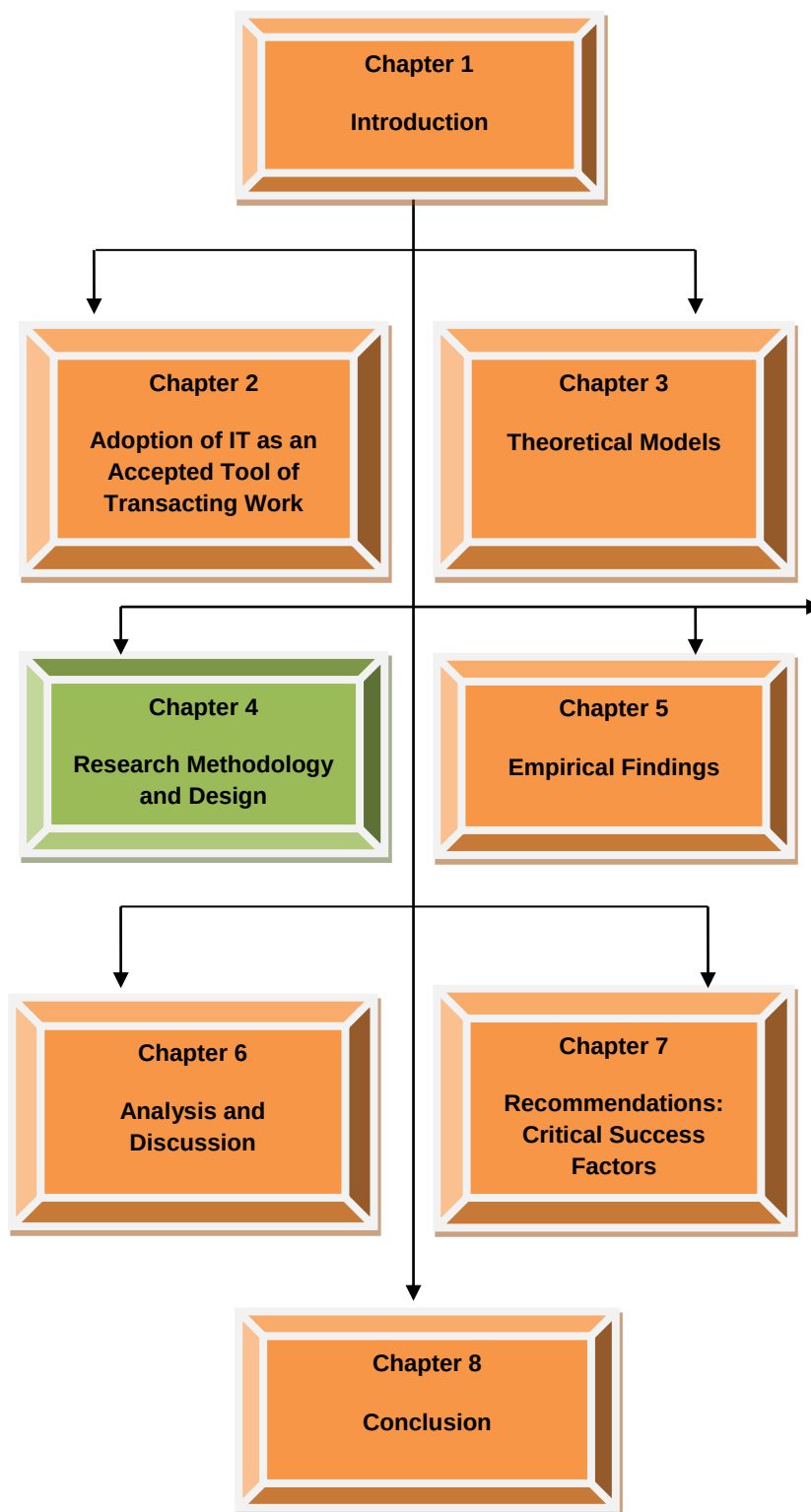
3.6 Adoption versus Acceptance of Technology

Renaud and van Biljon (2008) argue that it is important to make a distinction between adoption and acceptance of technology. Technology adoption is process-starting with the user becoming aware of the technology, and ending with the user embracing the technology and making full use of it. Someone who has embraced a technology is likely to replace the item if it breaks, find innovative uses of it, and cannot contemplate life without it. Many teenaged mobile phone users have embraced the technology without reservation. Acceptance, as opposed to adoption, is an *attitude* towards a technology and it is influenced by various factors. A user who has purchased a new technology item has not yet adopted it – there are other stages beyond simple purchasing and this is where acceptance plays an important role. If the user buys an item and then does not accept it, it is unlikely that full adoption will occur. It is for this reason that Renaud and van Biljon (2008) proposed the Senior Technology Acceptance and Adoption Model (STAM) for modeling the acceptance process; this was driven by factors that influence mobile phone adoption into the context of the elderly mobile phone user. By relating acceptance factors to adoption stages STAM provides an explanation of why many elderly adults never reach the final adoption phase and never fully accept technology. This approach may also be used in modeling technology acceptance of other demographic groups. However, larger groups are needed to test validity and reliability of STAM and furthermore the age group identified (60 – 92) is quite broad and further work includes testing the model on smaller age ranges (Renaud and van Biljon, 2008). The next section summarises Chapter 3 above.

3.7 Conclusion

This chapter explored both the theoretical frameworks used in this study as well as the human resources in higher education research conducted previously making use of three theoretical frameworks. The original TAM is extended up to the TAM3. All the three TAM Models contributed to the development of the UTAUT model. The TAM provides a basis which traces how external variables influence belief, attitude and intention to use and posits that perceived usefulness and perceived ease of use affects the acceptance and use of IT. The TAM2 explains perceived usefulness and perceived ease of use including social influence, cognitive instrumental processes and experience. Furthermore, the TAM3 posits that anchor and adjustment are determinants of Perceived Ease Of Use. On the other hand, UTAUT model posits that four key variables are the direct determinants of usage intention and behavior. All these models aim to understand user attitudes towards technology adoption and continued use. Whilst the focus of the Technology Acceptance Model (TAM) is on technology adoption, acceptance and use, the Expectation Confirmation Model (ECM) of IT continuance is a model for investigating continued information technology (IT) usage behavior.

On analysis of this secondary data, it was found that there were some similarities and contradictions between TAM and characteristics of HR Professionals. Recommendations in this regard are discussed in Chapter 6 of this study. On analyzing the applicability of the different theories and models for adoption of IT at the University of Fort Hare, research techniques used to validate these theories in the UFH context are discussed.



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Chapter 4 Research Methodology and Design

4.1 Introduction

This study explores the technology acceptance and continued use of ITS among University of Fort Hare Human Resources Staff. In the following sections, the research design and methodology, research paradigm, evaluating and validating qualitative research, data collection method, sampling and data analysis, expert reviews and validation, the delineation of the study as well as the ethical considerations are discussed. The next section identifies and explains the different research designs that can be used for this research study. According to Cooper and Schindler (2006), the research design is the blue print of how data is collected, measured and analysed.

4.2 Research Design and Methodology

Leedy and Ormrod (2010) define research as “a systematic method of gathering and analysing information or data in order to enhance our understanding of the facts that we are concerned or interested in”. The methodology describes the means/methods used to gain knowledge. These can be both qualitative and quantitative. When comparing qualitative and quantitative data, qualitative data is generally text based, and quantitative data is generally numeric. A combination of these methods will be used in this study and together with the secondary data is known as triangulation. Cohen, Manion and Morrison (2009) defined triangulation as “the use of two or more methods of data collection in the study of some aspect of human behaviour”. The literature study forms the third part of the triangulation in this study. The research design followed in this study is a case study approach and is discussed in the next section.

4.2.1 Research Design: Case Study Approach

Cresswell (2008: 61) defines a case study as “An exploration or in-depth analysis of a ‘bounded system’ (bounded by time and/or place) or a single or multiple case, over a period of time”. The case being studied can refer to a process, activity, event, programme or individual or multiple individuals. It might refer to a period of time rather than a particular group of people. Stake (2010) argued that the sole criterion for selecting cases for a case study should be the opportunity to learn, as that applies to the University of Fort Hare HR Department case study. After gaining access and confidence of participants, the product of this study will be an in-depth description of the situation at the UFH HR Department.

This case is situated within the larger context (HR Department within UFH Eastern Cape), though the focus will remain on the HR departments' adoption of technology. The type of case study undertaken is instrumental as this is intended to advance understanding of adoption and continued use of IT within the UFH HR Department. For the purposes of giving a clear description of the HR department as the case of focus in this study, *Annexure D includes the UFH HR Department Organisational Structure with a detailed description of the department*. The function of ITS in this department is briefly explained in this annexure. The next section identifies and explains the different research paradigms that can be used for research purposes with emphasis on this particular study.

Any piece of research has an underlying philosophical paradigm, a pattern or shared way of thinking to which the research project is aligned. A wide variety of philosophical paradigms exist, arising out of different ideas, views and perspectives of the world. This, in turn, leads to diverse ideas as well as the kinds of research questions and processes used to find solutions (Oates, 2006). This section discusses the research paradigm for this study. Figure 4.1 is used to illustrate these paradigms.

Figure 4.1: Continuum of Core Ontological Assumptions (Morgan & Smircich, 1980: 492 and Collis & Hussey, 2003: 51)

Combining research methods is referred to as triangulation and it is argued that the underlying ontological research paradigms are not necessarily opposed, but that they can be accommodated within one study (Myers, 2009). Oates (2006: 38) contended that “Triangulation gives researchers multiple modes of ‘attack’ on their research question”.

If one research paradigm is to be singled out for this research project based on a single factor, it would be that there is no single reality or truth of the world and that not all research approaches produce the same set of findings. Positivists subscribe to the idea that multiple lines of attack within research lead to a consistent set of findings – a single reality. Yet interpretive research tries to identify, explore and explain how all the factors in a particular study are related and interdependent (Oates, 2006). The interpretive research paradigm emphasizes qualitative research methods, which are flexible, context sensitive and largely concerned with understanding complex issues (Carcary, 2009).

Therefore, it must be argued that interpretive research, belonging to the phenomenological paradigm, is the dominant paradigm of this research project. Although this study takes a primarily interpretive approach, both qualitative and quantitative research methods are used (Oates, 2006). This study seeks to investigate and identify, explore and explain how factors are related and interdependent to affect adoption of technology in HR Department at the University of Fort Hare. It further investigated the impact / relation of TAM and other theories to development of Critical Success Factors for adoption and acceptance of technology in the HR department at the University of Fort Hare. Based on the above, qualitative research will dominate this study and it is important to evaluate the dependability of the qualitative research. The next section discusses the evaluation and validation of qualitative research.

4.2.3 Evaluating and Validating Qualitative Research

Researchers debate how interpretivist research efforts can be evaluated for dependability. Positivist researchers, who emphasise the issues of validity, reliability and generalisability, often regard qualitative research methods as unscientific (Carcary, 2009).

The researcher is not perceived as being entirely objective in a qualitative research method but is part of the research process; this is relevant for the adoption of information systems at the University of Fort Hare HR Department as the researcher is the HR Director in this unit.

Walsham (2006) states that we are biased by our own background, knowledge and prejudices to see things in certain ways and not others. Carcary (2009) stated that each situation is different, hence the researcher needs to explore below the surface of its details to understand the reality. The meaning derived by the researcher is a function of the circumstances, the people involved and the broad interrelationships in the situations being researched (Saunders et al, 2007).

The researcher's best tool for analysis is his or her own mind, supplemented by the minds of others when work and ideas are exposed to them (Walsham, 2006).

Unlike the positivist stance, physical-law-like generalizations are not the end product; understanding through detailed description is sought by answering questions such as what, Why, and how,. The strength of the interpretive approach is that the researcher collects large quantities of detailed evidence, thus qualitative research may achieve depth and breadth which is more relevant and critical for this study due to the size of the sample.

The challenge for many qualitative researchers lies in analyzing the body of evidence gathered so as to produce a convincing explanation of the phenomena, based on a holistic interpretation of the social understandings captured in the empirical data. The difficulty is that the researcher is *faced with a bank of qualitative data, has very few guidelines for protection against self delusion, let alone the presentation of unreliable invalid conclusions to scientific or policy making audiences. It stands to reason that the strength of qualitative data rests very much on the competence with which the analysis is carried out.* Data analysis is an iterative process and requires *reflexive interpretation* which needs reflection and interpretation on several levels and this involves examining how the theoretical, cultural and political context of individual and intellectual involvement affects interaction with whatever is being researched. Interpretation involves interaction with empirical material; interpretation of underlying meanings; critical interpretation and reflection on text production; and language use. Carcary (2009) stated interpretation suggests that there are no clear rules and that the researcher's judgement, intuition and ability to highlight issues play an important role in the process.

There is potential for researcher bias in interpretivist research because of the role of the researcher's judgment and intuition. It is critical to demonstrate the trustworthiness of the research findings, hence critical success factors must be validated. Consistency and integrity are most important factors to consider for interpretivist study design.

Mason (as cited by Carcary, 2009) stated that it is important to reflect on the body of evidence, the ability to make critical assessments of informants' statements, and the importance of producing convincing arguments and explanations.

Another way of evaluating research is for a researcher during a research project, to communicate errors during the process of gathering information, and therefore the researcher must remain vigilant in order to maintain the integrity of the research project. Hence, research evaluations will assist in maintaining the credibility and integrity of the research project.

There are many different approaches to evaluating qualitative research; however, Carcary (2009) maintained that the canons of validity, reliability and generalisability can also be used in evaluating qualitative research but these standards need to be reconceptualised to reflect the key issues of concern for interpretivist researchers. The next section discusses Validity as one of the approaches to evaluating qualitative research.

4.2.3.1 Validity

From the interpretivist perspective, validity refers to **authenticity** of the study's research model and its fundamental assumptions. This refers to how well the research method investigates what it intends to and the extent to which the researcher gains full access to participants' knowledge and meaning. It is important to achieve similarity of understanding between the participants and the researcher in ensuring that the research is credible. It is important to demonstrate the appropriateness of the research method in answering questions and providing explanations. Validity interpretation is concerned with how convincing the data analysis process and the researcher's interpretations are. Data analysis approaches and transparency of researchers' interpretations are also important to demonstrate validity of the interpretivist approach.

Lewis and Ritchie (as cited by Carcary, 2009) suggested that it is useful to consider internal and external validity of a qualitative study. Internal validation is enhanced by adopting a constant comparative method and recognizing the importance of deviant cases in acquiring a greater understanding for theory development. External validity is improved through triangulation and respondent validation to enhance *trustworthiness* of the findings.

The above approach was followed in this study. The next section discusses reliability as another approach in evaluating qualitative research.

4.2.3.2 Reliability

Reliability is largely concerned with whether a study can be repeated. Mason (as cited by Carcary, 2009) stated that from an interpretivist perspective, reliability is concerned with demonstrating that the researcher has not invented or misinterpreted data or been careless in data recording or analysis. The procedures that lead to research findings need to be outlined in a transparent way by checking through interpretations, systematically analyzing the evidence, supporting interpretations with evidence, and offering a balanced perspective thereby ensuring *dependability* of the findings. The findings of this study can be repeated in other settings. The next section discusses generalizability as another approach in evaluating qualitative research.

4.2.3.3 Generalisability

Generalisability is concerned with how applicable theories generated in one setting are applicable to other settings. The main focus in qualitative research is to ensure appropriate representation of the study's events and to understand the key issues under investigation. Due to the nature of the individuals and organizations, it is not unreasonable to expect that some findings may be transferrable to other original organizations. A detailed understanding of the issues in a particular case can form the basis for better understanding those issues in other similar settings. According to Koch (as cited by Carcary, 2009), *transferability* to other settings depends on the similarity between the context in which the research was conducted and the context to which the research findings are applied.

Lewis and Ritchie (as cited by Carcary, 2009) use the term *inferential generalisation* to reflect the concept of transferability to other settings. The researcher needs to provide detailed descriptions of context and phenomena so as to enable others to assess the findings' *transferability*. The next section discusses the Research Audit Trail as a strategy to establish confirmation of the qualitative process.

4.2.3.4 Research Audit Trail

According to Carcary (2009), strategies for establishing *confirmability* need to be built into the qualitative research process. Development of the research audit trail was recommended with the intention of establishing the study's trustworthiness through the reader's ability to audit the events and influence the actions of the researcher.

It is important to measure the quality of the qualitative study through demonstrating that it was carried out with substantial care. Reporting the process followed in undertaking the research including choice of methodology and analytical decisions, allows others to assess the significance of the research. In order to develop a detailed audit trail, a researcher needs to maintain a log of all research activities, maintain research journals, and document all data collection and analysis procedures throughout the study. Lincoln and Guba (2009) discussed six categories of information that need to be collected to inform the audit process:

1. Raw data
2. Data reduction and analysis notes
3. Data reconstruction and synthesis products
4. Process notes
5. Materials related to intentions and dispositions
6. Preliminary development information

Through examining these information categories, a researcher can better assess whether the study's findings are grounded in the data, whether inferences are logical and so on. This trail enables the researcher to reflect on how a study unfolded. Furthermore, it helps the reader to follow each stage of the process, trace through the research logic, and helps other researchers determine whether a study's findings may be relied upon as a platform for further inquiry and as a basis for decision making. Research audit trails may be intellectual or physical in nature. An intellectual audit trail assists the researcher in reflecting on how his/her thinking evolved throughout all phases of the study. A physical audit trail documents stages of a research project, from identification of the research problem to intellectual audit trails for an empirical study. These stages are developed in the following section as the research methods used in this study.

4.3 Research Methodology

Cohen and Manion (2009) stated that methodology means the range of approaches used to gather data which are used as a basis for inference and interpretation, explanation and prediction. These methods can be both qualitative and quantitative. When comparing qualitative and quantitative data, De Luca and Knock (2007) highlighted that qualitative data is generally text based, and quantitative data is generally numeric. A combination of these methods can be used together with secondary data.

This approach is known as triangulation. Based on the nature of this study, two methods of data collection were used. Literature study forms the third part of the triangulation in this study and the next section discusses triangulation.

4.3.1 Triangulation

In many instances, it is unlikely that a single measure will adequately assess the extent to which an objective is attained, especially when the objective entails complex and multifaceted knowledge and skills like the one of interest (Creswell, 2008). In such cases, the use of multiple measures and approaches will enhance the validity, reliability, equity, and utility of the data as well as decisions about the phenomena (McMillan and Schumacher, 2009).

Creswell (2008) highlighted that the purpose of triangulation is to ensure that the research findings accurately reflect people's perceptions, and to help researchers increase their understanding of the probability that their findings will be seen as credible or worthy of consideration by others. In comparing different accounts, convergence, divergence and difference allow insights and new understandings to be developed (Mcfee, 2007). McKernan (2010) wrote of various types of triangulation, namely conceptual and theoretical (seeing a project from different models or perspectives); informational (data collected in different settings); research investigator (using different inquirers); and methodological (collecting data by multiple research methods, such as participant observation, questionnaires, interviews and document analysis). For this particular study methodological triangulation was used. Questionnaires, an interview with Twyford (2010), (a consultant from ITS Service Provider who was contracted to drive the implementation of the ITS HR Modules at UFH), perusal of the UFH Strategic Plan, and feedback from management meetings regarding HR data were incorporated as research methods.

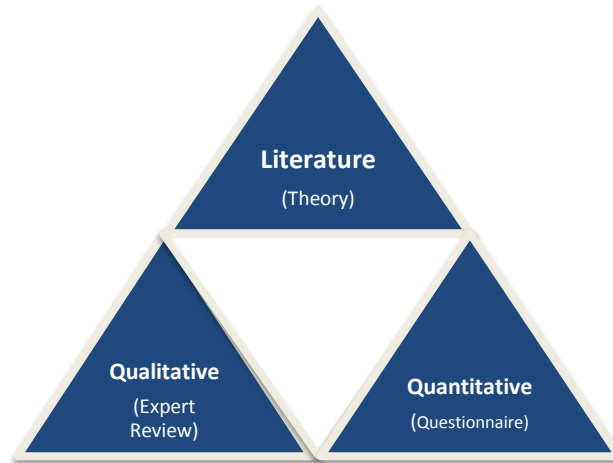


Figure 4.2: Research Methodology Summary

4.3.2 Data Collection

This section discusses the techniques used for collection of data.

Primary Data Collection – Research Instrument

The questionnaires were assessed and evaluated by experts in questionnaire design before use, to ensure that they met the required standard and best practice. Participants were selected because they were users of the ITS HR System.

Questionnaires are used to elicit information directly from a group of people assumed to be representative of the larger study population. Cooper and Schindler (2006) claim that the self-administered questionnaire has become part of modern living. Examples of self-administered questionnaires include service evaluations of insurance companies, hotels, restaurants and transportation providers. The distribution method employed for these questionnaires is by e-mail, fax, courier service or computer.

Advantages of using questionnaires as data tools include cost and time effectiveness because it allows for a large number of people to be surveyed. The e-mail/electronic distribution of questionnaires costs less than the cost of travelling to various physical data collection sites, in this case HR Department in Bhisho, East London and Alice campuses. Conducting individual interviews is also very time consuming for both the researcher and participants as the researcher has to travel to the various sites and wait for an appropriate time to conduct the interview.

Other advantages of using questionnaires include guaranteed confidentiality and anonymity of the respondent allowing for honest responses without fear of victimisation. Hofstee (2009) states that the type of information obtained from a questionnaire is varied and includes factual, attitudinal, interpretational or opinion based.

The obvious disadvantage of questionnaires is that it allows for limited interaction between the researcher and the participants. The format of a questionnaire also does not allow the researcher to deviate from the set questions and limits the depth to which a participant can be probed. A well-documented disadvantage is the poor response rate of answered questionnaires. The poor response rate of questionnaires has the potential to weaken the results.

When using a questionnaire as a data collection tool, there are other factors to consider including complexity, time and resource commitment in the construction of the questionnaire and the subsequent analysis of the results. The responses of the participants in a study are also a reflection of their reading, writing and comprehension skills. A low literacy rate or misinterpretation of the questions can lead to incorrect data being obtained.

The design of a questionnaire must be appropriate to the purpose it must achieve (Cooper and Schindler, 2006). There are two different formats typically used when designing a questionnaire. These include unstructured responses (or *open-ended response*) and structured responses (or *closed response*). Closed responses typically are categorised as dichotomous, multiple-choice, checklist, rating, or ranking response strategies. Closed-response questions are appropriate when there is a clear frame of reference, the participant's level of information is predictable and the researcher believes that the participant understands the topic.

During the literature review, various questionnaires were identified as having potential to answer the research questions posed in this study. The questionnaire used in this study was compiled making use of Davis (2008) TAM questionnaire and Venkatesh et al's (2009) UTAUT questionnaire with minor additions. A section on computer literacy was added as part of the questionnaire. Both these questionnaires have been published previously and extensively used in other studies to test the acceptance and use of new technology by users in different settings.

The validity and rigour of these questionnaires have been proven in past literature and have shown to be relevant to users making use of a diverse set of technologies in both a voluntary and mandatory environment (Venkatesh et al, 2003). Various researchers also proved that it can be applied to individuals of varied levels of IT competency, gender, age and culture (Yarbrough and Smith, 2007). The sections covered by this questionnaire included characteristics of the participants, *perceived ease of use*, *perceived usefulness*, *performance expectancy*, *effort expectancy*, *social influence*, *facilitating conditions*, *attitude towards the system*, *behavioural intention*, and *computer literacy*.

A pilot study was conducted among a sample of 3 HR Staff members with similar characteristics to the study population in order to test the adequacy of the research instrument and to assess whether there were any irregularities or ambiguity in the questions of the research instrument. After the pilot study was concluded, the researcher certified the questionnaire as competent for the purpose of this study.

Reliability of the research instrument was ensured through the following:

- Guidelines as set out in the proposal were followed while developing, distributing and analyzing the questionnaire with the aim of improving standardization;
- frequent cross checks were done to improve the accountability of data entering;
- a pilot study was conducted to ensure reproducibility of the questionnaire;
- good definitions for all variables were provided to ensure repeatability of the questionnaire;
- questionnaires not returned within the allotted time period were followed up to minimise bias.

Secondary Data Collection

Data that was collected by another person is termed secondary data. The secondary data examined in this study included a literature survey of frameworks, methodologies, journal articles, past research projects, reports, books and Internet sources. The literature survey was performed initially to determine the problem and the research objectives. This is the most important aspect of the secondary data collection phase as this is where the body of knowledge in the discipline is expanded upon. The next section discusses the data analysis method used to give meaning to the data in this study.

4.3.3 Data Analysis

An in-depth analysis and comparison of the data collected from questionnaires is made in order to identify and categorise the responses according to the themes derived in the literature. Data derived from quantitative questions were analysed using Excel and presented in graph format; data derived from qualitative questions were categorised according to themes through a mind-mapping exercise. *The Raw Data spreadsheet is attached to the study as Annexure E.* The next section discusses the overview of the research process followed in this study.

4.3.4 Research Process

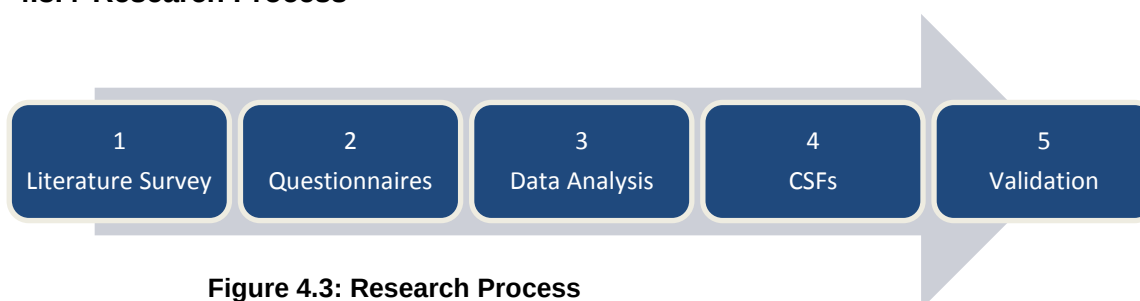


Figure 4.3: Research Process

Step 1: A literature survey using journals, electronic documents, books, articles, reports and other studies was conducted to validate that the problem identified poses a real challenge for HR Departments within higher education Institutions and to identify possible Critical Success Factors for effective acceptance and continued use of ITS System within the UFH HR Department

Step 2: After careful consideration and analysis of the information retrieved in step 1, an extensive questionnaire was developed. The questionnaire was made up of quantitative questions using Likert scale and qualitative questions using open-ended questions. The sample included the entire population, that is 15 members of the HR Department. An acceptable sample size for this study was a minimum of 100 percent of the population (15 HR Staff), therefore the study will justify making statements with 100% certainty. The main focus of this step was to understand factors that influence the acceptance and continued use of ITS. A pilot study was organised and conducted with 3 HR staff members to check if there were any irregularities or ambiguities in the questionnaire. (See Appendix A for questionnaire)

The aim of the literature review was to present an overview of recent research focusing on the adoption and continued use of an information system, in this case HR Systems within HR Department at UFH.

The literature review is divided into 9 sections:

- Adoption of IT in South Africa
- Adoption and continued use of IT in developing countries
- Adoption and use of IT on a continued basis as an accepted tool of transacting work at higher education Institutions
- Sub-cultures at higher education institutions
- Adoption and continued use of IT at the University of Fort Hare
- Integration of IT to HRM
- Impact of IT Usage on Job Satisfaction,
- Aligning TAM to HR Model of roles
- The literature survey in which various theories and philosophies in technology adoption was discussed.

Step 3: An in-depth analysis and comparison of the data collected from questionnaires was made in order to identify and categorise the responses according to the themes derived from literature. Data derived from quantitative questions was analysed using Excel presented in graph format and data derived from qualitative questions was categorised according to themes through a mind-mapping exercise.

A mind-map is a diagram used to represent concepts, ideas or tasks linked to and arranged radially around a central key work or idea. Primary branches represent the major ideas or themes around the central topic. The process of mind-mapping is said to allow free thinking and to clear the mind of previous assumptions about the subject. A significant challenge to the validity of this mind-mapping approach is researcher bias and to avoid bias, researchers should summarise the themes emerging from a series of narratives collected as part of the survey. Mind-mapping is used to improve factual recall from written material or verbal communication; it has the potential to enhance effective learning. Mind-maps also create understanding of information by making associations, by creating and exploring links and skills that establish the basic process of problem-solving, and creative thinking during problem based and reflective learning. Brussow (2004) stated that mind-mapping as a learning facilitation method offer educators several advantages like stimulating interest, enhancing concentration and increasing understanding.

It is against this background that mind-mapping is chosen as one of the data analysis methods to elicit meaning and also to ensure understanding of the responses received from HR staff members. *An example of the mind-map designed for this study is attached as Annexure F.*

Step 4: The primary and secondary data gathered from Step 1 to Step 3 (through the literature survey and questionnaires) were grouped according to the various research questions. Analysis of the HR staff responses was discussed and the findings influenced the development of the proposed Critical Success Factors.

Step 5: To test the relevance i.e. to validate the Critical Success Factors, the CSFs were given to a group of 6 experts (two each from two HR departments from previously advantaged institutions (PAIs) and two from two HR Departments from previously disadvantaged institutions (PDIs), two were Chief Information Officers (CIOs) from Information and Communication Technology (ICT) Departments from other universities) within HE for review purposes. Their comments were noted and the final CSFs were adjusted accordingly. Their feedback either supported or opposed the proposed solution and this added to the integrity of the CSFs. The final CSFs were adjusted accordingly. *The Expert Reviewer profiles are attached as Annexure G and Expert Reviewer feedback is attached as Annexure H.* The next section discusses the Delphi Technique used for achieving convergence of opinion concerning real world knowledge solicited from the experts.

4.3.5 Delphi Technique

The Delphi Technique is a qualitative research method. Dalkey and Helmer developed the Delphi Technique in 1963 at the Rand Corporation, and it is a widely used and accepted method for achieving convergence of opinion concerning real-world knowledge solicited from experts within certain topic areas. It is designed as a group communication process that aims at conducting detailed examinations and discussions (Hsu and Sandford, 2007).

The technique is used to explore new concepts within and outside the Information Systems domain (Skulmoski, Hartman and Krahn, 2007). Ordinary surveys seek to discover what is, whereas the Delphi Technique attempts to deal with what could/should be. The Delphi method is an iterative process to collect and distil the anonymous judgments of experts; no other data gathering and analysis technique employs multiple iterations designed to develop consensus on a specific topic (Hsu and Sandford, 2007); (Skulmoski, Hartman and Krahn, 2007).

The iteration process is a means of offsetting the shortcomings of a conventional pooling of opinions (Powell, 2009). The Delphi technique usually consists of a panel of experts in a specific domain and is characterised as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem (Okoli and Pawlowski, 2004).

The size of the panel can vary from a few to 50 experts. This depends on the number of experts available; however, in Brockhoff's study of Delphi performance developed in 1975, he suggested that groups of eleven participants is more accurate than a larger group; furthermore he found that for fact finding questions for dissertations, groups of seven had a higher performance (Colton and Hatcher, 2007). Powell (2009) added that the panel size does not need to be a representative sample for statistical purposes as the qualities of the experts outweighs the numbers. Therefore, it can be reasoned that one expert's opinion on a specific topic outweighs the responses before and during a random questionnaire survey (Powell, 2003). Additionally, Skulmoski, Hartman and Krahn (2007), added that the Delphi Technique is well suited to the rigorous capture of qualitative data. According to Adler and Ziglio (1996 in Skulmoski, Hartman and Krahn, 2007) the participants should meet four 'expertise' requirements:

- knowledge and experience with the issues under investigation
- capacity and willingness to participate
- sufficient time to participate in the Delphi process
- effective communication skills

The Delphi method is a flexible research technique well suited when there is incomplete knowledge about phenomena (Skulmoski, Hartman and Krahn, 2007).

Additionally, it is not only a quantitative method but is also very suitable for qualitative research. Therefore, the Delphi Technique is well suited for this research project based on the above justifications. The next section discusses the population targeted to participate in this study.

4.3.6 Population

All HR staff were requested to respond to the questionnaire. Additionally, a group of 6 experts, one from a different university were identified for the purpose of validating and refining the Critical Success Factors (CSFs) after these were produced.

Cooper and Schindler (2006) stated that if individuals agree to participate in a study, the researcher must be aware that they may not have the knowledge required. Furthermore if participants are asked to report on events that they have not experienced personally, the purpose of the study must be assessed carefully. If the purpose is to learn what the participant understands to be the case, it is legitimate to accept the answers given. Cooper and Schindler (2006) further stated that if the intent is to learn what the event or situation actually is, it must be recognised that the participant is reporting second-hand data and therefore the accuracy of the information deteriorates.

In this study, the HR Department staff had previous experience or some experience of using HR Systems and reported their individual intention of making use of the technology in future. The study population was defined as all 15 HR Staff members working in Alice, East London and Bisho. Because there are only 15 HR staff members, it is critical for this study to focus on ensuring that each respondent answers the questionnaire. The questionnaires were distributed to participants using SharePoint.

The data obtained was placed into various categories according to both the TAM and UTAUT models. These include *ease of use*, *perceived usefulness*, *performance expectancy*, *effort expectancy*, *social influence* and *facilitating conditions*. A section on computer literacy and the various modalities of IT was also included in the questionnaire.

Different formats of questions and responses are included in the questionnaire to increase the variance of responses and also to provide depth: yes/no, degree of agreement or disagreement (Likert scale), scale questions and rank order questions. Open-ended questions were also asked to obtain in-depth views from respondents. The next section discusses the population and sample of experts used in this study.

4.3.7 Population and Sample of Experts

Since the ITS population is relatively unknown due to the interpretive nature of this study, the sample size of the population is relatively small. The experts that were consulted were gathered at a HR Directors Forum, many of whom were internationally recognised and ordinarily would not be able to provide feedback because of their busy schedules. It is for this reason that all the experts were consulted at this venue. Moreover all experts consulted met the 'expertise' criteria discussed in section 4.3.5.

To evaluate the Critical Success Factors, the CSFs were given to a group of six experts (two from two HR departments from previously advantaged institutions and two from two HR Departments from previously disadvantaged institutions and two were CIO's from ICT Departments from two other universities) within HE for review purposes. Their comments were noted and the final CSFs were adjusted accordingly. The next section discusses the delineation of the study.

4.4 Delineation of the Study

The focus areas of the study are adoption, acceptance and continued use of technology in HE Institutions Human Resources departments, guided by the TAM and ECM. Existing literature and frameworks will be used to link these focus areas. Research is limited to the University of Fort Hare HR staff. The history and characteristics of UFH may have a bearing on adoption, acceptance and use of technology. The study was conducted over three campuses of the University of Fort Hare, Alice, Bisho and East London. The Alice campus is in a predominantly rural area, Bisho in a semi-urban and the East London campus in an urban area. The study covers ITS acceptance, use, continued use together with correlating benefits derived from the IT investment. This study did not include the staff of the University of Fort Hare. The next section discusses the ethical considerations considered in conducting this study.

4.5 Ethical Considerations

Cooper and Schindler (2006) stated that ethics are norms or standards of behaviour that guide moral choices about our behaviour and our relationships with others. The purpose of ethics in research is to make sure that no one is harmed or suffers adverse consequences from research activities. Some unethical activities are pervasive and include violating non-disclosure agreements, breaking respondent confidentiality, misrepresenting results, deceiving people, invoicing irregularities, and avoiding legal liability.

Durrheim and Wassenaar (2007) identified three broad principles upon which many of the ethical guidelines are based. The first is the principle of autonomy. Researchers are required to respect the individual and autonomy of the research participants. The following measures shall be undertaken: before engaging with the respondents, their informed consent was obtained using a consent form. This means informing them about what the research project entailed and what their participation in the research would be.

The second principle is that of nonmaleficence. Researchers must ensure that they do not do harm to participants (or the research site). There are two ways to do this. The first is to assess the potential risks and to take necessary measures to protect participants. The most pertinent risk in this case is that confidential opinions that might be expressed in interviews or questionnaires are made known to participants colleagues and/ or employers. To prevent this, all participants remain anonymous: at no stage shall participants names be used. Only relevant biographical information will be collected, including information about their rank at the institution. Once raw data has been collected, it will only be available to the researcher. Once data analysis and interpretation have been completed, all data and back-up copies of data will be stored in a secured environment. The third principle is beneficence. This calls on researchers to conduct research that will benefit society in some way. This study has been designed to create CSFs for best practices in HR Departments so as to implement improved adoption, acceptance and usage of IT. In order for this research to be of benefit to UFH (research sites) and society in general, a way of distributing such research to other settings other than academic institutions will need to be devised. This will require publishing the CSFs in an accredited journal. The Critical Success Factors will ensure efficiency and effectiveness, thereby assisting the Institution to derive value from the IT investments. The next section discusses concluding remarks for this chapter.

4.6 Conclusion

In this chapter the research design and methodology applied during this research project was discussed. This chapter explored the research methodology and design followed in this study. A combination of quantitative and qualitative methods was used together with the secondary data and that is called triangulation. The research design followed was a case study approach which is instrumental as it intended to advance the understanding of adoption and continued use of IT within the UFH HR Department. The qualitative research design dominated this study and was important to evaluate the dependability of the qualitative research as the researcher was not perceived as being entirely objective in a qualitative research method but was part of the research process. This was relevant for the adoption of information systems at the University of Fort Hare HR Department as the researcher was the HR Director in this unit.

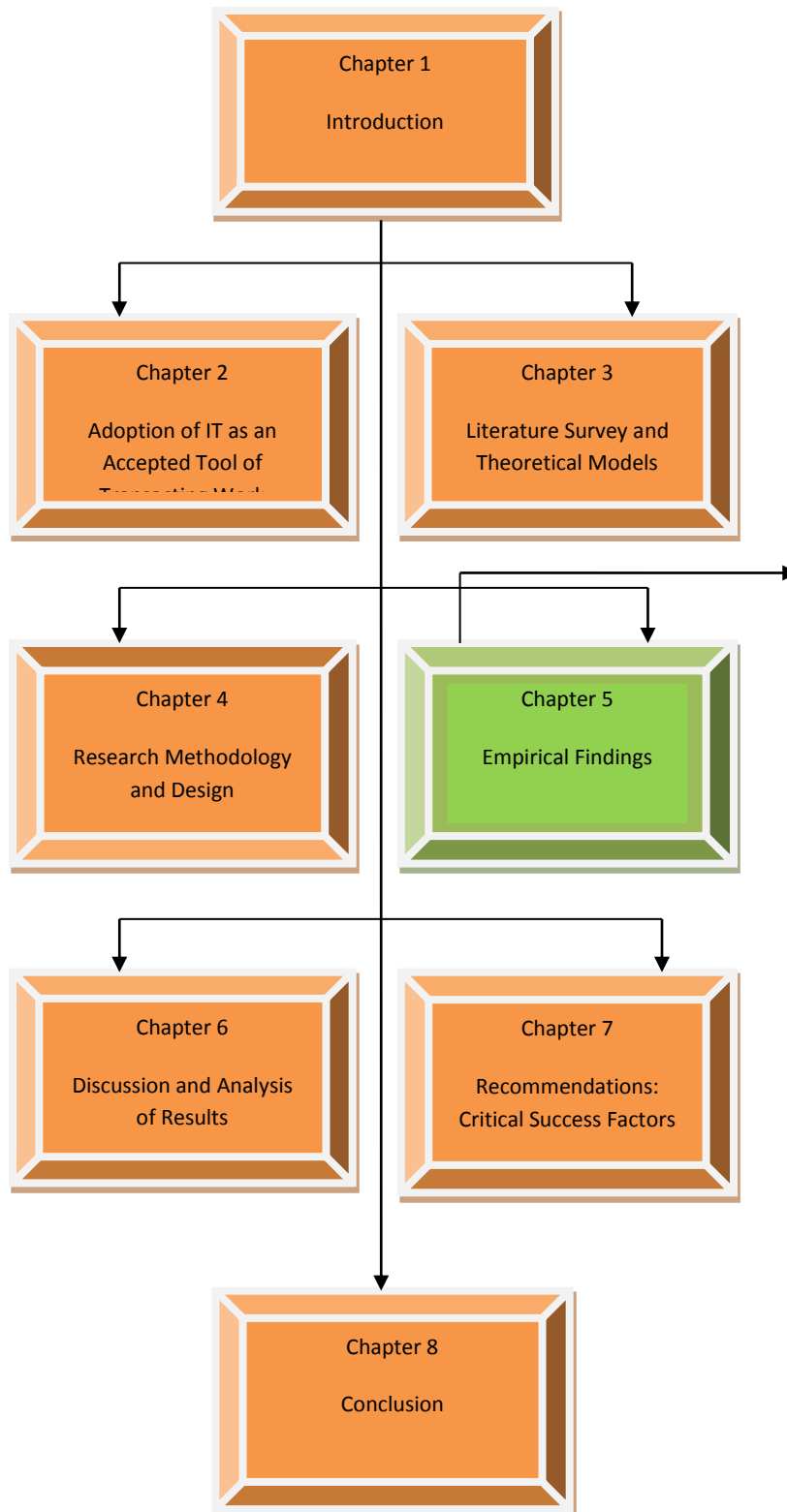
The research paradigm was interpretivist and consistency and intergrity were important factors to consider as there was potential for researcher bias in interpretivist research because of the role of the researcher's judgment and intuition. From the interpretivist perspective, validity refers to **authenticity** of the study's research model and its fundamental assumptions. Reliability is largely concerned with whether a study can be repeated in other settings. Generalisability is concerned with how applicable theories generated in one setting are applicable to other settings. Research Audit Trail is important to measure the quality of the qualitative study through demonstrating that the study was carried out with substantial care.

The research instrument used was questionnaires and were assessed and evaluated by experts in questionnaire design before use to ensure that they met the required standard and best practice.

Participants were selected because they were users of the ITS HR System. The literature survey was performed initially to determine the problem and the research objectives. This is the most important aspect of the secondary data collection phase as this is where the body of knowledge in the discipline is expanded upon. All (100%) HR department staff were requested to respond to the questionnaire as this was a small sample. The 100% response rate is critical as it justifies making statements with 100% certainty.

Data derived from quantitative questions were analysed using Excel and presented in graph format; data derived from qualitative questions were categorised according to themes through a mind-mapping exercise. The Delphi method is a flexible research technique well suited when there is incomplete knowledge about phenomena and was used in this study.

To evaluate the Critical Success Factors, the CSFs were given to a group of 6 experts, their comments were noted and the final CSFs were adjusted accordingly. This study focused on adoption, acceptance and continued use of technology in HE institutions' Human Resources departments, guided by the TAM and ECM. Ethical considerations were given to, amongst other things, confidentiality. In order for this research to be of benefit to UFH (research sites) and society in general, a way of distributing such research to other settings other than academic institutions will need to be devised. The next chapter discusses the presentation of the investigation and analysis of the research data.



- 5.1 Introduction
- 5.2 Response Rate
- 5.3 Socio-demographic Characteristics of Participants
- 5.4 ITS Modalities
- 5.5 Facilitating Conditions Influencing Acceptance and Use of Technology
 - 5.5.1 Perceived Usefulness
 - 5.5.2 Perceived Ease of Use
 - 5.5.3 Performance Expectancy
 - 5.5.4 Effort Expectancy
 - 5.5.5 Social Influence
 - 5.5.6 Facilitating Conditions
 - 5.5.7 Attitude Towards the System
 - 5.5.8 Behavioral Intent
- 5.6 Management Support
- 5.7 Computer Literacy
 - 5.7.1 Computer Literacy of HR Professionals

Chapter 5 Empirical Findings

5.1 Introduction

A detailed discussion of ITS in the HR Department within the University of Fort Hare in the Eastern Cape, South Africa as well as the three theories employed within this study, namely TAM, ECM and UTAUT, was put forward in the literature chapters. Additionally the research design and methodology used during this study have been described. The empirical analysis of the primary data collected, however, has not been discussed thus far.

The different sections within this chapter are divided into the general discussion of the primary data obtained (response rate and demographics), as well as the specific representation of the three research questions posed earlier which are addressed individually. The analysis of the data collected is reported and illustrated by various methods, i.e. tables, graphs and text. The data reported will be used in the next chapter during the analysis and discussion. The first two sections detail the general information regarding the study population.

5.2 Response Rate

A total of 15 questionnaires were distributed to HR Professionals at the University of Fort Hare HR Department. After 3 weeks a total of 15 questionnaires were submitted representing a 100% return rate.

To answer the main research question, the sub-research questions were addressed. The research questions were used to guide the discussion as presented in the next section.

5.3 Socio-Demographic Characteristics of Participants

The study population consisted of 12 females (80%) and 3 males (20%). All of the participants are 100% South African. Seven percent (7%) of the participants were younger than 25 years, 27% aged between 26 and 30 years and 40% aged between 30 and 40 years; and 27% of the participants were older than 40 years. Based on these findings, age does not have a direct impact on adoption of technology, as displayed in Figure 5.1, that participants use IT irrespective of their age. The age of the participants are depicted in Table 5.1.

Table 5.1: Age of Participants

		Number of Participants	Percent (%)
Valid	< 25 years	1	7
	26 - 30 years	4	27
	30 - 40 years	6	40
	> 40 years	4	27
	Total	15	100

The study participants indicated that 73% worked in a rural setting and 27% in a urban area. Table 5.2 provides a breakdown of the different work places of the study participants. Comparing results of this study, it is revealed that the location (rural or urban) has no bearing on adoption of technology.

Table 5.2: UFH Campuses

Campuses		Number of Participants	Percent (%)
Valid	Alice	11	73
	East London	3	20
	Bisho	1	7
	Total	15	100

Table 5.3 below illustrates the frequency with which the participants used ITS. 100% of the study population indicated that they use the system, 7% indicated that they use it at least once a week respectively, and 93% indicated that they make use of the system on a daily basis.

Table 5.3: Frequency of Using ITS

		Number of participants	Percent (%)
Valid	Less than often	0	0
	Once a week	1	7
	Everyday	14	93
	Total	15	100

The participants that considered themselves as computer literate was 100%, those that indicated they were knowledgeable about Microsoft Word were 100%, and those that considered themselves familiar with Microsoft Excel were 93%, whilst 7% was not familiar. 100% know how to save a document and to attach a document to an e-mail. 93% of respondents confirmed that they received formal computer training, whilst 7% never received formal computer training. These results confirm that computer training had a positive impact on adoption of technology. The next section provides a list of the different types of ITS Modules that can be used for purposes of HR Administration, as well as the frequency that these technologies are used.

5.4 ITS Modalities

Table 5.4: Frequency of Modules Used

	Never (%)	Seldom (%)	Often (%)	Daily (%)
Personnel System	7	13	20	60
Leave System	7	13	33	47
Evaluation System	47	47	7	0
Skills Development System	67	33	0	0

ITS is made up of different types of Modules which can be used for different HR aspects. These Modules include Personnel System, Leave System, Evaluation System/Code Structure and Skills Development System. The above Table 5.4 illustrates the percentages of the different types of Modules used by different participants. Most of the participants indicated that they used Personnel System daily (60%), followed by Leave System (47%); 47% of participants reported that they never used Evaluation System, and 47% reported that they used it seldom. Sixty-Seven percent (67%) reported that they never used Skills Development System with 33% using it seldom. Seven percent (7%) reported using Evaluation System often. None of the respondents reported daily use of both Evaluation System and Skills Development System. The next section discusses the facilitating conditions influencing acceptance and use of technology.

5.5 Facilitating Conditions Influencing Acceptance and Use of Technology

This section seeks present responses to questions asked in an attempt to answer sub-question 1, 2 and 3:

- 1. What facilitating environmental conditions that are necessary for the acceptance and continued use of ITS?*
- 2. What effect does management support and interest have on the decision to adopt the use of ITS HR Modules?*
- 3. What role does previous exposure to computer training have on the user that will help predict the likelihood of ITS HR Modules being adopted and used?*

In this section, different conditions influence the acceptance and use of technology as pointed out in the TAM and UTAUT models. These conditions include perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards the system, behavioral intent, management support, computer literacy and computer training.

For each of these conditions the questions asked from the respondents and findings of the study conducted are discussed. These findings address the 3 sub-research questions in an attempt to answer the major research question: What are Critical Success Factors influence the acceptance and continued use of the integrated tertiary software (ITS) as used by higher education Human Resources Departments? The next section discusses the impact of perceived usefulness on acceptance and use of ITS.

5.5.1 Perceived Usefulness

The participants perceived ITS as useful technology and the following questions were asked to evaluate the impact of perceived usefulness on acceptance and use of ITS.

Table 5.5: Question and Response rate to Perceived Usefulness

Questions asked	Findings
<i>Using ITS improves the quality of work I do.</i>	53% of HR Professionals agreed that ITS improves the quality of work they do.
	47% of HR Professionals disagreed with this statement.
<i>Using ITS gives me greater control over my work.</i>	53% of HR Professionals agreed that using ITS gives them greater control over their work.
	47% of HR Professionals disagreed with the statement.
<i>ITS supports critical aspects of my job.</i>	73% of HR Professionals agreed that ITS supports critical aspects of their job.
	27% of HR Professionals disagreed with the statement.
<i>Using ITS improves my job performance.</i>	79% of HR Professionals agreed that ITS improves their job performance.
	21% of HR Professionals disagreed with the statement.
<i>Using ITS allows me to accomplish more work than would otherwise be possible.</i>	67% of HR Professionals agreed that ITS allows them to accomplish more work than would otherwise be possible.
	33% of HR Professionals disagreed with the statement.
<i>Using ITS enhances my effectiveness on the job.</i>	67% of HR Professionals agreed that ITS enhances their job effectiveness on the job.
	33% of HR Professionals disagreed with the statement.
<i>Using ITS makes it easier to do my job.</i>	80% of participants agreed that ITS makes it easier to do their job.
	20% of HR Professionals disagreed with the statement.

On average, the overall impression of HR Professionals perceived the technology to be very useful in the HR Department (67%), which is positive. The only category that scored an overall total of less than 60% was 'Using ITS improves the quality of work I do' and 'Using ITS gives me greater control over my work'.

The majority of HR Professionals confirmed that they used ITS on a daily basis which attests to the usefulness of ITS. The next section discusses the impact of perceived ease of use on acceptance and use of ITS.

5.5.2 Perceived Ease of Use

The results of the perceived ease of use on acceptance and use of ITS system are presented in this section.

Table 5.6: Question and Response rate to Perceived Ease of Use

Questions asked	Findings
<i>I find it cumbersome to use ITS system.</i>	67% of HR Professionals agreed that it is cumbersome to use ITS System. 33% of HR Professionals disagreed with this statement.
<i>Learning to use ITS is easy for me.</i>	33% of HR Professionals agreed that it is easy to learn to use ITS. 67% of HR Professionals disagreed with this statement.
<i>Interacting with ITS system is often frustrating.</i>	33% of HR Professionals agreed that interacting with ITS system is often frustrating. 67% of HR Professionals disagreed with this statement.
<i>I find it easy to get the ITS system to do what I want it to do.</i>	67% of participants agreed that it is easy to make ITS do what they want it to do and can manipulate it to give expected results. 33% of participants agreed that it is easy to make ITS do what they want it to do and can manipulate it to give expected results.
<i>The ITS system is rigid and inflexible to interact with.</i>	47% of participants agreed that ITS is rigid and inflexible to interact with. They find it frustrating to manipulate during their daily operations. 53% of participants agreed that ITS is rigid and inflexible to interact with. They find it frustrating to manipulate during their daily operations.
<i>It is easy for me to remember how to perform tasks using ITS system.</i>	73% of participants agreed that it is easy to remember how to perform tasks using ITS system once it is in operation. 27% of participants disagreed that it is easy to remember how to perform tasks using ITS system once it is in operation.
<i>Interacting with the ITS system requires a lot of my mental effort.</i>	47% of participants agreed that interacting with ITS requires much mental effort which is also an indicator that continuous training is necessary. 53% of participants agreed that interacting with ITS requires much mental effort which is also an indicator that continuous training is necessary.
<i>I find it takes a lot of effort to become skillful at using ITS system.</i>	47% of participants agreed that it takes a lot of effort to become skillful at using ITS system. 53% of participants disagreed that it takes a lot of effort to become skillful at using ITS system.

Forty-Seven percent (47%) of HR Professionals who participated in this study agreed that considerable effort is necessary to become skillful at using ITS system.

This is an indication that continuous training and support is necessary to enable HR Professionals an opportunity to become skillful in using ITS to realize benefit. Forty-Seven percent (47%) agreed that interacting with ITS system requires much mental effort which is also an indicator that continuous training is necessary. Seventy-Three percent (73%) agreed that it is easy to remember how to perform tasks using ITS system once it is in operation; this could be an indicator that using ITS daily makes it easy to remember how to perform tasks. Forty-Seven percent (47%) of HR Professionals agreed that ITS system is rigid and inflexible to interact with meaning that they find it frustrating to use it during their daily operations. Sixty-Seven percent (67%) of HR Professionals agreed that it is easy to make ITS do what they want it to do; they can manipulate it to give expected results. Using ITS system in rural areas was not found to be cumbersome while those in the urban areas also did not encounter any difficulties. This contradicts literature that respondents in rural areas would encounter more difficulties compared to respondents in urban areas. The next section discusses the impact of performance expectancy on acceptance and use of ITS.

5.5.3 Performance Expectancy

The findings of the Performance Expectancy on acceptance and use of ITS system are presented in this section.

Table 5.7: Question and Response rate to Performance Expectancy

Questions asked	Findings
<i>I find ITS useful in my job.</i>	87% of HR Professionals agreed that ITS system is useful in their job.
	13% of HR Professionals disagreed that ITS system is useful in their job.
<i>Using the ITS system enables me to perform tasks more quickly.</i>	87% of HR Professionals agreed that ITS system enables them to perform tasks more quickly.
	13% of HR Professionals disagreed that ITS system enables them to perform tasks more quickly.
<i>Using ITS enable me to be more productive.</i>	80% of HR Professionals agreed that using ITS system enables them to be more productive.
	20% of HR Professionals disagreed that using ITS system enables them to be more productive.
<i>If I use ITS, I will increase my chances of obtaining a salary increase.</i>	87% of HR Professionals agreed that ITS will increase chances of obtaining a salary increase.
	13% of HR Professionals disagreed that ITS will increase chances of obtaining a salary increase.

The expectations of HR Professionals were very high as indicated by 87% of HR Professional responses agreeing that the 'ITS system is useful in their job'. Only 13% disagreed with this statement. Eighty-Seven percent (87%) of HR Professionals also agreed that 'ITS system enables them to perform tasks more quickly' during operations, thereby increasing their productivity. Eighty percent (80%) of HR Professionals also agreed that 'using ITS enables them to be more productive'. Eighty-Seven percent (87%) of HR Professionals also agreed that 'if they use ITS, this will increase their chances of receiving a salary increase' which indicates that they see a link between ITS and their performance which translates to incentives. The expectations of participants concerning ITS were positive as they expected it to improve their productivity and efficiency of work. The next section discusses the impact of effort expectancy on acceptance and use of ITS.

5.5.4 Effort Expectancy

The findings of the Effort Expectancy on acceptance and use of ITS system are presented in this section.

Table 5.8: Question and Response rate to Effort Expectancy

Questions asked	Findings
<i>My interactions with the ITS system are clear and understandable.</i>	67% of HR Professionals indicated that their interactions with the ITS system are clear and understandable.
	33% of HR Professionals indicated that their interactions with ITS system were unclear and not understandable.
<i>It was easy for me to become skilful at using the ITS system.</i>	67% of HR Professionals indicated that it was easy for them to become skilful at using ITS system.
	33% of HR Professionals indicated that was difficult for them to become skilful at using the ITS system.
<i>I find the ITS system easy to use.</i>	67% of HR Professionals indicated that they find ITS system easy to use.
	33% of HR Professionals indicated that they find ITS system difficult to use.
<i>Learning to operate the ITS system is easy for me.</i>	67% of HR Professionals indicated that learning to operate the ITS system is easy for them.
	33% of HR Professionals indicated that learning to operate the ITS system is difficult for them.

The expectation of participants regarding the effort is addressed in this section. Sixty-Seven percent (67%) of HR professionals indicated that their interactions with the ITS system were clear and understandable, whilst 33% indicated that their interactions with ITS system were unclear and not understandable. Sixty-Seven percent (67%) of HR professionals reported that it was easy for them to become skillful at using the ITS system. Sixty-Seven percent (67%) of HR professional found the ITS system easy to use, 33% found it to be difficult to use. Most HR professionals generally considered themselves knowledgeable about ITS and found it easier to make use of the system or become skillful at using it than those who did not consider themselves knowledgeable about the technology. This finding contradicts with research as cited by Anandarajan et al (2008) who indicated that individually-based training can have no effect on improved self-efficacy and performance in a collectivistic setting, such as South Africa, as respondents reported that their previous computer knowledge was very instrumental in assisting them to learn ITS system quicker. The next section discusses the impact of social influence on acceptance and use of ITS system.

5.5.5 Social Influence

The findings of the Social Influence on acceptance and use of ITS system are presented in this section.

Table 5.9: Question and Response rate to Social Influence

Questions asked	Findings
<i>People who influence my behaviour think I should use ITS system.</i>	67% of HR Professionals indicated that people who influence their behaviour think they should use ITS system.
	33% of HR Professionals indicated that people who influence their behaviour do not think they should use ITS system.
<i>People who are important to me think I should use ITS system.</i>	53% of HR Professionals believe that people who are important to them think they should use the ITS system.
	47% of HR Professionals believe that people who are important to them do not think they should use the ITS system.
<i>The senior management of my institution have been helpful in the use of ITS system.</i>	73% of HR Professionals believed that senior management of the institution have been helpful in the use of the ITS system.
	27% of HR Professionals strongly disagreed with this statement.
<i>In general, the University of Fort Hare has supported the use of the ITS system.</i>	73% of HR Professionals believe that the University has supported the use of the ITS system.
	27% of HR Professionals strongly disagreed with this statement.

Outside forces such as the political plan of local community leaders has been identified in literature as an obstacle when introducing IT into a new environment. The following graph displays the social influence on HR Professionals.

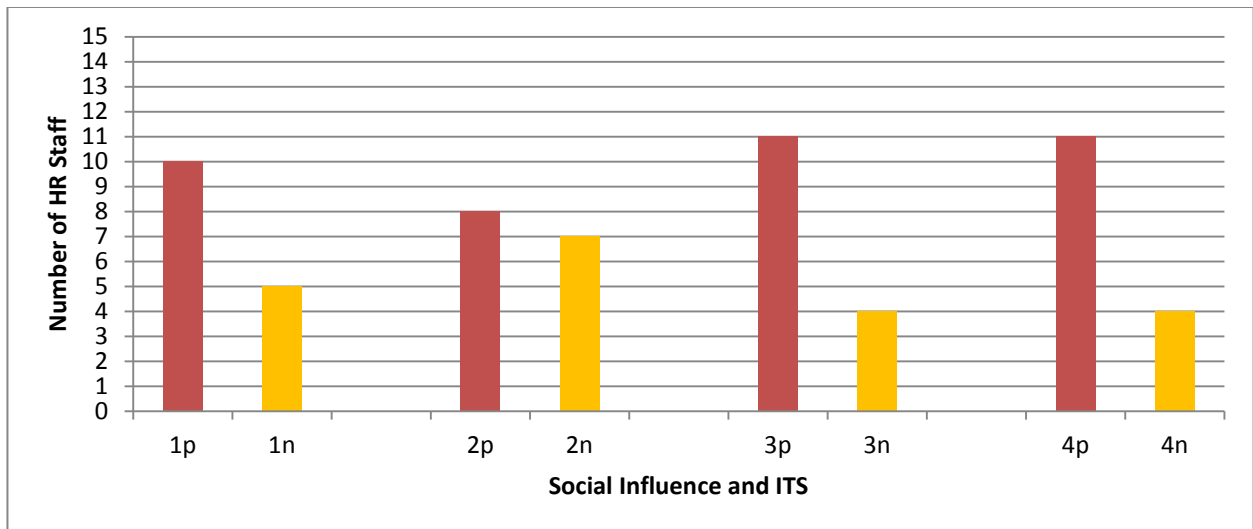


Figure 5.1: Graph Showing Social Influence and ITS

The 'p' in the above graph depicts Positive responses and 'n' depicts Negative responses. There were four questions in the section for social influence and ITS. Internal social influence was important to HR professionals with 67% of the respondents indicating that 'people who influence my behavior believe that I should use ITS system'. Fifty-Three percent (53%) of the respondents also believe that people who are important to them think that they should use the ITS system. Seventy-Three percent (73%) believed that senior management of the institution have been helpful in the adoption of technology, whilst 27% strongly disagree with this statement. Seventy-Three percent (73%) of the respondents believe that the University has supported the use of the ITS system, whilst 27% strongly disagree with this statement.

Majority of participants perceived impact of social influence as positive on adoption of technology as they considered senior management as supportive of usage of ITS. The next section introduces the impact of facilitating conditions on acceptance and use of ITS.

5.5.6 Facilitating Conditions

The findings of the Facilitating Conditions on acceptance and use of ITS system are presented in this section.

Table 5.10: Question and Response rate to Facilitating Conditions

Questions asked	Findings
<i>I have the resources necessary to use ITS.</i>	67% of HR Professionals indicated that they have the resources necessary to use ITS.
	33% of HR Professionals indicated that they do not have the resources necessary to use ITS.
<i>I have the knowledge necessary to use ITS.</i>	67% of HR Professionals indicated that they have the knowledge necessary to use ITS.
	37% of HR Professionals indicated that they do not have the knowledge necessary to use the ITS system.
<i>ITS is not compatible with other systems I use.</i>	73% of HR Professionals indicated that ITS is compatible with other systems they use.
	27% of HR Professionals strongly disagreed with this statement.
<i>There is a specific person allocated for assistance if I experience system difficulties.</i>	53% of HR Professionals agreed that there is a specific person allocated for assistance if they experience problems.
	47% of HR Professionals strongly disagreed with this statement.

Facilitating conditions include resource availability such as technical assistance and knowledge of the system. Literature has identified several facilitating conditions such as knowledge of the system, availability of and compatibility of existing infrastructure and technical assistance that will contribute to the adoption of new technology. In this study only 67% of HR Practitioners indicated they had the resources necessary to make use of ITS. The majority (67%) of the HR Practitioners also indicated that ‘they had the knowledge necessary to operate the system’. Seventy-Three percent (73%) of HR Practitioners indicated that ‘ITS is compatible with other systems they use’. Technical assistance was available to only 53% of the HR Practitioners who did not consider themselves knowledgeable about ITS, but 47% disagreed that ‘there was a specific person allocated for assistance if they experienced system difficulties’.

It stands to reason that in any activity there is a direct correlation between the skills required and the effort and time taken to perform the activity. The next section introduces the impact of attitude towards the system on acceptance and use of ITS.

5.5.7 Attitude Towards the System

The findings of the Attitude towards the system on acceptance and use of ITS system are presented in this section.

Table 5.11: Question and Response rate to Attitude towards the system

Questions asked	Findings
<i>Using ITS is a good idea.</i>	93% of HR Professionals agree that using ITS is a good idea.
	7% of HR Professionals disagree with the statement.
<i>ITS makes work more interesting.</i>	87% of HR Professionals agreed that ITS makes work more interesting.
	13% of HR Professionals disagreed with the statement.
<i>I like working with the ITS system.</i>	87% of the HR Professionals reported that they liked working with the ITS system.
	13% disagreed with the statement.
<i>I feel apprehensive about using ITS.</i>	67% of HR Professionals agreed that they feel apprehensive about using ITS.
	33% of HR Professionals disagreed with the statement.
<i>I hesitate to use ITS for fear of making mistakes I cannot correct.</i>	73% of HR Professionals agreed with this statement.
	27% of HR Professionals disagreed with this statement.
<i>I am satisfied with the tools (e.g. collaboration, emailing, assessment, reporting) available on ITS for processing of employee data.</i>	67% of HR Professionals agreed with this statement.
	33% of HR Professionals disagreed with this statement.
<i>I am satisfied with the use of ITS in addition to the traditional/manual system of processing data.</i>	73% of HR Professionals reported that they are satisfied with the use of ITS in addition to the traditional/manual system of processing data.
	27% of HR Professionals disagreed with this statement.
<i>Overall, most of my expectations of using ITS have been positive.</i>	80% of HR Professionals reported that their expectations of using ITS have been positive.
	20% disagreed with the statement.

Attitude is described in the literature as an individual's positive or negative feelings (evaluative effect) about performing the target behavior. (Yousafzai, Gordon, Foxall and Pallister, 2007).

Ninety Three (93%) of HR professionals agree that 'using ITS is a good idea; 87% reported that ITS makes work more interesting; 67% reported that they feel apprehensive about using the ITS system. Eighty Seven percent (87%) of HR professionals reported that they liked working with ITS. Seventy Four percent (74%) reported that 'they are satisfied with using ITS in addition to traditional/manual system of processing data' whilst 80% also reported that most of their expectations from using ITS were positive.

The majority of HR Professionals also reported that they felt apprehensive and fearful of making mistakes when using ITS; this could be attributed to a lack of knowledge or previous bad experiences with the system failing to deliver the expected outcomes due to technical difficulties. The next section discusses the impact of behavioural intent on acceptance and use of ITS.

5.5.8 Behavioral Intent

The findings of the behavioral intent on acceptance and use of ITS system are presented in this section.

Table 5.12: Question and Response rate to Behavioural Intent

Questions asked	Findings
<i>Assuming I have access to ITS, I intend to use it in the next 12 months.</i>	93% of HR Professionals agreed that they will access ITS in the next 12 months if they have access.
	7% of HR Professionals disagreed with the statement.
<i>I predict, I will use ITS in the next 12 months.</i>	93% of HR Professionals agreed that they predict, they will use ITS in the next 12 months.
	7% of HR Professionals disagreed with the statement.

Following the above favourable attitude towards ITS as discussed in the previous section the behavioural intent towards the technology was also found to be very favourable. Most of the HR Professionals indicated that they would make use of the ITS system in the next 12 months. This included both the planned and predicted use of the technology during the next 12 months. The next section discusses the impact of management support on acceptance and use of ITS.

5.6 Management Support

The second research question investigated the effect of management support on the decision to make use of ITS.

The findings of the Management Support on acceptance and use of ITS system are presented in this section.

Table 5.13: Question and Response rate to Management Support

Questions asked	Findings
<i>A policy for the provision of infrastructure for managing an employee's life cycle using ITS is necessary.</i>	90% of HR Professionals agreed that a policy for the provision of infrastructure for managing an employee's life cycle using ITS is necessary.
	10% of HR Professionals disagreed with the statement.
<i>A policy for training staff members to update their own employee data using ITS, is necessary.</i>	87% of HR Professionals agreed that a policy for training staff members to update their own employee data using ITS, is necessary.
	13% of HR Professionals disagreed with the statement.
<i>My department supervisor thinks that using ITS is valuable for decision making and improvement of HR services.</i>	87% of HR Professionals agreed that their departmental supervisor thinks that using ITS is valuable for decision making and improvement of HR services.
	13% of HR Professionals disagreed with the statement.

Ninety percent (90%) of the respondents agreed that a policy for the provision of infrastructure for managing an employee cycle using technology was necessary. Eighty-Seven percent (87%) agreed that a policy for training staff members in updating their own employee data using technology was necessary. Eighty-Seven percent (87%) agreed that their departmental supervisor believed that using ITS was valuable for decision making and improvement of HR services. Seventy percent (70%) of HR professionals concur that management support and interest does have a positive effect on the decision to adopt the use of ITS HR Modules because it guarantees increased productivity, efficiency and effectiveness.

Management support and interest have a positive impact on the decision to adopt use of ITS HR Modules.

Generally, management support and training was viewed to have positive impact on the decision to use and adopt ITS HR Modules. The next section explains the impact of previous exposure to computers/IT on acceptance and use of ITS.

5.7 Computer Literacy

Impact of exposure to computer literacy is addressed in this section. *Sub-question number 3 reads as follows: What role does previous exposure to information technology have on the user that will help predict that likelihood of ITS HR Modules being adopted and used?*

In this section computer literacy, frequency of computer use and computer training is reported to answer the above mentioned question. Ninety-Three percent (93%) of the respondents received some sort of formal computer training previously irrespective of their age.

In this study the general computer literacy exposure was self reported at 100% while none of the participants considered themselves to be less computer literate which supports the point made above. Previous computer literacy exposure had a direct positive impact on adoption of technology as supported by the results of this study. The next section discusses Computer Literacy of HR Professionals.

5.7.1 Computer Literacy of HR Professionals

Table 5.14 provides a breakdown of different tasks and accessories that can be used with a computer. Computer literacy was compared against behavioural intention to use ITS within the next 12 months. It was positive for the categories of planned, predicted or intended use of the ITS system.

Table 5.14: Computer Literacy

Do you make use of....	Y/N	Number of Participants	Percentage (%)
E-mail	Yes	15	100
	No	0	0
Saving a document	Yes	15	100
	No	0	0
Microsoft Word	Yes	15	100
	No	0	0
Microsoft Excel	Yes	14	93
	No	1	7

The results as presented in the above table imply that the majority of the participants who considered themselves computer literate intended to make use of the technology during the next 12 months. The majority of the participants who considered themselves computer literate predicted that they would make use of the ITS during the next 12 months. It was the computer literate participants who planned to make use of ITS. The next section presents computer training of the HR Professionals.

5.7.2 Computer Training

The findings of the computer training on acceptance of ITS system are presented in this section.

Table 5.15: Question and Response rate to Computer Training

Questions asked	Findings
<i>Have you received any formal computer training?</i>	93% of HR Professionals agreed that they had received formal computer training and made daily use of a computer for either personal or work purposes. 7% of HR Professionals disagreed with the statement.
<i>Are you familiar with Microsoft Word?</i>	100% of HR Professionals reported that they are familiar with Microsoft Word, the most widely used program. 0% of HR Professionals disagreed with the statement.
<i>Are you familiar with Microsoft Excel?</i>	93% of HR Professionals agreed that they are familiar with Microsoft Excel, which is viewed as the most advanced program. 7% of HR Professionals disagreed with the statement.
<i>Do you know how to save a document?</i>	100% of HR Professionals reported that they know how to save a document. 0% disagreed with the statement.
<i>Do you consider yourself computer literate?</i>	100% of HR Professionals reported that they consider themselves computer literate. 0% disagrees with the statement.
<i>Do you know how to attach a document to an e-mail?</i>	100% of HR Professionals reported that they know how to attach a document to an e-mail. 0% disagreed with the statement.

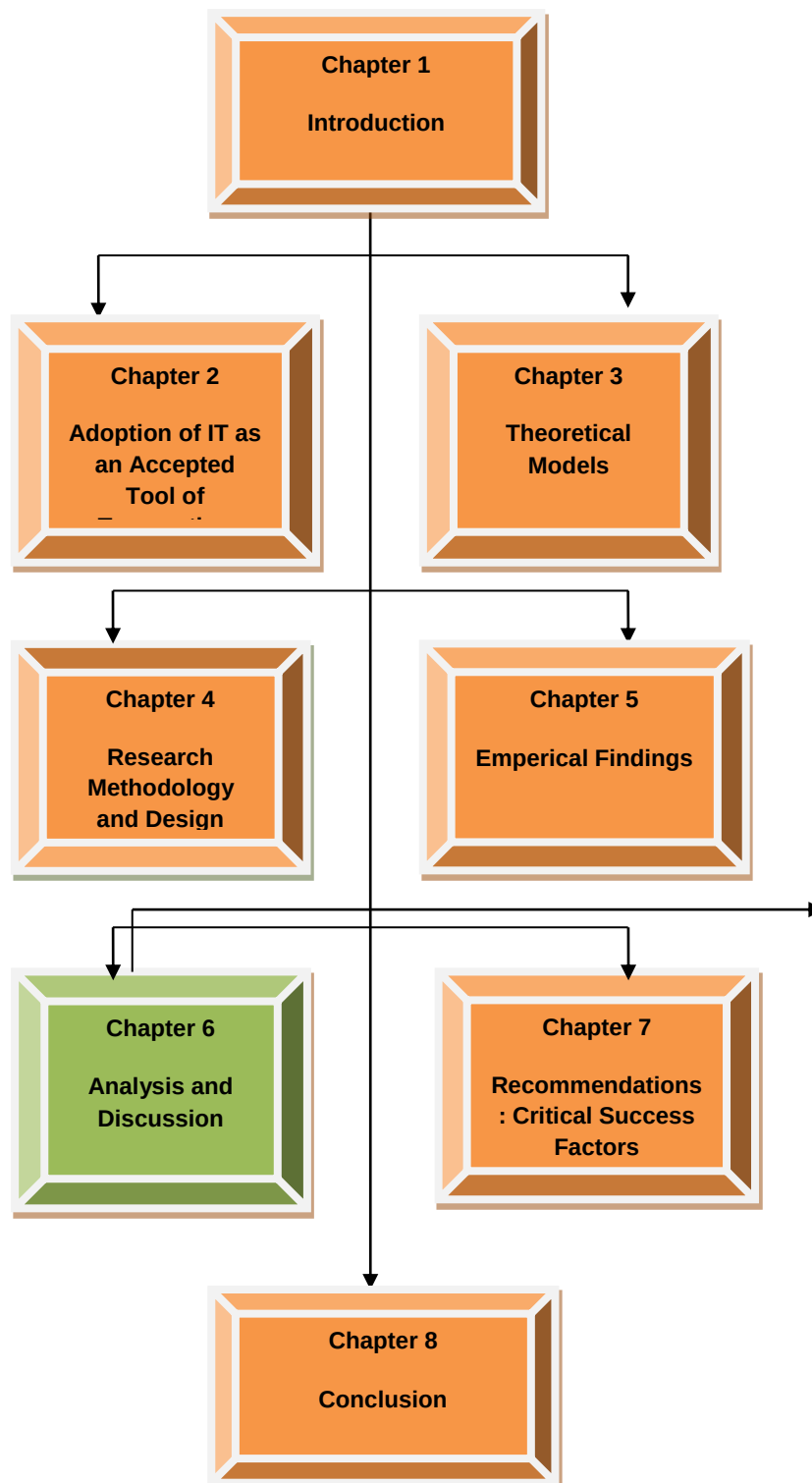
Based on the results presented in Table 5.15 the impact of computer training on adoption of Integrated Tertiary Software (ITS) is discussed in this section. Ninety-Three percent (93%) of HR professionals indicated that they had received formal training and made use of a computer on a daily basis for either personal or work purposes. Hundred percent (100%) of the HR professionals reported that they were familiar with Microsoft Word, the most widely used program. Ninety-Three percent (93%) of the HR professionals reported that they were familiar with Microsoft Excel which is viewed as an advanced program, and this is supported by the rating given on the self-evaluation in computer literacy. Hundred percent (100%) of HR professionals know how to save a document. It is viewed that previous computer training has a positive impact on adoption of technology as supported by participants in this study. This is key to efficiency and effectiveness in HR operations so as to avoid re-inventing the wheel, HR Professionals are expected to save their work in the HR Share drive for access by the team. The next section concludes the empirical findings chapter.

5.8 Conclusion

In this chapter, empirical analysis of results with specific reference to the research question and sub-questions of this study were discussed. Based on the findings, age does not have direct impact on adoption of technology, (as displayed in Figure 5.1) because participants use IT irrespective of their age. Findings of this study revealed that the location (rural or urban) had no bearing on adoption of ITS system. This is evident in findings as using ITS system in rural areas was not found to be cumbersome, while those in the urban areas also did not encounter any difficulties. Computer training had a positive impact on adoption of technology as this motivated participants (HR Staff) to use ITS on a daily basis and confirms usefulness of ITS. Most HR professionals who generally considered themselves knowledgeable about ITS and found it easier to make use of the system or become skillful at using it than those who did not consider themselves knowledgeable about the technology. This finding contradicts with research as cited by Anandarajan et al (2008) who indicated that individually-based training can have no effect on improved self-efficacy and performance in a collectivistic setting, such as South Africa.

The expectations of participants concerning ITS were positive as they expected it to improve their productivity and efficiency of work. Most HR professionals generally considered themselves knowledgeable about ITS and found it easier to make use of the system or become skillful at using it than those who did not consider themselves knowledgeable about the technology. It stands to reason that in any activity there is a direct correlation between the skills required and the effort and time taken to perform the activity. Majority of participants perceived impact of social influence as positive in adoption of technology as they considered senior management as supportive of usage of ITS. The majority of HR Professionals also reported that they felt apprehensive and fearful of making mistakes when using ITS; this could be attributed to a lack of knowledge or previous bad experiences with the system failing to deliver the expected outcomes due to technical difficulties.

Management support and training was viewed to have positive impact on decision to use and adopt ITS HR Modules. The majority of the participants who considered themselves computer literate predicted that they would make use of the ITS during the next 12 months. It was the computer literate participants who planned to make use of ITS. The next chapter is critically discussing and analyzing the above results linking the analysis to literature.



- 6.1 Introduction
- 6.2 Response Rate
- 6.3 Demographics
- 6.4 Integrated Tertiary Software (ITS)
- 6.5 Facilitating Conditions Influencing Acceptance and Use of Technology
 - 6.5.1 Perceived Usefulness
 - 6.5.2 Perceived Ease of Use
 - 6.5.3 Performance Expectancy
 - 6.5.4 Effort Expectancy
 - 6.5.5 Social Influence
 - 6.5.6 Facilitating Conditions
 - 6.5.7 Attitude Towards the System
 - 6.5.8 Behavioral Intent
 - 6.5.9 Management Support
 - 6.5.10 Computer Literacy
 - 6.5.11 Organisational Support
 - 6.5.12 Training
- 6.6 Conclusion

Chapter 6 Discussion and Analysis of Results

6.1 Introduction

This chapter seeks to critically discuss and analyse the findings to give meaning to the collected by linking it to literature. The purpose of conducting a qualitative study is to produce findings. Data demands interpretation and in turn provides information to be analysed (Hofstee, 2009 and de Vos, 2002)). Data analysis is the process of bringing order, structure, and meaning to a mass of collected data.

A questionnaire was used to collect primary data in order to answer the main and sub-research questions. The questionnaire was designed with both the various sub-categories of the TAM and UTAUT in mind and provided a broad overview of the results of these theories. While the previous chapter discussed the empirical findings of the study, this chapter focuses on the interpretation of the data obtained as pertaining to the various research questions. Each research question is discussed separately making use of the primary data obtained and relevant literature. The next section critically analyses the response rate from the questionnaires.

6.2 Response Rate

The integrity and credibility of the data collected usually depends on the response rate of the participants returning the questionnaire. A survey tends to elicit a low response rate. A low response rate affect the integrity of the study so that conclusions drawn from the data may be erroneous. A response rate of 50% is usually considered adequate, 60% good and 70% excellent. This aspect should not be considered a measurement; the overall population was only 15 and for the credibility of the results of this study, all 15 HR staff members responded to the questionnaire which means that the statements and facts about this study can be presented with 100% certainty as supported by de Vos (2002) when articulating that the higher the response the more generalisable the results.

The research instrument used in this study was a semi-structured questionnaire which was distributed electronically via Share-point. The benefits of using this approach, as cited by de Vos (2002), are that electronic questionnaires are most frequently used; the researcher compiles the questionnaire and sends it with clear, carefully worded prescriptions at the level of understanding of the target population. The questionnaire must be compiled in such a way that it is non-threatening and creates an interesting impression.

The approach and objective of this study was mostly addressed through an in-depth analysis of the responses so as to understand issues related to adoption of ITS within the UFH HR Department. This study achieved a 100% response rate which was critical to yielding quality results which can be generalized. The case study approach was used and as argued by Stake (2010), the sole criterion for selecting cases for a case study should be the opportunity to learn which applies to the University of Fort Hare HR Department's adoption of technology case study. The type of case study undertaken was an instrumental case which advanced the understanding of factors affecting adoption and continued use of IT within the UFH HR Department.

Based on the collected and analysed data, theory was also be employed to compare and contrast the Critical Success Factors developed as supported by Leedy and Ormrod (2010) that theory is used to make comparisons, build theory, or propose generalizations.

The response rate was 100% which implies that the results of this study can therefore be generalised to the general population of the HR Department staff employed at the University of Fort Hare in a developing country making use of ITS HR Modules. The next section discusses the socio-demographic characteristics of the study participants.

6.3 Demographics

The study population consisted mainly of females with males only a small proportion of the population. 12 participants were females and 3 were males. The HR profession has traditionally been seen as a female dominated career, as cited by Ulrich (2009).

Eleven (11) participants were located in Alice, 1 in Bisho and 2 in East London. The percentage of participants in rural and urban settings was skewed with about 12 working in Alice, 1 in Bisho and 2 working in East London. One of the main advantages of ITS is that it connects HR professionals in urban and rural areas providing support and guidance to the University of Fort Hare community. The ICT roll out in rural areas is viewed as not as advanced in the Eastern Cape as in a developing community. The HR professionals in urban areas are expected to be more computer literate but this is not always the case, as the HR professionals in the rural areas were also trained at the same tertiary institutions. This notion is supported by Pure eta al. (2008) that acceptance of IS in the urban areas tends to be influenced by certain factors, such as, *the underlying assumptions of the democratisation of the workforce, high literacy rates and a reasonable infrastructure.*

In this study, both HR Practitioners and HR Administrators participated; 60% of the population was administrators and 40% Practitioners, a true reflection of UFH HR staff complement.

In this study, age did not have direct impact on adoption of technology and this is contradicting literature as it portrays technology as generally not well accepted by the older generation who can have a significant influence on the technology acceptance behavior of ITS (Davis and Venkatesh, 2009). They have included age in their theory as contributing factor for the acceptance of new technology, demonstrating this very point.

Educational level and computer literacy were viewed as having a positive impact on adoption of ITS within HR Department and this is supported by Mahmood et.al. (2007); Wu and Kuo, (2008); Lee, Lee and Lee, (2006) who skillful that educational level is considered important for computer literacy as higher educational qualifications are equated with increased exposure to computers in general.

The HR profession is moving increasingly towards computerized systems in order to provide universal access to their records and other automated HR related activities, hence it has become important that HR professionals be computer literate. Having identified the impact which IT have in the field of HRM, it is therefore recommended that computer literacy should be included as a Module for HR Qualification (Janneck, 2010).

100% of the respondents reported that they used a computer every day which is in line with the expectations of the HR field. In the next section, The Integrated Tertiary Software is discussed.

6.4 Integrated Tertiary Software (ITS)

Results pertaining to ITS Modules at UFH are analysed in this section. Eighty percent (80%) of participants confirmed daily use of ITS system because it is where most of the HR Administration is handled. The majority of HR Practitioners and administrators in the HR department certainly use ITS Module in order to respond to queries from staff, investigation of queries, validation of data, etc. This is aligned to the above statement that the HR profession is moving increasingly towards computerized systems which makes it important that HR professionals should be computer literate (Janneck, 2010).

Twenty percent (20%) of the study participants reported that they seldom used the ITS Leave System Module because of the nature of some of the HR Administration roles within the old departmental structure where individuals are only expected to receive visitors, answer the telephone and maintain physical records within the HR Department, as supported by Gardner et al. (2003) who says that HR work is classified between strategic and operational categories. Operational varies from computer based to physical, i.e. maintenance of manual personnel records.

The ITS Leave System has just been launched and 80% of the HR Staff members reported that they used the Leave System Module of ITS, and because the paper-based leave application system was discontinued, HR communicated to all staff that the paper based leave application forms would be discontinued after October 2010. Twenty percent (20%) of respondents reported that they seldom used the Leave System perhaps because they had not applied for leave between the implementation date of the Leave System and the time they completed the questionnaire.

Hundred percent (100%) of the respondents reported that they had never used the Evaluation System Module of ITS; this is a concern as the Module is active and been paid for. This further adds to the perception that ITS is not used optimally. The Skills Development System is also not being used as almost 100% of the population reported that they had never used the ITS Skills Development Module. This is also a concern because this system is active and the University paid for it a long time ago. There is no link between the Personnel System and the Skills Development Module which would add value to the accuracy of Skills Development Reporting to DoL at a click of a button.

The majority of the participants do not make use of the Skills Development and Evaluation Module. This can be due to a variety of reasons. The Skills Development aspect of HR has been carried out manually since the inception of the University. This system is not linked to the Personnel System and the concern is that the Department of Labour (DoL (2003) reported that they are not entirely satisfied with the University submitted Skills Development Report because of inherent inaccuracies which could be due to data integrity. Resistance to change may be the cause. Another possible explanation could be that the Skills Development Module is considered not user friendly or that HR Professionals simply do not make use of the technology. Another reason could be that data is incorrect or incomplete on the system.

The possibility of these Modules not being used optimally to enhance generation of value is shared by Townsend and Bennett (2009) who said that the adoption of information technology and its continued use are key to achieving the value of the investments made in such information technology. This is just as relevant for higher education Human Resource Divisions as they are expected to provide management with accurate data for decision making purposes.

HR staff who participated in the study considered themselves to be computer literate and this is positive as the University of Fort Hare HR Department's vision is to improve the standard of service offered to staff. It is imperative to change the attitude of staff to become more responsible for updating their own information and also to maximize the usage of electronic Information Technology based systems. ITS has been identified as the top priority in achieving this vision; this is the future of the HR Department strategy. The University has invested considerable funds into the ITS upgrade project already. Wu and Kuo (2008) concurred that computer literacy is a necessary skill for HR professionals as the trend for the HR field is to move towards usage of HR automated Systems. It is further supported by Rozelle and Landis (2010) that recruiting systems today use websites rather than face-to-face meetings to communicate job related information. Online recruitment and e-performance management are a strategic future plan for UFH to minimize the time and effort invested in these essential HR processes.

The intention is to ultimately align the entire Employee Life Cycle to ITS for the University to gain value from the investment made in purchasing ITS system. In view of all the changes pertaining to Online Leave, Online recruitment and e-performance management, there is a need to further research the overall effectiveness of the HR systems. The next section explores different conditions mentioned by the TAM and UTAUT models in order to explain user acceptance and use of technology, as well as the facilitating conditions influencing acceptance and use of technology by HR Professionals.

6.5 Facilitating Conditions Influencing Acceptance and Use of Technology

This section explores perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards the system, behavioural intent, management support, computer literacy, organizational support and training as different conditions that influence the acceptance and use of information technology.

These conditions are identified by the TAM and UTAUT and have been discussed in previous chapters. There are some universal problems that have been identified in literature common to all developing countries when introducing new technologies into existing traditional/manual ways of transacting work. These include financial support for the upgrade with limited focus on benefits and value derived from the system. Training of the users and development of local expertise to motivate the optimal use of the system is needed. The ITS system is often introduced as new technological systems still on trial and requiring refinement before alignment to the exact needs of HR. When these alignments/tailoring are not made easy and clear to the users from the start, they may become discouraged and pessimistic with the project. The intervention or introduction of new technology is often too narrow as it does not take into consideration the existing HR cultural and political environment. IT projects often give inadequate focus on training, especially technical training, and this is identified as one of the barriers to adoption of new technology into HR Departments. The above views are supported by Bajaj et al. (1998); Wu and Kuo (2008) and Lee et al. (2006), when they cited organisational support, training level, perceived usefulness, perceived ease of use and other factors as having positive impact on adoption of technology.

The next section discusses the perceived usefulness and its impact on acceptance and use of ITS.

6.5.1 Perceived Usefulness

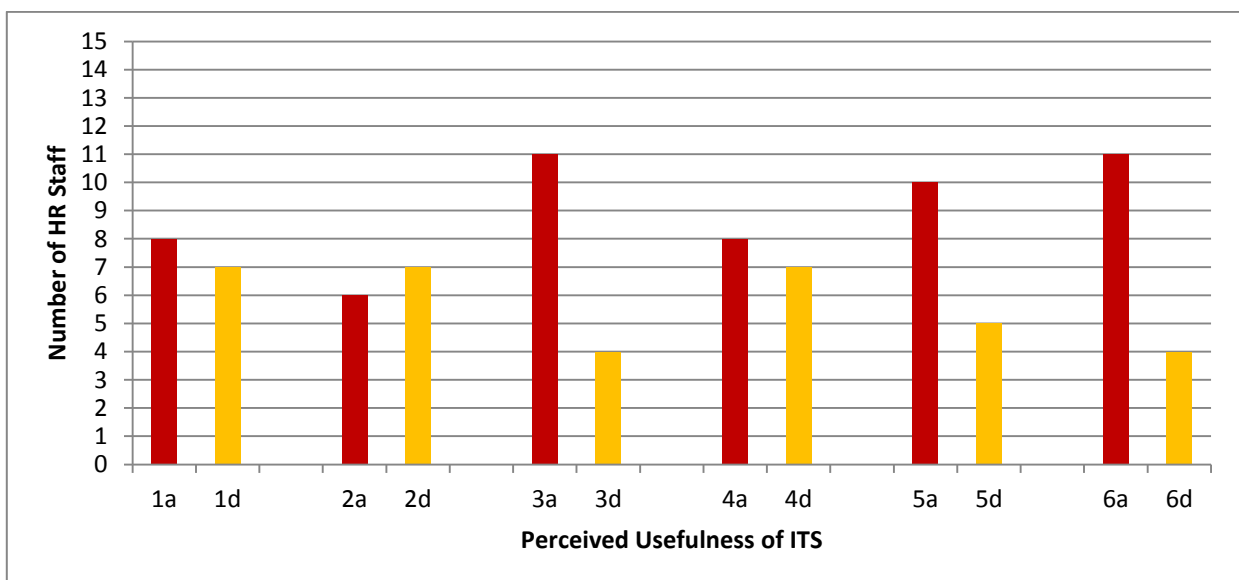
The definition of perceived usefulness is the degree to which a person believes that a particular information technology will enhance their job performance (Davis, 2008). More than 70% of HR Professionals perceive ITS as a useful technology in human resources practice. The majority of HR Professionals view ITS as useful and of assistance to improve productivity in their job, which implies that technology is accepted, whereas it is not necessarily easy to use. Suracuse et al (2008) found that perceived usefulness and attitude towards users had the most significant influence on intention to use and actual technology use. The same argument can be applied to those with previous exposure to new ICT; they tend to be more impressed with the technology as they are not aware of the limitations. Most of the HR professionals at UFH arrived during the era of ITS and have never used or experienced any other system.

This explains why literature also reports 'perceived usefulness' and not only 'perceived ease of use' to be critical within this user group.

Despite the perceived lack of acceptance of ITS by HR Professionals, when deciding to accept or make use of new technology they would consider if the technology was relevant to effective delivery of HR services (critical aspects of their job) as well as the quality and output (improvement in quality and productivity) of the system. Furthermore, this is supported by Tule (2003) who said that HR professionals considered IT as useful if it increases their productivity, quality of work, effectiveness and overall service.

HR Professionals at UFH reported that ITS was useful in their job and provided them with more control in their work. This is aligned to literature that there is a correlation between system usage and job satisfaction; however, this contradicts Robey (2009) who said that in abstractive cultures in regions such as North America and Europe, people think and behave in a linear fashion using a rational cause and effect paradigm to create perceptions, whereas in associative cultures among Africans, Asians and Arabs, perceptions and behavior utilize associations with events that may not have logical basis. HR professionals at UFH are in an associative culture and their responses to the questions reflect that perceived usefulness is positively related to system usage which contradicts this view. The following graph shows the perceived usefulness of an ITS system by HR Professionals.

Figure 6.1: Graph Showing Perceived Usefulness of ITS



The above graph is labeled (a) advantage and (d) disadvantage. There were six questions asked for perceived usefulness.

As shown in the above graph, some of the perceived advantages of ITS that is useful in HR delivery according to the HR professionals include the following:

Fifty-Three percent (53%) of the HR Professionals agree that using ITS improves the quality of work they do. Fifty-Three percent (53%) agree that using ITS gives them greater control over their work. Seventy-Three percent (73%) agree that ITS supports critical aspects of their job. Fifty Three percent (53%) agree that using ITS improves their job performance. Sixty-Seven percent (67%) agree that ITS allows them to accomplish more work than would be possible. Sixty-Seven percent (67%) agree that ITS increases the effectiveness of their job. Seventy-Three percent (73%) also agree that ITS makes it easier to do their job

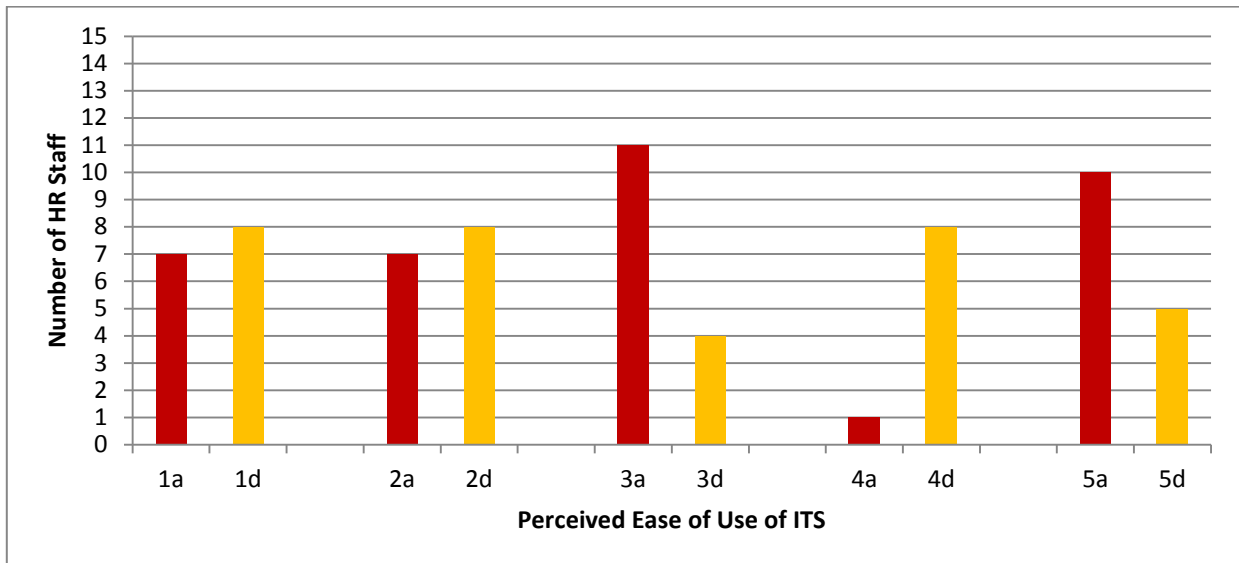
The perceived amount of knowledge of ITS and the perceived ease of use was found to be significant. HR Professionals increased ITS knowledge had an impact on the perceived ease of use of the technology. This is important as the acceptance and use of ITS will be influenced positively if HR Professionals are familiar with the technology. Some of the HR Professionals indicated that they did not consider themselves knowledgeable about ITS, indicating a lack of awareness of potential of the technology.

While Davis (2008) stated that perceived usefulness is the major determinant of computer acceptance in the workplace, Holden and Rada (2009) concurred that perceived ease of use is not likely to affect acceptance, but it does appear to correlate with usefulness. The reason for this may perhaps be that if a technology is difficult to use it cannot possibly be perceived as useful. The implication of perceived usefulness for the acceptance of new technology in HR Professionals then follows that training, and management support must be provided to ensure improvement in HR outcomes. People tend to use or not use an application to the extent that they believe it will enhance their job performance (Davis, 2008). This includes decreasing the time to do the job, and achieving more efficiency and accuracy. The next section discusses the second factor of the TAM, perceived ease of use.

6.5.2 Perceived Ease of Use

According to Davis (2008), perceived ease of use is the degree to which a person believes that using the technology will be free of effort. The following graph shows the extent of the perceived ease of use by HR Professionals.

Figure 6.2: Graph Showing Perceived Ease of Use of ITS



The above graph is labeled (a) advantage and (d) disadvantage. There were five questions asked for perceived ease of use. As shown in the above graph, some of the perceived advantages of ITS to be useful in HR delivery according to the HR professionals, include the following:

Forty-Seven percent (47%) of HR Professionals who participated in this study agreed that it required considerable effort to become skillful at using the ITS system. This is an indication that continuous training and support is necessary to allow HR Professionals an opportunity to become skillful in using ITS in order to realize the benefit. Forty-Seven percent (47%) agreed that interacting with the ITS system required considerable mental effort which is also an indicator that continuous training is necessary. Seventy-Three percent (73%) agreed that it was easy to remember how to perform tasks using the ITS system once it was in operation; this could be an indicator that daily use of ITS improves one's skills. Forty-Seven percent (47%) of HR Professionals agreed that the ITS system was rigid and inflexible to interact with meaning they found it frustrating to use during their daily operations. Sixty-Seven percent (67%) of HR Professionals agreed that it was easy to manipulate ITS to give expected results.

The benefits are defined as improving productivity, quality of service, enhancing effectiveness and providing overall practical offering.

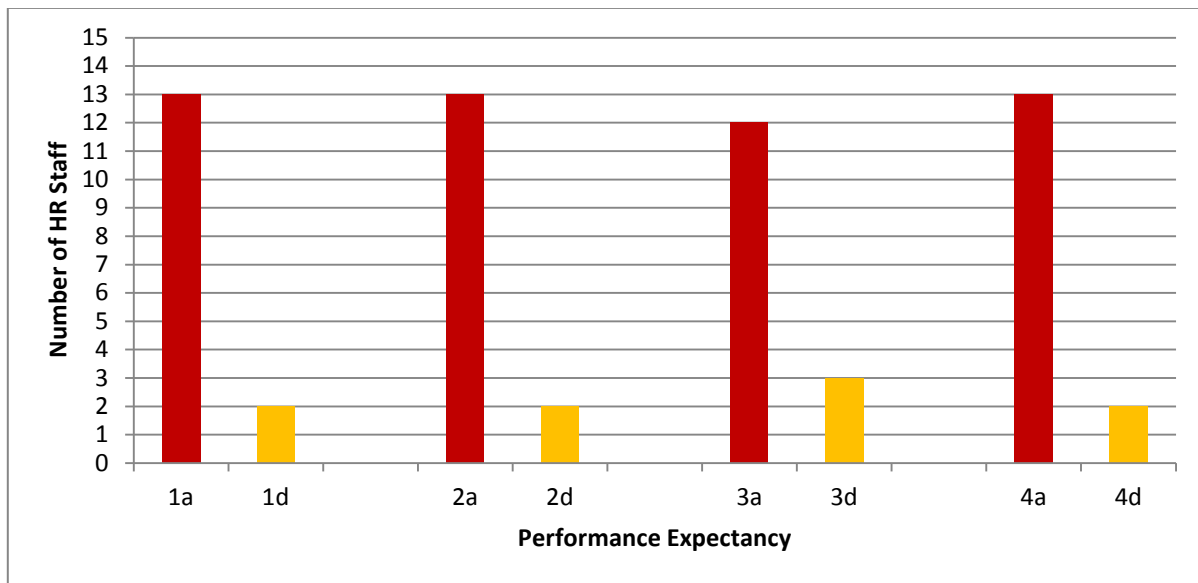
The frequency of use may also play a part with efficiency and effectiveness when using the ITS system. Bajaj et al. (1998); Wu and Kuo (2008) and Lee et al. (2006) supported that organisational support, training level, perceived usefulness, perceived ease of use and other factors are having positive impact on adoption of technology.

Most of the participants indicated that they use the ITS system daily to a maximum of 8 hours which refuted the perceived notion of non-usage. Davis (2008) reported that ease of use becomes non-significant with increased experience among users of new technology. Similarly Chismar and Willey-Paton (2003) argued that perceived ease of use condition weakens as the competency of the user increases. In the next section the factors associated with the UTAUT model are discussed, namely performance expectancy.

6.5.3 Performance Expectancy

Figure 6.3 illustrates performance expectancy which is the level of expectation of ITS by HR Professionals. Performance expectancy represents the degree to which an individual believes that using the system will help them to attain their goals in job performance. The expectations of HR Professionals were very high as indicated by 87% of HR Professionals who found the 'ITS system useful in their job'. Only 13% disagreed with this statement. Eighty-Seven percent (87%) of HR Professionals also agreed that 'ITS system enables them to perform tasks more quickly' during operations thereby increasing their productivity. Eighty percent (80%) of HR Professionals also agree that 'using the ITS enables them to be more productive'. Eighty-Seven percent (87%) of HR Professionals agree that 'If they use ITS, this will increase their chances of getting a salary increase' which indicates that they really see a link between ITS and their performance which translates to incentives.

Figure 6.3: Graph Showing Performance Expectancy of ITS



The above graph is labeled (a) advantage and (d) disadvantage. There were four questions asked for performance expectancy. As shown in the above graph, some of the perceived advantages of ITS usefulness in HR delivery according to the HR professionals, include the following:

Software engineering research and practice directs significant attention towards ensuring that systems are developed to meet performance-oriented system requirements; similarly, the literature related to IS success highlighted the importance of performance based system quality to system success (Furneaux and Wade, 2010). The results of this study demonstrates that the significance of technically oriented system characteristics are related to positive evaluations of IS effectiveness. Literature would seem to suggest that an inadequate system performance, even a highly institutionalised system, should be discontinued. Defined as the extent to which the operation of a system is technically adequate, system performance includes such characteristics as reliability, responsiveness, and availability of a system.

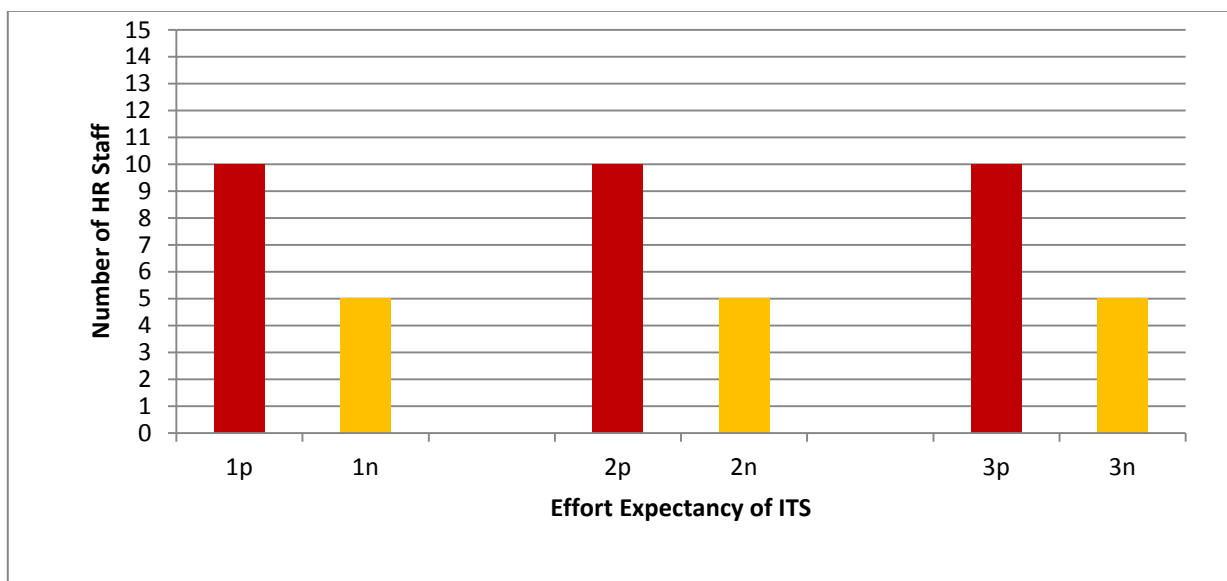
Although the software associated with an information system is not subject to physical wear, system performance can be negatively impacted by intrinsic characteristics of the software as well as by factors that include ageing hardware, changes to related software, and changing usage patterns.

System performance problems, however, the cause, tend to be both relevant and problematic for users and for other stakeholders who depend on the output a system produces. Hence, it is argued that declining system performance will lead to increased organizational recognition that the use of a system should be discontinued (Furneaux and Wade, 2010). The next section discusses the effort expectancy of the ITS system.

6.5.4 Effort Expectancy

Effort Expectancy is defined as the degree of ease associated with the use of the system. The majority of HR professionals indicated that they expected the system to be easy to use. The following graph depicts the effort expectancy by HR Professionals.

Figure 6.4: Graph Showing Effort Expectancy of ITS



The above graph is labeled (p) positive and (n) negative. There were three questions asked for effort expectancy. As shown in the above graph, there are perceived advantages of ITS to the HR efficiency and effectiveness according to the HR Professionals, include the following:

Sixty Seven percent (67%) of HR Professionals indicate that their interactions with the ITS system are clear and understandable, whilst 33% contradicts this view as they say that their interactions with the ITS system were unclear and not understandable.

This is supported by Jack and Mars (2008) who stated that obstacles such as cost, workload, education and effort expectancy may be more important when adopting a new technology such as the ITS than simply providing the resources or infrastructure needed.

Sixty-Seven percent (67%) of HR professionals report that it was easy for them to become skillful at using the ITS system. Sixty-Seven percent (67%) of HR Professionals found the ITS system to be easy to use, while 33% found it difficult to use. Sixty-Seven percent (67%) report that learning to operate the ITS system is easy for them; 33% report difficulty.

Most HR Professionals generally considered themselves knowledgeable about the ITS and found it easier to make use of the system or become skillful at using it than those who did not consider themselves knowledgeable about the technology. The majority of HR Professionals indicated that they expected the system to be easy to use whilst some expected the system to be difficult to use. Jack and Mars (2008) stated that there are other factors that impact on effort expectancy of ITS that influence the adoption which must be considered, such as workload of the user and education/computer training that are more important when adopting a new technology (such as the ITS) than simply providing the resources or infrastructure needed. Furthermore, in any activity there is a direct correlation between the skills required and the effort and time taken to perform the activity. An increase in skill would lead to ease of use which in turn would reduce the effort expectancy and time needed to use ITS. The next section discusses the social influence impact on HR Professionals.

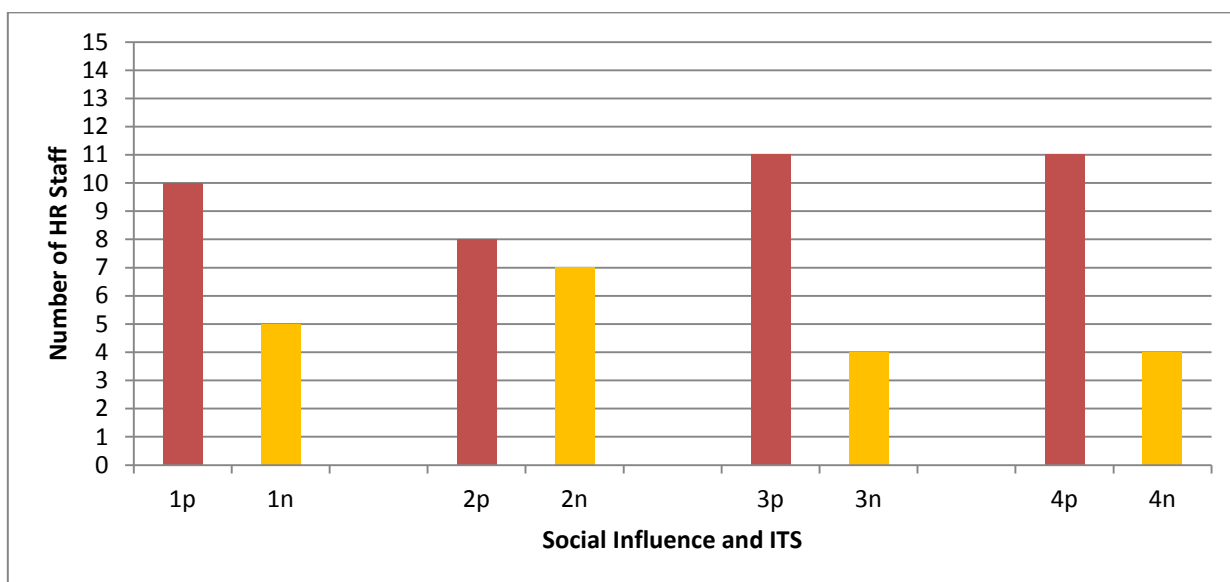
6.5.5 Social Influence

This section deals with the extent to which an individual allows the opinions of others to influence their decision to use the system, which is called social influence.

Social influence is critical considering that it can influence the acceptance of the technology by imposing internal and external forces that will determine the success or failure of the adoption of technology. If social influence is contributed through external compliance, it is associated with a negative influence on the users' attitude while internalisation and identification will contribute towards a positive user attitude. Venkatech et al (2003) indicate that internalisation of the induced behaviour also plays a larger part than perceived usefulness in the acceptance and usage of new technology.

Outside forces such as the political plan of local community leaders has been identified in literature as an obstacle when introducing IT to a new environment. The following graph displays the social influence on HR Professionals.

Figure 6.5: Graph Showing Social Influence and ITS



The above graph is labeled 'p' positive and 'n' negative. There were four questions asked for social influence. As shown in the above graph, some of the perceived importance of ITS to be positive influence to HR delivery according to the HR Professionals, include the following:

Internal social influence was important to HR Professionals with 67% of the respondents indicating that 'people who influence my behavior believe that I should use ITS system'. Fifty-Three percent (53%) of the respondents also believe that people who are important to them think that they should use the ITS system. Seventy-Three percent (73%) believe that senior management of the institution have been helpful in the adoption of technology whilst 27% strongly disagree with this statement. Seventy-Three percent (73%) of the respondents believe that the University has supported the use of the ITS system whilst 27% strongly disagree with this statement.

Yarborough and Smith (2007) suggest to include external factors such as time, organisational issues, system-specific issues and personal factors when investigating social influence on the acceptance of new technology.

They argue that these factors are unique to HR and the tertiary environment must be included in order to improve the accuracy of the prediction. The HR Professionals who considered themselves knowledgeable about the technology were more prone to be influenced by social conditions such as management and peers.

Proper communication and dissemination of information regarding technology may be implemented as an initiative to manage the change. This can reduce resistance to the introduction of ITS in the initial stages of implementation. The next section discusses the impact of facilitating conditions on HR Professionals.

6.5.6 Facilitating Conditions

Facilitating conditions are the objective environmental factors that observers agreed made the task easy to accomplish (Venkatesh et al, 2003).

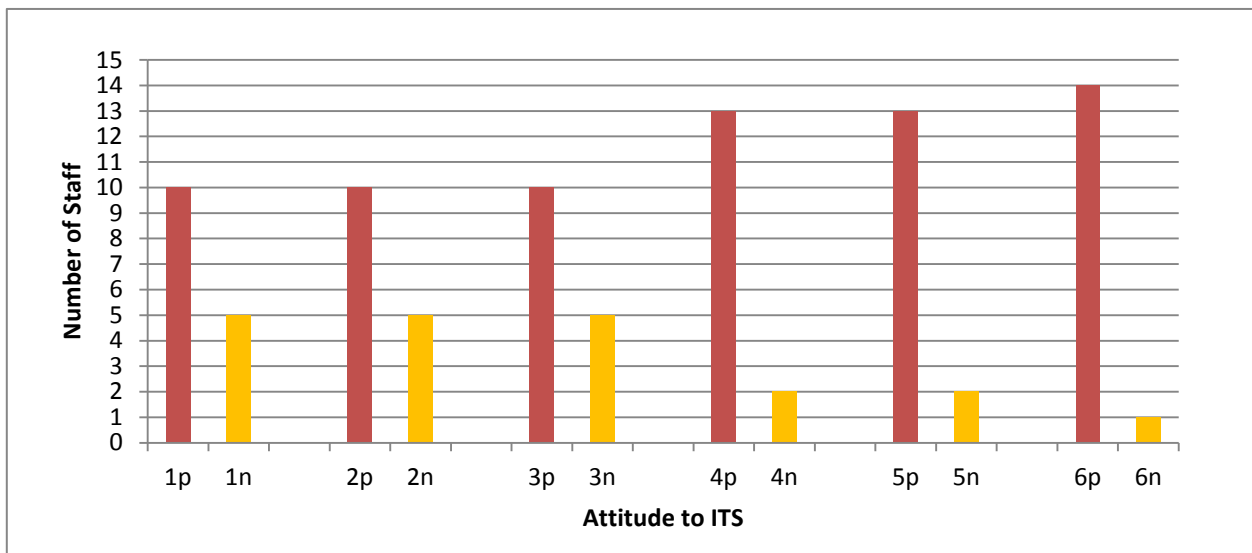
Literature has identified several facilitating conditions such as knowledge of the system, availability and compatibility of existing infrastructure and technical assistance. In this study only 67% of HR Practitioners indicated that they had the resources necessary to make use of ITS whilst 33% disagreed with this statement. The majority (67%) of HR Practitioners also indicated that 'they had the knowledge necessary to operate the system'. 73% of HR Practitioners indicated that 'ITS is compatible with other systems they use'. Technical assistance was available to only 53% of the HR Practitioners who did not consider themselves knowledgeable about ITS but 47% disagreed that 'there was a specific person allocated for assistance if they experience system difficulties'. Lee et al (2006) argued that technical assistance is a critical facilitating condition to adoption of technology and objective environmental factor that observers agree make the task easy to accomplish. The next section discusses the attitude towards the system by HR Professionals.

6.5.7 Attitude Towards the System

This section discusses the impact of attitude towards adoption of ITS. The majority of HR Professionals indicated a positive attitude towards ITS though there was substantial apprehension and fearfulness when using the system; some were dissatisfied with the tools (e.g. collaboration, emailing, assessment, reporting) available on ITS for processing of employee data.

This can be directly attributed to knowledge and level of skills. Doolin and Ibrahim (2005) reported similar results in their study of the introduction of technology in rural America. The following graph depicts the attitude displayed by HR Professionals towards ITS.

Figure 6.6: Graph Showing Attitude to ITS



The above graph is labeled 'p' positive and 'n' negative. There were six questions asked for attitude to ITS. As shown in the above graph, some of the positive impact of attitude to ITS to be useful in HR delivery according to the HR professionals include the following:

Attitude is described as an individual's positive or negative feelings (evaluative effect) about performing the target behavior, and it is argued that attitudes towards an object influence intentions which, in turn, influence behaviour with respect to the object, that is, its use (Yousafzai, Foxall and Pallister, 2007).

Ninety-Three percent (93%) of HR Professionals agree that 'using ITS is a good idea, 87% think that ITS makes work more interesting and 67% feel apprehensive towards using the ITS system. Eighty-Seven percent (87%) of HR Professionals like working with ITS. Seventy-Three percent (73%) reported that 'they are satisfied with using ITS in addition to the traditional/manual system of processing data', whilst 80% also reported that most of their expectations from using the ITS were positive. The majority (73%) of HR Professionals also report feeling apprehensive and fearful of making mistakes when using the ITS; this could be attributed to a lack of knowledge or

previous bad experiences with system failing to deliver the expected outcomes due to technical difficulties. Umarji and Seaman (2005) argued and recommend that the product should be criticized not the people.

Metrics should not be used to assess individuals as this can spark doubt and uncertainty about the usefulness of an IT system. Based on the discussions above, it is important to note that unless these apprehensions are addressed at the start of the implementation of the IT system, they will eventually affect adoption. Attitude has two sub-components: affective (e.g. happy-sad) and cognitive (e.g. beneficial-harmful) (Umarji and Seaman, 2005). Fenton and Hall (2006) discussed practitioner attitude in detail and claim that if you fail to generate positive feelings towards the program, you seriously undermine your likelihood of success. Attitude is also influenced by job seniority, integrity of metrics data and reality of the metrics programs (Umarji and Seaman, 2005). The next section discusses the impact of behavioural intent of acceptance and use of technology.

6.5.8 Behavioural Intent

This section deals with the impact of behavioural intent on adoption of technology. Umarji and Seaman (2005) concurred that behavioral intention is a predictor of Use; the measure of BI must correspond to the measure of use. Following from the above, behavioural intent towards the technology was found to be very favourable. Most of the HR Professionals indicated that they would make use of the ITS system in the next 12 months. This included both the planned and predicted use of the technology during the next 12 months. This is borrowed from the Theory of Planned Behaviour and refers to both personal and situational impediments to performing a behavior. It addresses the situation where performance may depend on non-motivational factors such as availability of requisite opportunities and resources. Behavioural intention is affected by both external and internal factors. External factors are those outside one's person that may affect behavior; therefore, we include here user resources such as relevant documentation, availability of a help facility, reliable and experienced personnel, adequate time and financial stability. According to Umarji and Seaman (2005) who indicated that internal factors refer to the personal ease or difficulty of performing the behavior, based on one's prior experiences, skills gained through learning, and intelligence impact on intention to use technology. The next section discusses the importance of management support of HR Professionals to accept and use the technology in the study.

6.5.9 Management Support

When planning a new technology system for an organization, administrators should have the ability to predict whether the new system will be acceptable to users, investigate reasons why a planned system may not be fully acceptable, and then take corrective action to increase acceptability. This action will help to improve the business investment in time and money (Davis, Bagozzi and Warshaw, 2006).

Eighty-Seven percent (87%) of the respondents agree that a policy for the provision of infrastructure for managing the employee cycle using technology, is necessary. Eighty-Seven percent (87%) agree that a policy for training staff members in updating their own employee data using technology is necessary. Eighty-Seven percent (87%) agree that their departmental supervisor believes that using ITS is valuable for decision making and improvement of HR services.

Seventy-Two percent (72%) of HR Professionals concur that management support and interest have a positive effect on the decision to adopt and use ITS HR Modules because it guarantees increased productivity, efficiency and effectiveness. Management support and interest have a positive impact on the decision to adopt use of ITS HR Modules. Some of the responses received were as follows:

- “It has high effect because management should know the efficiency and effectiveness of any system they adopt.”
- “systems are management tools to improve outputs; they are there to assist management manage.”
- “Management support play a huge role as this impacts on motivation for staff to use ITS.
- “If supported by management means will get resources, training and will make my work useful to manager.”
- “Lots of positive effect, people see that using ITS is important. It needs to be driven from the top.”
- “Management support is necessary, management must be strict for staff to take them serious.”
- “Big effect, if not support people will carry on using manual process.”
- “Huge effect and the more management support received the more interested would staff be.”

Dansky, Gamm, Vasey and Barsukiewicz (2009) stated that perceived organisational support are important predictors of perceived usefulness. Behavioural intent is influenced significantly by the support of higher authorities in this study. The support of management was found to be very important to the HR Professionals in both the planned and predicted behavioural intent categories. More than half of the participants indicated that they planned to make use of the technology and perceived the departmental supervisor to be supportive of the technology.

Planned and predicted use of the technology is significantly linked to HR management support structures but HR Professionals perceived less support from departmental management towards the technology than from the institutional management. The majority of the participants indicated that they had necessary resources to make use of ITS. The knowledge level about ITS was also found to influence the perception of management support. HR Professionals knowledgeable about ITS considered management support much more favourably than those who were not. This can be explained as increased knowledge of ITS providing an improved insight into what is necessary to support the technology and thus a more accurate evaluation of the level of support provided by the management.

The most significant challenge within many university HR departments is the adoption of Integrated Tertiary Software (ITS), ease of use of ITS and continuous usage thereof due to lack of management support and institutional policies (Yarbrough and Smith, 2007; Ngai et.al. 2008). Management should be at the forefront to communicate the objectives and goals of the implemented ITS system to staff with accompanying institutional policies to regulate usage. The intention is to minimize misunderstanding between the project and individual user's goals leading to confusion and conflict.

A possible solution to the above situation is to incorporate follow-up session between management and staff and include staff from the start when the introduction of the new technology is planned (Mitchelle, 2009). It is evident from the above findings that HR Professionals strongly agree that development of policies and management support and interest are necessary for the adoption of technology. The next section discusses the impact of computer literacy in acceptance of ITS.

6.5.10 Computer Literacy

This section discusses the impact of computer literacy in adoption of the ITS system. It is because of computer technology that administration of complex higher education systems is possible. Administrators can be more assured of being in control of organizational needs and decisions. Academic decision makers in higher education follow the incremental model of decision making more now because technology plays such a large and interdependent role in administration (Sellers, 2005). Due to the nature of HR qualifications, most tertiary institutions have included computer literacy module into the curriculum in order to prepare students for HR practice. Ninety-three percent (93%) of the respondents had previously received formal computer training irrespective of their age. In the HR profession the older professionals often move from simply being employed to independent consulting which makes computer literacy a necessary skill as they need to physically use computers to deliver services. In technologically sophisticated organizations, the same is true but at a broader level (Sellers, 2005). HR professionals present in the rural areas (Alice), use the ITS system on a day to day basis. If the HR professional is not computer literate she will not be able to make use of the system. Each Practitioner is dedicated to service a certain faculty which necessitates computer literacy for resolution of day to day queries.

When drawing induction and development strategies to familiarise HR Professionals with ITS, it becomes important to take previous computer exposure and skills of the participants into account to facilitate the acceptance and usage of the ITS system. This view is also supported by Lungo (2008). Based on the above findings, it is recommended that when recruiting HR Professionals to the Institution, the requirement should be the previous experience of using ITS or other HR Systems or alternatively basic computer literacy skills must be included when assessing suitability.

Hundred percent (100%) of HR Professionals feel that level of computer literacy is of importance to ease of use of ITS HR Modules. The question asked was:

Is your level of computer literacy and IT experience of importance to ease of use of ITS HR Modules? Why? Some of the answers received were:

- “Yes, because ITS is computer based, so basic understanding of computer operation is necessary. It makes learning the system much easy”;
- “Yes because various utilization of system in the past, adapting to something new is always exciting, and good.”
- “Yes, I believe all IT systems require a moderate to expert knowledge of computers and the more advanced you are the easier it is.”
- “When you are familiar with using the computer, it becomes easier to understand other systems.”
- “Level of computer literacy is necessary. I struggled because I have limited computer knowledge.”

Sixty percent (60%) of HR staff use the ITS system daily and spend a considerable amount of time on the system averaging out to about 6 hours. 40% use it but not daily.

HR Professionals including those in Alice (rural area), make use of computers for work purposes; this contradicts with studies as supported by Doolin and Ibrahim (2005) when they indicated that people in rural areas are prone to struggle with using computers due to low levels of computer skills in their areas as well as the ICT infrastructure. If the infrastructure is not in place it will become very difficult to depend on the ITS system for work. Eighty percent (80%) of HR Professionals use ITS Personnel System daily to capture, draw queries and maintain data. Eighty percent (80%) of HR Professionals use the Leave System daily because of the new HR management policy instituted in October 2010. Literature suggests that Management support, policy and interest play a significant role in acceptance and usage of technology. The 20% that reported seldom or no usage of the leave may not have had an opportunity to apply for leave between implementation of the leave system and response to the survey. It is concerning though that majority of HR Professionals have not used the Evaluation system and Skills development system although it is available and paid for. One of the responses to the question: *How did ITS training impact on actual usage of ITS?*, was, “The training received was not adequate to conduct maximum usage of skills development Module which could have impacted positively on the running of Employment Equity (EE) report and Workplace Skills Plan (WSP) report. Instead of capturing study subsidy for employees on the ITS, it was captured on Excel. Capturing on ITS could have facilitated easier importation of data to WSP without taking more time”.

Seventy-Seven percent (77%) of the HR professionals believe that the ITS training received had a positive impact on actual usage of the ITS system. The question asked was: *How did training received impact on actual usage of ITS?* Amongst other statements were the following:

- "It was good though short."
- "Very helpful especially when given a manual for updates when you are unable to perform a task."
- "ITS training received made my life easy, easy to find a document and to correct errors."
- "ITS system training impacted on actual usage but it was not enough, had to learn as I work."
- "Impacted a lot on my understanding of benefits of the system and made my work easier as a senior administrator."

Despite the perceived resistance to change, the majority of HR Professionals reported a positive impact brought about by change from the manual process to ITS. A study by Sellers (2005) suggested that HR Administrators resist change, but are more willing to choose among known alternatives than new untested alternative ideas or solutions. Reverting back to the past where academic administrators were not dependent on computers is impossible. Being aware of the limits and drawbacks that technology brings with it is certainly better than doing without it. HR Administrators are willing to sit for hours and answer emails knowing that their decisions are going to be affected by the limits of the information technology. *The question asked was: 'What is the impact of the change from manual process to ITS?'* Some of the responses were as follows:

- "Time management and clean data."
- "Extremely positive things especially with leave system where there is less, much less paper."
- "Change was good, we can now meet deadlines, working very smoothly. It is time costly."
- "Productivity and speed needed when working. Changes and competition."

One of the respondents said "Improvement in turn but lots of mistakes" which validates the data integrity impact of usage of ITS. This is supported by Lungo (2008) who indicated that computer literacy level of the user influence the learning process of familiarising the user with a specific computer programme.

Despite the perceived lack of optimal usage of the ITS programme, HR Professionals found it much easier to learn because of the formal computer literacy training received. The following section discusses findings on the impact of organizational support on adoption of technology by HR Professionals.

6.5.11 Organisational Support

This section introduces the impact of organizational efforts that contribute to the achievement of universal access for an interactive medium. In order to facilitate the achievement of positive adoption of technology, organizations can provide training sessions for their employees to encourage their use of the technology. Management support and training contribute to use of technology in the organizations. Other efforts that organizations may use, include: establishing policies that force employees to adopt technology, by setting expectations, rewarding the use, or penalizing the non-use of the technology (Lin and Ha, 2009). The manner according to which the University of Fort Hare rewards or penalises usage of technology would need to change accommodating culture within the institution so as to avoid increasing resistance.

Sixty percent (60%) of HR Professionals are unsure if there are any institutional policies guiding usage of ITS within the institution. The question asked was: *What impact Institutional policies have on continuous usage of ITS?* Some of the responses were:

- “Regulation, process and security and obviously Risk Management.”
- “Policies are necessary guidelines, and every system should be governed by standard guidelines.”
- “Institutional policies are important because people will comply with usage of ITS.”
- “Currently there are not specific policies that protect the usage of ITS.”

The non-availability of policies that govern usage of the ITS system compromises the integrity of University data. The impact therefore may be huge in the sense that the University may not get the actual subsidy supposed to be getting from DoL due to institutional policies that are non-existent”. “Institutional policies will help, but training must happen”; “people will use ITS more if there were policies and punishment for not using it”.

Ninety-three percent (93%) of HR Professionals report that there are no penalties or rewards regarding use of ITS and this could be a contributor to data integrity problems and perceived

non-usage of the system. The question asked was: *Are there any rewards and penalties within the HR Department as well as at the University regarding the use of the ITS system?* Some of the answers were: "No rewards or penalties in HR for ITS system. No rewards or penalties even university wide"; "no penalties and if can be done, people will use ITS."

It is important to note that organizations may use other approaches to support adoption of HR systems. These approaches can include: establishing policies that force employees to adopt technology, by setting expectations, rewarding the use, or penalizing the non-use of the HR systems (Lin and Ha, 2009). The manner according to which the University of Fort Hare rewards or penalises usage of technology would need to be rigid to be effective within the institution to avoid increasing resistance.

The next section discusses the findings on the impact of training and support on acceptance and use of ITS.

6.5.12 Training

This section introduces a discussion regarding impact of training on adoption of the ITS system. Providing adequate training can cultivate correct skills and reduce knowledge barriers that impede acceptance of ITS system. Anandarajan (2008) indicated that individually-based training has no effect on improved self-efficacy and performance in a collectivistic setting, such as South Africa.

Seventy-Seven percent (77%) of HR professionals believe that the ITS training received had a positive impact on actual usage of the ITS system. The question asked was: *How did training received impact on actual usage of ITS?* Amongst other statements were the following:

- "It was good though short."
- "Very helpful especially when given a manual for updates when you are unable to perform a task."
- "ITS training received made my life easy, easy to find a document and to correct errors."
- "ITS system training impacted on actual usage but it was not enough, had to learn as I work."
- "Impacted a lot on my understanding of benefits of the system and how will it make my work easier as a senior administrator."

Another question asked was: *To what extent do you think training and support are available and adequate in the University?* The majority of HR professionals reported that training is very important and critical to ITS usage but insufficient. Some of the responses were as follows:

- “Less training is received, most of the time we train and teach each other as we have no ITS manager on site.”
- “Not enough, not enough.”
- “Smaller extent.”
- “Little or no training at all, learn as you work and ask colleagues.”
- “Training support is only available through other colleagues, never heard from ITS service provider after launch of system.”
- “Training not enough, but if you push and practice often you enjoy ITS.”

Based on the above findings continuous training should be initiated between the ICT department, which is responsible for ITS training, and the training and development unit to ensure that system users will effectively utilize the ITS system to its full benefit. This is supported by Moses and Paulsen (2008) when they stated that people are unlikely to use technology if they are not trained thoroughly to instill confidence regarding how to use the system.

The findings of this research will be shared with ICT department management. A task team with representation from ICT department and training and development unit will be formed. The terms of reference of the task team will be – planning ITS system overview training for HR staff. This training will be conducted every quarter to allow newly appointed HR staff to attend. Attendance of these training sessions will be compulsory. Attendance and use of ITS will be rewarded and non-attendance and non-use will be penalized. This initiative will ensure that momentum is maintained and will ensure that technical queries and questions are resolved as they arise to improve confidence in using the ITS system. The next section concludes the discussion and analysis of the results of the study.

6.6 Conclusion

This section summarises the discussion and analysis of results. Based on the 100% response rate, the results of this study can be generalised to the general population of the HR Department staff employed at the University of Fort Hare in a developing country making use of ITS HR Modules. Almost 100% of the respondents reported that they used a computer every day which is in line with the expectations of the HR field. The implication of perceived usefulness for the acceptance of new technology in HR Professionals follows that training, and management support must be provided to ensure improvement in HR outcomes. People tend to use or not use an application to the extent that they believe it will enhance their job performance. This includes decreasing the time to do the job, and achieving more efficiency and accuracy.

The benefits of frequency of use of IT are defined as improving productivity, quality of service, enhancing effectiveness and providing overall practical offering. This may also play a part with efficiency and effectiveness when using the ITS system. It is argued that declining system performance will lead to increased organizational recognition that the use of a system should be discontinued.

Technical assistance is a critical facilitating condition to adoption of technology and objective environmental factor where observers agree that it makes task easy to accomplish.

Fear and apprehension when using IT must be addressed at the start of the implementation of the IT system as they will eventually affect adoption. HR Practitioners' attitude are critical to adoption and continued use of ITS and literature claim that if you fail to generate positive feelings towards the program, you seriously undermine your likelihood of success.

Adoption of ITS is also dependent on internal factors such as personal ease or difficulty of performing the behavior, based on one's prior experiences, skills gained through learning, and intelligence impact on intention to use technology.

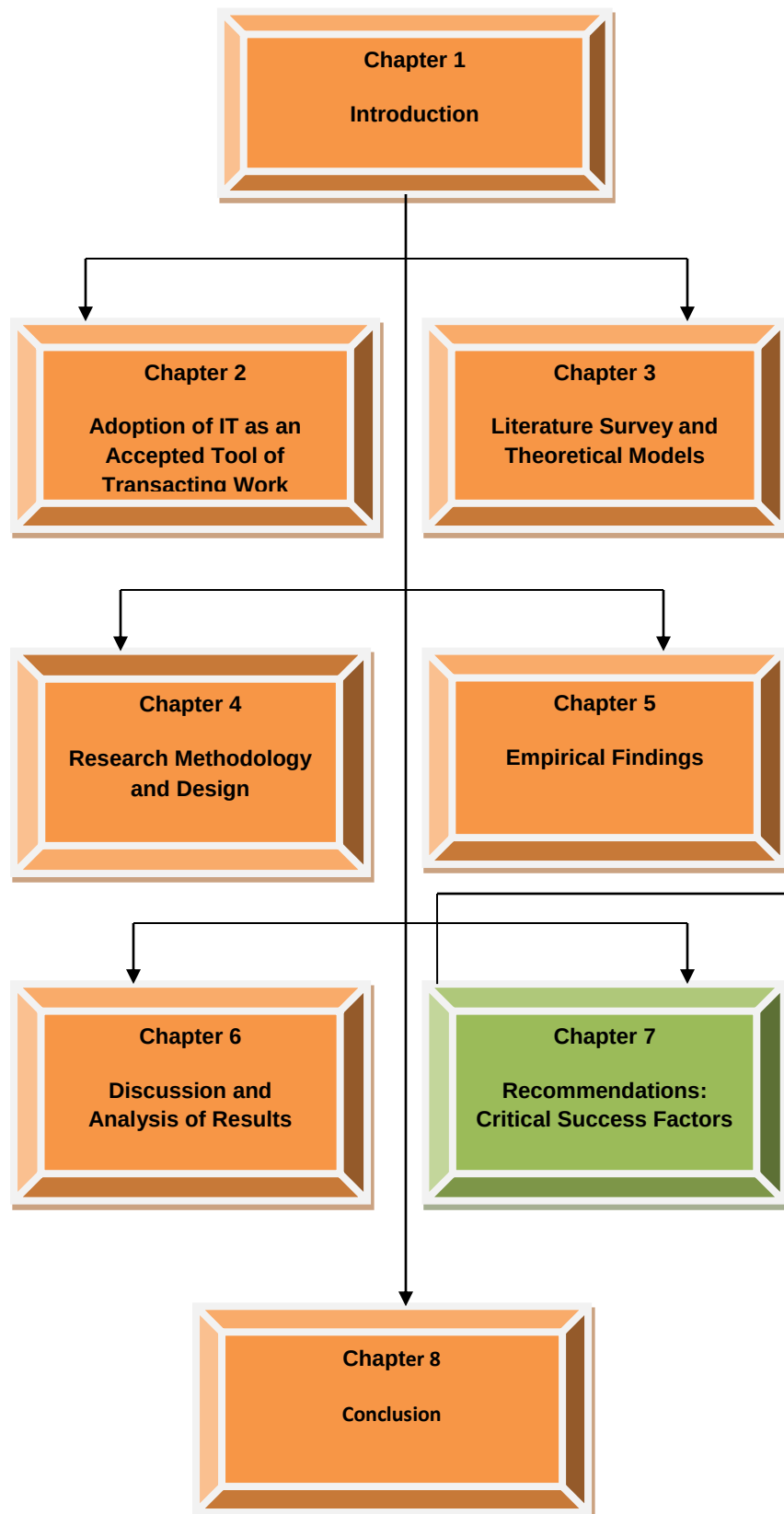
The HR Professionals who considered themselves knowledgeable about the technology were more prone to influence by social conditions such as management and peers. Proper communication and dissemination of information regarding technology may be implemented as an initiative to manage the change. This can reduce resistance to the introduction of ITS in the initial stages of implementation.

The support of management was found to be very important to the HR Professionals in both the planned and predicted behavioural intent categories. More than half of the participants indicated that they planned to make use of the technology and perceived the departmental supervisor to be supportive of the technology. HR Professionals strongly agreed that development of policies and management support and interest are necessary for the adoption of technology.

Computer literacy level of the user influences the learning process of familiarising the user with a specific computer programme. Despite the perceived lack of optimal usage of the ITS programme, HR Professionals found it much easier to learn because of the formal computer literacy training received. Based on the above findings, it is recommended that when recruiting HR Professionals to the Institution, the requirement should be the previous experience of using ITS or other HR Systems. Alternatively basic computer literacy skills must be included when assessing suitability. Based on the above findings continuous ITS system training should be initiated between the IT department, which is responsible for ITS training, and the training and development unit to ensure that system users will effectively utilize the ITS system to its full benefit.

Additionally, as a recommendation, it is suggested that to drive the necessary change and turnaround in respect of impact of IT on HR competence, a computer literacy course could be a pre-requisite for acceptance in a HR Qualification at tertiary institutions or be registered for non-degree purposes.

Change management and organizational support are viewed to account for a considerable amount of difficulties in the implementation process of a new system and it is important to note that organizations may use other approaches to support adoption of information technology. These may include: establishing policies that force employees to adopt technology. The next chapter presents the recommendations and critical success factors to adoption of ITS in HR departments within HE institutions.



- 7.1 Introduction
- 7.2 Top Management Intervention
- 7.3 Institutional Policies and Procedures
- 7.4 Data Management
 - 7.4.1 Standardised Process and Data Capturing Procedure
- 7.5 Compulsory Semester ITS Orientation
- 7.6 Monitoring and Evaluation
- 7.7 Management of Change
- 7.8 Communication Strategy
- 7.9 Project Advocate (Champion)
- 7.10 Project Management Principles
- 7.11 Critical Success Factors
- 7.12 Project Evaluation
 - 7.12.1 Population and Sample Experts
- 7.13 Conclusion

Chapter 7 Recommendations: Critical Success Factors

7.1 Introduction

From the discussion and analysis of results, Critical Success Factors were produced that will improve the acceptance and use of ITS among University of Fort Hare HR Staff members. These CSFs are divided into different sections so as to identify specific factors in each section that would influence the UFH HR Staff members.

Critical Success Factors (CSFs) highlight and identify key factors on which organisations should focus to be successful. Critical Success Factors refer to the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department, or organization (Collins English Dictionary, 2010). Identifying CSF is important as it allows organisations to channel their efforts on building their capabilities to meet the CSF, or even allow organisations to decide if they have the capability to build the requirements necessary to meet Critical Success Factors.

There are a variety of reasons why technology and specifically Information Systems introduced into the HR Department at the University of Fort Hare is not used optimally compared to best practice. Previous research has been conducted to identify these reasons in order to develop strategies to improve user acceptance and continued use of Information Systems.

As discussed by Nicholas (2010) in Chapter 2, section 2.2 of this research project, the keys to successful implementation of Information technology are related to the following:

- Securing top management commitment
- Forming cross-functional task forces to link project management with business units carrying out an assessment exercise of hardware requirements.
- Making deployment a step-by-step introduction rather than all at once
- Starting early planning on user training and support
- Streamlining decision-making to move implementation quickly
- Being patient, as IT implementation takes place

As discussed by Littlejohn (2003) in Chapter 2, section 2.2 of this research project, he identified possible factors that would contribute to the failure of the acceptance of Information Systems:

- Not taking into account different cultures
- Underestimating the complexity of HR processes
- Different expectations from various end users
- Long implementation time with fast managerial change
- Reluctance to provide more financial resources if the project is failing
- Failure to look for and learn from failures of past projects

Taking the above mentioned reasons, the following sections provide an overview of the various categories that can contribute to the successful adoption of ITS in the HR Department at the University of Fort Hare followed by a more detailed list of the CSFs.

7.2 Top Management Intervention

Forty-Seven percent (47%) of HR Professionals strongly disagree that there is management support and University support at UFH. Top management approval and support is necessary for effective implementation and adoption of technology. Alternative solutions must be put in place to ensure the sustainability of standard business processes at the institution. In Chapter 1 under background to this study, it is stated that top management support is the most frequently cited Critical Success Factor in adoption of technology. Top management must be willing to be involved and to allocate resources to the implementation of new technology. Divisional boundaries may affect many stakeholders in an organization and senior management need to mediate between various groups to resolve political conflicts when necessary and this is relevant for the University of Fort Hare as it is also unionized.

Other efforts that organizations can make include: establishing policies that compel employees to adopt technology, by setting expectations, rewarding use, or penalizing the non-use of the technology. Rewarding the usage of ITS will reinforce compliance and HR policy should indicate the mandatory nature of compliance to saving all master copies of letters of appointment, interview questionnaires, benefit change letters and other HR correspondence on Share-point.

Ninety-Three percent (93%) of HR Professionals stated that University support and implementation of Institutional policies in enhancing the adoption of ITS was critical, while 70% suggested that departmental management interest was necessary for adoption of new technology.

The roles of these two authorities differ and must be addressed separately when introducing new technology systems. The next section discusses the role of institutional policies and procedures.

7.3 Institutional Policies and Procedures

This section introduces institutional policies and procedures as a Critical Success Factor to adoption of technology in HR. The role of the University is to address the lack of institutional policy to ensure a coordinated and well regulated environment. Lin and Ha (2009) stated in Chapter 2, section 2.8.1 of this study that establishing policies that force employees to adopt technology, by setting expectations, rewarding the use, or penalizing the non-use of the technology within the institution. The manner which the University of Fort Hare rewards or penalises usage of technology would need to be aligned to the nature of the institution to avoid increase in resistance.

ICT areas in the tertiary institutions that need to be addressed through legislative frameworks include ethical issues such as privacy and confidentiality of data, as supported by Mokgabedi (2004) in Chapter 2 of this research project referring to factors that must be considered when addressing policy issues in the tertiary sector:

- To strengthen the development of comprehensive and integrated information systems
- To facilitate the development of employee information standards
- To implement security measures to safeguard the privacy of employee information inherent in electronic employee records
- To ensure that all universities have access to adequate ICT infrastructure
- To facilitate the development and implementation of a national programme
- To facilitate the development on ICT human resource strategy

Once the policy is in place, evaluation and monitoring must be done in order to provide meaningful, comparable and reliable information on HR Personnel System. It is then important to develop an adequate operational document which includes evaluation and monitoring. The data obtained in this way can be used to explain performance variation and solve the problems that arise. It can also be used in future projects in order to avoid similar pitfalls.

The priorities of the University must be communicated to the HR Professionals with adequate education and training. This will ensure that the priorities at both levels complement each other.

Appropriateness of these policies can be measured in terms of power requirements, security, environmental conditions, and other aspects of the local situation. The technical specifications and usability of the ICT targeted in the project or policy must not only reflect the needs of both the people and the organization but also engender a willingness to use it.

Communication between management and end-users must also be prioritized. Furthermore, education about ITS for all HR Professionals must be started early in the project in order to improve their knowledge about the technology. Management should also make it clear that ITS is mandatory and all staff should use it as per specifications to ensure effectiveness and efficiency (data integrity). The next section discusses data management as a recommended Critical Success Factor to acceptance and use of ITS.

7.4 Data Management

Data integrity is viewed to have significant impact on adoption of technology and data management is recommended to ensure better quality of data. Since ITS contains various Modules intricately linked with each other, data should be managed properly to ensure its accuracy. Zhang et al. (2009) indicated in Chapter 3 that the accuracy of the data has a positive impact on the success of the implementation of ITS. Institutions of higher learning undoubtedly are experiencing sharing challenges and data management challenges parallel to those that ERP systems have resolved in the private sector (Zhang et al., 2009). Institutions have a desire to administer data for different groups of people including managers, students and faculties.

Twyford (2010) further revealed in Chapter two of this study that implications of using different applications in one environment is lack of accessibility to critical information, preventing improvements on more accurate record keeping and forecasting. Data accuracy is a fundamental prerequisite for the effective implementation of an integrated system as indicated by Twyford (2010). Data should be validated and converted into a single and consistent format before the system is used.

Benefits of an ITS system are the production of real-time data shared across the organization and consequently, the integration and automation of business processes. Institutions of higher learning in their capacity as businesses require data that is historical, accurate, and up to date. In order for institutions to formulate informed decisions, it requires the best data available to operate efficiently and to offer its employees and students the best possible experience. Data needs to be accessible as and when is needed by users across various departments and business functions as supported by Townsend and Bennett (2009) in Chapter one of this study.

Another benefit of an ITS system is that at a click of a button (punching an employee number), all records pertaining to a specific individual such as performance, training, changes, grievances can be recalled. For the institution to realize this benefit, one set of procedures to capture data should be allowed. This will require all departments to integrate their processes as the system will not allow them to follow individual practices.

Capturing of data must be done according to only standardized procedure; working according to specifications to minimise the number of errors and to ensure data integrity. This will assist those members of the HR team who resist change and would rather adhere to existing practices. The next section discusses the compulsory semester ITS orientation as a recommended Critical Success Factor to acceptance and use of ITS.

7.5 Compulsory Semester ITS Orientation

HR Professionals agreed that training had a positive impact on adoption of technology and some of them reported that the training was not sufficient. Based on this finding, it is recommended that an Education and Training policy stating that all new employees must attend an ITS orientation session on joining the Institution as well as a refresher session every six months to ensure that they keep abreast of developments and updates on the system. This would counteract the impact of staff turnover – as people leave the institution, new employees acquire an opportunity to understand the way of working at the University on arrival. This would contribute significantly to change and transformation within the HR Department. Compliance with this policy will be monitored and linked to approval and certification that employees have satisfactorily performed during the probation period guaranteeing them permanent employment.

The computer literacy rate among the study population was relatively high (100% of the HR Professionals had received formal computer training). In the literature, however, the level of confidence in technology is a defining issue in the acceptance of ICT in both developing and developed countries. This confidence can only be gained from education – either computer literacy or information literacy. Here information literacy refers to the knowledge of the system and operational requirements while computer literacy refers to the basic functions associated with the use of a computer. For developing countries these issues extend to privacy, data protection, security and cybercrime. If the end-user is not confident about how safe the technology is, it will limit the way HR Professionals are willing to use the technology.

ICT is a tool used to improve HR Professional efficiency and effectiveness and should not be considered as a means in itself.

Continuous training should be initiated between the IT department, which is responsible for ITS training, and the training and development unit to ensure that system users effectively utilize the ITS system to its full benefit (Moses and Paulsen, 2008). The educational aspect must be started early in the implementation phase and concentrate on the 'why' rather than 'how' the system works. If commitment from the end-users of the system is obtained early, it will improve the chances of success dramatically. Activities can include conducting awareness campaigns, induction activities, as well as basic and advanced training. If computer literacy levels increase, the effort in learning how to use ITS will decrease and in turn improve the user acceptance among the HR Professionals. A general HR systems course can also be included as part of the HR qualifications curriculum to familiarize the students with the concept. The next section discusses the monitoring and evaluation of performance of the system as a recommended Critical Success Factor to acceptance and use of ITS.

7.6 Monitoring and Evaluation

This section presents monitoring and evaluation as a recommended Critical Success Factor to counteract the impact of inaccurate data. The success of any IT system depends on monitoring and evaluation of performance and accuracy of data, including continuous measurement of adoption for more efficient and effective control (Puri, Byrne, Leopoldo and Quraishi, 2009). With specific reference to HR Professionals, it is imperative to ensure monitoring and evaluation of accuracy of data captured on the system. This will ensure realization of business goals and objectives. The next section discusses the importance of change management as a recommended Critical Success Factor to acceptance and use of ITS.

7.7 Management of Change

This section presents management of change as a Critical Success Factor to ensure buy in into the adoption of technology. Since the implementation of a new system is bound to have a profound impact on the entire organization, it is important for the Institution to assess departmental readiness for change on cultural, environmental, and technical levels. Training and communication of change process, departmental restructuring, and job role analysis are examples of such activities. Without adequate investment in management of change, end user perceptions of the software are likely to be poor and erode over time. Effective Change Management is defined as a structured approach to transitioning individuals, teams or organizations from a current state to a desired future state (Collins, 2003).

The process is aimed at empowering HR Professionals to accept and embrace changes in their current environment. When new technology is introduced into the HR Department, this changes the work patterns and responsibilities. These changes must be anticipated as they relate to workload within the department. The goal, however, should be to integrate ITS system with the established work practices with consideration that the skill requirements of the HR staff may have to change.

One of the barriers that should be addressed is that although ITS system may increase the workload initially when the technology is integrated into existing practices and routines, once this is done it will increase productivity. In this context, integrating technology use into peoples' daily routines is a major hurdle for many IT systems implementation initiatives. Yet this seemingly obvious issue is often overlooked by IT systems implementation projects and policies. Where technology use becomes an additional burden to the already over-burdened lives of people in developing countries like South Africa, it was proved that it limits widespread technology uptake. People are unlikely to use technology if it involves efforts that outweigh benefits as indicated in an article written by (Moses and Paulsen, 2008).

This must be taken into account when implementing ITS system, as it must contribute to the daily routine already in place rather than impose an additional workload on the HR Department. Therefore, end-users must be involved from the start of the project in order to provide valuable input that can be used when designing and developing the system. Feedback should be provided to the end-users on a regular basis in order to assess if the expectations of this user group will be met. In this study it was found that the HR Professionals at the University of Fort Hare were enthusiastic about the advantages that ITS could provide to enhance quality and productivity in their work as illustrated below:

- 87% of HR Professional responses indicated that they find the 'ITS system useful in their job'. Only 13% disagreed with this statement.
- 87% of HR Professionals also agreed that 'ITS system enables them to perform tasks more quickly' during operations thereby increasing their productivity.
- 80% of HR Professionals also agreed that 'using ITS enables them to be more productive'.

When the technology is first introduced it is important to set goals that are achievable in order to prove to end users that ITS is advantageous to the daily HR service offered to the University community.

As mentioned above the HR Professionals at the HR Department returned positive scores for performance and effort expectancy suggesting that this group would accept and use ITS. It is very important that commitment from the HR Professionals should be obtained in order to provide a functioning ITS system, the change management strategies, communication, education and goal setting become very important for the implementers of ITS. The next section discusses the importance of communication as a recommended Critical Success Factor to acceptance and use of ITS.

7.8 Communication Strategy

This section introduces the communication strategy as another Critical Success Factor to adoption of technology. A clear and effective communication strategy at all levels of an organization is necessary before and during the implementation of new technology. Communication should include the formal promotion of ITS project teams and advertisements of the project's progress to the rest of the organization. Regular communication influence quicker acceptance of technology in an ITS implementation environment. This is supported by Byrne (2008) when he says communication and participation, as well as the capacity to do so, are needed to strive towards ideal adoption of new Information Systems. In order to avoid failures in communication, an open and honest information policy communicated to the users can satisfy their need for information. Issues of communication in the implementation of an ITS seem to be widely recommended judging from available literature. Literature further revealed that organizations should have well-defined channels of communication, so that all policies can be communicated clearly and effectively as indicated by (Umarji and Seaman, 2005). The next section discusses the importance of a project advocate as a recommended Critical Success Factor to acceptance and use of ITS.

7.9 Project Advocate (Champion)

This section introduces the project advocate, often referred to as champion, as a Critical Success Factor to adoption of technology. Although not formally recognised as a project team member, the advocate is a true believer in the project's goals and value. As indicated in literature chapters of this study, project advocates often provide assistance in *Advocacy*: The primary role of the project advocate is to advocate and promote the benefits of pursuing your project. The champion actively seeks project support from management and other organisational leaders. The aim is to ensure that senior decision makers view the project as necessary.

Project advocates also *remove roadblocks*: All projects run into barriers at some point. Whether it is project funding, resource allocation, or any number of other issues, the project champion is often able ensure that the project continues. This is supported by Lin and Ha (2009) when they said the champion must be an employee at leadership level because certainly the champions are central nodes of the formal communication network within an organisation.

The presence of a project advocate has facilitated many successful projects. They play a critical role in handling organisational change. The project advocate should be a high level executive sponsor who has the power to 'champion' the implementation of a system throughout the organization. Certain new technology implementation projects require employees to work long hours and overtime which may lead to stress and low morale, and this requiring the project champion to encourage members (Lin and Ha, 2009).

Implementation projects to introduce new technology must start at the ground level working with all the necessary stakeholders in order to build the ITS system according to the findings of the needs assessment. This process involves a collection of activities such as education, awareness-raising and engagement with the end users who will use the ITS system. This kind of broad process will lay a foundation for local buy-in and a sense of ownership among beneficiaries, that may necessarily lead to a context-specific project.

Social influence is very important to HR Professionals. One of the ways to facilitate social influence is to introduce a champion who will advance the objectives of the project (Lin and Ha, 2009). Various studies have revealed that the appointment of an advocate will increase the acceptance of the ITS by HR Professionals. A local advocate is someone who understands and embraces the objectives, supports technology-based solutions and is trusted by the HR Professionals. The advocate should play a key role in communication with the different stakeholders, be an advisor to the initiative, and act as a catalyst to help the initiative introduce innovation. This individual may not necessarily be on site in the HR Department, but must have a concrete connection that can be leveraged.

The University of Fort Hare must ensure that all stakeholders are consulted to ensure university-wide ownership of the project. Literature has found that the bottom-up approach is far more successful when implementing ITS projects than the top down approach as it means the project is grounded in the realities of the Fort Hare community situation. A good way to ensure this ownership and proper communication is to identify a champion early on in the process.

The disadvantages with this approach, however include, that the advocate may promote ITS to the HR Professionals, but they may 'gold plate' the technology. This means that the advocate promises that the technology will deliver advantages which it cannot possibly meet. Another disadvantage is if the champion leaves the institution or becomes disillusioned with the technology for some reason, there is often a void that cannot easily be filled; this tends to decrease the chance of successful implementation. The next section discusses the importance of project management principles as a recommended Critical Success Factors for acceptance and use of ITS.

7.10 Project Management Principles

This section introduces project management principles as a Critical Success Factor to adoption of technology. When introducing a new technology, it is important not to overwhelm the users with all the technical aspects associated with ICT. Rather plan the introduction in stages with concrete milestones which will ease user anxiety and provide the users with an opportunity to master fundamental skills before continuing with more complex concepts.

According to Mitchelle (2009), these principles include early involvement of all stakeholders, conducting a needs analysis, clearly defining aims and objectives, developing a project plan with clear roles and responsibilities, regular feedback sessions, developing a clear operational management system, monitoring methods to measure the achievement of objectives, setting of smaller milestones and making use of proper project management tools, such as Gantt Charts in order to track progress easily.

A needs analysis of the local situation will provide valuable insight into what the HR Professionals need to improve service in their specific area. This will include factors about specific local conditions, human resource capacity and infrastructure, the needs and desires of the end users and other factors such as training or computer literacy which will affect technology uptake and sustainability in this setting. Conducting a needs analysis means not only looking at the present situation, but also previous projects of a similar nature in order to learn what has worked and what has not worked. Even if the technology has never been introduced in South Africa before, it is worth researching similar projects in other African or even developing countries around the world. Lessons learned from previous projects will enable the project manager to avoid the same pitfalls and build on what was previously learned (Mitchell, 2009). With the introduction of any technology it is important to ensure that the project plan is flexible.

New technology standards are constantly being developed, and new products introduced to the market. To stand the test of time, development initiatives should avoid locking into a specific technology, but rather use technologies based on open standards whenever possible. Once a project is underway, a technology-neutral approach leaves room for the project to change and adapt as needed. Technology use built on open standards makes it easier for initiatives to shift between technology solutions.

Unless the technology is perceived as easy to use, reliable and effective, the system will not be used by HR Professionals on a regular basis. It is important to set concrete goals and take small achievable steps within a realistic timeline. If the project fails to meet the expectations of what is required, these clear targets will provide a focus point. Setting unrealistic goals can also lead to problems when initiatives do not deliver what they said they would, leaving communities feeling discouraged and distrustful. And while funders usually require well-considered objectives and deliverables, they often put pressure on projects to deliver results that fit within timeframes set to their funding cycles, which may not always correlate with what makes sense for the project.

Evaluation must not just be conducted on the technology itself but must include an overall view of the impact of ITS on HR Professionals. Very often evaluation techniques are not specified at the start of the project, making it impossible to monitor variables to compare pre and post implementation. This then becomes a problem when no data is available to do proper evaluation of the effectiveness of the system. This valuable information can be used to justify or motivate for more resources as well as the roll out of the system to other rural areas.

From the information discussed above, the following table was compiled in order to summarise the CSFs identified during the literature study as well as the analysis of the primary data of this study. Figure 7.1 provides an overview of the specific CSFs and the different conditions as identified by the TAM and UTAUT that each addresses.

7.11 Critical Success Factors

Table 7.1: Critical Success Factors

CRITICAL SUCCESS FACTOR		TAM and UTAUT conditions
CSF01	Top Management Intervention <i>Allocation of resources</i> <i>Mediation between various groups</i>	Perceived Ease of Use
		Perceived Usefulness
		Social Influence
		Facilitating Conditions
		Performance Expectancy
CSF02	Implementation of Institutional Policies and Procedures <i>Co-ordinated organizational environment</i> <i>Privacy and confidentiality</i>	Perceived Usefulness
		Perceived Ease of Use
		Social Influence
		Facilitating Conditions
		Performance Expectancy
CSF03	Data Management <i>Data Integrity</i> <i>Standardised data capturing procedures</i>	Perceived Ease of Use
		Performance Expectancy
		Social Influence
		Facilitating Conditions
CSF04	Compulsory ITS Semester Orientation <i>New employee orientation</i> <i>Quarterly overview sessions to enhance confidence and optimum use of the ITS system</i>	Perceived Ease of Use
		Perceived Usefulness
		Performance Expectancy
		Effort Expectancy
		Social Influence
		Facilitating conditions
		Attitude towards the system
CSF05	Monitoring and Evaluation <i>Effective and Efficient controls</i> <i>Accuracy of data captured on the system</i> <i>Realization of institutional goals</i>	Performance Expectancy
		Perceived Usefulness
		Social Influence

CSF06	Management of Change • <i>Assess institutional readiness</i> • <i>Address end-user perceptions</i> • <i>Address barriers to change</i> • <i>Present benefits for change</i>	Perceived Ease of Use
		Perceived Usefulness
		Social Influence
		Attitude towards the system
		Effort Expectancy
		Facilitating Conditions
CSF07	Communication Strategy • <i>Open and honest information policy</i> • <i>Address need for communication</i> • <i>Encourage involvement</i> • <i>Clear and effective communication</i>	Social Influence
		Attitude towards the system
		Facilitating Conditions
CSF 08	Project Advocate • <i>Advocacy</i> • <i>Removal of roadblocks</i> • <i>Social influence</i> • <i>Stakeholder consultation</i>	Performance Expectancy
		Social Influence
		Facilitating Conditions
		Attitude towards the system
CSF09	Project management principles • <i>Needs analysis</i> • <i>Communication</i> • <i>All stakeholders included</i> • <i>Ensure ownership</i> • <i>Defining aims and objectives</i> • <i>Regular feedback</i> • <i>Set concrete goals</i> • <i>Achievable milestones</i> • <i>Clear roles and responsibilities</i> • <i>Monitoring and evaluation</i>	Perceived Ease of Use
		Perceived usefulness
		Social Influence
		Attitude towards the system
		Facilitating conditions
		Performance Expectancy
		Effort Expectancy

7.12 Project Evaluation

Interpretive research concludes that the validation, credibility, dependability, and generalisability of the study must be addressed in order for the research findings to be credible (Oates, 2006). It is critical to demonstrate the trustworthiness of the research findings, hence the Critical Success Factors must be validated. Consistency and integrity are the most important factors to consider for an interpretivist study design. Mason (as cited by Carcary, 2009) stated that it is important to reflect on the body of evidence, the ability to make critical assessments of informants' statements, and the importance of producing convincing arguments and explanations.

To evaluate the Critical Success Factors, the CSFs were given to a group of six experts (two each from two HR departments from previously advantaged institutions and two from two HR Departments from previously disadvantaged institutions and two were CIO's each from ICT Departments from two other universities) within HE for review purposes. Their comments were noted and the final CSFs were adjusted accordingly.

7.12.1 Population and Sample of Experts

Since the ITS population is 23 institutions and due to the interpretive nature of this study, the sample size of the population is relatively small. The experts that were consulted met at a HR Directors Forum. Their comments were noted and the final CSFs were adjusted accordingly.

Moreover all experts consulted met the expertise criteria discussed in section 4.3.5. The feedback received from these experts provided credibility and refinement to the proposed CSFs. The feedback received from the experts was very positive. They all indicated that they believed the CSFs identified would be beneficial to the acceptance and use of ITS. The range of CSFs was found to be adequate as it addressed the issues raised in the literature study and primary data analyzed during the study. One of the experts suggested that the ITS training be modified to be made compulsory and part of the University Semester Orientation Process. One other expert also emphasized the importance of Data Management as it yields accuracy of information mined from the ITS System. One of the experts suggested that the Institutional Policies must include standardized procedures for capturing of data to ensure data accuracy and value of the integrated system.

In general the CSFs were thought to be of benefit to the body of knowledge related to ITS adoption in tertiary institutions as they would provide guidance for implementation within other Tertiary Institutions.

7.13 Conclusion

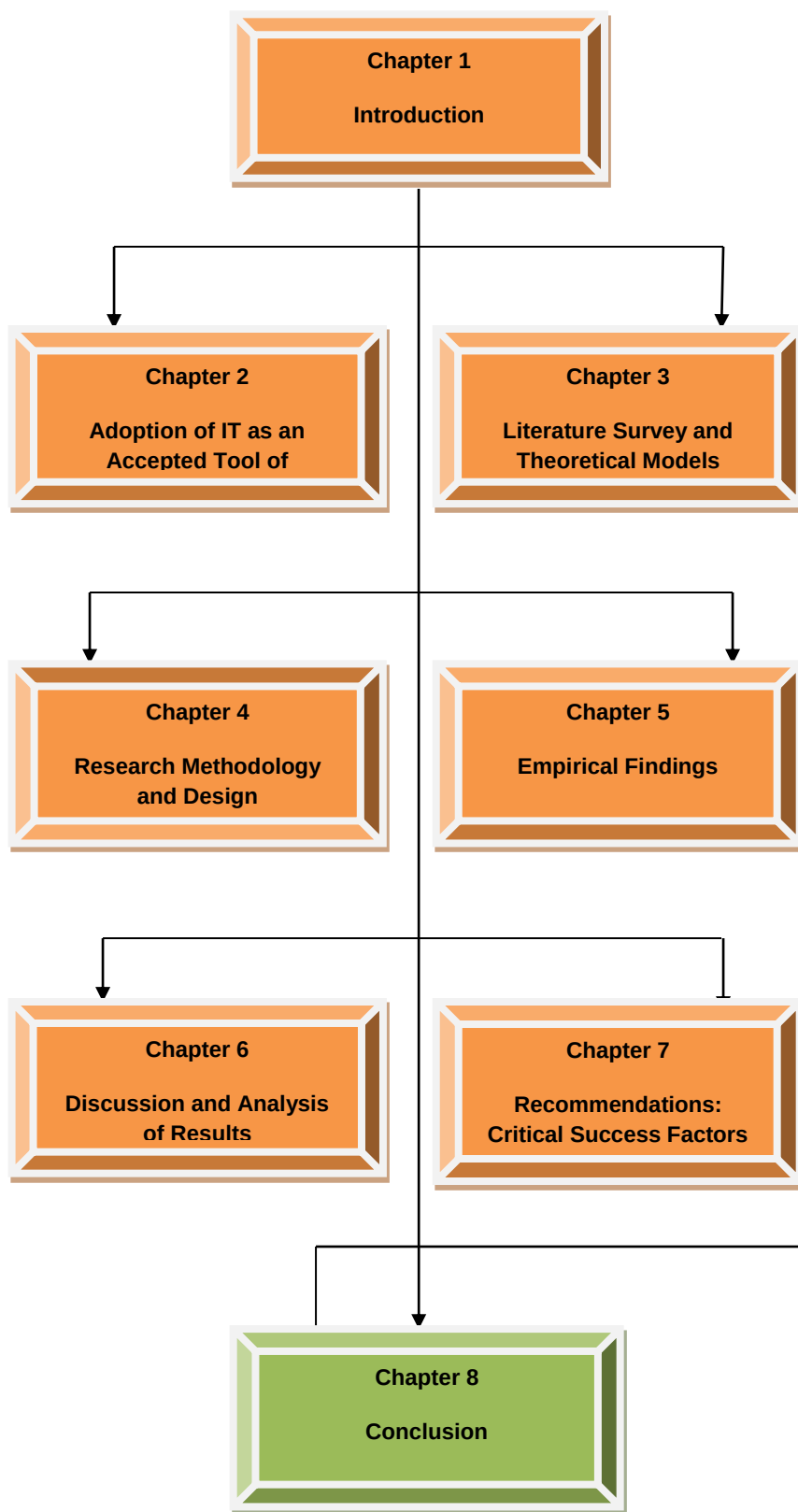
In a nutshell, there are multiple factors that influence employee attitude towards ITS HR Modules. Two main factors were found to improve this attitude: firstly, positive experiences with an IT system (especially its experienced usability), and secondly, the employees' preferences as to the role played by HR in the organization (especially the strategic preference). To translate these findings into practice: the first finding suggests that for an HR ITS suite implementation to be successful the broader IT environment should be taken into consideration. If the image IT already has within an organization is good, HR ITS can be easily implemented. An already negative image of ICT department within an organization will yield negative reactions from staff. Negative responses to adoption of HR ITS should not be emphasised as reactions to the ITS system but to ICT service within the institution. In this case one should expect a slow process of gaining trust and credibility while implementing an HR IT system.

The best way to do this is by showing the usability and functionality of HR ITS, and the benefits of changing HR roles that go along with it. The second finding suggests that, in practice, employees will be more positive towards an HR ITS implementation if they recognise a strategic role for HR. This is an opportunity for HR Professionals and executives to shape the way HR ITS is implemented in the University.

Communication on strategy and change related contributions of the HR function in the company, can be used as a tool of change management when implementing an HR IT system. From the results of this study, we can also learn that managers and shop-floor employees can generally be approached in quite similar ways when implementing HR ITS system. However, providing adequate system support may be especially relevant for managers.

In conclusion, the results of this study add to our knowledge of the multi-factorial nature of a relatively new field called Electronic HR System. Technological, organizational and human factors all appear equally important and to mutually influence each other during implementation.

From the analysis and discussion of the primary data gathered and reported in the previous chapter and conclusions, CSFs were identified. Once again existing literature and primary data was used to substantiate why CSFs are important in the current study situation. Making use of the results of the current study as well as previous literature also provided the added advantage that these CSFs can be generalized to other similar settings. The Critical Success Factors were found to be: Institutional Policies and Standard Procedures, Data Management, Compulsory ITS Semester Orientation, Monitoring and Evaluation, Management of Change, Communication Strategy, Project Advocate, Project Management and Top Management Intervention. This means that the results can be generalized and provide an important contribution to the body of research about ITS in an HR Department within a university setting in developing countries. The next chapter is the conclusion of the study and provides an overview of the various chapters.



- 8.1 Background
- 8.2 The contribution made by this research project
- 8.3 An evaluation of the research outcomes
- 8.4 Directions for future research
- 8.5 Limitations of the Study
- 8.6 Concluding note

Chapter 8 Conclusion

This chapter provides a conclusive discussion to this research project. A brief background of the research is presented in section 8.1, followed by an overview of all chapters and contribution made by this research will be discussed in section 8.2. An evaluation of the research outcomes follows in section 8.3.

The following section 8.4 provides future research recommendations. These recommendations provide direction in which future research could build on the work of this project. Finally, some concluding remarks are offered in section 8.5.

8.1 Background

The most significant challenge within many university HR departments is the adoption of Integrated Tertiary Software (ITS), ease of use of ITS and continuous usage thereof. The focus of this research project is User Acceptance and Continued Use of ITS within the HR Department at the University of Fort Hare. This study aimed to investigate and validate the factors promoted by the Technology Acceptance Model (TAM) which predicted technology use and acceptance. In particular, emphasis was placed on the current environment, resistance to change and user profiles, and made recommendations on how to sustain the use of the ITS System.

The literature consulted in this research project examined, facilitating environmental conditions such as Perceived Usefulness, perceived ease of use, performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards the system, behavioural intent, computer literacy, organisational support, training, management support for an ITS System.

This study will add to the body of knowledge regarding Critical Success Factors to enhance the adoption of technology in African countries, particularly in higher education institutions' Human Resources departments. The TAM constructs that have been investigated and validated in Western countries were 'assessed' for validity in the African context.

This study recommended Critical Success Factors that can be engaged by Human Resources Departments in higher education institutions to derive better value from IT. The literature consulted in this research project suggested that the University of Fort Hare had not focused much effort in understanding the impact of the environmental factors on the adoption and acceptance of ITS in HR Department at the University of Fort Hare.

In Chapter 2, adoption of IT in South Africa, adoption of IT developing countries to ensure economic survival and the adoption of IT in Western countries with underlying assumptions of the democratization of the workforce and reasonable infrastructure. Adoption of IT in higher education touching on impact of globalization, digital divides, market driven forces and political factors were discussed. This chapter also addressed sub-cultures in higher education institutions and showed the influence of social networks through critical mass theory. The Adoption of IT at the University of Fort Hare as well as the successes and challenges of IT implementation at the University of Fort Hare were discussed. Understanding of IT in SA is critical to understanding implementation of new IT or improvement in such developing countries. HR Professionals agreed that management believed that ITS is valuable for decision making and improvement of HR services. Research recommends that institutions of higher education (HE) need to follow global education and administration trends in technology without which expectations will not be met. The motivation gained from observing other people using the systems is an interesting dynamic in the adoption of information technology which resulted to the concept of Critical Mass Theory (CMT).

It is important to note that all these factors were also found to influence the acceptance of technology within the HR Department at the University of Fort Hare and were incorporated into the Critical Success Factors for technology acceptance within this area

In Chapter 3, both the theoretical frameworks used in this study as well as the human resources in higher education research conducted previously, making use of three theoretical frameworks. The original TAM was extended up to the TAM3. All the three TAM Models contributed to the development of the UTAUT model. The TAM provides a basis which traces how external variables influence belief, attitude and intention to use and posits that perceived usefulness and perceived ease of use affects the acceptance and use of IT. The TAM2 explains perceived usefulness and perceived ease of use including social influence, cognitive instrumental processes and experience. Furthermore, the TAM3 posits that anchor and adjustment are determinants of perceived ease of use. On the other hand, UTAUT model posits that four key variables are the direct determinants of usage intention and behavior. All these models aim to understand user attitudes towards technology adoption and continued use.

Whilst the focus of the Technology Acceptance Model (TAM) is on technology adoption, acceptance and use, the Expectation Confirmation Model (ECM) of IT continuance is a model for investigating continued information technology (IT) usage behavior.

On analysis of this secondary data it was found that there were some similarities and contradictions between TAM and characteristics of HR Professionals. Recommendations in this regard were discussed in Chapter 6 of this study. On analyzing the applicability of the different theories and models for adoption of IT at the University of Fort Hare, research techniques used to validate these theories in the UFH context were discussed and contributed to development of Critical Success Factors for adoption of information technology.

In Chapter 4, the research design and methodology applied during this research project was discussed. The research approach and data collection techniques were also highlighted. A questionnaire provided an ideal research instrument. Both quantitative and qualitative methods were deployed in order to gain insight into the problem area. This was achieved by quantifying the results from the Linkert Scale responses. Evaluation and validation of the qualitative research were discussed. The case study approach adopted in this study, was explained. Triangulation was discussed as it is unlikely that a single measure adequately assesses the extent to which an objective is attained. The delineation of the study and ethical consideration were also addressed.

Using a spreadsheet tool provided a method of dissecting and analysing multiple combinations of the results. The results were filtered based on the respondents' experience of using ITS in the HR Department at the University of Fort Hare. Clear trends and patterns were identified. These were then analysed and incorporated into the critical success factors produced. The findings and recommendations were presented in Chapter 6.

In Chapter 5, empirical analysis of results with specific reference to the research question and sub-questions of this study were discussed. The response rate, socio-demographic factors of participants, ITS modalities, facilitating conditions influencing acceptance of technology, perceived ease of use, perceived usefulness, performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards the system, behavioural intent, management support, computer literacy, computer training was discussed in this chapter. HR professionals responses informed the development of Critical Success Factors to enhance the adoption of ITS within the HR Department at the University of Fort Hare.

In Chapter 6, the analysis and discussion of the data gathered and reported during the previous chapter. Making use of existing literature, it compared the findings of the study with previously reported studies in order to draw conclusions about the similarity or differences between them. The chapter began with a thorough discussion of each of the research questions. The findings on response rate, socio-demographic factors of participants, ITS modalities, facilitating conditions influencing acceptance of technology, perceived ease of use, perceived usefulness, performance expectancy, effort expectancy, social influence, facilitating conditions, attitude towards the system, behavioural intent, management support, organizational support, computer literacy and computer training were discussed and contributed to recommendations necessary for adoption of ITS within the HR department at the University of Fort Hare.

In Chapter 7, the resulting outcome of this research project is Critical Success Factors that influence the adoption and acceptance of technology in HR Department within University of Fort Hare were presented and discussed. From the analysis and discussion of the primary data gathered and reported in the previous chapter and conclusions, CSF were identified. Once again, existing literature and primary data was used to substantiate why CSF are important in the current study situation. Making use of the results of the current study as well as previous literature also provided the added advantage that these CSF can be generalized to other similar settings. The critical success factors were found to be: Institutional Policies and Standard Procedures, Data Management, Compulsory ITS Semester Orientation, Monitoring and Evaluation, Management of Change, Communication Strategy, Project Advocate, Project Management and Management Intervention. This means that the results can be generalized and can provide an important contribution to the body of research about ITS in an HR Department within a university setting in developing countries.

The following section will highlight the contributions made by the research project.

8.2 The contribution made by this research project

In this research project it was established that the facilitating environmental factors are critical to adoption of ITS within the HR Department at the University of Fort Hare. The adoption of ITS must be improved to enhance efficiency and effectiveness of the HR Department. The University of Fort Hare is a multi-campus operation and the use of paper systems is extremely difficult. The University made a decision to invest in ITS with the objective of improving effectiveness and efficiency of services. ITS has become popular and dominates in the South African higher education industry.

A significant problem is that ITS is partially used and it is necessary to further explore the specific influence of technological and environmental factors that may change a user's acceptance and use of this technology. The objective of the study is to produce Critical Success Factors that will influence the acceptance and continued use of ITS at the University of Fort Hare HR Department and additionally, to suggest ways to sustain this technology usage from initial adoption (the pilot programme) to full adoption.

The findings of this study are suggesting that Management support is critical to ensure improvement in HR outcomes. Perceived usefulness suggest that people tend to use or not use an application to the extent that they believe it will enhance their job performance. This includes decreasing the time to do the job and achieving more efficiency and accuracy.

In any activity there is a direct correlation between the skills required and the effort and time taken to perform the activity. An increase in skill would lead to ease of use, which in turn would reduce the effort expectancy and time needed to use ITS. This is suggesting that Compulsory ITS semester orientation sessions must be instituted to increase the adoption of the ITS system.

Technical assistance is a critical facilitating condition to adoption of technology and objective environmental factor that participants agreed that it makes task easy to accomplish.

Fear and apprehension when using ITS must be addressed at the start of the implementation of the IT system as these will eventually affect adoption. This is suggesting that user's of the system must be involved right at the beginning of the ITS system implementation project. HR Practitioners' attitude is critical to adoption and continued use of ITS and literature claims that if you fail to generate positive feelings towards the program, you seriously undermine your likelihood of success.

Adoption of ITS is also dependent on internal factors such as personal ease or difficulty of performing the task, based on one's prior experiences, skills gained through learning, and intelligence impact on intention to use technology.

The HR Professionals who considered themselves knowledgeable about the technology were more prone to influence by social conditions such as management and peers. Proper communication and dissemination of information regarding technology may be implemented as an initiative to manage the change. This can reduce resistance to the introduction of ITS in the initial stages of implementation. The support of management was found to be very important to the HR Professionals in both the planned and predicted behavioural intent categories.

HR Professionals strongly agreed that development of policies and management support and interest are necessary for the adoption of technology.

Computer literacy level of the user influences the education process of familiarising the user with a specific computer programme. HR Professionals found it much easier to learn ITS because of the formal computer literacy training received. Based on this finding, it is suggested that when recruiting HR Professionals to the Institution, the requirement should be the previous experience of using ITS or other HR Systems or alternatively basic computer literacy skills must be included when assessing suitability.

Based on the above findings, continuous training should be initiated between the IT department which is responsible for ITS training, and the training and development unit to ensure that system users will effectively utilize the ITS system to its full benefit. Additionally, as a recommendation, it is suggested that to drive the necessary change and turnaround in respect of impact of IT on HR competence.

The University of Fort Hare must introduce rewards or penalties for usage of technology and this must take into account the context within the institution so as to avoid increasing resistance.

Following from the discussion above the nine Critical Success Factors were produced in order to address the issues raised by the HR Professionals. When these CSF are addressed before and during the implementation of ITS, the likelihood of adoption of ITS within the HR Department will improve.

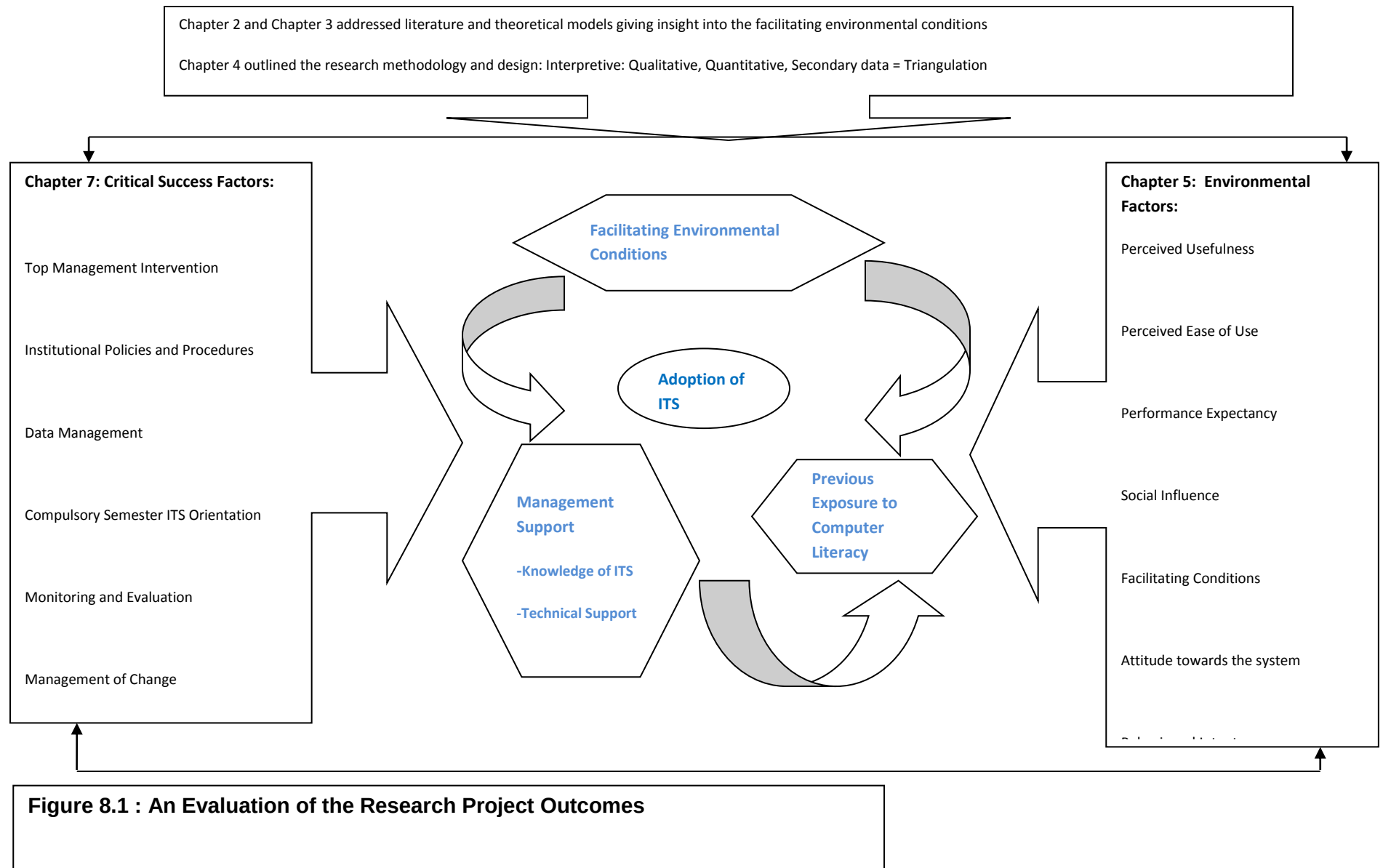
The Critical Success Factors include:

- Implement Institutional Policies and Standardised Procedures
- Data Management
- Compulsory ITS Semester Orientation
- Monitoring and Evaluation
- Management of Change
- Communication Strategy
- Project Advocate / Champion
- Project Management
- Top Management Intervention including Technical Support

8.3 An evaluation of the research outcomes

At the onset of this research project, three research questions were provided in section 1.3 and 1.4. These questions have remained the guiding focus for the direction in which every step of this project has taken. Topics which were not found to be adding value to one of these questions were either removed or refocused. In order to evaluate the success of this research project, an assessment of each of these questions was undertaken. If each of these questions has been answered, the research project has fulfilled its original intentions.

An Evaluation of the Research Project Outcomes



The primary research question is:

What are Critical Success Factors that influence the acceptance and continued use of the Integrated Tertiary Software (ITS) used by higher education Human Resources Departments?

This question is asked as the primary question for this study. The answer to this question forms the primary output for the research project. In response, the Critical Success Factors were developed as presented in table 7.1 that seek to provide the answer to this question.

The Critical Success Factors were identified in order to address the issues that were raised by HR Professionals as barriers to adoption and acceptance of ITS system in HR Department at the University of Fort Hare. Through the Critical Success Factors, a solution has been provided which satisfies this question. The Critical Success Factors are follows:

- Implement Institutional Policies and Standardised Procedures
- Data Management
- Compulsory ITS Semester Orientation Sessions
- Monitoring and Evaluation
- Management of Change
- Communication Strategy
- Project Advocate / Champion
- Project Management
- Top Management Intervention including technical support

Secondary research questions directly related to the primary question were identified. These questions complemented the solution and formed a significant part of the research project.

The first research sub-question is:

What facilitating environmental conditions are necessary for the acceptance and continued use of ITS?

By combining the findings of both the primary and secondary data collection, a specific set of facilitating environmental conditions which can support or hinder adoption of ITS by University of Fort Hare HR Professionals were established. The literature survey included theoretical models explored and identified facilitating environmental conditions, while the primary data collected from study respondents provided an insight into the specific responses and impact of the facilitating environmental conditions on the behaviour of HR Professionals at the University of Fort Hare. This question has been comprehensively covered and the following environmental conditions were identified:

- Perceived Usefulness
- Perceived Ease of Use
- Performance Expectancy
- Effort Expectancy
- Social Influence
- Facilitating Conditions such as knowledge of the system, compatibility of the system, technical assistance.
- Attitude towards the system
- Behavioral Intent
- Management Support
- Computer Literacy
- Organisational Support
- Training

The second research sub-question is:

What effect does management support and interest have on the decision to adopt the use of ITS HR Modules?

This question seeks to identify the support needed from management such as Institutional policies, administrative support, commitment, and level of enforcement in promoting the continued use of ITS. In order to achieve this, HR Professionals were asked to comment on the following:

- A policy for the provision of infrastructure for managing an employee's life cycle using technology is necessary.

- A policy for training staff members to update their own employee data using technology is necessary.
- May department Supervisor thinks that using ITS is valuable for decision making and improvement of HR services.

Planned and predicted use of the ITS system is significantly linked to HR Management support structures by HR Professionals perceived less support from departmental management towards the ITS system. They indicated that they had necessary resources to make use of ITS. HR Professionals knowledgeable about ITS considered management support much more favourable than those who were not. This can be explained as increased knowledge of ITS providing an improved insight into what is necessary to support ITS and thus a more accurate evaluation of the level of support provided by the management. It is evident from the above findings that HR professionals strongly agree that development of policies and management support are necessary for adoption of ITS. This research project recommended development of the Institutional policies and procedures as a Critical Success Factor to adoption of ITS in HR, and to also ensure coordinated and well regulated environment as policies will force employees to adopt employees by setting rewards for use and penalising the non-use. This sub-question has been successfully answered in this research.

The third research sub-question was:

What role does previous exposure to computer training have on the user that will help predict the likelihood of ITS HR Modules being adopted and used?

The responses to this question provided an insight into the computer literacy level and ITS experience of HR Professionals at Fort Hare University, and whether this influences the perceptions of the user's ease of use of the ITS HR modules. It was found that level of computer literacy has a direct impact to adoption of ITS. It was recommended that computer literacy be a pre-requisite for appointment in HR. This sub-question has been successfully answered in this research as the recommendation provides a method of closing such a gap.

In summary, each of the questions set out at the onset of this research have therefore been adequately addressed by the research project. In order to investigate the main research question, three sub questions were identified. Once the three sub-questions were answered collectively, this answered the main research question.

The CSFs identified in this study were designed with the objective of answering the three sub-questions as displayed in figure 8.2 below:

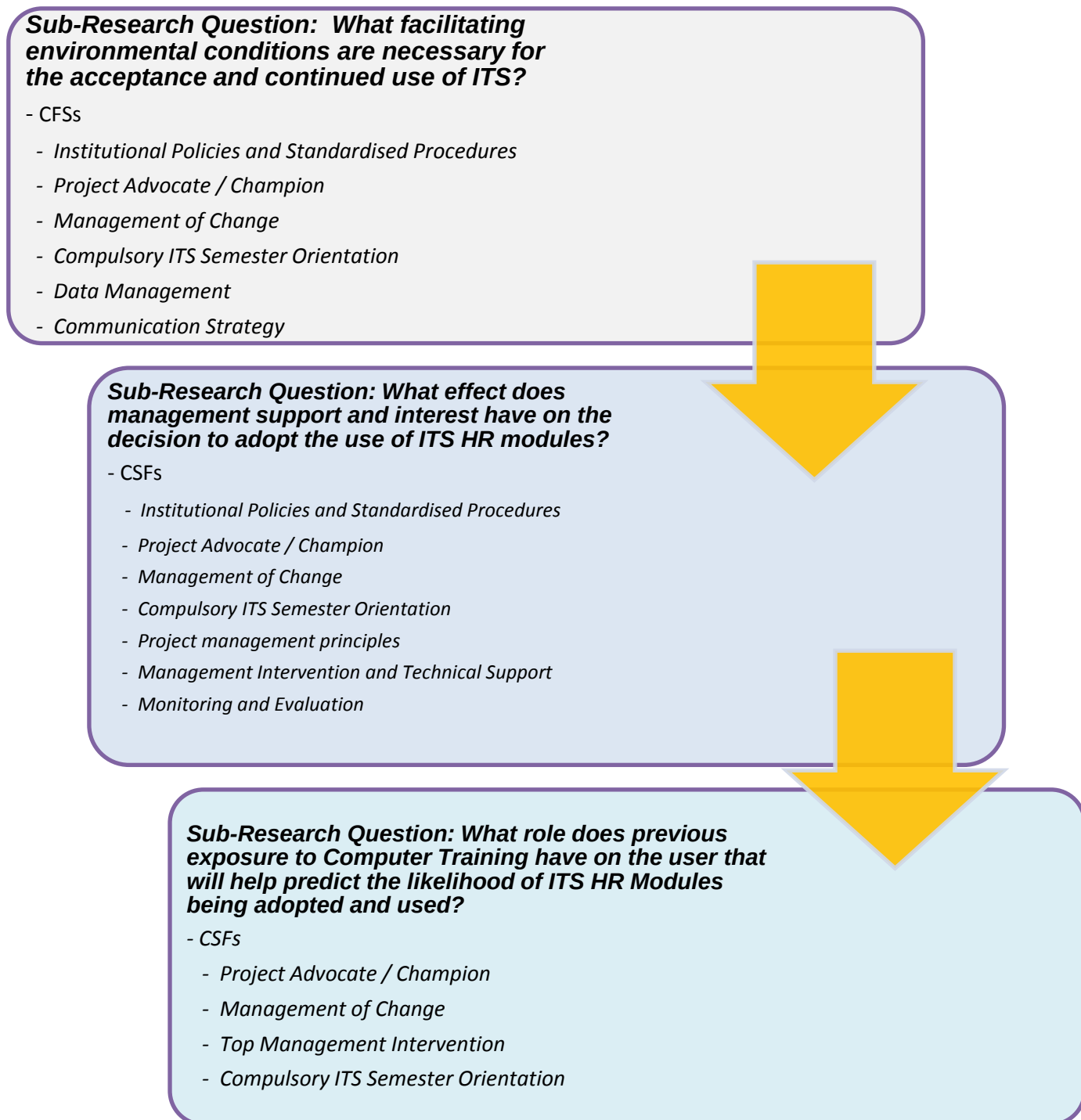


Figure 8.2: Linking secondary sub-questions with corresponding critical success factors.

8.4 Directions for future research

There were many directions in which this research project might have digressed, had the main research question not maintained focus. This section will detail a number of areas in which future research might be able to build upon this research project.

This research project investigated the acceptance and use of ITS in the HR Department within the University of Fort Hare. The uses of ITS were limited for the purpose of this study to HR Professionals and excluded University Employees' views of the technology.

Future ITS research projects will have to investigate employees' views as recipients of HR services offered. Employees are rarely engaged in the decision making process regarding how technology should be used to provide a service. Employees must play a much broader role if ITS is to be truly accepted and used in the tertiary sector. If employees are expected to become more involved with university decisions, they must be included in the decision making processes regarding HR IT systems (Finch, Mort, May and Mair, 2005).

The same study should be conducted at another university and the results can be compared. The same study can be conducted with Finance and a comparison made; this would add value to the CSFs as identified.

The intention is to ultimately align the entire Employee Life Cycle to ITS for the University to gain value from the investment made in purchasing the ITS system. In view of all the changes, there is a need to research the overall effectiveness of the HR systems. The environment has changed so much that the competitive workplace environment lend itself more easily to HR delivery through electronic HR systems. In future research, the possibility of interaction between these two aspects deserves further attention, both theoretically and empirically. General research directions that should also be investigated include the testing of additional variables making use of the TAM and UTAUT models, testing the acceptance of ITS on larger population sizes as well as longitudinal studies of the effects comparing technology acceptance among groups and individuals.

More specific research questions include specific circumstances: do different TAM and UTAUT variables have a dominant impact on acceptance and use, what are the causes of TAM and UTAUT variables and how do these relationships differ depending on the stage of HR technology implementation and a comparison from various theories to test the acceptance and use of technology in an HR IT environment. In conclusion, the following suggested directions for future research are:

8.5 Limitations of the Study

The study made use of self-reporting methods to collect data. This method has been criticised in literature because it assumes that self-reported usage reflects actual usage. This is untrue as self-reported usage is known to be subject to method bias. It would be useful in future research to couple a survey type collection data tool with objective measures (Agarwal and Karahanna, 2000).

Other limitations of this study include the sample size (15) which may not be enough to project the results to the general population although this was the total HR staff complement. Future research should increase the sample size to include other HR Departments in other tertiary institutions in order to make sure that the results provide adequate information regarding technology use among HR Professionals. Only ITS HR Modules were investigated in this study. While the objective of the study was to examine the user acceptance of ITS, there are other Information Systems available that can be included in this category.

Readers should be cautious in interpreting the results of this study. Further research is needed to investigate the disparities in the performance in certain CSFs and the reasons underlying such disparities, for other organizations / institutions of higher learning. Although some of these factors may or may not be equally important to organisations / institutions, this study has highlighted the critical areas in ITS implementation projects that must be handled cautiously.

8.6 Concluding note

This research project provided Critical Success Factors to be considered for acceptance and continued use of ITS in HR Department at the University of Fort Hare.

The Critical Success Factors provide an excellent method of ensuring that the value from IT investment is realised and in turn influence the efficiency and effectiveness of the higher education institutions. The Critical Success Factors can also be used in other environments to enhance adoption of new information technology. Regular assessment of the Critical Success Factors is vital in ensuring an ongoing, consistent and effective solution for adoption of new technology. Finally, employees, management, clients and customers will benefit from taking into account the Critical Success Factors before and during implementation of new technology projects. HR Departments can now embrace the innovative and exciting technological improvement and adopt new technology without fearing it.

Annexure: A

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Annexure: B

Consent Letters

The letter to Vice Chancellor

50 Church Street

East London

September 2010

The Vice Chancellor

University of Fort Hare

East London / Alice Campus

5209

Sir,

Re: ***Request for permission to conduct research***

The above matter has a reference: Nolufefe Ngqubekile, student number: 9116389

I kindly request you to grant me permission to conduct research at the above mentioned institution. I am doing a masters degree in Information systems. The research programme will involve interviews with some of your employees in the human resource department.

The questions will concern the usage of IT within the HR department. The outcomes of this study when completed will be shared with you for the benefit of HR department.

Thanking you in advance for the positive response.

Respectfully I remain,

Nolufefe Ngqubekile (Ms)

Letter to participants

To whom it may concern:

I am studying at University of Fort Hare doing a Master's degree in Information Systems. My research topic is "Critical Success Factors about adoption of ITS in the HR department within University of Fort Hare".

Your participation in this study will require approximately 30 minutes of your precious time. The information gathered will be kept confidential. No reference or report regarding the results of the study will be linked to you personally.

Note that your participation is voluntary.

Thanking you in advance.

Respectfully I remain,

Nolufefe Ngqubekile (Ms)

Annexure: C

Research Instrument: Questionnaire:

What is Integrated Tertiary Software?

ITS is an integrated software to support the administrative functions within higher education, further education and training sectors.

SECTION 1: DEMOGRAPHICS

Please put a tick (✓) in the appropriate box

1. Campus

Alice	East London	Bisho
-------	-------------	-------

2. Position

Practitioner	Administration Supervisor	Administrator	Administration Assistant	Front Desk Operator
--------------	------------------------------	---------------	-----------------------------	------------------------

3. Gender

Male	female
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4. Age

under 25	26 -30	30 - 40	Over 40
-------------	--------	---------	------------

5. How often do you use a computer?

Every day	Every second day	Once a week	Less than often
-----------	---------------------	----------------	--------------------

7. How often do you experience the following problems when using the computers in the university?
For this question rate your answers from 1 to 4. 1=never; 2=rarely; 3=often and 4=very often

No internet access	1	2	3	4
--------------------	---	---	---	---

Very slow internet	1	2	3	4
--------------------	---	---	---	---

Computer files infected by a virus	1	2	3	4
------------------------------------	---	---	---	---

Faulty computers	1	2	3	4
------------------	---	---	---	---

Computers very slow	1	2	3	4
---------------------	---	---	---	---

Printers and photocopiers not working	1	2	3	4
---------------------------------------	---	---	---	---

TECHNICAL SUPPORT

1. Which support is available, when you have problems? (Select all that apply)

A technician on site	Telephone support	Remote desktop support	e-mail support	Frequently asked questions file	Call centre support
----------------------	-------------------	------------------------	----------------	---------------------------------	---------------------

2. On the average approximately how long does it take for assistance to arrive?

Immediately	Within 24 hours	A day to a week	After following up on the request for a number of times	After I have lodged a complaint	Too long	Never arrives
-------------	-----------------	-----------------	---	---------------------------------	----------	---------------

3. Rate the service offered by technical support services in providing technical support.
Rate your answers from 1 to 6. 1=very bad; 2=bad; 3=poor; 4=good; 5=very good and 6=excellent. Choose the appropriate number.

1	2	3	4	5	6
---	---	---	---	---	---

SECTION 2

PERCEIVED USEFULNESS

For the questions that follow, rate your answers from 1 to 6. 1=totally disagree; 2=strongly disagree; 3=disagree; 4=agree; 5=strongly agree and 6=totally agree. Choose the appropriate number.

1. Using ITS improves the quality of work I do.

1	2	3	4	5	6
---	---	---	---	---	---

2. Using ITS gives me greater control over my work.

1	2	3	4	5	6
---	---	---	---	---	---

3. ITS supports critical aspects of my job.

1	2	3	4	5	6
---	---	---	---	---	---

4. Using ITS improves my job performance.

1	2	3	4	5	6
---	---	---	---	---	---

5. Using ITS allows me to accomplish more work than would otherwise be possible.

1	2	3	4	5	6
---	---	---	---	---	---

6. Using ITS enhances my effectiveness on the job.

1	2	3	4	5	6
---	---	---	---	---	---

7. Using ITS makes it easier to do my job.

1	2	3	4	5	6
---	---	---	---	---	---

PERCEIVED EASE OF USE

1. I find it cumbersome to use the ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

2. Learning to use ITS is easy for me.

1	2	3	4	5	6
---	---	---	---	---	---

3. Interacting with ITS system is often frustrating.

1	2	3	4	5	6
---	---	---	---	---	---

4. I find it easy to get the ITS system to do what I want it to do.

1	2	3	4	5	6
---	---	---	---	---	---

5. The ITS system is rigid and inflexible to interact with.

1	2	3	4	5	6
---	---	---	---	---	---

6. It is easy for me to remember how to perform tasks using ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

7. Interacting with the ITS system requires a lot of my mental effort.

1	2	3	4	5	6
---	---	---	---	---	---

10. I find it takes a lot of effort to become skillful at using the ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

ACCEPTANCE AND USE OF TECHNOLOGY

Performance Expectancy

1. I find the ITS system useful in my job.

1	2	3	4	5	6
---	---	---	---	---	---

2. Using the ITS system enables me to perform tasks more quickly.

1	2	3	4	5	6
---	---	---	---	---	---

3. Using the ITS enables me to be more productive.

1	2	3	4	5	6
---	---	---	---	---	---

4. If I use ITS, I will increase my chances of obtaining a salary increase.

1	2	3	4	5	6
---	---	---	---	---	---

Effort Expectancy

1. My interactions with the ITS system are clear and understandable.

1	2	3	4	5	6
---	---	---	---	---	---

2. It was easy for me to become skillful at using the ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

3. I find the ITS system easy to use.

1	2	3	4	5	6
---	---	---	---	---	---

4. Learning to operate the ITS system is easy for me.

1	2	3	4	5	6
---	---	---	---	---	---

Social Influence

1. People who influence my behaviour think I should use ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

2. People who are important to me think I should use ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

3. The senior management of my institution have been helpful in the use of ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

4. In general, the University of Fort Hare has supported the use of the ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

Facilitating conditions

1. I have the resources necessary to use ITS.

1	2	3	4	5	6
---	---	---	---	---	---

2. I have the knowledge necessary to use ITS.

1	2	3	4	5	6
---	---	---	---	---	---

3. ITS is not compatible with other systems I use.

1	2	3	4	5	6
---	---	---	---	---	---

4. There is a specific person allocated for assistance if I experience system difficulties.

1	2	3	4	5	6
---	---	---	---	---	---

Attitude towards the system

1. Using ITS is a good idea.

1	2	3	4	5	6
---	---	---	---	---	---

2. ITS makes work more interesting.

1	2	3	4	5	6
---	---	---	---	---	---

3. I like working with the ITS system.

1	2	3	4	5	6
---	---	---	---	---	---

4. I feel apprehensive about using ITS.

1	2	3	4	5	6
---	---	---	---	---	---

5. I hesitate to use ITS for fear of making mistakes I cannot correct.

1	2	3	4	5	6
---	---	---	---	---	---

6. I am satisfied with the tools (e.g. collaboration, emailing, assessment, reporting) available on ITS for processing of employee data.

1	2	3	4	5	6
---	---	---	---	---	---

7. I am satisfied with the use of ITS in addition to the traditional/manual system of processing data.

1	2	3	4	5	6
---	---	---	---	---	---

8. Overall, most of my expectations of using ITS have been positive.

1	2	3	4	5	6
---	---	---	---	---	---

Behavioural intention

1. Assuming I have access to ITS, I intend to use it in the next 12 months.

1	2	3	4	5	6
---	---	---	---	---	---

2. I predict, I will use ITS in the next 12 months.

1	2	3	4	5	6
---	---	---	---	---	---

MANAGEMENT SUPPORT

1. A policy for the provision of infrastructure for managing an employee's life cycle using technology is necessary.

1	2	3	4	5	6
---	---	---	---	---	---

2. A policy for training staff members to update their own employee data using technology, is necessary.

1	2	3	4	5	6
---	---	---	---	---	---

3. My department Supervisor thinks that using ITS is valuable for decision making and improvement of HR services.

1	2	3	4	5	6
---	---	---	---	---	---

SECTION 3

COMPUTER LITERACY

1. Do you consider yourself computer literate?		
2. Are you familiar with Microsoft Word?		
3. Are you familiar with Microsoft Excel?		
4. Do you know how to save a document?		
5. Do you know how to attach a document to an e-mail?		
6. Have you received any formal computer training?		

SECTION 4

Please indicate which of the following ITS modalities you have made use of in the past:

Modality	Never	Seldom	Often	Daily
1. Personnel System				
2. Leave System				
3. Evaluation System/Code structures				
4. Skills Development System				

OPEN ENDED QUESTIONS

1. How did ITS training impact on actual usage of ITS?

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2. What has been the impact of the change from manual process to ITS?

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3. What effect does management support and interest have on the decision to adopt the use of ITS HR Modules? Why?

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4. What impact do Institutional policies have on continuous usage of ITS?

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5. Is your level of computer literacy and IT Experience of importance to ease of use of ITS HR Modules? Why?

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6. How many times do you use the ITS system daily?

1	2	3	4	5	6
---	---	---	---	---	---

How much time do you spend using the ITS system daily?

1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours
--------	---------	---------	---------	---------	---------	---------	---------

7. To what extent do you think training and support are available and adequate in the University?

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8. Are there any rewards and penalties within the HR Department as well as at the university regarding the use of the ITS system?

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ANNEXURE D : Detailed Description of the Human Resources Department Organogram

1. Introduction

The University of Fort Hare's operations spread over three campuses with a staff compliment of +- 900 permanent staff members and +- 700 part-time staff members. In order to support line management and the overall business processes, HR needs to re-align its functions and service delivery by using an organisational structure which makes provision for inclusion of a multiple role model for HR Functions is a move away from the HR Operations – only paradigm towards a multiple role paradigm addressing the Individual staff members needs and ensuring that HR Best Practices are followed on an organisation-wide basis.

Human Resources is a support function of UFH and the intention is to ensure that HR staff are equipped to do their jobs with minimum restrictions. In particular HR focuses on:

1.1 Decentralised Human Resource Services

HR processes made simple and efficient by placing HR Services Team at the Faculty or Support Service unit per specific campus to cater for the day to day HR needs and includes:

- Recruitment
- Appointments and Employee contracts (all appointment types)
- Benefits and salary administration
- General HR administration
- Staff movements
- Termination of services
- HRIS and staff records
- Internal IR issues: Disciplinary Hearings and Grievances
- Data integrity

This is the area where ITS System is mostly used for capturing, storage and retrieval of employee data.

1.2. Centralised Human Resource Functions

To support the overall objectives and strategies of the University and to respond to the business needs of the institution, through the implementation of Organisation-wide interventions and the implementation of Human Resource Management Best Practices including:

- Strategic IR
- Training and Development
- Policy Development and Implementation
- OD
- Employment Equity and Diversity Management
- Performance Management
- Career Development and Succession Planning
- HR Reports and compliance
- EAP and Employee Wellness

ITS System is also supposed to be used in this area particularly with capturing of training and Development, Employment Equity and Diversity Management to inform the compliance reporting as required by Skills Development Act and Employment Equity Act. The HR Professionals are not utilising this facility in the ITS system which would benefit the institution with accurate reports at a click of a button.

2. Benefits of the two-level HR Structure (Centralised and Decentralised)

The two-level HR Structure enables HR to provide a comprehensive and professional HR service to assist in the management of the university. The service is provided on two levels through:

2.1 HR Teams

HR Teams are assigned for specific faculties and or support service units responsible for the day to day HR activities such as Recruitment, HR Admin, Remuneration administration. These teams will be supervised by a Team Leader, skilled as a HR Practitioner and coordinating the activities of the HR team according to service level agreements.

A team will take full responsibility for all HR operational matters for a specific faculty and or support service unit. The HR Team delivers a one-stop HR service for the staff of that particular

faculty or support service unit. The HR team act as “Internal HR Consultants” and will be trained in all aspects of the HR Services that are provided.

2.1.1 Composition of HR Teams

One HR Team consisting of:

- 1x Team Leader (HR Practitioner/Specialist)
- 2x HR Officers
- 2x HR Assistants

Are responsible for two faculties plus one or more support services unit, depending on the total of staff to be served and are responsible for the total HR Operations functions for those faculties and support services units.

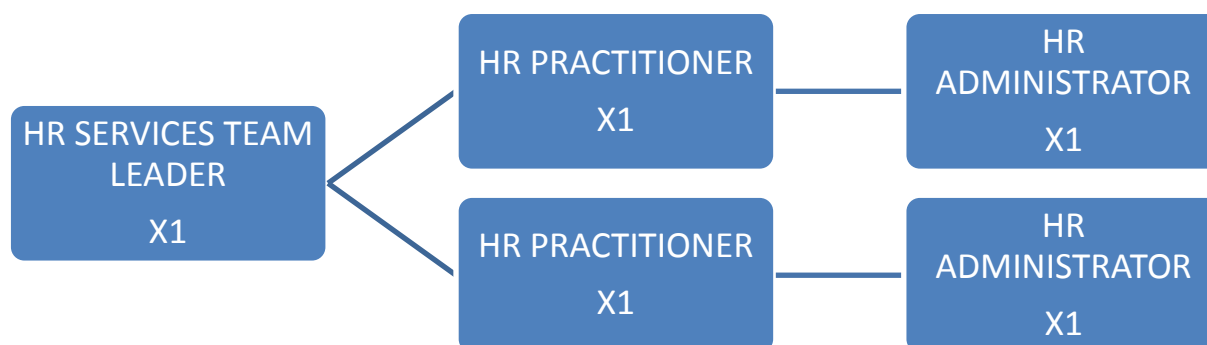


Figure 9.1: HR Team Structure

2.2 HR Director / HR Manager: Centralised HR Services

The Team Leaders of the different (x5) HR Services Teams, will report to the HR Manager who will report to the Executive Director HR. The first level of the structure is a Centralised HR Function assigned to the office of the Director: HR. The centralised HR office supports the objectives of the institution by the organisation-wide implementation of strategic HRM Best Practices and interventions.

2.2.1 Office of the Director HR is responsible for providing leadership and direction in all aspects of Human Resources Management, both at organisational and departmental level, with overall responsibility for the management and development of all services provided by HR. The office is responsible for the implementation of HR Best Practices throughout the university and on all levels. A small team of HR specialists is responsible for implementation of these interventions and report directly to the Director HR.

2.2.1.1 Composition of the HR Centralised Service's Structure

- Director: HR
- 1x HR Manager Decentralised Services
- 1x IR Practitioner
- 1x OD Practitioner
- 1x OD Officer and 1x OD Assistant
- 1x EAP Practitioner.

All the above positions (except the OD Officer and OD Assistant) report directly to the Executive Director: HR as displayed below in Figure 9.2: Comprehensive HR Department Organisational Structure.

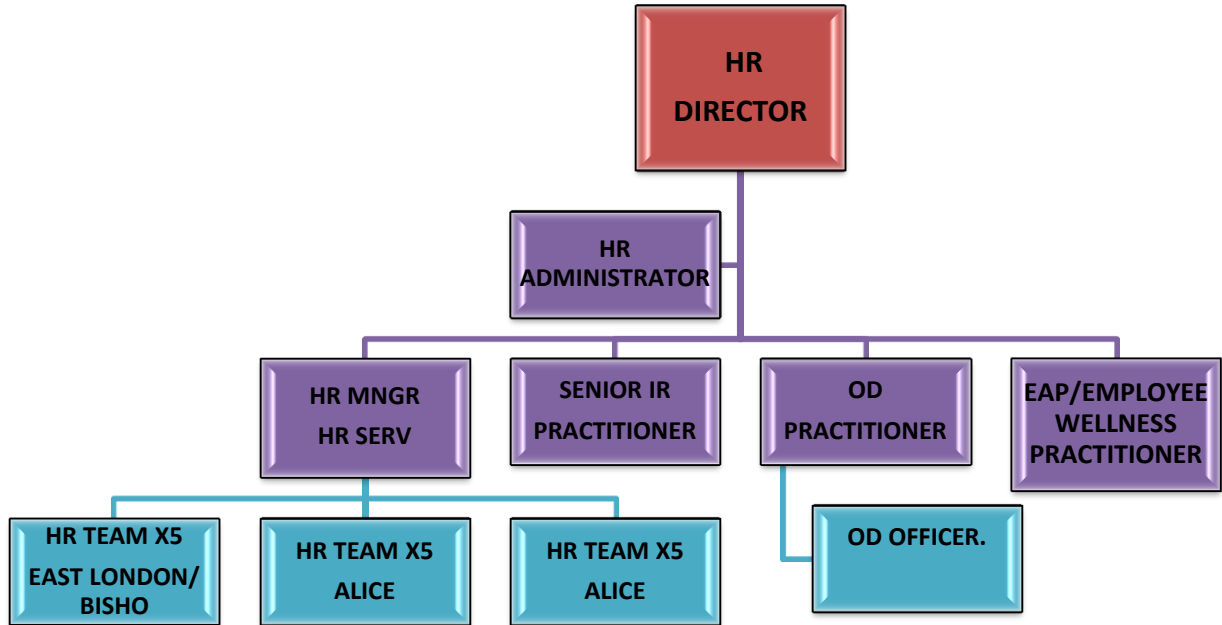


Figure 9.2: Comprehensive HR Department Organisational Structure

3. Components of the HR Structure

The above HR re-designed HR Structure enhances and support the following:

- Development of human resource strategies and policies to support institutional goals.
- Provision of advice and support to all levels across the board within the institution on HR related matters.
- Efficient HR services by taking HR to the line as Internal HR consultants/ Business partners with line management.
- Authentic, reliable HR information and data.
- Implementation of HR Best Practices on an organisation-wide basis to enhance business processes.

3.1 Comprehensive HR Functions Model

Inclusion of a multiple role model for HR Functions is a move away from the HR Operations – only paradigm towards a multiple role paradigm addressing the Individual staff members needs and ensuring that HR Best Practices are followed on an organisation-wide basis through ensuring that HR plays the following roles effectively:

- Strategic partner role;
- Change Leader role;
- Administrative Expert role; and
- Employee Champion role.

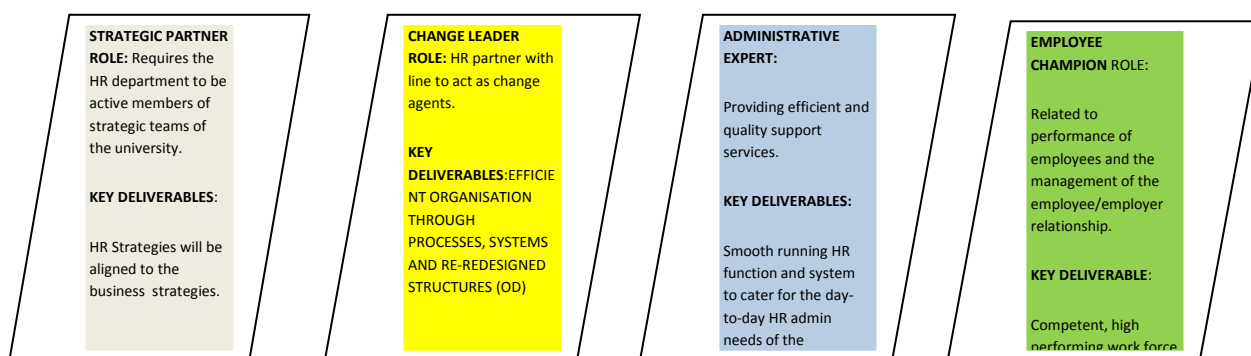
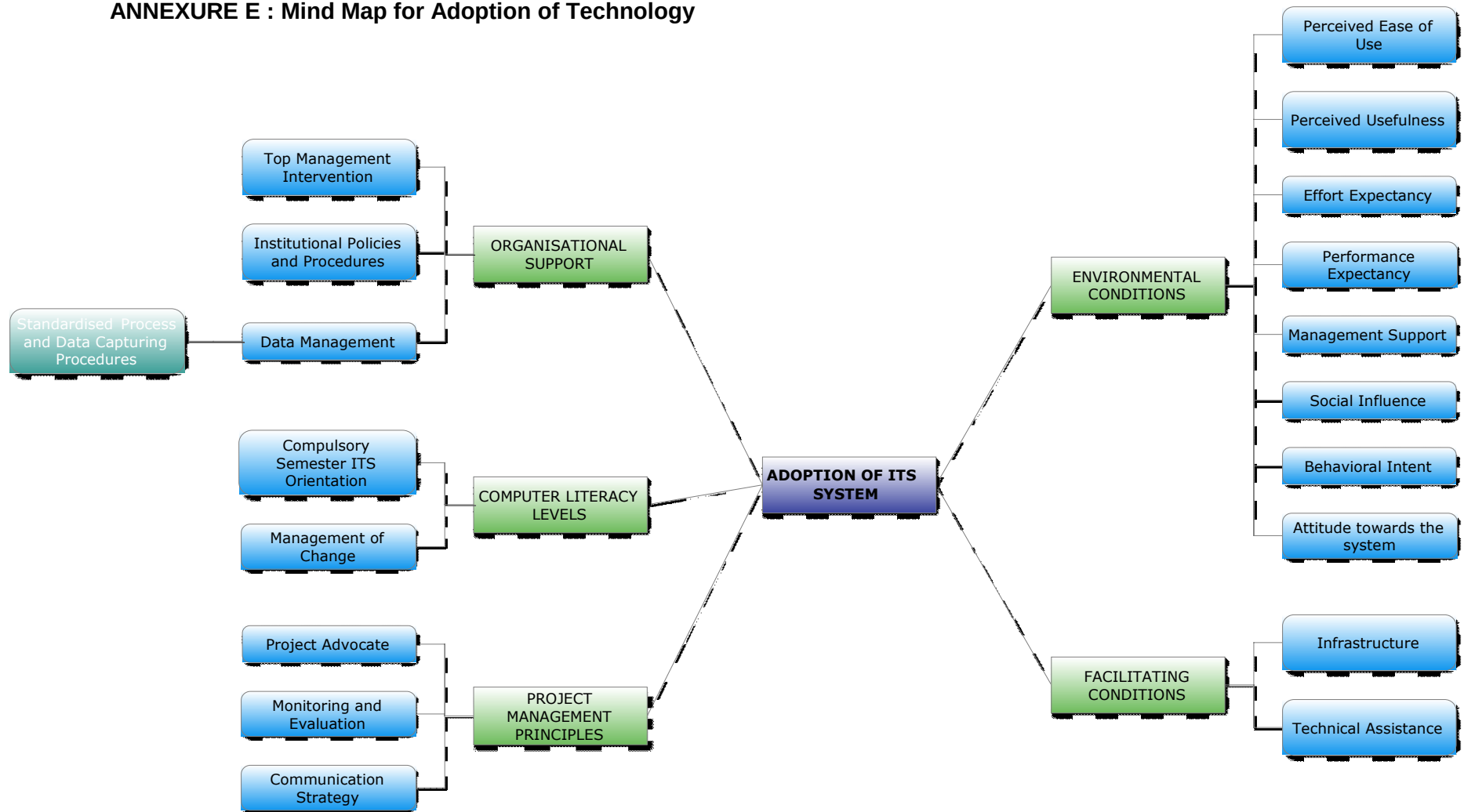


Figure 9.3: Comprehensive HR Functions Model

ANNEXURE E : Mind Map for Adoption of Technology



ANNEXURE F: Expert Reviewer Profiles

1. ICT EXPERT REVIEWER PROFILES

1.1 BASSON DINGAAN

Chief Information Officer: University of Cape Town

Industry: ERP - ITS

Past Experience:

- Managing IT Implementation Projects
- Managing networks and staff for many years
- 10 years general management and software development
- 10 years advanced configurations on systems like Oracle, Unix, Novell and Microsoft
- **Connections: 41**

Education:

- TI – Computer Systems
- CCNA – BSCI (Building scalable Cisco Networks)
- CCNA – Cisco Network Security
- FWLAN – Cisco Wireless LAN
- A+- Cisco IT Essentials II
- Xyplex Engineer – Bridging and Routing / Media and Access
- Servers
- CISSP
- ITIL

Basson Dinga qualified ITS Manager with fifteen years experience in the IT Industry and has been involved with the University of Fort Hare for more than five years. He is experienced with managing projects, networks and staff management. General management to software development and advanced configurations on systems like Oracle, Unix, Linux, Novell, VOS and Microsoft.

Specialties

IT Skills:

Xyplex Engineer, Configuring databases SQL servers, MCSE - Internet Information Service, Novel networking Technologies, Supporting SQL server 2000. wired & wireless networking (Juniper, Cisco, Procurve), virtualisation, ITIL.

Business Skills:

Project management, Consulting

1.2 ERIK GIBSON

Chief Information Security Officer:

Industry: Computer and Network Security Officer

Past Experience:

- Technical Consultant at Simeka BSG
- IT Manager at Nemotech
- Network Engineer at Alexander Forbes
- **Connections:** 63

Education:

- OSCP
- CISSP
- ITIL

Erik Gibson qualified IT security professional with 8 years of broad-based IT experience, with Microsoft and Linux system administration, security, networking and programming and database expertise.

Self-motivated person as well as a team member with good communication skills. Capable of delegation and people management, and is always willing to try new ideas and technologies, and ensuring that they make business sense.

Specialties

IT Skills:

Security auditing, penetration & web app testing, PCI-DSS, firewalls, intrusion detection, policy & compliance, cryptography & key management, system administration (Windows, *NIX, Apple, SQL, email), database design & implementation, programming (C#, PHP), wired & wireless networking (Juniper, Cisco, Procurve), virtualisation, ITIL, log management.

Business Skills:

Technical sales, consulting, project management, credit cards, smart cards, CDMA/GSM, EMV, PIN, Visa & MasterCard.

2. HUMAN RESOURCES REVIEWER PROFILES

2.1 Ms Banele Mesatywa : Newly appointed Executive Director HR – WSU

Ms Mesatywa qualified for BA Degree in Industrial Psychology at the University of Transkei; BA Honours in Labour Relations at the University of Western Cape, and Masters Degree in Human Resources and Labour Relations at the University of Port Elizabeth. Masters in Business Administration, WITS University.

Ms Mesatywa worked for a number of reputable companies and has acquired 12 years Human Resources experience: She started at lower ranks at Cape Town City Council as a Health and Safety Representative; Marley Flooring as a Skills Development Facilitator / Personnel Officer; Hemingways Casino as Human Resources Consultant; Eastern Cape Tourism Board as Human Resources Manager and Metrorail Eastern Cape as Human Resources Manager. She is now Executive Director HR at WSU. (Previously disadvantaged Institution).

Over the years, she acquired overall management of all Human Resources Aspects with a responsibility to ensure that the HR operational plan links to the Human Resources department Strategic Plan to ensure that it is aligned with the strategic plan of the organisation.

Banele has sound people management and customer service skills.

2.2 Mr Gladman Ndhlovu: Director: HR – University of Venda

Mr Ndhlovu qualified for Bachelor of Communications Degree at the University of Kwa Zulu Natal; B Communications Honours at the University of Durban Westville and Masters Degree in Business Administration at Wits University.

Mr Ndhlovu acquired a number of years experience and worked in a number of reputable organisations and has acquired 16 years Human Resources experience: He started at lower ranks at University of Port Elizabeth as HR Manager, Mercedes Benz Manufacturing plant in EL as HRD manager,

Siemens SA in Midrand as a Corporate Human Resources Manager; Alexander Forbes SA in Sandton as Head of Human Resources, and now he is Director-HR at the University of Cape Town (Previously advantaged institution)

Over the years, she acquired overall management of all Human Resources Aspects with a responsibility to ensure that the HR operational plan links to the Human Resources department Strategic Plan, and that it is aligned with the strategic plan of the organisation. He has acquired a Prince II Project Management certification in 2008. Attended a number of Skills Development Programmes. He lead various HR change management related projects.

Gladman has sound people management and judgement skills.

2.3 Ms Adreane Steyn : HR Accounts Executive – Wits University

Ms Steyn qualified for BA Social Work Degree at the University of Fort Hare; BA Honours degree at the University of Rhodes, and Masters Degree in Business Leadership (MBL) at Unisa School of Business Leadership (SBL).

Ms Steyn worked for a number of reputable companies and has acquired 17 years Human Resources experience. She started at lower ranks at Telkom SA in Pretoria as a Human Resources Consultant; PPC Cement Head Office as a Human Resources Manager; Old Mutual Insurance in Sandton as Director – HR, and she is now Director-HR at the Wits University (Previously advantaged Institution).

Over the years, she acquired overall management of all Human Resources Aspects with a responsibility to ensure that the HR operational plan links to the Human Resources department Strategic Plan and that it is aligned with the strategic plan of the organisation. She has acquired

a sound Project Management experience. She acquired a number of years Skills Development Training. She lead various organisational restructuring projects including change management related projects.

2.4 Ms Gloria Ali: Executive Director Human Resources – University of Cape Town

Ms Ali qualified for Bachelor of Administration Degree at the University of Fort Hare, Bachelor of Administration Honours at the University of Fort Hare and Masters in Business Leadership and the School of Business Leadership (Unisa SBL) in Midrand. She is also a certified Prince II Practitioner through Pricewaterhousecoopers.

Ms Ali worked for a number of reputable organisations including Daimler Chrysler head office in Pretoria where she started from humbly beginnings as a HR Graduate Trainee. When she left Daimler, she was an HR accounts executive. She joined Siemens SA as a Corporate HR Manager after which she joined Alexander Forbes as the Head of Human Resources Department.

Ms Ali has robust HR and Systems experience: she was instrumental in the implementation of the SAP ERP system at Siemens and was also a project owner at Alexander Forbes when they implemented the E-Performance Management System. Ms Ali has a sound change management background and worked as a Change Management specialist under Pricewaterhousecoopers where she lead a Re-engineering project for the Eastern Cape Office of the Premier in Bisho.

Ms Ali is a seasoned HR Professional with sound understanding of HR Principles, HR trends and has a passion for technology. She believes that there is not HR without technology if HR has to take services to people and be a strategic partner to business.

ANNEXURE G: Expert Reviewer Feedback

Expert Reviewer 1:

The effective implementation of an ERP system like ITS, **change management** strategies and an understanding of organizational culture is necessary. Change management involves the effective balancing of forces in favour of a change over forces of resistance. Training and education is an important process in change management. Many previous studies conducted in various regions/countries have indicated that training and education should be provided to employees or users.

Expert Reviewer 2

Training and education is an aspect of change management that allows the users to understand the overall concepts of the ERP system (ITS System) and ensures their acceptance and readiness to use the new system. It needs to be pointed out that user training will be effective only if it also includes business practices and processes as part of its content.

In order to avoid failures **in communication**, an open and honest information policy communicated to the users can satisfy their need for information.

In an attempt to ensure that data is managed effectively, before selecting an ERP package (ITS System), UFH should have ascertained that data model supported by the package is compatible with its data requirements. This aspect is a valuable CSF for its key to accuracy of data.

Expert Reviewer 3

Clear and effective communication at all levels is critical for acceptance of technology and must happen before and during the implementation of the ITS System. Communication includes the formal promotion of the ITS System, project teams, and advertisements on the project's progress to the rest of the University. This reviewer agreed that effective communication is one of the Critical Success Factors that influence the acceptance of technology in an ERP implementation environment.

Data must be validated and converted into a single and consistent format before the system is used to ensure accurate reporting.

Expert Reviewer 4

Since data contains various modules intricately linked with each other in the ITS System, Data management is one of the CSF factors because it is necessary for data to be managed properly to ensure its accuracy. Accuracy of data is important in ensuring success in acceptance of technology.

Data management should have an impact on mapping and conversion of data and should be established as an integral task of any IT implementation plan.

Expert Reviewer 5

The monitoring and evaluation of performance is a critical factor in the success of any IT system. It is important to measure implementation progress regularly for more efficient and effective control. Through monitoring and feedback from users, the performance of the ITS System can be reviewed and evaluated to see whether it is achieving the institutions' goals and objectives.

Expert Reviewer 6

The presence of a project champion has facilitated many successful projects and it is a necessary CSF because project champions are not only important for the implementation of many systems such as IS, but also play a critical role in the implementation of ERP and in handling organizational change. The project champion should be a high-level executive sponsor who has the power to 'champion' the ERP project throughout the organization.

Project management is indeed an important CSF since the implementation of ITS is complex. Effective project management will allow the institution to plan, coordinate, and monitor various activities in different stages of implementation of the ITS System.

'Top management support' is a Critical Success Factor for implementation, hence the implementation project must receive approval and support from top management before it can be implemented. Top management must be willing to become involved and allocate valuable resources to the implementation effort. As ERP projects span divisional boundaries and affect many stakeholders in an organization, senior executives need to mediate between various interest groups to resolve political conflicts when necessary. All of the studies in every region or country were in high agreement on the critical role played by top management support in the successful implementation of ERP. This showed that top management support is widely recognized as necessary for ERP implementation, and that this factor may be independent across regions and countries