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ORGANISATIONAL CHANGE: THE ASSIMILATION OF SOFTWARE TECHNOLOGY IN THE HIGHER EDUCATION ENVIRONMENT

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A research report submitted to the Faculty of Humanities of the University of the Witwatersrand in partial fulfilment of the requirements for a Master of Arts in Industrial Psychology.

Supervisor: Dr Francois Strydom
Submission Date: 20th October 2006

DECLARATION

I, Bhavna Atulkumar Patel declare that this research report is my own, unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Arts in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Bhavna Atulkumar Patel
20th day of October 2006

DEDICATION

To my dad, Dalpat

This work is dedicated to you, for your unwavering moral support and motivation threading this difficult path. Without your unstinting support and belief in me I might not have had the strength to complete this.

ACKNOWLEDGEMENTS

My sincere thanks and appreciation go to the following people:

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- My sincere love goes to my two dear children, Simran and Rahil, who unknowingly sacrificed important mother time for my studies.
- My husband Atul, and family for their patience and support.

ABSTRACT

Organizational change- its mechanisms, and its outcomes - is a topic of increasing interest and study in both business and education. The external environment, including the economic, political, and cultural dimensions of society is rapidly changing, growing in complexity and posing numerous challenges. The creation of the learning organisation is one of the responses to these challenges. During the 1990s the concept of the "learning organisation" attracted much attention and generated a significant amount of research. The central tenent of a learning organisation is that it is able to learn and therefore able to adapt better to both external and internal challenges. The study of how learning takes place in organisations has therefore become important in understanding organisational change.

In the current research study, the implementation of an Enterprise Resource Planning (ERP) system meant that organisational change would be inevitable. New information technology software would result in changes in business processes, changes in work groups, changes in terminology and changes in how work is processed. The implication was that there would be a need for learning to take place in order for organisational change to take place. The Guttman's Stage of Assimilation Model formed the theoretical basis for the research. A key assumption is that the assimilation of technology is best characterised as a process of organisational learning.

The research findings indicated that learning did take place and Guttman's model provided interesting insights into the different types of assimilation that took place at different level of the organisation. Interesting differences were found between academic and support staff and useful lessons were learned about how ERP systems can be introduced into higher education organisations. The current research findings also provided evidence that training and communication were crucial during a change process. These two elements are also vital in enabling organisational learning to take place.

DECLARATION ii

DEDICATION iii

ACKNOWLEDGEMENTS iv

ABSTRACT v

TABLE OF CONTENTS vi

CHAPTER 1: INTRODUCTION 1

1.1 Introduction 1
1.2 The Research Problem 1
1.3 The Research Objectives 2
1.4 The Importance of the Study 2
1.5 Structure of the Report 3

CHAPTER 2: LITERATURE REVIEW 5

2.1 Introduction 5
2.2 Key Assumptions 6
2.3 The Impact of Enterprise Resource Planning Systems 6
2.4 Organisational Change 8
2.4.1 Higher Education Institutions and Organisational Change 9
2.4.2 Reasons for Organisational Change 10
2.4.2.1 Disruptive Nature of Change 11
2.4.3 Process Models of Change 12
2.4.4 Factors to Consider in Organisational Change 16
2.4.5 Resistance to Change 19
2.5 The Concept of Learning 20
2.6 Organisational Learning 22
2.6.1 Higher Education Institutions as Learning Organisations 25
2.6.2 The Focus of Learning Organisations 26
2.7 Resistance to Change and the Impact on Organisational Learning 32
2.8 Constructs Underpinning the Organisational Learning and Organisational Change 34
2.8.1 Communication 34
2.8.2 Improving Learning during Training 36
2.8.3 Teamwork and Team Learning 37
2.9 Conclusion 38

CHAPTER 3: RESEARCH METHODOLOGY 40

3.1 Introduction 40
3.2 Research Questions 40
3.3 Methodology 40
3.4 Sample and Sampling Technique 41
3.5 Data Collection 42
3.6 Data Analysis 43
3.7 Ethical Considerations 45
3.8 Conclusion 45

CHAPTER 4: RESULTS AND ANALYSIS 46

4.1 Introduction 46
4.2 Results of the Interview 46

CHAPTER 5: DISCUSSION 60

5.1 Introduction 60
5.2 Discussion of Results 60
5.3 Conclusion 72

CHAPTER 6: RECOMMENDATIONS AND CONCLUSIONS 73

6.1 Introduction 73
6.2 Achievement of Research Objectives 73
6.3 Recommendations for Management 80
6.4 Limitations of the Study 81
6.5 Areas for Further Research 82
6.6 Conclusion 82

BIBLIOGRAPHY 83

APPENDICES 94

Appendix 1 Informed Consent Form 96

Appendix 2 Consent for Recording 98

Appendix 3 Interview Schedule based on Guttman's Stage of Assimilation Model 99

Appendix 4 Transcriptions of Interviews 100

LIST OF TABLES

Table 3.1	Categorisation of Sample	42
Table 4.1	Major and minor themes at the various stages of Guttmans' Stage of Assimilation Model	57
Table 6.1	Comparison of Support and Academic Staff at the Various Stages of Guttman's Stage of Assimilation Model.	75

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The concept of the learning organisation stems from ideas long held by leaders in organisational development and system dynamics. One of the specific contributions of organisational development is its focus on the humanistic side of organisations i.e. the way an organisation learns and reflects its culture and values. Organisational development takes place through its individuals and teams with their unique capabilities and personalities. The desire and commitment to learn is embedded in the way people in the organisation work together and support each other's efforts to improve continuously.

Few institutions have implemented the principles of a learning organisation as they were originally conceived; however, many organisations are embracing the principles of the learning organisations today in response to rampant change. Some of today's most successful organisations are embracing these ideas to meet the demands of a global economy where the value of the individual is increasingly recognized as the most important resource (De Geus, 1998).

1.2 THE RESEARCH PROBLEM

The aim of the study is to investigate how organisational learning takes place when an Enterprise Resource Planning (ERP) system has been implemented. An ERP system is defined as an integrated business management software solution designed to bind more closely a variety of company functions including human resources and financials, as well as manage company resources.

Currently the institution of higher education under review for this research is undergoing a major change process as a result of the implementation of new technological (ERP) systems. The new technological change impacts the entire University as it spans the student administration, finance and human resources divisions. Thus major change in systems is being implemented after 20 years bringing about changes, within various divisions in the University, which need to be addressed. This implementation of an ERP system includes change management, organisational development, employee relations, policies and procedures, human resources management, training and development. The implication of this major change is that

new learning will need to take place across all divisions within the University if the ERP system is to be integrated successfully into the organisation. To assess the extent of integration Guttman's Stage of Assimilation Model was used as a basis for analysis.

1.3 RESEARCH OBJECTIVES

The researcher wishes to:

1.3.1 Investigate how organisational learning takes place where Enterprise Resource Planning (ERP) has been implemented.

1.3.2 Identify into what stage of the Assimilation model employees fall.

1.3.3 Assess how the learning patterns of academic and support staff differ.

1.3.4 Identify the lessons which can be learned given the introduction of an ERP system.

1.4 THE IMPORTANCE OF THE STUDY

Tertiary institutions within South Africa have undergone many changes recently, most significantly institutional mergers (Department of Education, 2004/2005). In an attempt to evolve continuously within the current external environment, all organisations understood the need and have some have taken action to address challenges that the external environment presents. Although sometimes seen to function like a business, tertiary institutions are unique in that some of the challenges of the external environment do not exclude them. Whether a tertiary institution specialises in distance or residential learning, all have to consider the growing importance of IT and their service to students.

The current study has been carried out at a tertiary institution, which has implemented a sophisticated ERP system. Radical IT change has occurred after almost 20 years. Various factors come into play during change processes such as the culture of the organisation, the demographics of the staff members, the knowledge, skills and

abilities of the various stakeholders to support such technology, financial implications, and infrastructure.

The impact of IT change occurs across all platforms, there are high risks, and the institute vulnerable in terms of management styles, processes, learning capacity, change capability and daily business. Due to the impact of change on an organisation, the core methodology of the way work is carried out within a specific organisation is put under scrutiny. The various models of how teams work are also tested and re-tested within the changed environment.

An in-depth understanding of the learning process that takes place during the introduction of an ERP system can support the steps can then be taken to manage the process of change and assist the organisation in meeting key objectives and goals of the change.

1.5 STRUCTURE OF REPORT / OUTLINE OF CHAPTERS

Chapter one provides a context for the study, addressing in particular the research objectives as well as why such a study is pertinent to Human Resources and the wider working environment.

Chapter two covers the literature review. This chapter focuses on some of the key issues of organisational change and organisational learning and presents a theoretical background to determine the scope of the study. The impact of information technology is assessed in light of organisational change and organisational learning. The implementation of an ERP system is an example of major change. When such change takes place there is invariably a need for new learning in how work in the organisation is carried out. A new system means that there may be change in processes and procedures. New software implies change in how transactions are processed on the system. Thus there is a link between organisational change and organisational learning, implying there is a need to understand how learning takes place during extensive change.

The research methodology, outlined in chapter three, defines the study objectives and discusses the research design, the sample and sampling technique and the instrument used to conduct the case study.

In chapter four the results obtained through the qualitative research are presented and described.

Chapter five discusses and interprets the findings of the research.

Chapter six links the results to the set research objectives and published literature and draws conclusions and provides recommendations for similar institutions, as well as makes suggestions for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The environment in which organisations operate is continuously changing: from changes in technology and business strategy to those in culture and the values and norms of individuals. In such a dynamic environment the challenge for management is how to maintain stability within the micro-environment yet simultaneously adapt to the forces of the macro-environment. Within organisations themselves, the only thing constant is the continual change of these organisations.

Despite the growing attention and research, many of the efforts towards organisational change still fail (Cicmil, 1999). There are many reasons for the failure of such efforts, for example the organisational culture, the timing of the change effort (where change initiatives coincides with peak periods within the organisation), and the role of change-agents (those that are responsible for driving change within the organisation) (Bennebroek Gravenhorst et al., 1999). Managing organisational change is, to a large extent, about managing the human resource aspects of that process, with a central focus on organisational learning. The human resource of the organisation is both an essential factor in organisational change and, at times, the biggest obstacle to that change (Smith, 2005).

With the high velocity of change, the concept of the 'learning organisation' was established amongst large organisations as they attempted to develop structures and systems that are more adaptable and responsive to change. “Organisations learn only through individuals who learn. Individual learning does not guarantee organisational learning. But without it no organisational learning occurs (Senge, 1990, p.139).”

The implementation of an Enterprise Resource Planning system (ERP) within a company is a complex activity, resulting in the need for change, subsequent management of the change, and organisational learning. The success of the implementation of the ERP system includes not only technical factors, but also organisational and human factors. Thus the integration or assimilation of the system by the users needs to be a measure of the success of the change.

For the purposes of the current research some key assumptions were made.

2.2 KEY ASSUMPTIONS

In adopting the Guttman's Stage of Assimilation Model some key assumptions made include: firstly, learning is essential for change to take place (Senge, 1990). Secondly, the introduction of an Enterprise Resource Planning (ERP) system implies that people need to learn how to utilise the new system. Thirdly, the study assumes that the assimilation of technology is best characterised as a process of organisational learning. The study looks at Guttman's Stage of Assimilation between the first and second stages of implementation.

2.3 THE IMPACT OF ENTERPRISE RESOURCE PLANNING SYSTEMS

Over the last few years, global management has bought into the idea that radical change may be the only hope for survival in the competitive environment. Information technology (IT) is central to these efforts and has been identified as one of the most prevalent facilitators of, and a primary catalyst for, process, in turn helping a company to achieve its business objectives (Chan & Land, 1999). In a global organisation, control and co-ordination would be impossible without information and communications technology. Information technology has thus moved from the realms of being a supporter of business practice to being a core element of business infrastructure: organisations of all shapes and sizes have to embrace IT if they wish to survive and thrive in an increasingly competitive environment. Thus, it can be argued that the "data network" is now as important as the social network of an organisation (Baines, 1998). Some of the benefits of IT, include dramatically increasing the speed of information delivery, streamlining activities and decreasing redundant data entry (Taylor, 1996). Each of these factors adds up to enhanced productivity, better data integrity and increased customer service.

The study of successful information systems implementations has produced many articles, yet the 1990s witnessed the failure of many planned change interventions (Carlopio, 1998). Although there is a general consensus that the implementation of IT reduces the time span of decision-making processes and allows faster responses to customer needs and a changing environment, the relatively low level of organisational benefits realised by typical strategic information technology intervention is often the

product of poor adoption and implementation practices on the part of senior managers and IT practitioners, who have failed to understand the nature of change in complex organisations. However, organisational learning has provided some means of addressing these failures (Lane, 1996).

IT implementation under-performance and failure are rarely explained by merely considering economic and technical criteria. Indeed, the human and organisational aspects of IT-related change are often marginalised or ignored (Clegg, 1993). Interest in the relationship between information systems failure and organisational issues will provide a clear understanding of the dynamics of change at the people/technology interface, and the relationship between information systems and strategy, which are prerequisites for the success of major IT change projects.

In considering the implementation of a new IT change initiative, the level of penetration and sophistication of the new IT system needs to be addressed as this has a significant impact on the organisation by way of culture, structure, new working practices and organisational learning. Thus, the new concept of the data-networked organisation can only function with adequate technology support (Baines, 1998). The implementation of new technology is all the more successful where individuals are technically literate, confident and trustworthy, in the organisations that Baines (1998) would term ‘networked’ (that is, that of empowered individuals who have access to all the information they require to understand and fulfil their role and so contribute to the corporate good).

It follows then that employees have to be highly technically-literate, self-confident and trust-worthy, which in turn has direct implications for new training and subsequent learning.

Baines (1998) draws on the link between technology, organisational structure, and business processes, further stating that if this link is not recognised, tension will arise from the ‘perhaps hidden but real’ effects that the introduction of technology brings, and the pre-technology structures and processes that have failed to adapt. She further emphasises that there must be a harmony between the three components and that this can happen naturally through a process of evolution but is more likely to need some

assistance in the form of organisational design and the re-engineering of business processes. The dynamics, which occur at people/technology interface, can be addressed by some of the concepts that underpin organisational learning. In this light we turn now to the literature around organisational change and how learning can facilitate or hamper such change

2.4 ORGANISATIONAL CHANGE

Contemporary organisations continue to operate in a chaotic world where globalisation, competitive advantage, and socio-political factors play an role in change (Cicmil, 1999). This fascinating, yet controversial concept of organisational change and, change management, has been a major concern of business and academic research in recent years. Both business and academia agree that change should not be enacted for its own sake, but is rather a strategy to accomplish an overall goal.

There has been a proliferation of management literature on the topic, with new models and frameworks evolving from various interdisciplinary studies. Despite the abundance of literature available, empirical evidence confirms that the majority of organisations are still experiencing difficulty in managing their change projects (Cicmil, 1999).

Organisational changes can be defined as movements away from the status quo (Nelson, 2003). From an organisational development perspective, change is a set of behavioural science-based theories, values, strategies and techniques aimed at the planned change of the organisational work setting for the purpose of enhancing individual development and improving organisation performance (Weick & Quinn, 1999). Literature makes reference to evolutionary, incremental, or first order changes. These are small changes that alter certain small aspects, which are made in search of improvements in the present situation, while still keeping the general working framework (Nadler & Tushman, 1990). The second type of change is strategic, transformational, revolutionary or second order changes. These are radical transformations, where the organisation totally changes its essential framework, affecting the basic capabilities of the organisation (Nadler & Tushman, 1990), generally in pursuit of a new competitive advantage.

The implementation of new technology emphasises the need for change as users of the system require new knowledge, skills and abilities. In this research study the introduction of an Enterprise Resource Planning (ERP) system is used as an example of change and the researcher wishes to understand organisational learning during such change.

The birth of democracy in South Africa has brought along with it the challenges of globalisation and competitive advantage with South Africa entering the global economy, the opening of trade barriers, lifting of economic sanctions, etc, to which organisations must respond with change initiatives and new strategies if they are to survive.

The evolution of thought on organisational change has moved in the last two decades from an "experts improve whole systems" to "everyone improves whole systems" approach. Today, we are moving towards an era that calls for methods of organising change programmes that allow "everybody" to innovate and change to prepare a company to compete successfully in a changing and competitive global business environment (Karp, 2004). Within these global environments institutes of higher education also have to compete within their markets.

2.4.1 HIGHER EDUCATION INSTITUTIONS AND ORGANISATIONAL CHANGE

There is consensus that the knowledge-based society has arrived, and that those organisations that will succeed and survive in the global information society are those that can identify, value, create and evolve their knowledge (Rowley, 2000). Universities and other higher education institutions are recognised to be in the knowledge business (Goddard, 1998), and are as such increasingly exposed to marketplace pressures. A critical synthesis of research literature on the process of organisational change at the level of the higher education is therefore needed.

In considering organisational change the following unique features of higher education institutions need to be taken into account (Kezar, 2001):

- the interdependence of the organisation

- its relative independence of its environment
- the unique culture of the academy
- its institutional status
- that as an institution it is inherently value-driven
- that multiple power and authority structures coexist within it
- that it is a loosely coupled system
- the prevalence of organized anarchy in decision-making
- that governance is shared
- that employee commitment and tenure might differ to that in business
- that employees might perceive goal ambiguity in the institution's vision

Traditional higher education institutions are attempting to adapt to today's environment in terms of purpose, structure and programme. Thus in a complex higher education environment, the responsibility for change must be taken out of the hands of a few and given to a broader range of internal and external stakeholders.

For institutions of higher education to continue to play a leading role in building capacity, it is important to match the functions of the institution with the societal needs presented by a changed environment. Thus, new blueprints of the necessary changes in the role of higher education need to be drafted, in order to meet the new challenges of the coming decades (Benjamin, 2003).

2.4.2 REASONS FOR ORGANISATIONAL CHANGE

The internal and external environment, in which organisations survive, and grow, and die in turn, is dynamic. The concept of organisational change is often reviewed and studied from an organisation-wide radical change perspective, as opposed to incremental low impact improvements. Thus, from a macro-level, work looks routine with sporadic change but at a micro level there is continuous adaptation and adjustment (Kofoed et al., 2002).

The incremental daily changes are not often seen as major shifts from the norm and thus do not cause much concern, where as change initiatives, requiring considerable investments and are targeted towards re-orientation of the organisation, where drastic

movements from the norm have had to be imposed on employees of an organisation are seen to be disruptive (Kofoed et al., 2002).

The sometimes disruptive nature of change affects people's relationships with things, places, people, organisations and ideas (Hayes, 2002).

2.4.2.1 Disruptive Nature of Change

Things: Technological advances have made changes to the way work is done, for example, manual interventions have been replaced by automation. Certain jobs and skills have become obsolete but at the same time, technology has led to the increase of new highly skilled jobs (Hayes, 2002).

Places: Greater job markets in the larger cities have enticed people to relocate. The price of a better job is the disruption of moving, as well as the necessary adjustment to a new environment and culture.

People: In the current dynamic of the work environment, we experience an increase in the number of people with whom we interact and develop relationships. However, these relationships are more shorter-lived as people move more frequently from one organisation to another (Hayes, 2002).

Organisations: The correlative of organisations having to cope with continuous change is individuals needing coping mechanisms in the face of rampant change. This in turn affects the psychological contract that people hold with their organisations. There is considerable change in the way people and processes are designed (Schnitt, 1993). Change has eroded the loyalties that people used to have for an organisation. For example, a merger might erode employee loyalty due to feelings of insecurity (Hayes, 2002).

Ideas: The knowledge system in society is undergoing rapid upheaval with changes in every sphere of life. The young society of today are being exposed to quite a different reality to that of 20 years ago with greater levels of competition, constant change and globilisation (Hayes, 2002).

Diversity: The economically active population in South Africa has changed drastically. The inclusion of women, people with disability has increased the competition for jobs (Hayes, 2002).

Mergers and acquisitions: Mergers bring considerable change where members of both organisations are faced with new systems of learning, a new culture and the need to adapt accordingly. A state of homeostasis is reached often only with considerable compromise from both organisations. Change in the form of mergers may also lead to the re-engineering of processes where the organisation undergoes fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in measures of performance, such as cost, quality service and speed (Hammer, 1992).

It appears that a normal part of organisational life includes the capacity to change, as institutions need to embrace flexibility in less certain environments. For all these reasons, together with awareness of the impact of managerial actions, there is interest in what happens during the phase of change. The acceptance of dynamic over static contingency models, however, has been a gradual and evolutionary process rather than a sudden and dramatic development.

Many organisations look toward implementing certain change initiatives in the hopes of better performance. Often decisions are made without analysing the organisation's readiness to adapt to the change. The ability to assess if an organisation is ready for change depends on the organisation's understanding of the process of change. The following section deals with the various process models of change.

2.4.3 PROCESS MODELS OF CHANGE

Many process models of change have developed through the years as the environment in which research is carried out changes and as constituents within an environment change.

Lewin (1951) provided some useful insights into the nature of planned change. His model is based on three stages in a change cycle. These three stages are:

Unfreeze → Change → Refreeze

Step 1: Unfreeze: where the present equilibrium is unfrozen. Discomfort grows with the shifting of past assumptions and practices which are deemed to be no longer valid. The purpose of this stage is to provide the motivation for change.

Step 2: Change: where action is taken to move the organisation to the new, desired way of doing things. Change programmes/initiatives are implemented.

Step 3: Refreezing: where new behaviour is required in response to change (Lewin, 1951).

Beckhard and Harris (1977) have developed a similar three-stage model that focuses on defining the current and future, managing the transition, and maintaining and updating the change. The model emphasises the management of the transitional stage.

Egan (1988) developed on the early stages of Lewin's model, focusing considerable attention on diagnosing, visioning, and planning for change. The first stage of Egan's model emphasises three issues:

- The current scenario: where problem and opportunities are assessed;
- The preferred scenario: developing and evaluating a range of possible changes and gaining commitment;
- Strategies and plans for moving to the preferred scenario: brainstorming strategies and methodology, and setting visible plans.

The second stage relates to the period of transition where plans are implemented, while the final stage gives attention to the consolidation of change (Hayes, 2002).

Kotter (1995), a master in the field of change management, emphasises a comprehensive step-by-step framework, which provides a theoretical foundation for change efforts. His model presents eight stages which include:

Establishing a sense of urgency:

A vital first step towards achieving successful organisational change is creating dissatisfaction with the present state of things and a concurrent desire for a shared vision of where and how the organisation needs to change. By actively revealing discrepancies between current and desired states, and at the same time conveying credible and positive expectations for achieving change, motivation and readiness for change can be generated – this both in individuals and organisation-wide (Kotter, 1995).

Forming a powerful guiding coalition:

The guiding coalition is a group of members with enough power to lead the change effort. It is important to create this guiding coalition early in the change effort in order to drive future change efforts. These coalitions do not necessarily comprise all top management but a successful coalition is one where power is vested together with some top management titles, information and expertise, reputations and relationships (Kotter, 1995).

Creating a vision:

Creating a picture of the future that is easy to communicate and appeals to the organisation at large is critical to the successful change effort. Creating strategies of how to achieve change is important. Without a sensible vision, change efforts can easily dissolve into a list of confusing and incompatible sub-projects that can take the change effort in the wrong direction, thus impacting on the organisations goals and objectives (Kotter, 1995).

Communicating the vision:

Change is difficult unless the majority of the members of the organisation are willing to help and make sacrifices to the successful implementation of the change. Every vehicle for credible communication is needed to be utilised to bring about awareness of the new visions and strategies (Kotter, 1995).

Empowering others to act on the vision:

This entails not only involving members of the organisation but also encouraging risk-taking, non-traditional ideas, activities, and actions. Renewal is necessary in order to remove obstacles. Obstacles could be in the form of organisational structures, processes and procedures which might undermine the vision (Kotter, 1995).

Planning for and creating short-term wins:

The risk of losing momentum in longer-term projects is high. A lot of the hype, enthusiasm, motivation and commitment that is created at the start of the project could fade in a long and extended project. By planning the project such that a number of smaller successes can be achieved along the way maintains motivation, commitment and enthusiasm which need to be sustained for a much longer period (Kotter, 1995).

Consolidating improvements and producing still more change:

Until change efforts have sunk deep into the culture of the organisation, these change efforts cannot be viewed as successful or completed, for new approaches and processes are susceptible to regression. This process can take from five to ten years. Leaders may view the short-term wins of change effort to institute other change projects not in line with the vision. This could lead to too much unplanned change leading to old traditions creeping in (Kotter, 1995).

Institutionalising new approaches:

Change has been effective when it becomes "the way we do things around here". New behaviours and approaches need to be rooted in the social norms and shared values of the organisation's members. Two factors that are particularly important include showing members how the new behaviours and approaches have led to improved performance, and ensuring that the new generation of top management personify, and identify with, the new approach (Kotter, 1995).

The above process models of change of Lewin (1951), Beckard and Harris (1977), Egan (1988) and Kotter (1995) highlight the importance of:

- Diagnosis - understanding where the organisation is currently at, and what the desired state should be.
- Strategies and plans - developing strategies and plans to move the organisation to the next level or desired state.
- Implementation - translating strategies into actionable steps. This includes the management of interpersonal and political issues associated with change (Hayes, 2002).

In the presence of various theories of change and the abundance of literature available on change, there are certain key factors that should be considered before a change initiative is deployed.

2.4.4 FACTORS TO CONSIDER IN ORGANISATIONAL CHANGE

Managing organisational change is, a very large part, about managing the "people" aspects of that process (Smith, 2005*).* People are the vehicles for change. People, the human resources of organisations, are both an essential factor in organisational change and, at times, the biggest obstacles to achieving change. Often during a change initiative, focus is concentrated on issues related to resistance to change. A proactive approach would be to consider factors that contribute to change readiness. By creating change readiness before attempts at organisational change begin, the need for later action to cope with resistance may be largely reduced. Thus an investment in developing change readiness – at both an individual and whole-of-organisation level – can benefit the organisation twofold, as positive energy goes into creating preparedness for change, in turn, significantly reducing the need for the management of resistance. Some points to consider with regards to change readiness include:

2.4.4.1 *Organisation Culture*

To sustain a programme of change it is essential to understand the culture of the organisation in which new ideas are to be introduced. New ideas that run counter to the traditional values of an organisation are the ones that are the most difficult to introduce.

2.4.4.2 *Creating a sense of need and urgency for change*

Change efforts need to achieve momentum and a sense of urgency whereby enough people in the organisation perceive and/or accept the need for change (Smith, 2005). Kurt Lewin, a pioneer in the analysis and understanding of organisational change, described in his model three phases of change: unfreezing, change initiative, and refreezing. In terms of change readiness, the unfreezing in organisational change is the most critical - the need to break the status quo and to encourage people to perceive and embrace the need for change is vital. Without a sufficient level of dissatisfaction with the current state of things, the desire for change necessary to move an organisation to the next level may never surface. Kotter (1995), in his model, also emphasises that in order to achieve successful organisational change, the creation of a sense of urgency and a need for change is essential. Furthermore, creating a shared vision of where and how the organisation needs to change is an important part of the change process. Thus, by actively revealing discrepancies between current and desired states, and at the same time conveying credible and positive expectations for achieving change, motivation and readiness for change can be generated both in individuals and organisation-wide (Smith, 2005).

2.4.4.3 *Communicating the change message and ensuring participation and involvement in the change process*

Organisations are made up of appropriately teamed people, and the social energy which emanates from these teams is critical to the success of any change initiative. Employees bring to the organisation their attitudes, skills, motivations and base knowledge, which form a significant component of the organisational environment in which change is to be attempted. The manner in which employees interact and thus communicate in an organisation (either via direct or indirect channels) has significant bearings on a change initiative. Communication is a key driving force to ensuring that successful change can take place (Ford et al., 2002). There are endless pieces of literature which relate to the importance of communication during change. Broadcasting messages is not enough; what is required is conversation which involves individuals sharing meaning, not just communication (Hesselbein et al., 1997).

Often communication carries some context of emotions, which are either positive or negative. During a change initiative, careful consideration should be taken to ensure that communication with regards to the need for renewal, the nature of the changes to

be made and the organisation's capability to effect change, be made well before the project commences. This in turn secures employee confidence, commitment and a willingness to participate. Communicating continuously with staff about changes and involving them in the consideration of options and decision-making is an important element in the change process. Active, ongoing and meaningful involvement in the change process helps employees to see the need for change and encourages them to embrace personal responsibility for achieving change.

2.4.4.4 *Providing anchoring points and a base for the achievement of change*

During a change process there are both those elements which are uncertain as well as those which are predictable. What needs to be ensured, regardless of the predictability of the outcome, is that the scope and expectations of the project remain realistic. Providing information to staff about certain predictable aspects of the change can assist staff to see clearly their role in the new ways of doing things, thus building confidence in, and commitment to, the changes (Smith, 2005).

Issues around staff training and development, team building, and role modelling should be campaigned from the top management of the organisation in order achieve the shift to a change-ready organisational culture and philosophy (Smith 2005). The sustained senior and middle management commitment and support for the project must be reflected. Total buy-in at all levels of the organisation is crucial.

2.4.4.5 *Mobilising your internal staff*

Staff members are your most valued component during a change initiative. They are your central resource in ensuring that a change initiative is implemented successfully within the organisation. Staff should therefore be equipped with adequate change management skills to ensure that communication of the change initiative is organisation-wide. Process owners should be identified to spearhead the process within the various areas of the organisation. Cross-functional teams should be developed to integrate efforts across functional boundaries (Nurmi, 1996).

2.4.4.6 *History*

History is a very good predictor of the likely success predictor of a project. An analysis of the reasons for the success or failure of previous implementations can

allow for improved results on future implementations. However, no matter how well planned change initiative may be, some level of resistance will be experienced in any change project (Heracleous, 2002).

In considering factors that relate to organisational change, resistance to change is often an aspect of any change initiative which requires attention.

2.4.5 RESISTANCE TO CHANGE

An overview of the literature (Maurer, 1996; Strebel, 1994; Waddel & Sohal, 1998) provides a clear delineation of factors that contribute to resistance to change. Some reasons why individuals might resist change are (Patton & McCalman, 2000):

- an inability to challenge the status quo
- a fear of the unknown
- the perceived threat to an individual's personal security and their confidence to perform
- an unwillingness to challenge old ideas
- the wish to avoid new technological challenges
- the wish to avoid organisational re-design

The above findings have been analysed in many research articles where it is assumed that everyone shares the same objective and homogeneous reality, and that those affected by the change initiative encounter not only the same initiative, but do so within the same context (Ford et al., 2002). Accordingly, literature often reads with a implication, which describes the source of resistance "in the individual", thus influencing the decision to implement strategies appropriate for addressing and overcoming resistance created by "the individual" (Ford et al., 2002).

The idea that human beings have an innate tendency to resist change is deeply ingrained in management thinking. Academic and popular support for this idea can be traced as far back as 50 years ago, with the abundance of literature on "Overcoming Resistance to Change". For decades after that, resistance was treated as a natural consequence of change, and managers were offered various strategies to "trick" their employees into following change efforts (Maurer, 1996).

A closer look at resistance, however, reveals in many cases important information that should not be ignored. People more often resist change, not because they are naturally lazy, but for very pragmatic reasons such as insecurity regarding their job, their skill levels, the ability to cope and integrate the change, etc. (Piderit, 2000).

Change initiatives will continue within organisations and the grappling of issues around resistance to change will also follow suit. It is the ongoing management of these issues in general, as well as organisation learning in particular, that the researcher should continue investigating in order to ensure that new challenges posed by change are addressed.

2.5 THE CONCEPT OF LEARNING

Learning is a widely used term, with various definitions depending on the context in which it is used. A basic definition of learning is the act, process, or experience of gaining knowledge or skill. In behavioural terms, learning is defined as a relatively permanent or lasting change in a behavioural tendency, which is as a result of specific experiences or repetitions of an experience (Seifert, 1983, 146).
For the purpose of this research learning is defined as the assimilation of complex technologies where employees and the organisation as a whole acquire the knowledge and skills necessary to effectively apply new technology. Learning becomes essential during any change process.

Van Dyk et al, (1992) define two major groups of learning theories, namely:

- Behaviourist theories, which are concerned with the stimuli that immediately, precede the learned behaviour and the consequences of behaviour, which are called reinforcements. In change management exercises the ability to influence people's behaviour will, to a large extent, impact on how change is accepted and how eventual learning will take place. Theories and models of human behaviour do not suggest that, when placed in similar situations, all people will react alike. Rather, individual differences certainly play a role in behaviour (Van Dyk et al., 1992).

- Cognitive theories are concerned with the less visible processes of human learning namely memory, attention, insight, organisation of ideas and information processing

(Kim, 1993). It is therefore concerned with the organisation of thought processes that lead to performance. The implementation of an ERP system means that users need to familiarise themselves with and learn a new technology. Consequently, concepts such a memory, attention and information-processing become part of the learning process into assimilating the new technology.

Within the two major groups of learning theory, Classical conditioning, operant conditioning, Bruner's Theory of Instruction and Cognitive Field theory are some of the theories, which cover the broad spectrum of learning theories. The cognitive field theory aligns itself very closely to Guttman's Stage of Assimilation Model. The cognitive field theory of learning considers the actions taken to move from a state of limited knowledge to full understanding. Moving from a state of limited knowledge to one of full understanding entails six logical steps. These are (Van Dyk et al., 1992):

- Motivation
- Types of learning
- Initial learning success
- Reinforcement
- Retention and actualisation
- Application of transfer

The above stages resemble the process through which users of a new ERP system would go through in terms of moving from a state of limited knowledge to one of full understanding, bearing in mind that while organisations may decide to implement new technologies, it may be up to individuals within the organisation to make independent decisions about adoption and usage. The integration of a change process spans from an organisation's first awareness of the new technology to acquisition and widespread deployment (Meyer & Goes, 1988).

The various theories of learning provide a framework for organisational learning during organisational change. The theoretical starting point of this research is Guttman's Stage of Assimilation Model (Eetlie, 1980).

This model is based on the modification of Roger's original five-stage model of the process of adoption of innovation: awareness, interest, evaluation/trial, adoption and

implementation. The best description of these stages is provided by Eetlie (1980, p. 992) who defines these stages as follows:

"Awareness, the innovation exists but complete information is not yet available or has not been obtained,

Interest, the innovation looks interesting and additional information is actively being sought about the new technology,

Evaluation/trial, the innovation is being compared to existing or future situations in the organisation in relation to its advantages and disadvantages, and the innovation is being used on a limited basis in order to determine its utility in a full-scale implementation,

Adoption, trial results of the technology are being considered to determine whether or not the innovation will be adopted,

Implementation, the innovation has been adopted and is being implemented on a full-scale basis."

Learning theories have focused on the individuals when considering learning. This creates difficulties when attempting to look at learning on an organisational level where we need to transfer ideas of learning and memory to a collective dimension. The bridge from individual to collective is generally held to be that organisational learning involves sharing of knowledge, values or assumptions. The following discussion looks at the movement from the individual to organisational learning.

2.6 ORGANISATIONAL LEARNING

The dominant coalition, that is senior management, seek to achieve the ultimate goal of an organisation, survival, by aligning the organisation with the environment. An overview of literature highlights the importance of strategy as a vehicle for managing the organisation's alignment with its environment, while Kotter (1995) points to the importance of adaptability as a determinant of long-term effectiveness. The quality of individual and organisational learning has also been identified as another important determinant of an organisation's effectiveness.

An environment where organisations grapple with rapid change and the subsequent need to survive, has led to the development of the concept of organisational learning and the learning organisation (Burnes et al., 2003). Organisational learning and the

learning organisation is of interest amongst progressive business organisations, academics and consultants concerned with transformational change and planned organisational change in turbulent environments. The concept of the 'learning organisation' has gained currency amongst large organisations as they attempt to develop structures and systems which are more adaptable and responsive to change (Massey & Walker, 1999). The idea of organisational learning is credited to the creation of the “action learning” process (Revans, 1982), which uses small groups, rigorous collection of statistical data, and the tapping of the group’s positive emotional energies. Thus a key feature to learning and managing change is a focus on team working. Organisational learning and learning organisations bear striking similarities to the traditional scientific approach to management, and stresses the importance of systems thinking and continuous improvement (Wang & Ahmed, 2003).

Learning begins at the level of the individual in the workforce, this then needs to transpire into collective learning, an important aspect of learning organisations. While emphasising the role of human agency in learning, corporate and group culture is influenced by individual learning and can assist the direction and use of individual learning. Organizations cannot learn until their members begin to learn (Romme & Dillen, 1997).

Various researchers have defined the concept of the learning organisation. Garvin (1993) stated that a learning organisation is "skilled at creating, acquiring, and transferring knowledge, and modifying its behaviour to reflect new knowledge and insights".

Marsick and Watkin (1999, p. 206) suggest that all organisations learn but that learning organisations are characterised by “proactive interventions to generate, capture, store, share and use learning at the systems level in order to create innovative products and services”.

Burns (1995) suggests that a learning organisation is characterised by eight key features which can be summarised as: a systems approach to learning; commitment to lifelong learning; flexibility and adaptability; shared vision; flat management

structure; participation in a cooperative industrial framework; a wide view of learning; managerial support of the view that learning and work are intertwined.

According to Peter Senge (1990, p. 3) learning organisations are “organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together”. He described individual learning as one of the core disciplines needed to build a learning organization. His theory is based on 5 dimensions that allow for innovation within organizations, equipping them to become learning organizations. These are:

- Personal Mastery - where people live in a continual learning mode (Senge, 1990).
- Mental Models - deeply ingrained assumptions, generalisations, or even pictures and images that influence how we understand the world and how we take action (Senge, 1990).
- Building shared vision - working together to create a vision and then working to incorporate that vision into each unit or part of the organization, thereby helping people to develop a guiding focus for the organization (Giesecke & McNeil, 2004).
- Team learning - the team enters into a genuine "thinking together". Team learning is vital because teams, not individuals, are the fundamental learning unit in modern organizations. Unless teams can learn, the organization cannot learn (Senge, 1990).
- Systems Thinking – relates to the ability to examine the whole system, rather than just trying to fix isolated problems (O’Mally & O’Donoghue, 2005).

Senge (1990) aptly emphasises life-long learning, arguing that in an ever-changing world, one can never learn it all.

The implementation of an ERP system implies that many different user groups , whose individual requirements vary significantly, need to be addressed during the change process. For individual learning to take place these requirements need to be understood and addressed to foster eventual organizational learning.

Advocates from academia and management consulting have advised organizations that the rate at which organizations learn may become the only sustainable competitive advantage; thus the need for constant adaptation, that is learning, in ever changing environments becomes crucial.

It is argued by some that higher education institutions do not mimic corporate organizations, either in terms of economic decision-making (Winston, 1999) or in the history or ideology that govern institutional choices. However, there are many scholars who have come to assign business diagnostics and prescriptions to educational institutions.

2.6.1 HIGHER EDUCATION INSTITUTIONS AS LEARNING ORGANISATIONS

The global economy is more knowledge-based than ever before. Education, higher education in particular, has therefore come to play a pivotal role in addressing complex national and international problems. Institutions of higher education are seen to be "think-tanks" and builders of human capital capacities (Forrant & Pyle, 2002). They alert industry to new issues, develop new approaches to problem solving, as well as facilitate broadly defined development processes.

Universities are organisations that are dedicated to learning; they create knowledge, but are they a learning organisation? Do they apply new knowledge to improve their performance, do they change to new ways of operating? Do they adapt to new circumstances and pressures in the environment in which they function (Patterson, 1999)?

Considering higher education's primary focus on creating academic and/or learning communities, it might be fair to assume that the culture thereof is coherent with that required for a learning organization.

The forces of technology, globalisation and the emerging knowledge economy are creating a revolution that is forcing organisations to seek new ways to reinvent themselves. "For the universities, developments in national-level policies and student customer-level demands (preparation for employment and lifelong learning, personal

and intellectual development, value for money) have engendered and supported significant developments at institutional levels (driven by competition for students and funds, response to industry, academic and research credibility, the quest for quality)" (Patterson, 1999, p. 9). That many institutions of higher education fail to qualify as learning organisations may no doubt be true. However, the same may be said for a lot of other organisations in both the private and public sectors (Garvin, 1993). But it is also true that many universities have responded and adapted, that they have applied new knowledge and changed to new ways of behaving; they are in the process of becoming learning organisations (Patterson, 1999).

An important characteristic that is common to both organisations and higher education is that knowledge is power, since the main asset which determines the employability of individuals is their knowledge (Patterson, 1999). Thus an understanding of how people learn provides a solid basis from which to address new learning and greater knowledge creation at an individual level, which needs to take place for change initiatives to be successful.

Having drawn on the importance of learning and the need to become a learning organisation, the following section discusses the central foci of learning organisations.

2.6.2 THE FOCUS OF LEARNING ORGANISATIONS

The concept of organisational learning and the learning organisation has its principles rooted in many perspectives of management (Garratt, 1999), and its practices recognise a wide range of factors which determine learning results, such as organisation strategy, culture, structure, absorptive capacity, problem-solving ability, employee participation.

The concept of organisational learning covers various aspects of organisational management. Based on this researcher's extensive literature review, the concept of learning organisations can be said to focus on these five points: the collectivity of individual learning, the importance of process or system, culture or metaphor, the use of knowledge management, and the need for continuous improvement (Wang & Ahmed, 2003).

2.6.2.1 *Focus on the collectivity of individual learning:*

The main focus is on the role of individual learning, where individuals are considered "agents" for organisational learning.

A learning organisation evolves as a result of the learning and behaviour of its people (Senge, 1990). As a workforce's ability to learn faster than another institution constitutes a significant sustainable competitive advantage, organizations need to foster an environment where the individuals consciously interact with others through the process of education and as a result of experience (Kolb, 1984). Thus, a learning organisation should primarily focus on valuing, managing and enhancing the individual development of its employees.

Organisational learning is, in this sense, the coming together, or collectivity, of individual learning within the organisation. Collective learning occurs in addition to the learning process at the individual level, and may even occur independently of each individual (Romme & Dillen, 1997).

It is worth noting that individual learning is not necessarily positive, nor does it necessarily contribute to the organisation, as employees may learn something that hinders company progress, or may learn to improve themselves, rather than benefit the organisations (Field, 1997). Thus, what distinguishes a learning organization is its ability to ensure learning-based interaction as opposed to just individual learning Morgan, 1986).

2.6.2.2 *Focus on Process or System*

The development of systems theory and in particular the socio-technical systems view of organizations are most likely responsible for allowing us to imagine organizations as "living things" that can, among other things, learn. The systems view of organisational learning has been taken mainly from the information processing perspective (Cyert & March, 1963). Organisations are referred to as information processing systems, acquiring, interpreting, distributing, and storing information within the organisation, and therefore four components of the organisational learning process are proposed: knowledge acquisition, information distribution, information interpretation and organisational memory (Huber, 1991).

The viewpoint of organisations being open systems, addresses the fact inter-organisational learning is an important part of the whole organisational learning system where knowledge is widely acquired, from both internal and external resources. In a learning organisation, the most successful stage incorporates three aspects of learning: adapting to their environment; learning from their employees; and contributing to the learning of the wider community or context of which they are a part (Pedler et al., 1991). However, there is lack of emphasis on flexibility, innovation and creativity within the system view, and these factors become increasingly important for an organisation to succeed.

2.6.2.3 *Focus on culture or metaphor*

Within the organisational learning literature, there is a strong emphasis on the cultural perspective of the learning organisation. Culture, understood as a coherent system of assumptions and basic values, which distinguishes one group from another and orients its choices, is in its very nature a tenacious and unalterable phenomenon (Gagliardi, 1986). Culture serves as a sense-making mechanism that guides and shapes the values, behaviours and attitudes of employees (O'Reilly &Chatman, 1996), and it is through values that behaviour flows and is guided (Simon, 1976).

In the new economy, knowledge is not reserved for people in managerial or professional positions. Organisations need to change to a collaborative team culture and focus on the process and involvement of people within the organisation (Mintzberg, 1994). Every member of the organisation must be able to contribute positively. The same has been stressed by Jones (1996) that, in addition to the full utilization of the technical skills and knowledge of employees, a team approach is essential for the effective acquisition of new knowledge and skills. Team skills are inextricably linked to effective learning. It is the learning and motivation which a team approach enables that forms the mainspring of quality, innovation and service. Torbert (1991) names it "the liberating culture", which is a means of overcoming barriers that limit organisational learning. This shift in mindset can be grafted onto existing values, where the transition may be more incremental. Values postulated by the new strategy may not be antagonistic towards traditional ones but simply different. Employee acceptance would then involve "broadening the nucleus of basic values" through cultural incrementalism (Abraham et al., 1997).

2.6.2.4 *Focus on knowledge management*

Organisational knowledge is stored partly in individuals in the form of experience, skills and personal capability, and partly in the organisation, in the form of documents, records, rules, regulations and standards (Weick & Roberts, 1993). Knowledge sharing is a key component of a learning organisation as organisations learn if individuals are supported by the entire knowledge base of the organisation. Nonaka (1991) provides a more holistic view of a learning organisation, stating that knowledge is created in a spiral, starting with 'tacit' knowledge, which is a deeply personal knowledge, a craft, profession or "know-how", and therefore difficult to formalise and communicate. It is these tacit skills of craftsmen and professionals that the learning organisation needs. The first step for the organisation is therefore to acquire these skills. The second step is to translate these tacit secrets into 'explicit" knowledge, which is easy to communicate. The explicit knowledge is transformed into a product and then, in the final stage, through the experience of creating a new product, people enrich their own knowledge base with an intuitive understanding. Indeed, "making personal knowledge available to others is the central activity of the knowledge-creating company" (Nonaka, 1991, p. 98);creating a learning environment between individuals and the organisation to facilitate the interaction and strengthening of each other's knowledge base becomes the main task for management.

2.6.2.5 *Focus on continuous improvement and incremental innovation*

Definitions of learning organisations generally focus on the need for continuous improvement (Pedler et al., 1991,Garratt, 1999, Senge, 1990). In this sense, the adoption of total quality management (TQM) is a milestone towards a learning organisation.

TQM's main tenets are the pursuit of continuous improvement. TQM enables organisations to focus on meeting and satisfying customer needs by improving processes, understanding the internal customer concept, involving each individual employee, implementing organisation-wide training and development and concentrating on improvements in cost, quality and customer satisfaction (Luthans, 1998). It has been argued that TQM and learning organisations are mutually dependent (Ford, 1991) as organisational learning is an intended outcome of TQM, and there is a correlation between such learning and process improvement (Barrow,

1993). Continuous improvement enables incremental innovation, and a learning organisation must therefore dedicate itself to incremental innovation through effective learning mechanisms.

2.6.2.6 *Focus on creativity and innovation*

A focus on merely continuous improvement may provide competitive advantage for a limited period until companies confront competitors' innovations that undermine their area of competence. In turbulent organisational environments, "competitive advantage is anchored in the company's ability to innovate its way temporarily out of relentless market pressures" (Ghosal et al., 1999). Whilst organisational learning coheres with the idea of incremental improvement, may sometimes be deficient in terms of the flexibility, innovation, creativity, and the ability to take the proactive meaures required to succeed in new business environments. Innovation and creativity should possess the following features:

- Triple-loop learning - Organisations should constantly question existing products, processes and systems by strategically asking where the organisation should stand in the future marketplace, rather than merely single and double-loop learning which simply asks what is wrong, as well as how to correct and prevent errors (Wang & Ahmed, 2001).
- Organisational unlearning - People often hold onto old beliefs and practices, which once provided positive outcomes, until such time as they are proved obsolete or ineffective in the present environment. Holding onto existing beliefs and methods inhibits learning, therefore, organisational learning is necessarily accompanied by a certain degree of organisational unlearning (Wang & Ahmed, 2003).
- Knowledge creation - Innovation capacity is referred to as the continuous process of knowledge creation (Nonaka & Takeuchi, 1995). A combination of the organisation's innovation capacity and triple-loop learning, accompanied by organisational ambition, wisdom and courage, would ensure organisations of long-term sustainability (Bierly, 2000).
- Creative thinking - Creativity is the foundation for all innovation, which is in turn central to the concept of organisational learning (Wang & Ahmed, 2003).

- Competence-orientation – A central focus of organisational learning needs be on building competence, both organisation-based and marketplace-based, so as to undermine competitors' innovation (Kambil et al., 2000). Organisations should strive to open up a new market opportunity, rather than focusing on current competition (Wang & Ahmed, 2003).
- Links to organisational sustainability - Organisational learning should facilitate the creative quality process so as to deliver valuable innovation in the marketplace. Value innovation is necessary in order to achieve organisational sustainability, rather than temporary profitability and incremental changes within the current competitive framework (Wang & Ahmed, 2003).

The concept of organisational learning has been borrowed and developed from the individual learning process. As individuals develop their personalities, personal habits and beliefs over time, organisations develop worldviews and ideologies - they too have cognitive systems and memories (Hurley, 2002). Individuals come and go and leadership changes, but the organisation's memories preserve certain behaviours, mental maps, norms, and values over time (Hurley, 2002).

In studying learning in organisations, one soon discovers that there are three levels of learning: individual learning, group learning and organisational learning (Simons et al., 2003). Communication, storage and integration process are crucial to organisational learning (Hurley, 2002). The combination and coordination of these three kinds of learning makes an organisation a learning one (Simons et al., 2003). In encountering current business environments, a learning organisation has to strive to achieve breakthroughs in terms of both organisational competency and competitive edge in the marketplace (Wang & Ahmed, 2003). A learning organisation should therefore be dedicated to improving the learning context and strategically strengthening the organisation's competency to facilitate knowledge creation and innovation, and deliver marketplace-based competency (Wang & Ahmed, 2003).

In understanding both organisational change and organisational learning, and their relationship, it is necessary to understand the implications of resistance to change.

2.7 RESISTANCE TO CHANGE AND IMPACT ON ORGANISATIONAL LEARNING

Why is there resistance to change in organizations?

Literature reveals that resistance occurs because it threatens the *status quo* (Spector, 1989) which is known and comfortable, whereas the future is unknown (Myers & Robbins, 1991) and hence feared. Resistance may occur when people's personal security is threatened (Bryant, 1989). Change may also be resisted because it threatens the way people make sense of the world, calling into question their values and rationality (Ledford et al., 1989). Indeed, the failure of many corporate change programmes is often directly attributable to employee resistance. Resistance has been classically understood as a foundation cause of conflict that is undesirable and detrimental to organisational health. However, resistance is a natural part of the change process and is to be expected. People most often resist change for very pragmatic reasons (Coghlan, 1993). A change initiative may involve a ripple effect in a change in organisational structure, change in technology or a change in people. Organisational researchers have recognised that resistance to change comes from both individual and organisational variables. Holistic change management sees opportunities in change resistance, thereby generating positive energy for the advancement of organisational change and potential for mutually beneficial "wins" for change managers.

It could be argued that the vast majority of organisational change is managed from a technical viewpoint (Arendt et al., 1995) with a tendency to neglect the equally important human element, which is often crucial to the successful implementation of change (Levine, 1997). "Change can only be evaluated by its consequences, and these cannot be known with any certainty until the change effort has been completed and sufficient time has passed "(Hultman, 1979, p. 53). Thus, resistance plays a crucial role in influencing the organisation toward greater stability. Whilst pressure from external and internal environments continue to encourage change, resistance is a factor which balances these demands against the need for constancy and stability (Waddell & Sohal, 1998).

Futhermore, resistance has distinct diagnostic qualities that can be utilized as a source of learning. If understood functionally, resistance can serve as a directing force in

collective learning efforts whereby both management and employees are able to discuss the various positives and negatives of change.

Luthans (1998) provides a list of some of the traditional factors that contribute to resistance to change:

Fear of the unknown

One of the major factors attributed to resistance to change is the shift from the known to the unknown. Individuals often derive a sense of security from doing things the same way. Disrupting well-established patterns of work creates an environment of unfamiliarity (Luthans, 1998).

Economic insecurity

Change initiative can lead to reshuffling within the organisation. Change has the potential to threaten the livelihood of people (Luthans, 1998).

Threats to social relationships

People form strong social bonds with co-workers. Change may lead to re-organisation of groups, thereby threatening the integrity of the social relationships which provide social rewards for staff members (Luthans, 1998).

Habit

As people become comfortable in their work patterns, they learn certain methods for conducting daily business. Learning new means of conducting business can seem to be too much of a challenge for certain employees (Luthans, 1998).

Failure to recognise the need for change

Often people do not recognise and appreciate the need for change. This can have severe ramifications on the implementation of change (Luthans, 1998).

Structural inertia

In some cases, organisational structures, which are designed to promote stability, are too rigid to allow change to occur. People are recruited and trained in doing specific

jobs, and are therefore inflexible. Similarly, work group inertia arises when social norms pressure people to perform jobs in certain ways.

Socially constructed reality

Resistance can also be a function of the socially constructed reality in which employees work. Thus depending on the nature of conceived change, the form of resistance to change will vary. The environment in which change occurs provides the context in which people act and interact, whereby the nature of these realities establishes the opportunities for action, how people will see the world, what actions to take (Ford et al., 2002).

In planning for organisational change, managers will often have preconceived ideas of why people resist change, which will in turn further impede the change process. However, not all change interventions are appropriate - the organization might be addressing the wrong areas, thus as conflict can sometimes be used constructively for change, legitimate resistance might bring about additional organizational change (Waddell & Sohal, 1998). While management invests a significant amount of money in creating the planned change, little is invested in the communicating, training and follow-up needed to implement change successfully (Schneider & Goldwasser, 1998).

The following discussion makes reference to three constructs which have an impact on resistance to change, which in turn influences both organisational learning and organisational change.

2.8 CONSTRUCTS UNDERPINING ORGANISATIONAL LEARNING AND ORGANISATIONAL CHANGE

Theories on organisational learning and organisational change provide an array of constructs that interrelate with organisational learning and change. The following discussion concentrates on three constructs which if addressed correctly may bring about successful organisational change and organisational learning.

2.8.1 Communication

Communication is vital to the effective implementation of organisational change, as poorly managed change communication results in rumours, the exaggeration of

negative aspects of the change, and therefore resistance to change (DiFonzo & Bordia, 1998). Communication is often neglected or feared, in case panic is created, especially in situations where staff feel that are being compromised, eg, restructuring change effort. However, the risk of leaving a communication vacuum is much greater because it encourages misunderstanding, grapevine gossip and misinformation. Keeping people informed about upcoming change is thus critical. This reduces the fear associated with uncertainty (Plant, 1987).

A formal communication plan should be created that takes cognisance of the message, frequency of the message, audience and feedback. The communication of change should take place via various media, which should include emails, presentations or 'road shows' to small and large groups, use of newsletters and other available forms of communication, and the creation of a web site. The idea is to make the process impossible to ignore.

The mere broadcasting of messages is not enough. Communication should not just be about ensuring that people receive communication of what is happening but rather that staff at every level understand what is happening in the organisation and why there is change. During any change process staff need to believe that top management knows what it is doing and they need to comprehend what the change means for them as individuals. Concerns raised should not be met by one-way forms of communications (Hesselbein et al., 1997). To this end one should ensure that conversation, not just communication, takes place.

Informal communication and social networks that exist throughout the organisation form a major part of the change process and must be managed carefully. Top management should introduce the change project - staff should not be made aware of change that affects them via the "grapevine". In addressing some of the concerns that staff may raise, managers should encourage discussions. These discussions then translate into a process of learning. As staff inquire and gain an understanding, interest is raised and levels of understanding increase. If staff understand what is happening, the impact of the change and how it affects them, people will move from a scenario of limited knowledge to greater knowledge, a greater understanding for the need for change is created.

In certain scenarios change can be accomplished by tying the success of the process to personal training plans, annual reviews, and other well-established business processes. This would ensure that staff incorporate the change into their daily work patterns, thus eventually leading to new learning.

2.8.2 Improving Learning during Training

Training is an essential ingredient in the change process in that it helps us move our current abilities to the next level. This need may arise for any number of reasons (Lawes, 1996, p. 29), for example:

- because we do not have all the skills to do the job we currently hold or because that job itself is changing;
- because of technological change;
- because of structural changes;
- in order to prepare us for changes to come in the organization we currently work for, or to give us transferable skills to make us more employable elsewhere.

Often during change processes, strategic training plans are developed, however the implementation of these plans overlook the intention, that is, learning. Effective learning involves not only the acquisition of information, but should ensure that the information is applied and utilised correctly and appropriately. Thus, it is not how much a person knows (a quantitative perspective of knowledge), but rather how much the individual can do with what they know, that is important. The objective is to move beyond information acquisition, and towards information application (a shift towards a qualitative perspective). Effective learning happens when knowledge acquired during a training course is applied practically to address a particular problem or situation (Robotham, 2003).

This improvement of learning in the context of training is an objective, which often appears to be of secondary importance. Antonacopoulou (1999), based on an extensive review of management development literature, concluded that “a central priority of management development is the improvement of organisational competitiveness, productivity, and ultimately efficiency. These definitions often neglect that an integral part of the development process is learning. Even when

reference is made to learning there is hardly any indication that there is flexibility and that individual differences in learning styles are taken into account" (Antonacopoulou, 1999, p. 16).

This lack of focus on the importance of learning may be twofold. Firstly, employees may regard training as simply a means for improving job prospects (Rigg, 1989), and secondly, the organisation may fail to provide an appropriate infrastructure to support learning after training has taken place and so learning is seen as less important. (Antonacopoulou, 2001).

Proper training is critical in ensuring people adapt to a new processes, especially when they have become accustomed to and experienced in another process.

2.8.3 Teamwork and Team learning

Having moved into the knowledge era, organisations have fast realised that success is built on intellectual resources more than on physical assets. Hence, knowledge is the most important asset that an organisation possesses (Drucker, 1998). Knowledge sharing is a key component of learning organisations. Organisations can only truly learn if individuals are supported by the entire knowledge-base of the organisation. In a learning organisation, knowledge is spread quickly and efficiently thus facilitating exponential growth.

Teamwork is a key feature of learning organisations and aids the efficient spread of knowledge. There are two advantages to be gained from teamwork development. Firstly, organizational teams can improve organizational performance through the involvement, learning and increased communication that transpires through teamwork and team interactions. Secondly, an organization that is able to provide the evidence of their teamwork development and improved performance can potentially increase its value for investors (Castka et al., 2003).

Typically, teamwork involves problem resolution, discussions, sharing of information, mentoring and coaching. Over time, as these activities unfold within the teams, mutual interactions and relationships help develop a shared body of knowledge and a sense of identity. These teams can then reflect on their collective learning. Team

learning is an important level that needs to be aspired to in the learning organisation. Team learning is more than the sum of all individual learning. It is collective learning, resulting in changes in group rules and group norms.

It is widely recognized that the use of employee teams is an important means in organizational change and continuous improvement (Munro-Faure et al., 1998). During change implementations, crossfunctional teams should be used; if multiple teams are used, they should integrate their efforts across functional boundaries.

Teams, when they are led effectively, are truly the most powerful and productive means for accomplishing work, as people who work well together can accomplish more than is possible individually (Senge, 1990). For the more complex tasks, shared knowledge, support and accountability drive high performance. Working in teams provides accelerated learning.

2.9 CONCLUSION

Many factors, such as globalisation, technological advances, privatisation, mergers or acquisitions, coupled with changing customer demands, are forcing organisations to review their purpose, structures, design and processes constantly. This evaluative process assists organisations in deciding which changes (strategic or operational) will have to be made in order to survive and grow. In this new dynamic environment, the "only constant is change". Organisational change is regarded as normal, a natural response to environmental and internal conditions.

The implementation of an Enterprise Resource Planning (ERP) system would result in radical change within any organisation. Such organisational changes may lead to the reconfiguration of roles, responsibilities, structures, outputs, processes, systems, technology or other resources, which in turn means learning is imperative to survival. This research project reviewed the implementation of the ERP system as instance of organisational change where learning needed to take place for such change to be successful. The current study assumed that the assimilation of technology is best characterised as a process of organisational learning. Guttman's Stage of Assimilation Model provided the theoretical background of how learning takes place.

Research literature indicates that up to 70 per cent of change programmes fail (Patterson, 2000). Many reasons could be attributed to failed change projects, however the most important, the human factor, is one that is often neglected even though factors contributing to resistance to change are often taken into account during change processes. In order to survive and prosper in today's turbulent business environment, organizations need to transform their traditional methods of organizing and managing into learning organizations.

Learning organisations involve different ways of perceiving, thinking and behaving. Movement towards this new way of organizing and managing may involve an active leadership role by top managers as well as team-working throughout the organization (Strachan, 1996). This process towards becoming a learning organisation is characterised by innovation and learning and continues almost indefinitely as teams and their organization members discover new ways of improving organizational performance and adapting to changing conditions.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter defines the methodology used to understand how organisation learning takes place during organisational change. It discusses the sample used and the different sub-groups of respondents. It examines the type of data that was collected. An interview schedule, based on Guttman's Stage of Assimilation Model, was used as the method of data collection. Finally, this chapter looks at the methodology used in the analysis of the recorded data.

3.2 RESEARCH QUESTIONS

The research report addresses the following questions,

- How organisational learning takes place when an ERP system is being implemented?
- At what stage are employees in the Assimilation model?
- How does learning differ between academic and support staff?
- What lessons can be learned to help us understand organisational learning and change better given the introduction of an ERP system?

3.3 METHODOLOGY

The present study adopts a qualitative research design. Qualitative research can be defined as "multimethod in focus, involving an interpretive, naturalistic approach to its subject matter" (Denzin & Lincoln, 1994, p. 2). Qualitative research methods are designed to help researchers understand people and the social and cultural contexts within which they live.

The current research is based on a case study design. The case study approach to qualitative analysis constitutes a specific way of collecting, organising and analysing data, whereby it emerges as an analysis process (Patton, 2002). Comprehensive, systematic and in-depth information is gathered with regards to each case of interest.

Case studies are widely used because they offer insights that might not be achieved with other approaches. Case studies have often been viewed as a useful tool for the preliminary, exploratory stage of a research project, as a basis for the development of

the ‘more structured’ tools that are necessary in surveys and experiments (Patton, 2002). Case studies support deeper and more detailed investigation and are useful in providing answers to ‘How?’ and ‘Why?’ questions, and in this role can be used for exploratory, descriptive or explanatory research (Rowley, 2002).

The credibility of data received from cases studies are dependant on three elements (Patton, 2002): Rigorous methods used for fieldwork, the credibility of the researcher, and qualitative analysis of the results from the case depends on the insights and conceptual capabilities of the analyst.

Some of the advantages of case studies include firstly, high construct validity where data collection questions are linked to the research questions and propositions, secondly, in-depth insights, and thirdly, an opportunity to establish rapport with research subjects (Mouton, 2001). Some of the disadvantages include the lack of generalisability, non-standardisation of measurement, and data collection and analysis can be very time consuming (Mouton, 2001).

One barrier to credible qualitative findings stem from the suspicion that the analyst has shaped the findings according to predispositions and biases. Whether this has occurred unconsciously, inadvertently or intentionally is not the issue. The issue is to counter such a suspicion before it takes root. The researcher for this thesis may be biased to some extent having been very close to the project and having access to information that would further substantiate the results.

For the present study, the unit of analysis is the experience of individual staff members of the implementation process of the ERP solution at the University of the Witwatersrand. Guttman’s Stage of Assimilation Model provides the theoretical foundation for the analysis.

3.4 SAMPLE AND SAMPLING TECHNIQUE

Purposeful sampling is the dominant strategy in qualitative research. Purposeful sampling seeks rich in-depth information- from small samples, purposely selected to provide that specific information.

The sampling technique that was followed for this inquiry was stratified purposeful sampling. Stratified samples are samples within samples. Purposeful sampling involves obtaining information from specific targets- that is gaining information from people who will be able to provide the needed information (Sekaran, 1992).

For the implementation of the ERP system, users of the system were categorised into three strata namely professional users, approvers/ line managers and self-service users. The implementation of the ERP system spanned across the entire organisation, which meant that all staff would be affected by the system. Thus the population would comprise of all staff employed at the University. For the purpose of the current research a total of 12 interviews were conducted with staff members from different categories. The sample was first categorised along two dimensions that is academic or support staff. The second categorisation was along the dimension of the type of user the staff member was. This included professional user, approver and self service user.

Table 3.1. Categorisation of Sample

	ACADEMIC	**SUPPORT**
Professional users	**1**	**4**
Approver/line managers	**1**	**2**
Self service users	**2**	**2**

3.5 DATA COLLECTION

The most utilized data collection methods in qualitative research studies is the interviews, observations and document analysis (Rogers & Bouey, 1996). Interviews are most successful and useful when you have a rich, detailed picture of people's experience and the meaning they attach to it. Qualitative interviews are categorized into three types: structured interviews, unstructured interviews, and semi-structured interviews (Rogers & Bouey, 1996).

Semi Structured interviews were utilised for this research. Qualitative interviewing utilized open-ended questions that allowed for individual variations. The Guttman Stage of Assimilation model prescribes six stages. Based on these six stages an

interview schedule was developed (see Appendix 3). An interview schedule is a list of questions that the interviewer wants to explore during each interview. Although it is prepared to insure that basically the same information is obtained from each person, there are no predetermined responses, and in semi-structured interviews the interviewer is free to probe and explore within these predetermined inquiry areas.
The interviews conducted were tape recorded and then transcribed for data analysis.

3.6 DATA ANALYSIS

Qualitative data usually take the form of words rather than numbers. The words are based on observations, interviewing or documentation (Miles & Huberman, 1994). Good qualitative data form a source of well-grounded, rich descriptions and explanations. Qualitative enquiry draws on both critical and creative thinking. The central focus of qualitative analysis lies in being able to transform large amounts of raw data into meaningful information thus providing the essence of what the data reveal (Patton, 2002).

A major feature and strength of qualitative research is that focus is on naturally occuring ordinary events their natural setting. There are two main disadvantages associated with qualitative research. First, due to the large amount of time and effort they involve, qualitative interviewers can't usually study a very large or random sample of people. This makes it very difficult to claim that the findings of such a study can be generalized to other groups of people that did not participate. Second, since the interviewer in a qualitative interview takes a very active role in determining what data are collected, there is a higher probability that he or she may inadvertently bias the results of the study (Rowley, 2002).

Evaluators have identified a few basic commonalities in the process of making sense of qualitative data. Miles and Huberman (1994) to describe the major phases of data analysis:

- Data reduction

  Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written up field notes or transcriptions."

Data reduction often forces choices about which aspects of the assembled data should be emphasized, minimized, or set aside completely for the purposes of the project at hand (Miles & Huberman, 1994).

- Data display

Displays such as matrices, graphs, charts and networks, are designed to assemble organised information into an immediately accessible, compact form so that the analyst can see what is happening (Miles & Huberman, 1994).

- Conclusion drawing and verification

This activity is the third element of qualitative analysis. Conclusion drawing involves stepping back to consider what the analyzed data mean and to assess their implications for the questions at hand. Verification, integrally linked to conclusion drawing, entails revisiting the data as many times as necessary to cross-check or verify these emergent conclusions (Miles & Huberman, 1994).

For the purposes of this study, the tape-recorded interviews were transcribed. Data was analysed using thematic content analysis. “Content analysis is used to refer to any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings (Patton, 2002, p.453). Thematic content analysis is exploratory in that it aims to understand the data, which is read with the intention of looking for themes. During the analysis themes will expand, contract or change as more transcripts are read. In essence thematic analysis focuses on identifiable themes and patterns of living and/or behaviour which describe the data (Aronson, 1994).

Some of the advantages that thematic analysis provides is flexibility; it is a relatively easy method and quick methodology to learn; usefully summarises key features of a large body of data; and can generate unanticipated insights. Some of the disadvantages include time consuming; the inability o actually analyse the data; using the data collection questions as the themes that are reported; a mismatch between the actual data and the analytical claims that are made; and when there is too much overlap between themes (Braun & Clarke, 2006).

For the purposes of the current research, a contact summary sheet, which focused and summarised the interview schedule, was developed. The response from each interviewee was put against each question and a matrix was developed. On quantifying responses, major themes, minor themes and remarks were noted for each question. A step by step, in-depth analysis based on the different stages of Guttman's Stage of Assimilation provided a framework from which to arrive at conclusions and recommendations.

3.7 ETHICAL CONSIDERATIONS

The current study was carried out at a tertiary institute from whom permission was granted by the University's Ethics Committee. The candidates interviewed were assured on matters of confidentiality and anonymity. The consent form was provided to each candidate who participated. The consent form outlined briefly the context of the research and also stipulated that candidates had the option to stop at any time during the interview should they wish to (Appendix 1 and 2). The interview was recorded however no names were recorded. Each interview recording was identified by a number.

3.8 CONCLUSION

Issues surrounding the value and uses of conclusion drawing and verification in qualitative analysis takes us back to how to judge the validity and quality of qualitative research. There is broad consensus concerning the qualitative analyst's need to be self-aware, honest, and reflective about the analytic process. Analysis is not just the end product, it is also the repertoire of processes used to arrive at that particular place. Analysts should be judged partly in terms of how skilfully, artfully, and persuasively they craft an argument or tell a story (Patton, 2002). During qualitative analysis the researcher should address whether the analysis flow wells and makes sense in relation to the study's objectives and the data that was presented, is the analysis interesting, informative, provocative and does the researcher explain how and why she or he drew certain conclusions, or on what bases she or he excluded other possible interpretations? These are the kinds of questions that can and should be addressed in judging the quality of qualitative analyses.

CHAPTER 4: RESULTS AND ANALYSIS

4.1 Introduction

This chapter will provide the results and analysis of the qualitative data obtained during the data collection phase of this study.

To enhance the credibility and transparency of the analysis, percentages are provided to illustrate how many of the 12 respondents felt the same way about a certain issue. The responses of staff members to each question (Appendix 3) in the set of data are structured in the following manner:

Major themes: This classification is based on an arbitrary decision by the researcher that if more than 40% of the respondents had the same response to a question; it could be regarded as a major theme.

Minor themes: These are responses given by between 9% and 40% of the respondents.

Remarks: These are interesting comments that were made by the respondents

4.2 Results of the Interviews

As indicated in Chapter 3, these results were obtained from the 12 staff members, categorised along two dimensions. Firstly as either academic or support staff, secondly in terms of the user status, that is professional user, approvers and self service users. The results were obtained by looking for patterns in the responses of staff members to each of the 15 questions. This resulted in a typed set of data of approximately 60 pages which had to be analysed to obtain the following results.

STAGE 1: AWARENESS

Guttman (Eetlie, 1980, p. 992) defines this stage as "the innovation exists but complete information is not yet available or has not been obtained". In the context of the current research, this stage is defined as "key users are aware of software implementation but do not have complete information".

1. Describe your first impression of the system?

Major themes:

The largest percentage (58%) of the staff members experienced positive first impression. They were generally excited about the thought of having a new system, which would bring about a paperless environment, a system that would allow for faster and easier processing. Some comments from respondents included:

- "have functions that most of us have only dreamed off and will be very powerful"
- "first impression about the system are very positive"
- "I was very comfortable with the//in fact I found it to be quite friendly"

Responses to this question also indicated that academic staff (75%) were vaguely aware that a new system was being implemented. Some of the comments that were received from academic staff include:

-"I just heard that it was been introduced, I can't remember when"

-"First of all I went there about four times at CNS and they didn't get a password for; so straight away that was a put off"-

Minor theme:

Responses (17%) indicated that some had very mixed opinions about the new system.

2. Please describe your understanding of the system?

The new system has been implemented and it has been five months post go-live. Sufficient time has elapsed for staff to have developed some understanding of the system.

Major Theme:

The comments received are indicative that since its inception 92% of the respondents do have a general understanding of the workings of the system, irrespective their positive or negative experience with the system. Some of the comments include:

"I think it's a very user friendly system and it is quite self-explanatory"

"I think I'm pretty okay with the system! I mean, not that I have problems handling the system"

"I think if I had to sum it up in word I would have to say disappointed"

3. What information do you think you lack regarding the system?

Major theme:

The majority (66%) of the respondents stated that they lacked sufficient training. Support for this is provided by some of the comments from respondents, such as,

"have not had all the training that I could have had, not because it wasn't offered",

"It's probably not information as much as experience and exposure",

"appropriate training",

"still getting to know the system and it's only the more you work with it you realize what's missing".

Minor theme:

A few respondents (17%) reflected that they lacked the overall picture and more exposure to the various components of the system.

One academic respondent commented on "what the system could do for her". This linked to communication failure, as the respondent was not aware of the benefits she could derive from the system.

Another comment from an academic respondent related to communication, was in terms of on-going communication about the change. Many of the respondents were providing comments in terms of the past status whereas this comment was in terms of current and future status of the process.

Remarks:

An interesting remark from an academic staff member was,

"I have no idea how to use it. Because I'm too busy to find out" suggesting disinterest in the entire process.

STAGE 2: INTEREST

This stage of the model is defined as "the innovation looks interesting and additional information is actively being sought about the new technology" (Eetlie, 1980:992). In terms of the research study, at this stage users have been exposed to the system and we need to enquire what they are hoping to gain from the new system.

4. Three categories of user have been identified, which include professional users, approvers and self-service users. Which category do you think you fall in and what levels of exposure to the system will you require in doing your job?

Major theme:

All interviewees (100%) were aware of the category in which they fell into. Some staff fell into all three categories and are able to identify their roles within each category. This however does not indicate the level of exposure they have experienced in that category. Many felt that they require more exposure to the system in order to their jobs. Comments such as,

"I think I'm a professional user, I'm an approver and happily I'm also self-service person - level of understanding that I have at the moment is insufficient to be able to do my job well"

"Well, I fall into all three of them; simply because of the professional user, I am HOD of this division, so in that I run the whole Payroll. When it comes to self-service, I approve all//no self-service is I do my own leave"

5. What do you hope to gain from the system?

Major theme:

A large percentage (92%) of respondents felt that productivity issues could be addressed by the system. Some of these productivity issues included greater efficiency, greater productivity, having information at their fingertips, faster turn around times, a well-managed institution. This is supported by statements such as,

"better production, work more effectively"

"information on my fingertips"

"efficiency, faster output"

"life much easier and it is suppose to lessen paper work"

6. A website was developed and numerous written communications were sent out regarding the system, what information did you feel was not being provided?

Major theme:

The numerous communications which were sent out and the website which was developed had been accessed by 58% of the respondents. Evidence supporting this includes comments such as "I think the information was provided. I don't think there is any real gap in information", "I think the communications at the beginning were good. The iWits communications were good" and "was certainly aware of emails being sent to out and that there were demonstrations on Oracle and so on". However the comments and the feedback vary amongst the respondents, "They just said you now have to use it. Well information that I got that you now have to use it".

Some respondents (17%) commented that before implementation communication was good, however post implementation, there had been a breakdown in communication, "since we've been online though, the communications have not been great, because they've implemented various things". Some of the features of the system were specific to a certain group of individuals (8%) thus, communication to the broader environment was not necessary supported by the comment "can't say that there really was anything that we lacked, because we so//we work with the specific part of the programme. So it wasn't in the interest of everybody outside and there're just a few of us using".

Minor theme:

Some respondents (33%) although they were aware of the communications, simply ignored them, as they did not affect them. One respondent "relied on talking to people who I knew were involved". Another respondent commented that, "I hadn't been involved in the implementation in other words as a professional user, I wouldn't probably you know have accessed that web page, it wasn't well announced".

7. What kinds of questions were raised in your mind?

Major theme:

About 60% of the respondents raised issues around specific functionality aspects of the system in terms of how things work, such as,

"How to export it to excel!"

"what happens to when I go on leave who approves"
"password really freaks me that in fact every month I got to have a new password"

Their responses to some extent relate to the lack of proper and training. This issue around training has also been raised in terms of the information, which respondents felt they lacked.

Minor theme:
With the financial position of the University being under constraint, some (17%) respondents felt that such a costly system was not necessary. It was felt that money could be utilised for "on the ground matters". One respondent raised the issue around "job losses" which often occurs during a change initiative.

Remark:
An interesting comment made by one respondent was that "the introduction of Oracle: the implementation had exposed the University. It had exposed some glarying weaknesses in not just processes but in the lack of documentation and the lack of people working in those functional areas who were not understanding what they were doing. People were unable to articulate what they were doing they were unable to see what their own little process is and how it fits into bigger processes."

STAGE 3: EVALUATION/TRIAL

This stage is defined as "the innovation is being compared to existing or future situation in the organization in relation to its advantages and disadvantages, and the innovation is being used on a limited basis in order to determine its utility in a full-scale implementation". For the purpose of this research this stage has been defined as "The first phase of implementation has occurred. Would users be able to derive benefits from the new system? If a comparison is made between the old system and the new system, what are the advantages and disadvantages"?

8. Since you have been exposed to the system, what benefits have you derived from the new system?

Major theme:

The functionalities of the system that have been accessed have provided greater efficiency, as reported by 67% of the respondents. Some comments include,

"easier in terms of not having to calculate many, many things manually"

"I have really found it very useful"

"don't have to rely on somebody else to order stuff for me"

"I can take greater ownership of processes."

Minor theme:

Two respondents (17%) raised the issue around workloads having increased. A comment from another respondent from the professional user category provided some understanding to the perceived increase in workloads. A greater amount of information was needed to provide high level of reporting. One respondent could not provide any comment, as s/he had never accessed the system.

9. If you had to compare the old system and the new system, which is being implemented, what advantages and disadvantages do you see in terms of this system and change?

Major theme:

It appears that 67% of the respondents were convinced that the benefits of the system far outweigh the disadvantages of the system. Benefits that could be derived included

"better and precise reporting",

"information processes is much quicker",

"nice for it to be online"

Minor theme:

These included concern around workloads and technical aspects of the system. There was also a comment made by one respondent with very strong resistance to the change which could be translated from the following comment,

"I don't think the change had to happen now anyway. So I can't actually see why they do that (like was said earlier). The old system was working; I think maybe they needed to perhaps expand on the old system a bit, because the old system was tweaked and tailored to the way we needed to work; that was our system it was tailored to the way Wits works"

Remarks:
A comment made by one respondent was the concern of "what would happen if things went drastically wrong because everything is all mechanized." In essence, in terms of technical jargon, a concern around disaster recovery was raised.

STAGE 4: COMMITMENT

This stage relates to **"**trial results of the technology are being considered to determine whether or not the innovation will be adopted". Translated for this research, this stage is defined by the comment "Trial results of the technology are being considered to determine whether or not the innovation will be adopted"

10. The first phase of implementation has occurred, how do you think that the second phase, which affects other area would benefit from the new system?

Respondents were questioned in this context as to whether words of encouragement would or were provided to those that would be impacted by the student system.

Major theme:
There are many frustrations but mostly technical teething problems. In moving forward they (50%) are weary of the frustration but are also encouraging to move ahead. Comments made include "spoken to people casually about the system those who still have to go on to//have to live and I have said to them they mustn't be afraid of it, because of I have found that it was quite an easy change over", "Hang in there is not really as bad as it looks. Change is not easy. But I would definitely strongly recommend that there is a consultative process in the training and the development", "insist to have more consultants staying longer after the go live date, because that's

when pick up errors you know; and that's where you need somebody that's got Oracle knowledge to help you through"

Minor theme:
Academic staff provided a little more insight when the question around the student system was raised. Few respondents (50%) raised concern due to the fact that elements in the students system might not be readily accommodated by the system.

One respondent clearly reflected issues of resistance to change, where the respondent made the following comment,
"I think if they are going to rush into the students system the way they did the financial system and not run the old system concurrently with the new system- I think they gonna make a mistake"

11. What added features would you hope to have if changes were made?

Major theme:
Many of the respondents (58%) related that specific functionality would need to be addressed, especially around reporting, with comments such as "Easier reporting", "a very bad reporting structure with the reporting structure (compared to the old line); and as a result they have to institute data mart back again", "I am interested in Wits becoming better at monitoring student's progress. So in particular I will be very pleased if we better able to do that; I don't just mean recording marks and deciding whether someone's qualified or not, I mean a much more clear tracking of how people doing and what sort of support we should be giving them"

Other respondents did not provide very clear opinions and some could not provide any feedback.

STAGE 5: LIMITED DEPLOYMENT

This stage is defined as "the innovation has been adopted and is being implemented on a full-scale basis". For the current research this stage is defined as "The first phase has been fully deployed and people have had sufficient exposure to the system."

12. Please could you describe your utilisation of the system?

Major theme:

Many respondents indicated that they (92%) had accessed the system frequently. Many of the responses referred to specific functionalities of the system, indicating that staff are engaging with the system. Responses included,

"I check notifications and approvals"

"they've got an iExpenses modules"

"I approve the staff leave"

One respondent had not even accessed the system, clearly indicating that it was "None-existent".

13. How comfortable are you with the system?

Major theme:

Staff (67%) is feeling quite comfortable with the system even though there are the odd frustrations of technical problems. Some comments include,

"Very comfortable",

" In the areas I'm responsible for I'm relatively comfortable"

"I'm cool with it",

"I haven't got a problem with it"

14. What are some of the features of the system, which you have accessed?

Major theme:

Almost all respondents (92%) had accessed some aspect of the system, except for one respondent. Most of the respondents provided details of what they had accessed on the system. Comments include,

"just the senior payroll and then self-service"

"everything in Payroll and everything in HRMS and finance of course, I work with the GL"

"use the employee self-service"

15. From the training which has thus far been provided how much of this and has assisted in you being able to apply your knowledge?

Minor theme:

About 33% of respondents had not attended any training, thus providing some explanation for the frustrations experienced during implementation.

"None of it. Most of my learning has been incidental has been by query"

The same percentage 33% of respondents had attended training and had found the training beneficial in that it provided a basis from which to start exploring. Some comments include,

"Look I think the training is important, because you faced with something so new, so if you put in a non threatening environment; it helps a lot,"

"Well all the training that I have been on, that they showed me iProcurement whatever that it's helped me that I could do my job."

Those that found that the training was not beneficial were 33%. Comments include,

"It didn't assist me at all because it was all so many things that I don't even use and it wasn't university specific,"

Remarks:

The lack of training was raised as an issue, however one respondent made an interesting comment, "I haven't attended any trainings. No, just as I said provide a pamphlet so that you know those of us who don't have time to go to the training; we can actually use it"

The table below summarises the major and minor themes at the various stages of Guttmans' Stage of Assimilation Model.

Table: 4.1 Major and minor themes at the various stages of Guttmans' Stage of Assimilation Model

Guttman's stage	**Major themes**	**Minor themes**
AWARENESS		
Defined as "the innovation exists but complete information is not yet available or has not been obtained**"**	- Staff members (58%) experienced positive first impression - Academic staff (75%) were vaguely aware that a new system - Respondents (92%) do have a general understanding of the workings of the system, irrespective their positive or negative experience with the system - Respondents (66%) stated that they lacked sufficient training	- Some (17%) had very mixed opinions about the new system - A few respondents (17%) reflected that they lacked the overall picture
INTEREST		
Defined as "the innovation looks interesting and additional information is actively being sought about the new technology"	- All interviewees (100%) were aware of the category in which they fell into that is professional user, approver or self service user	- Some respondents (33%) although they were aware of the communications, simply ignored them, as they did not affect them - With the financial position of the

	- A large percentage (92%) of respondents felt that productivity issues could be addressed by the system - The numerous communication which were sent out and the website which was developed, had been accessed by 58% of the respondents - About 60% of the respondents raised issues around specific functionality aspects of the system in terms of how things work	University being under constraints, some (17%) respondents felt that such a costly system was not necessary
EVALUATION/TRIAL		
Defined as "the innovation is being compared to existing or future situation in the organization in relation to its advantages and disadvantages, and the innovation is being used on a limited basis in order to determine its utility in a full-scale implementation"	The functionalities of the system that have been accessed have provided greater efficiency, as reported by 67% of the respondents - It appears that 67% of the respondents were convinced that the benefits of the system far outweigh the disadvantages of the system	- Two respondents (17%) raised the issue around workloads having increased - Concern around workloads and technical aspects of the system. There was also a comment made by one respondent with very strong resistance to the change

COMMITMENT		
Defined as **"**trial results of the technology are being considered to determine whether or not the innovation will be adopted"	In moving forward they (50%) are weary of the frustration but are also encouraging to move ahead - Many of the respondents (58%) related that specific functionality would need to be addressed, especially around reporting	Few respondents (50%) raised concern due to the fact that elements in the students system might not be readily accommodated by the system
LIMITED DEPLOYMENT		
Defined as "the innovation has been adopted and is being implemented an a full-scale basis"	- Many respondents indicated that they (92%) had accessed the system frequently. Many of the responses referred to specific functionalities of the system - Staff (67%) is feeling quite comfortable with the system even though there are the odd frustrations of technical problems - Almost all respondents (92%) had accessed some aspect of the system, except for one respondent	- About 33% of respondents had not attended any training, thus providing some explanation for the frustrations experienced during implementation

CHAPTER 5: DISCUSSION

5.1 INTRODUCTION

This chapter draws together the review of the theory with the research results as presented in chapter 4. Table 4.1 provided an outline of the results. This chapter will relate the findings back to Guttman's Stage of Assimilation Model and to the theoretical constructs of organisational change and organisational learning referred to in the literature review.

The initial objectives of the study were to:

- Determine how organisational learning takes place when there is an implementation of Enterprise Resource Planning (ERP) system. Guttman's Stage of Assimilation model provided the theoretical background against which it can be determined how learning has taken place.
- What stage are employees in the Assimilation model?
- How does learning differ between academic and support staff?
- What lessons can be learned given the introduction of an ERP system?

The relevant literature reviewed made reference to organisational change issues and organisational learning issues. The key assumptions made were firstly, learning is essential for change to take place (Senge, 1990). Secondly, the introduction of an Enterprise Resource Planning (ERP) system implies that people need to learn the new system. Thirdly, the study assumes that the assimilation of technology is best characterised as a process of organisational learning.

5.2 DISCUSSION OF RESULTS

The timing of the interviews for the current research were vital in that they were conducted after the first implementation of the ERP system (HR and Finance modules) and before the second implementation of the ERP System (Student Module). This had an impact on the responses received from participants.

STAGE 1: AWARENESS

This stage is defined as "key users are aware of software implementation but do not have complete information".

Questions:

Awareness, in Guttman's Stage of Assimilation Model, centred around questions which related to the staff member's first impressions of the system, to their current understanding of the system since they had accessed the system and processed transactions as part of their daily work loads, and having been exposed to the system what information they felt that they lacked. The issues being highlighted are the level of awareness of staff and whether there were differences in the levels of awareness for academic and support staff? Training being an important variable for organisational learning, do the results reveal that all too often insufficient training is one of the main contributors to the frustration and uncertainties that align to unsuccessful organisational change?

Outcomes and implications:

First impression in this context related to the initial stages of the project where external consultants were interacting with members of the business to gain an understanding of the processes and specific needs of the business. It was the initial exposure that the business had with the product. Participants had to think back in time to provide feedback to the question, which related to their first impressions. An analysis of the results showed that staff members (58%) experienced positive first impressions.

During the initial stages of the project there was greater awareness among the support staff as they had provided more concrete feedback in terms of their expectations of the system, indicating a greater level of awareness. At the initial stages of the ERP project academic staff (75%) were vaguely aware that a new system was being implemented. Academic staff could not provide much feedback in terms of their first impression indicating a lack of awareness. A system which spans across two areas of business, HR and finance, indicates that a larger group of support staff members would be affected by

the change, thus a greater level of awareness from support staff. Academic staff do not really engage in these area as part of their core functionality thus less need for awareness of the system.

The interviews were conducted approximately four months after the implementation of the ERP system. At this point respondents (92%) had a general understanding of the workings of the system, irrespective of their positive or negative experience with the system. These results indicate that post go-live (after the activation of the system) there was a much greater level of awareness and understanding across both groups of staff. This is substantiated when we compare the comments received around first impressions to those received around their current understanding.

Respondents (66%) stated that they lacked sufficient training. This is indicative that as staff accessed the system and there was greater awareness of the need for more training and to be more aware of the functionalities that the system provided.

Linking back to the construct of organisational change, creating awareness plays a crucial start to any project (Kotter, 1995). In terms of change theory, it is essential for staff to understand the need for change and need to perceive the benefits of change. Creating an awareness of the current state and the need to move to a desired is vital for any change project (Nelson, 2003). Actively revealing discrepancies between current and desired states, and at the same time conveying credible and positive expectations for achieving change, motivation and readiness for change must be generated (Kotter, 1990). Creating this shared vision of where and how the organisation needs to change is an important part of the change process.

Post implementation (going-live), there was a greater level of awareness of the system and staff were able to identify that there were gaps in the levels of training people had.

The vicious cycle begins with not having a sense of awareness of the change. If this is missing there will be no urgency for the need to change, thus no learning is thought to be

necessary. If no learning takes place, no change can take place with the assimilation of the software.

At the time the interviews had taken place, staff were well aware of the new system and some of its core functionality. However this does not imply that they had accessed or understood the system but reveals that there was an awareness of the new system. There was also awareness that the second phase of the implementation would take place soon. In comparing the level of awareness of academic staff during the first phase and second phase, there was a much greater level of awareness of academic staff at the awareness stage of the second implementation.

STAGE 2: INTEREST

Interest is defined as "the innovation looks interesting and additional information is actively being sought about the new technology".

Questions:

Questions were formulated to reflect the level of interest participants displayed. The questions related to participants having a basic understanding of system in order to provide feedback. Participant were required to identify which category of users (professional users, approvers and self-service user) they belonged to, what level of exposure to the system will they required in doing their job, what did they hope to gain from the system, with a website having been developed and numerous written communications which were sent out, what information did participants feel was not being provided and what kinds of questions were raised in their mind?

Outcomes and implications:

All interviewees (100%) were aware of the category in which they fell into that is professional user, approver or self service user thus indicating that they had shown interest in enquiring what their role in terms of the system was and also linked back to the

previous stage of greater awareness. The results also reflected that they had been exposed to the system in terms of their specific user profile.

A large percentage (92%) of respondents felt that productivity issues could be addressed by the system. Some of the benefits that people hoped to gain were efficiency, greater productivity, a better managed institution, etc. From this one is able to deduce that people were showing interest in the system, and finding out how the system would assist in providing these benefits and gains.

The numerous written communications which were sent out and the website which was developed, had been used by 58% of the respondents. Written communications were there but were only accessed to a greater extent by those that were being impacted. Once the system went live and people started to feel the impact they were becoming more conscious of the communication thus the replies that the communications should have continued after go alive. Staff member's interest started to show more interest as they were being impacted by the system.

About 60% of the respondents raised issues around specific functionality aspects of the system. Having been exposed to the system and being able to address specific requirements in terms of the system is indicative of the greater level of interest that was raised after implementation of the first phase.

A key question that was raised in the minds of people was the lack of proper training which links directly to the concepts of organisational learning and organisational change. During a system implementation the transfer of knowledge via training is essential for staff to be able to process on the system. The lack of training could account for the differing abilities and capacities of staff members and to the frustrations that were being experienced. The medium in which training takes place has to also be addressed as people differ in terms of their methods of learning. It must be borne in mind that leaning does not guarantee change. In the context of the current research, it has been assumed that the assimilation of the technology would mean that new learning had to take place.

Another issue raised and a comment received from one participant stated 'why are we spending this amount of money, why is it being imposed on us". With the constrained financial position of the University, some (17%) respondents felt that such a costly system was not necessary. The fact that they are aware of the system and it's costing is more evidence of people's interest in the system. Generally the results did not indicate that there were high levels of resistance to the change, but rather a lack of training and problems with the functionality of the system. Often during change initiatives factors relating to resistance need to be addressed to achieve some level of change (Waddell & Sohal, 1998). If the cause of the resistance to change can be addressed staff may be more motivated to learning thus bringing about change.

A website was developed and numerous communications had been sent out to make staff aware of the developments of the project. Staff were invited to presentations and were given the opportunity to raise questions and provide opinions. Results indicate that some respondents (33%) were aware of the communications, yet simply ignored them, as they did not affect them. The feedback received indicated a lack of interest. This could be because the system was thought to have no impact in terms of their daily work requirements.

In comparing both academics and support staff a greater level of interest has been shown by support staff, as they would be the most affected by the system. Academic staff were once again not being greatly affected and there was a lack of interest.

STAGE 3: EVALUATION/TRIAL

In this stage "the innovation is being compared to existing or future situations in the organization in relation to its advantages and disadvantages, and the innovation is being used on a limited basis in order to determine its utility in a full-scale implementation". For the purpose of this research this stage has been defined as "The first phase of implementation has been completed. Would users be able to derive benefits from the new

system? If a comparison is made between the old system and the new system, what are the advantages and disadvantages"?

Questions:

The first phase of the implementation relates to the Human Resources and Finance modules. Five months post-go-live, interviews had been conducted, and staff had had sufficient time to evaluate the system. The questions would elicit feedback in terms of what benefits the participants would be able to derive from the new system, thus providing some indication that the system has been evaluated. A comparison of both the old and new system in terms of advantages and disadvantages would further provide evidence that the system has been evaluated.

Outcomes and implications:

The functionalities the system provided greater efficiency, as reported by 67% of the respondents. They were able to give their opinions in terms of the advantages and disadvantages that the system provided and were able to compare these differences in terms of the old system. Most staff comments focused on the general every day processing of transactions using the system. Many of the comments related to aspects of positive feedback which included "much easier in terms of not having to calculate many, many things manually", "I have really found it very useful to just log on, look at the staff, being able to get an instant over view of the staff members", "I can take greater ownership of processes", definitely improved efficiency in my working area". From these comments it can be deduced that staff have evaluated the system to see what the system offers in terms of functionality. The professional users of the system, mainly categorised as support staff, were able to recognise that the full capacity of the system was not yet understood due to the current levels of skills and knowledge which was not sufficient. This current lack of skill and knowledge could be attributed to various reasons such as lack of training, lack of interest, lack of innate ability to interface with technology etc.

Two respondents (17%) raised the issue around increased workloads. These comments need careful analysis within a larger canvas of the implementation. The increased

workloads could be related to technical functionality of the system, which has not been set up correctly, and to the lack of proper training. The implementation also brought about changes in business processes. Frustrations have also stemmed from business processes being changed and re-iterations taking place with no formal communication of change. Thus the perceived increase of workloads, were work had to be done and re-done. Lack of technical support added to the frustration of staff as it stopped them from completing daily tasks and transaction on the system.

Academic staff had not provided much feedback in terms of evaluating the system. In-fact the information only relates to the self-service functionality, which was available to all staff. One of the key functionalities provided by the system, to all managers both support staff and to a much larger audience of academic heads, was manager self service. This functionality would provide information to managers in terms of budgeting, information on their staff, leave liabilities etc. In terms of evaluating such core functionality, which was not available in the old system, no academic staff made mention of having accessed such functionality. This lack of use might be ascribed to a numbers of factors such as not being aware, having little interest in administrative tasks interest and lack of training.

The fact that staff were able to evaluate the system and provide feedback is an indication that learning is taking place within the organisation. The ability to evaluate the advantages and disadvantages of the new system and compare them to the old system is also indicative of the learning, which is taking place. One of the key assumptions of this study is that learning is essential for change to take place (Senge, 1990). If staff understand how to access the functionalities required in order to complete their daily tasks, and if they see the benefits of using the system, there would be greater motivation to use the system. This in turn increases the learning that takes places. The more staff accesses the system, the more familiar they become with the system and, the assimilation of technology would be an indication that organisational learning is taking place. For management, seeing the benefits lies in the meaningful information that can be derived from the system, which can assist in decision making. The buy-in created by management

is also an important factor to both organisational learning and organisational change in that staff is encouraged to access and learn about the system, facilitating organisational change.

STAGE 4: COMMITMENT

This stage is defined as "trial results of the technology are being considered to determine whether or not the innovation will be adopted".

Questions:

As indicated the first phase of the implementation entailed deployment of the Human Resources and Financial modules. The follow-on to these modules being the Student System would be a two phased implementation, which would then be seen as a full scale deployment of the ERP Solution. Having already been exposed to the functionality of HR and Finance modules, the questions raised the issue of commitment to the change project in terms of the second implementation which was yet to take place. The questions related around issues of encouragement to the student team. Participants were asked to provide their opinion on how they thought that the second phase, which affects other area (student system) would benefit from the new system and what added features would they hope to have if changes were made?

Outcomes and implications:

Commitment to the change process occurs when the change is seen in a favourable light as well as when individuals do not have to make a significant investment in adjusting to the change (Fedor, et al, 2006). It is the personal adaptation demands that create the uncertainty, fear of failure, or difficulty in sense making that are thought to drive negative attitudes toward change. When adaptation requirements are low, the change is embraced more so than when adaptation requirements are high, even when the change is generally favourable (Fedor, et al, 2006).

The results of this study indicated that staff (50%) were weary of the frustrations they currently experienced and would experience once the student system went live. Despite these frustrations, they were encouraging to staff members who would be affected by the implementation of the student system. The encouraging comments are an indication that they acknowledged the reality that during any period of change uncertainty and frustrations are unavoidable. This further indicated that staff are committed to the change process.

Many of the respondents (58%) indicated that functionality around reporting would need to be addressed. This is a clear indication that staff are engaging with the system. Being aware of the pitfalls, taking an interest in the problems and evaluating how best to solve issues supports the view that staff are committed to the change and are progressing through the assimilation model.

Respondents (50%) raised concern around requirements for the student system, which might not be readily accommodated by the system. The functionality that the new system would provide would entail changes in the current business processes and changes to some of the rules which govern academic administration. After the implementation of the HR and Finance modules, the concern being raised by some academic staff, indicates that there is a growing awareness from academic staff around the implementation of the Student system. A comment received from an academic respondent in respect of staff involved in the student implementation, stated “Management of people and management of processes. It’s very different with the students system: I see a level of engagement from the managers”. Right-fully so, the implementation of the student system would affect academic staff as there would be a greater need to engage with this system.

In the current study, staff that were greatly impacted by the implementation of the HR and Finance modules, provided much encouragement to those who will be affected by the student implementation. This is an indication that staff are committed to the project. Staff members that would be impacted by the student system have also had the opportunity to learn from the experience of the implementation of the HR and Finance modules.

Employees' commitment to a change, as expressed by a willingness to exert effort on behalf of the change, is important if the organization is to realize the expected benefits from the change initiative. During a change process the manner in which management treats and involves employees can have an influence on commitment and the learning process. Showing respect for staff who will be affected by the change (Brockner et al., 1994), being open to and considerate of employees' concerns (Korsgaard et al., 1995), and providing staff the opportunity for inputs can encourage greater participation in the change process. This in turn will lead to greater commitment, which will encourage more learning. Greater levels of learning may lead to organisational change by means of the assimilation of the technology.

Attempting to address some of the uncertainties and frustration experienced during change projects, learning provides a solution which could provide some relief to the uncertainties and frustrations experienced during change projects. Learning needs to take place in order to bring about organisational change (Senge, 1990).

STAGE 5: LIMITED DEPLOYMENT

This stage is defined as "the innovation has been adopted and is being implemented on a full-scale basis". In terms of the current research this stage is defined as "The first phase has been fully deployed and people have had sufficient exposure to the system."

Questions:

Deployment related to the extent to which staff had assimilated the technology. Some of the questions, which were raised, included describing their utilisation of the system, how comfortable are staff members with the system, what are some of the features of the system which they had accessed, and from the training that had been provided how much of this had assisted them in being able to apply their knowledge?

Outcomes and implications:

Many respondents (92%) indicated that they had accessed the system. Their responses referred to specific functionalities of the system. These spanned across many of the functionalities provided by the system. The new system provided functionality, such as self-service, which is available to all staff. These results indicate that there is some level of deployment being reached.

Each opportunity to access the system provides the staff member another opportunity to become more familiar with the system. The more staff members access the system, the more they will learn new functionalities of the system, even if it is by trial and error. As staff have positive experiences of the system they will be curious to access other functionalities of the system, indirectly increasing their learning.

In such instance when there is an implementation of an IT system, much of the learning takes place as you access the system. Results of the study indicate that staff (67%) are feeling quite comfortable with the system even though there are numerous frustrations related to technical problems. When individuals feel comfortable in accessing a system, some of the factors related to resistance are addressed, and there may be greater initiative to learn more about the system. Having interviewed the participants after the first implementation provided some key inputs that could be used before the second implementation. Staff had realised the impact of the new system and the consequence of not being aware nor showing interest in the change process from the initial stages of the project. Changes to the system meant changes to business processes, which impacted all staff in some way. With the implementation of the student system there seems to be greater levels of awareness, interest, and commitment to ensure that staff assimilate with the technology. An indication that learning is taking place for staff that will be impacted by the student system.

In deploying the system throughout the University, training sessions were offered during implementation of the HR and Finance modules. These sessions were not well attended by staff members and of the sample interviewed, about 33% of respondents had not

attended any training, those that did attend only attended a few sessions thus providing some explanation for the frustrations experienced during implementation. This has been a central issue with regards to the learning. There had been many challenges with the training that was provided for the implementation. Comments were made regarding the training sessions not being business specific but rather very generic, thus not very informative. During a change process one of the fundamental keys to learning is training and communication. Many of the comments in terms of the frustrations experienced related to specific functionality problems, which may be addressed by training.

Linked closely to training is the importance of communication. Continuous communication is vital to both the learning process as well as the change process (Elving, 2005). Communication in terms of post go-live is even more critical in ensuring that staff is up-to-date with information.

5.3 CONCLUSION

An overall analysis of the results indicate that in terms of Guttman's Stage of assimilation model, for the first phase of implementation support staff are reaching the stage of deployment. They have accessed the system, evaluated the system and are utilising the system in terms of everyday processing. In the light of the numerous frustrations that are being experienced, an interesting analysis of the results reveals that no respondent made comment that the university should consider going back to their old systems. This further indicates a level of commitment to the change where staff has reached that phase of the Guttman's Stage of Assimilation model.

In terms of the comparison between academic and support staff, support staff showed much greater levels of awareness and interest before go-live. This may have been due to the fact that the HR and Finance modules to a large extent affected the support staff members. However after go-live, academic staff also realised the need for them to understand how the system functioned, how business processes were affected and how the system impacted their daily functioning.

CHAPTER 6: RCOMMENDATIONS AND CONCLUSIONS

This final chapter presents the recommendations and conclusions of this research report. The achievement of the research objectives is discussed, what lessons can be learned given the introduction of an ERP system, and recommendation for further research is discussed.

6.1 INTRODUCTION

It has become clear that the emergence of issues during an implementation of an ERP system is symptomatic of organisational problems not effectively dealt with earlier in the organisational change process that resulted from the implementation of the system. Often during an implementation of an IT system too much emphasis is placed on delivering the so called "product" and very often it is the people support and business process aspects which are neglected. There are various areas, which need to be addressed when embarking on a change initiative.

Some of the most important aspects to be considered during an implementation include understanding the implementation strategy, that is understanding the different sub projects which need to be carried out to reach the desired state, identifying resources in terms finances, infrastructure and people, and an intensive analysis of the organisation's capability to handle change (Oberholzer, 1995).

The current research attempted to identify how learning takes place during a change process. The theoretical foundation for the investigation was Guttman's Stage of Assimilation Model

6.2 ACHIEVEMENT OF RESEARCH OBJECTIVES

The research objectives are presented with a discussion on the extent to which the objectives are met and research questions proven or answered.

6.2.1 RESEARCH QUESTION 1

The researcher wanted to investigate how organisational learning takes place when there is an implementation of Enterprise Resource Planning (ERP) system.

The current research was based of the theoretical framework of Guttman's Stage of Assimilation Model. This model represented five stages (which included awareness, interest, evaluation, commitment and limited deployment), which staff would progress through in order to assimilate with the system.

The research results suggested that there is substantial evidence that staff did progress through the various stages of the Guttman's Stage of Assimilation Model, however people could be at different stages of the model. Progressing through the model is an indication that learning is taking place but there is differences in the level of learning as they progressing through the various stages.

6.2.2 RESEARCH QUESTION 2

The researcher wishes to identify at what stage are employees in the Assimilation Model?

The interviews were carried out after the implementation of the Human Resources and Finance module, but before the Student system implementation. The results reflected that the support staff were at the stage of commitment and moving towards deployment. The comments received from support staff substantiated that they were committed to move towards deployment. They had also provided encouragement to those staff members who would be affected by the student system.

On the other hand academic staff, at the time of the interviews, were at the interest stage with regards to the implementation of the Human Resources and Finance modules. They were starting to engage with the system and change process only after the system had gone-live. The reason for this was the realisation that the system had in-fact affected them as well. There was also interest being taken in terms of the second implementation, which entailed the roll out of the Student System.

The research findings showed that Guttman's model could be used to see at what stage different staff members were in the learning process. This provided new answers to how learning can differ between staff in different user profiles

6.2.3 RESEARCH QUESTION 3

How does learning differ between academic and support staff?

The table 6.1 below compares some of the comments received from both support and academic staff at the various stages of Guttman's Stage of Asimilation Model and provides evidence of the differences in the assimilation of the system.

Table 6.1 Comparison of Support and Academic Staff at the Various Stages of Guttman's Stage of Assimilation Model.

Guttman's Stages of Assimilation Model	Support Staff	Academic Staff
Awareness	Support staff were able to provide feedback on their first impression as well their current understandings Eg: "first impression about the system are very positive"	Academic staff were vaguely aware of the system during the initial stages of the project, however since the inception of the system there was greater awareness Eg: "I just heard that it was been introduced, I can't remember when"
Interest	Support staff have shown greater levels of interest. This indicative from the comments received Eg: "Improved capacity to be able to access information" "better production, work more effectively"	Academic staff had shown less interest. This is indicated by comments such as, Eg:"I'm probably self-service; when I absolutely have to" 'think the information probably was being provided but basically just ignored" However since system's inception there

		has been greater interest Eg: “it would have been nice it there had been a kind of user-friendly introduction aimed at the kind of general//those academic stuff”
Evaluation	Support staff were able to provide evidence of comparative evaluation between the old and new system Eg: “much easier in terms of not having to calculate many, many things manually- efficiency”	Academic staff could not provide an evaluation of the system. They had accessed the system but only for a limited functionality. Eg: “People have said to me with certain kinds of functions have now become much easier.” Eg: “I don’t understand the system. That seems to me, as a disadvantage”
Commitment	Comments received from support staff reflect a high level of commitment Eg: “they mustn’t be afraid of it, because of I have found that it was quite an easy change over” “Hang in there is not really as bad as it looks. Change is not easy”	Academic staff were sceptical of the new system and the functionality that it would provide. Eg: “at this stage I have my doubts because there’s such a lot of things as I said to you the rules and things that it currently cannot accommodate” “I have the impression that there were certain elements in the students system that might be not be readily accommodated by the system so I’m concerned about that;” “I’m really still you know just getting to grips with what is there already;”

Limited Deployment	Support staff were entering this stage of the model and starting to assimilate with the technology Eg: "Daily, permanent, love it, adore it, will not stop using it" "reporting by having being able to do as much as I"	Academic staff are far from deployment stage. Eg: 'I haven't even got to a position where I can give you an answer" "it would have been even easier if, for example//if I had a general conceptual understanding and know what it is doing, sort of a global view of what it is actually doing."

The findings showed that there were differences in how information was being assimilated and therefore how learning and organisational change was taking place. Support staff engaged with the change process at a greater level than academic staff as the implementation of the Human Resources and Finance modules related to the key performance areas for support staff.

6.2.4 RESEARCH QUESTION 4

Finally, what lessons can be learned given the introduction of an ERP system. The following key findings were made:

An overview of the responses provides some major themes, which span across the different stages of Guttman's Stage of Assimilation Model. Some of the major themes that have been identified were that respondents had a very positive first impression of the system and at the first stage, academic staff were vaguely aware that a new system was being implemented. However since its inception respondents had gained a general understanding of the workings of the system. There was a general feeling that staff lacked sufficient training. There was an understanding that the new system would address issues around productivity and respondents were convinced that the benefits of the system far outweigh the disadvantages of the system. An overview indicated that respondents were

feeling quite comfortable with the system even though there are the odd frustrations of technical problem.

- People play the key role in a change process and in terms of organisational learning. Addressing training, which was reported as one of the key obstacles, will assist in bringing about assimilation of the technology and this may lead to organisational learning. This finding is confirmed by various authors (Lawes, 1996; Simons, et al, 2003).

- The research finding also highlighted the lack of readiness of users to adopt the system. The implementation has exposed some weaknesses in not just processes but in the lack of documentation and the lack of people working in those functional areas that were not understanding their jobs within the larger processes of the University.

GENERAL RECOMMENDATIONS

As part of the post-implementation review some key learning experiences, which have a significant impact on the implementation of an ERP system are integrated with the literature review to generate recommendations on how these system can be implemented more successfully, which are summarised below:

- Understand the objectives: the scope and the expectations of the project should be realistic and targets should be set.

- Articulating a change strategy: the way in which the change strategy would be operationalized should be understood by all. A systematic process for change must be developed (Kotter, 1995).

- Implementation activities: The important issues relating to the implementation activities are to test the integration and core functionalities. Adequate

documentation of the process must be kept as reference points to review and adjust. Change reviews must be conducted at regular intervals (Cobley, 1993).

- Adequate change management skills: these skills are crucial to the project and should be identified and brought in either from the organisation or from external consultants (Oberholzer, 1995). The positives of using internal staff are they are familiar with the business, the culture and the people.

- Analyse and manage stakeholder commitment: there must be sustained and transparent support from top and middle management. Maximum buy-in on all levels of the organisation is also crucial (Kotter, 1995).

- Building teams: cross-functional teams should be used. Process owners and staff members should be identified from the business to be part of the project. Any new system will impact the way business will operate in future, thus it is best implemented by the resources in the organisation that best knows the business (Oberholzer, 1995).

- Ensuring there are greater levels of awareness in the organisation: all too often staff are not engaged in the process from the on-set of the project. Generally staff become engaged in the change at the very late stage, often almost near implementation

- Continuous communication: A good communication strategy must be developed. Projects like the implementation of an ERP system often have to keep a large constituency informed (Oberholzer, 1995). Various mediums of communication must be utilised. Often there is a flood of communication before implementation, however post-implementation communication often break-down. Continuous updates must continue in-order to keep staff informed of changes.

- Methods of overcoming resistance to change: Acknowledgement is often made with regards to factors contributing to resistance to change and the high comfort levels with existing organisational structures and procedures, however very often no method is in place on how resistance to change would be addressed. Programmes and assistance should be provided to staff in order to assist them make the transition, especially if the project may entail retrenchment, which will cause staff to resist the project if they feel threatened.

- Training: User training is crucial to any IT system implementation. In the context of the current research the lack of training was one of the main reasons for the frustrations that were experienced by participants. Training material must be company-specific and reflect the new business processes. User training should be conducted by competent internal staff that are able to provide a comparison between the old methods and the new methods.

- Post-implementation support: Support requirements should be understood and planned for. An audit of the level of skills and knowledge of staff needs to be conducted in order to ensure that the organisation is able to support the IT system. Gaps in the skill and knowledge level should be identified early in the change process and appropriate levels of training be provided to staff to be able to support the system.

6.3 RECOMMENDATIONS FOR MANAGEMENT

In terms of the context of the current research, management is advised that when an initiative is taken to fundamentally change the away in which the organisation work in terms of their business processes and technologies, some basic components of the change process must be considered in order to improve the outcome of a successful implementation.

Management must ensure that there is a need for change and that this need for change is communicated to all staff members. A clear presentation should be given of the benefits of embracing the change.

Management should ensure that the required capabilities and capacities are available within the organisation to see the change process through. This specifically relates to organisations capacity in terms of leadership, finance, and infrastructure.

Management should make the strategic goals of the university visible and align these to the change process.

In achieving organisational learning, training and communication play the key role in assisting the organisation. Training and communication also assist in address some of factors that contribute to resistance to change.

The overall message is that management plays the primary responsible partner in a change process.

6.4 LIMITATIONS OF THE STUDY

The profiles of the respondents recruited for the study fitted the various permutations that could exist within the institution. The small sample size in each profile might bias the findings in the favour of support staff. The focus was however on a deeper understanding of the relationship between the introduction of the system, learning and organisational change.

Results obtained cannot be generalised across the population however trends could be detected and further quantitative studies could be carried out to confirm findings.

During interviews, interviewer bias could affect the data, also the fact that the interviewer was closely associated with the project and the implementation could affect some of the findings.

6.5 AREAS FOR FURTHER RESEARCH

The current research was conducted at a higher education institution. From the collaboration that takes place between organisations of higher education it was noted that many of these institutions were also embarking on an implementation of an ERP system. It is recommended that other higher education institutions undertake similar research in order to see if similar research results are obtained.

It would be useful to repeat this study after the implementation of the student system to see how learning is taking place and how the organisation is changing.

Also a quantitative study can be carried out to analyse perceptions of the system and how the organisation has changed. In the long term, interval surveys should be carried to out in order to monitor assimilation of the technology and thus provided evidence of organisational learning.

6.6 CONCLUSION

Many factors such as globalisation, technological advances, mergers or acquisitions are forcing organisations to constantly review their purpose. This evaluative process will help them to decide which changes: strategic or operational, will have to be made in order to survive and grow. According to Micklethwait (1999) in this new dynamic environment the "only constant is change". Yet research indicates that up to 70 per cent of change programmes fail.

The current research findings provided evidence that training and communication was crucial during a change process. These two elements are also vital in enabling organisational learning to take place.

While the new IT system provides a facility to improve service levels to clients, there is an imperative of learning to take place, which precedes the greater levels of autonomy which business units hope to gain.

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