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THE EFFECT OF ENTERPRISE RESOURCE PLANNING SYSTEMS ON THE  
FINANCIAL STATEMENT AUDIT OF A HIGHER EDUCATION INSTITUTION

By

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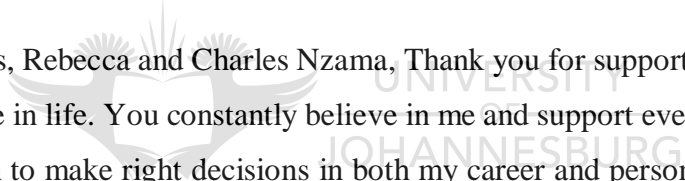
This paper has cultivated me to work hard, stay motivated, focused and always to look at a brighter side of completing the tasks. Juggling different things at a limited time thought be to be self-disciplined, organised and have great time management skills. While there were many people who kept me grounded, including my life partner, my parents, siblings and my course supervisor. They all played different roles in ensuring that I stay on track and complete the paper on record of accomplishment.

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## **ABSTRACT**

This study investigates the effects of the implementation and upgrade of financial Enterprise Resource Planning (hereafter ERP) systems, particularly the Oracle system, on financial reporting and audit. It also determines whether the independent external auditors play a vital role in the process of implementing internal controls in the implementation and upgrade of the Oracle system at a higher education institution (hereafter HEI). With the ever-evolving information technology, it is of utmost importance that the necessary controls be implemented.

A sample of 18 Oracle system users from the HEI finance expenditure department and HEI independent external auditors is surveyed and the results of the survey are used to provide advice to organisational management on measures that should be implemented to ensure smooth systems implementation and post-implementation results.

The empirical study indicates that the HEI had adequate measures and controls in place to ensure that the ERP implementation runs smoothly and threats are avoided, resulting in a successful implementation for competitive advantage in HEI.

## **KEYWORDS**

Financial systems

Enterprise Resourcing Planning (ERP)

Oracle

Higher Education Institution (HEI)

Upgrade

Implementation

Audit

Financial reporting



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## CHAPTER 1

### 1.1 INTRODUCTION

Information technology (hereafter IT) is a fast growing and highly technological industry which is continually subject to significant changes and renewal. Computers have become smaller, faster and more powerful and can process large quantities of data very quickly. This, together with developments in data communications, has led to many transactions being processed electronically. This has brought significant changes in the operation of the business through data processing departments to end user and distributed processing (Marx, Van der Watt, Bourne & Hamel, 2006). Since most organisations adopt IT to run their business, they are impacted by the significant changes brought by its usage. An example of the IT that is used is the financial Enterprise Resource Planning (hereafter ERP) system, which has different versions that organisations would need to adapt and upgrade.

ERP is defined as information system packages that integrate information-based processes within and across functional areas in an organisation (Kumar & Van Hillersberg, 2000). Examples of the ERP system include Oracle, People Soft, SAP and JD Edwards (Rizzi & Zamboni, 1999). This paper will focus on the Oracle system used at a higher education institution (hereafter HEI). The results of the survey can then be generalised to industries using the Oracle system.

ERP systems and the Oracle system in particular, play a vital role in the financial reporting and auditing of financial reports, it is therefore important to evaluate how the key role players involved in financial reporting and the auditors are affected when these ERP systems are implemented and upgraded. Most of the previous studies were limited to internal controls, internal processes and social financial reporting. None of the studies was conducted in South Africa and none of the studies evaluated how the financial reporting and audit of universities are affected by the implementation and upgrade of Oracle systems.

### 1.2 PURPOSE OF THE STUDY

The main aim of this paper is to investigate the effects of a newly implemented and upgraded ERP system in the South African context. The HEI selected is one of the largest residential universities in South Africa (SARUA, n.d) and uses an ERP system called Oracle. In its 2012 financial year, the institution upgraded its Oracle system from version R11 to R12. It will

therefore be very interesting to investigate some of the benefits and challenges of this organisational system development.

This study aims to determine what controls the HEI should implement to ensure that the Oracle System upgrade is done properly and that it has a positive impact on financial reporting and the audit approach.

### **1.2.1 Main objectives**

- The main objective of the study is to define and describe the implementation process and controls of an ERP system through a literature review.
- In addition, the study will provide an overview of the audit process, system implementation and upgrade as well as its effects on financial reporting for end users and the independent external auditors of the HEI.

### **1.2.2 Sub-objectives**

- To determine, from an independent external audit perspective, the effect of ERP system implementation and upgrade on financial reporting and the overall audit approach.
- To solicit, from the HEI's finance employees, the benefits and challenges associated with the use of a newly implemented and upgraded ERP system.

## **1.3 PROBLEM STATEMENT**

The information system is used to prepare financial reports by the HEI's financial department and should be reliable and valid. The independent external auditors are expected to give a fair opinion on the financial statements while relying on the Oracle system used to prepare these financial reports. This paper aims to investigate the benefits and challenges of an ERP system's implementation and upgrade to ensure smooth financial reporting and auditing.

Independent external auditors are tasked to review the internal controls and financial reports by giving fair opinion. The audit team therefore needs to be involved during the implementation, post-implementation and upgrade of the Oracle system to ensure that all parties understand both the benefits and challenges that come with the Oracle system and consequently, be able to address those challenges.

## 1.4 RESEARCH QUESTIONS

Based on the preceding discussion, issues may arise after the implementation and upgrade of the ERP systems that might affect the financial reporting and audit either positively or negatively. Given the lack of previous empirical evidence, the study will address the following primary research questions.

- What significant changes to financial reporting and audit reports are evident after the implementation/upgrade of ERP systems?
- What overall effect has the implementation and upgrade of ERP systems had on financial reporting and audit reports?

## 1.5 BRIEF CHAPTER OVERVIEW

The study is divided into the following chapters:

**Chapter one. Introduction and study layout.** In this chapter, the background of the study is discussed and the research problem and objectives of the study are explained.

**Chapter two. Literature review.** In this chapter, the broad and detailed context of financial (ERP) systems implementation as well as the upgrade and its effects on financial reporting and audit are discussed. A brief discussion of the existing literature and its findings is provided and the existing need in the research study and motivation to close this need is explored.

**Chapter three. Research outline.** This chapter will address the research methodology and research instruments used during this study. Any ethical considerations that are applicable to the study are also provided.

**Chapter four. Threats.** In this chapter, the different types of financial (ERP) systems implementation/upgrade are investigated. All threats are explained in detail.

**Chapter five. Solutions.** This chapter provides possible solutions that can be implemented by the HEI to address the implementation and upgrade threats that they face.

**Chapter six. Empirical study.** Based on the literature study, a questionnaire will be designed and developed to obtain information on the implementation/upgrade threats faced by the HEI.

The chapter will also explain the possible solutions that can be implemented. The methodology followed for the empirical study and the findings are explained and discussed.

**Chapter seven. Conclusion.** In this chapter, the conclusion from the literature and empirical studies are discussed and recommendations for possible areas of further research are identified.

## 1.6 CONCLUSION

A brief background of the study, its objective and sub-objectives were provided in chapter one. Research questions relevant to the aforementioned objectives of the study were discussed and the structure or layout of the entire study was highlighted.

A discussion of the existing literature associated with the implementation and upgrade of the ERP system is provided in the next chapter. The broad context of the ERP systems will be evaluated and exclusions in previous studies will be identified.



## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

A literature review initially establishes the theoretical roots of a study, clarifies ideas and develops the methodology. Subsequently, it serves to consolidate and enhance the knowledge base by integrating the findings made with the existing body of knowledge (Kumar, 2005).

The literature review should be comprehensive, critical and contextualised. It will provide the reader with a theory base, a survey of published works that pertain to the investigation, and an analysis of the work. It is a critical, realistic overview of what has been experienced before by other authors and can be used as referential guideline in a proposed study (Hofstee, 2009).

The literature will assist in identifying the theoretical framework, and the conceptual framework. The theoretical framework is the sorting of the information obtained from the literature review into the main themes and theories. This will highlight the agreements and disagreements that exist among the authors and identify any unanswered questions. This framework will consist of the theories and issues in which the study is embedded (Kumar, 2005).

Kumar (2005) further states that

the conceptual framework stems from the theoretical framework and concentrates, usually on one section of the theoretical framework that then becomes the basis of the study. This framework describes the aspects selected from the theoretical framework to become the basis of the inquiry. The conceptual framework is the basis of the research problem.

#### **2.2 BROAD AND DETAILED CONTEXT**

The following information was obtained from the literature review as it forms part of the main areas consistently discussed throughout the reference material.

### 2.3 ENTERPRISE RESOURCE PLANNING (ERP)

Scott (2002) defines an ERP system as

a suite of integrated corporate wide software applications that drives manufacturing, financial, distribution, human resource and other business functions in a real time environment.

The purpose of ERP is to provide organisations with a single point solution, thus integrating all core back office business activities such as inventory, logistics, finance and human resources into one system (Scott 2002).

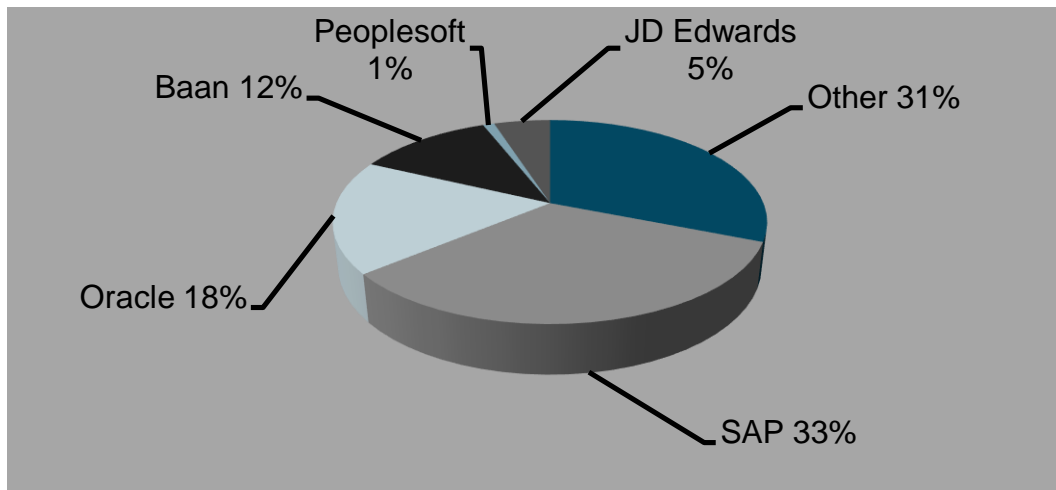
Business information systems can be designed as custom applications or they can be purchased as an off the shelf standard solution. The development of custom applications is generally expensive and has many uncertainties such as choosing appropriate development tools, duration of the development cycle and difficulties assessing the cost of development (Holland & Light, 1999).

A brief background of ERP is provided by Markus, Tanis and van Fenema (2000) who state that an ERP system has been developed from the material requirements planning (MRP) and manufacturing resource planning (MRP-11). The ERP concept developed in the 1960s and 1970s in which the information system is used to automatically coordinate activities among the production controls, inventory and accounting departments, confirms the earlier statement by Scott (2002).

Mabert, Soni and Ventakaramanan (2001) argue that out of more than 100 ERP providers worldwide, SAP-AG, Oracle, JD Edwards, People soft and Baan are collectively called the "Big Five" of ERP software vendors and control appropriately 70% of the ERP market.

Figure 1 on the following page, demonstrates the share that each of the perceived "Big 5" ERP systems have on the ERP market based on the studies conducted by (Mabert, *et al.*, 2001) (Coffey *et al.*, 2000) and (Everdingen *et al.*, 2000). From the figure, it is evident that the "Big Five" have the biggest portion of the ERP market.





**Figure 1. Big Five ERP systems**

Source: Mabert *et al.* (2000); Coffey, Kelly and Parks (2000); Everdingen, Hillegerberg and Waats (2000).

## 2.4 ORACLE SYSTEM

The Oracle system is one of the "Big Five" ERP systems and is placed second after SAP, as illustrated in figure one above (Mabert *et al.*, 2001; Coffey *et al.*, 2000; and Everdingen *et al.*, 2000). O'Leary (2000) concurs by stating that Oracle is the second largest supplier of software in the world. Oracle offers ERP applications designed to work with its database software and sells most of its applications to manufactures and consumer goods companies (O'Leary, 2000).

### 2.4.1 ERP implementation and upgrade processes

The following two different strategic approaches need to be adopted when implementing ERP software. The organisation has to:

- re-engineer its business process to accommodate the functionality of the ERP system. This means that the company will change its way of doing business and, consequently, change the key role players' duties and responsibilities. This approach is presumed to improve the process and avoid costly errors. (Holland & Light, 1999)
- customise software to fit the existing process of the organisation. This process results in delays in the project, introduces new bugs into the system and can be more costly.

### 2.4.2 Impact of ERP financial systems implementation and upgrade

Sahara, Koch and Tucker (2008) focused on the effect the ERP system has on an internal audit and found that the implementation reduces the financial and operating risks but increases the technical risk. Jain and Sorel (2011) also examined the impact of the ERP system on auditing

and internal control. They focused on the auditing perspective and how the auditors needed to perform their duties in an organisation that recently adopted ERP implementation. Their findings were similar to those of Sahara *et al.* (2008), as they both identified potential risks incurred by the organisation due to the implementation/upgrade of the ERP system. Both studies focussed more on the internal audit and internal controls measure and not on the full audit function perspective i.e. they made no reference to IT auditors, internal auditors and external auditors.

Brazel and Agogia (2007) investigated the impact of accounting information systems, such as ERP systems, on the auditors' performance of their duties and the way in which the company operated its business. They found that the implementation and utilisation of ERP systems could increase audit related risks such as business risk, database securities, process interdependency and overall control risk.

Yang and Guan (2004) examined the IT auditing and internal control standards in financial statements audits and the significance it has on the audit profession. Their study was limited to the United States of America. They found that the ERP methods and procedures used by auditors for conducting the audit differ.

Wright and Wright (2002) identified unique risks in business processes presented by ERP systems and how these risks influence the planning and conduct of assurance engagements by auditors. Their research was limited to risks caused to ERP systems and did not address audit and accounting reporting. The study identified the importance of the reliability of the system.

Moorthy, Seetharaman, Mohamed, Gopalan and San (2011) evaluated the role of IT and its effect on the audit process in an organisation. They focused on the global trend of adopting IT systems, the impact it has on the internal control of companies and the evaluation of components of internal control. The focus is on internal control only, not on the audit functionality as a whole.

Bierstaker, Burnaby and Thibodeau (2001) investigated the impact of information systems on the audit process. They highlighted the possibilities of paperless audits in the future and the usage of computer software for audit procedures.



Aukkaradej (2011) investigated a relationship between Accounting Information Systems (AIS) knowledge and audit effectiveness, and focused on risk assessment by auditors in Thailand. Their study is limited to risk assessment and focused on one specific country only. They found that ERP has a positive relationship with audit effectiveness and risk assessment.

Xiao, Sangster and Dodgson (1997) investigated the relationship between IT and corporate financial reporting. They focused mainly on social reporting, not on financial reporting. The study found that IT usage was associated more with the internal reporting change than the external reporting change and that these changes are mostly found in small companies.

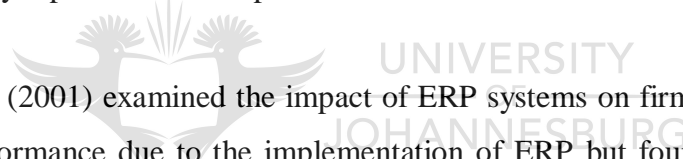
ERP systems play an important role in financial reporting. A study by Brazel and Dang (2008) examined the effect of ERP system implementation on management earning and earnings release dates. Their study was limited to the earnings of the company and not the financial performance of the company as a whole. The study by Nicolaou and Bhattacharya (2006) examined the long-term financial performance of ERP revisions (enhancement, upgrades) for firms who previously reported ERP adoption.

Poston and Grabski (2001) examined the impact of ERP systems on firms. They expected an improved firm performance due to the implementation of ERP but found that there was no significant improvement in financial performance but that there was an improvement in the evaluation of residual income, the ratio of selling, general and administrative expenses.

Hunton, Wright and Wright (2004) investigated the business and audit risk as a result of ERP implementation. Their study found that financial auditors might not be fully aware of the greater risk associated with ERP systems compared to a non-ERP environment.

Booth, Malocsy and Wider (2000) investigated the impact of ERP systems on the business process, accounting practice and performance of the organisation. Their study found that there was no key significant difference between the ERP adopters and non-adopters, both on the process and overall firm level.

Bae and Ashcroft (2004) also examined the implementation of ERP systems. Their study focused specifically on the SAP ERP system functionality and modules. As the impact of the



implementation of the ERP system was not addressed, there was no evidence of how financial reporting and audit function are affected.

Although financial ERP system implementation has become common in organisations for competitive advantage purposes, little prior research has been conducted to investigate the effect it has on financial reporting and audit. The previous studies are limited to internal audit function and internal control. The literature reviewed did not address the overall effect of the ERP system on financial and audit reporting and did not focus on the key role players in financial reporting and audit as a whole.

### **2.4.3 ERP problems and risks of implementation and/or upgrade**

Although there are advantages in developing an ERP system, there are also disadvantages due to the tight integration of application modules storage, network requirement and training overheads. The scale of reengineering and customisation tasks in the implementation process is a major reason for ERP dissatisfaction. This problem will be investigated with the help of HEI's employees (Sheer & Habermann, 2000).

Alshawi, Themistodeous and Almadani (2004) indicate that there are many problems associated with ERP systems. For instance, "enterprise" in ERP refers only to the back office and not to the whole enterprise; when implementing ERP systems, companies are required to make radical changes to their business processes; and business reengineering is accompanied by inherent risks.

Mc Vittie (2001) indicates that most people do not welcome change. It could be painful for the key role users of the systems to adapt to the new business processes.

Data accuracy from the old system to the new system might be an issue, as the conversion of data could accompany several risks. This could be a challenge to the organisation and negatively affect their financial reporting and business process.

A survey conducted by CMP (2001) indicated that 40% of participants failed to achieve their business goals after having implemented ERP projects for at least 12 months because of having to adapt to the new processes

Helo, Anussornnitisarn and Phusavat (2008) identified the following common problems reported in their study:

- Challenges in not meeting the budgets and exceeding the limit;
- Delays in the implementation schedules.

Charkraborty and Sharma (2007) indicated that 90% of all initiated ERP projects could be considered a failure in terms of poor project management.

Helo *et al.* (2008) indicated that most problems with ERP implementation are not technological issues, such as technology complexity, comparability or standardisation, but are human related.

For example:

- Organisation culture, i.e. the norms of running the business through the tradition adopted by the organisation; if some sections of the organisation do not accommodate all the business processes, it could have a negative effect on the organisation.
- Resistance to change. An end user may not be in favour of implementing the ERP system, or be unwilling to learn the new system. This normally arises when the end users are not properly informed and involved in the plans and implementation of the ERP system. There should be proper communication in place to address this probable risk.
- Incompatible business process. The business process of the organisation may not be supported by the newly implemented/upgraded system. The newly implemented ERP system might not match the existing business processes resulting in the re-engineering of the business process to match the applications of the new ERP system.
- Project mismanagement. The process of implementing/upgrading the system is not managed effectively and efficiency. Poor project management may result in failure to implement the ERP system and meet the targeted goals. Proper plans and resources should be in place to ensure that the project runs smoothly.
- Top management commitment. Lack of support from top management regarding the implementation/upgrade of the ERP system.

Huang, Chang, Li and Lin (2004) identified the following top 10 key risks in their study:

- Lack of senior management commitment and support to provide direction and increase confidence in the newly implemented/upgraded ERP system;

- Ineffective communication with users; lack of updates on the progress of the ERP system implementation/upgrade;
- Insufficient training of end users may cause errors when using the system;
- Failure to get user support to adapt to the new system;
- Lack of effective project management technology could lead to poor project management;
- Attempting to build bridges to legacy applications and neglecting to comply with applicable laws and regulations;
- Conflicts between user departments; users resistant to adapt to the new system;
- Inefficient composition of project team members; deploying adequate team members with the relevant skills and knowledge of implementing/upgrading the ERP system is necessary;
- Failure to redesign the business process; business process of the newly implemented/upgraded system not in line with the traditional business process;
- Unclear/misunderstanding change requirements; resistance to change and reluctance to adopt the newly implemented/upgraded ERP system.

The Institute of Management and Administration (May 2004) states that the majority of companies exceed their budgets when implementing an ERP system such as SAP, Oracle or People Soft. The study found that out of 600 companies who implemented the ERP system, only 37% met their budget target. The remaining companies (63%) spent over 30% more than their planned budget. This indicated that budget constraints might be one of the highest risk factors in the implementation of the ERP system.

#### **2.4.4 Risk solutions and success factors of implementation and/or upgrade of ERP**

Somers and Nelson (2001) include the following six factors in their list of critical success factors in the ERP implementation process:

- Top management support. The commitment of top management, an understanding of the capabilities and limitations of IT, monitoring the progress of the ERP implementation/upgrade, and communication of the corporate IT strategy to all employees is essential;
- Project champion. The presence of a project leader who understands both the IT and business processes is required. Accountability should be placed on the project leader;

- User training and education. Lack of user training and failure to completely understand how enterprise applications change business processes results in major risk, therefore proper training and education should be in place;
- Project management. IT projects should be well documented and properly implemented to avoid schedule and cost overruns;
- Steering committees should be formed to ensure the success of ERP implementation. The committee should consist of the key role players who are relevant to all areas of implementation.

Helo *et al.* (2008) argue that to enable education, training and the adjustment of processes, it is necessary to have the commitment of top management and the correct people to carry out the task. Change management should be considered, as some people are resistant to change and might dislike the newly implemented system.

Aladwani (2001) suggests a three step change management approach, namely:

- Knowledge formulation. The organisation implementing/upgrading the ERP system should ensure that proper communication and training is provided to enhance the knowledge of the ERP system amongst all key role players;
- Strategy implementation. There should be a proper strategy in place with formulated steps on how the system will be implemented/upgraded;
- Status evaluation. The progress of the implementation/upgrade of the system should be evaluated on a continuous basis to identify its status.

Zhang and Li (2006) indicate that to avoid the risks mentioned earlier when implementing ERP, a knowledge of both ERP systems and business management is required.

According to Vasile-Daniel (2010), when an organisation implements and/or upgrades the ERP system for competitive advantage, the organisation could be exposed to new risks triggered by IT complexity. ERP implementation and upgrades mostly require customisation and business process re-engineering that could trigger control weaknesses and lead to financial statement errors and incorrect internal information. To fulfil their mission as required by their professional standards, financial auditors need to develop and enhance their IT knowledge and skills and consider the following in their planning phase:

- Risks resulting from the implementation/upgrade of the ERP system. The auditors should be able to identify these risks when conducting an audit;
- Misstatements (possible misstatement). Financial statements may be misstated due to errors caused by the functions of the newly implemented/upgraded ERP system. Lack of internal controls on the ERP system might result in the misstatement of financial statements;
- Nature of audit testing. The method of conducting an audit might need to change due to new risk and business processes brought about by the newly implemented/upgraded ERP system.

## 2.5 CONCLUSION

The theoretical and conceptual framework of the study was discussed in this chapter.

### 2.5.1 Theoretical framework

The theoretical framework consists of the:

- background information on ERP financial systems and Oracle;
- implementation and upgrade processes of ERP financial systems;
- impact of ERP financial systems implementation and upgrade;
- problems and risks of implementation and upgrade of ERP financial systems;
- risk solutions and critical success factors of implementation of ERP financial systems.

### 2.5.2 Conceptual framework

- More information will be obtained from the HEI's financial expenditure employees who are key end users of the newly upgraded Oracle ERP system. Information regarding the risks/threats incurred during and after the implementation of Oracle version 12 will be identified and communicated by the end users.
- The independent external auditors of the HEI will also be approached to determine how they address the risks and whether they are of the opinion that the controls are their responsibility.

The next chapter will address the research methodology, population and ethical consideration used.

## **CHAPTER 3**

### **RESEARCH OUTLINE**

#### **3.1 RESEARCH METHODOLOGY**

The following two-pronged approach will be used:

- A literature study will be undertaken of the underlying factors surrounding the ERP systems implementing process and controls that should be implemented to ensure that the ERP system is implemented adequately and effectively;
- An empirical study of the HEI expenditure department will be conducted to discover business threats and possible solutions that could be implemented to address these risks. Questionnaires will be distributed to the independent external audit partners of these financial institutions and the HEI key role players identified to obtain the relevant information.

#### **3.2 POPULATION AND RESEARCH INSTRUMENTS**

The population used in the empirical study will comprise the finance expenditure key role players in the different departments. The departments will include accounts payable, stores, procurement and fixed assets. The key role players will include the managers, supervisors, two senior staff members, the director and the accountant. Thus, either a minimum of 18 people or the department as a whole (including only those employees using the newly upgraded Oracle ERP system on a regular basis) will participate in this study. The auditors of the HEI will be asked to complete the questionnaires to obtain an independent view on the business threats of the organisation and their involvement in preventing these risk activities.

#### **3.3 ETHICAL CONSIDERATIONS**

Ethical considerations include the confidentiality of the HEI. The independent external auditors have a responsibility toward the HEI to keep all their information confidential, and it is for this reason that the empirical study will not require the independent external auditors to include the name of the client to whom they refer when completing the questionnaire.

#### **3.4 CONCLUSION**

As mentioned in the research methodology, different methods can be used to obtain confidential information during the development of the Oracle ERP system. These methods and implementation threats will be addressed in the following chapter. It is important to gain an

understanding of these threats to ensure that the newly implemented or upgraded system is functioning effectively and has built-in controls to ensure that it performs as intended.

As indicated in chapter two, there are diverse risks related to the implementation of the Oracle ERP system during and after the implementation stage. The next chapter will discuss the threats that the end users of the system and the external auditors can possibly face.





## CHAPTER 4

### THREATS

#### 4.1 INTRODUCTION

ERP system implementation is normally a substantial undertaking for an enterprise. Owing to the extent of an ERP implementation and the frequency of ERP failures, companies have greater motivation to proactively identify and mitigate the various risks associated with the implementation process (Otieno, 2008).

With reference to the literature review, ERP systems are designed to integrate internal and external information that enhances the flow of communication and decision making across an enterprise, and focuses on business processes and functions. Risks range from broad to narrow and affect the outcome of business processes after the "go-live" date when the ERP system is fully operational and available to the end users (Grabski, Leech & Lu, 2001).

From the argument above, it is evident that organisations adopting an ERP implementation/upgrade should recognise a need to conduct risk assessments. These risk assessments will assist the organisation in identifying potential risks associated with the implementation/upgrade of an ERP system and will put the organisation in a good position to make insightful decisions that will affect their business process and performance positively.

A literature review including all threats that have been outlined/highlighted by other authors concerning the ERP implementation/upgrade will follow.

#### 4.2 THREATS

##### 4.2.1 Budget constraints and tight schedules (limited resources)

Organisations are often pressured to meet tight schedules and budgets, which often leads to a compromise of the quality of the ERP implementation project. This further limits the organisation's ability to achieve its goal. Such constraints are seen as one of the major threats to the successful implementation of an ERP system and may compel organisations to cut corners to meet all constraints. This may result in costly problems during the implementation process and after the ERP system "go-live" (Proviti, 2012).

Summer (2000) states that project management and control failures caused by inadequate planning and tracking can contribute to unrealistic schedules and budgets leading to a project failure. The risks associated with scope requirements include the failure to manage change properly. Lack of an effective methodology and poor estimation can lead to cost and time overruns.

#### **4.2.2 Lack of top management commitment and support**

Another risk factor in implementing an ERP system is the lack of involvement from cross-functional areas. In most cases, there is a lack of involvement from the key role players e.g. the involvement of the process owners and key users of the ERP system.

Therefore, the author suggests that a full-time process owner be appointed with the ultimate responsibility of making decisions regarding the business processes and who must ensure that the implementation process is adequate and effective (Proviti, 2012).

Executive personnel, such as the Chief Financial Officer, should be involved in decisions regarding finances. Summer (2000) mentions that the lack of senior management commitment is a serious issue and may have a negative impact on the project. There should be a project owner and key role players in each process of the business.

#### **4.2.3 Insufficient testing phase**

Before the system can "go-live", there should be different stages of testing, however due to the unrestricted nature of testing, many managers will shortcut the testing of an ERP system to expedite or meet the "go-live" date. Extensive testing ensures less maintenance costs during the post "go-live" period (Proviti, 2012).

This short cutting of testing exposes the organisation to the risk of not being able to identify gaps that might need attention. The after effects of these short cuts may be too costly for the organisation resulting in the dysfunction of the ERP system and the non-reliance on reports produced by the financial system.

#### **4.2.4 Data losses**

Data stored on the old system need to be converted to the newly implemented/upgraded system. It is critical for the organisation to ensure that data conversion is transferred completely and

accurately. The threat associated with data conversion and validation is the inadequacy of planning the amount of time and required resources for mapping data structures (Proviti, 2012).

#### **4.2.5 Technical risk – customisation of an ERP system**

The riskiness of technical issues is extremely broad, as some risks are not found through formal risk assessments. However, many risks arise because businesses attempt to implement an ERP system with as little customisation as possible. This also affects the business processes of the organisation, as the processes will need to be adjusted to fit the newly implemented/upgraded system. Even though there is a desire for more standardisation, the customisation of an ERP system is unavoidable (Proviti, 2012).

Most organisations postpone the customisation of the systems until it pushes back schedules and increases costs of implementation. The author suggests that customisation should be aligned with the system development life cycle to counteract this risk (Proviti, 2012).

Customisation can result in delays in the ERP implementation and, subsequently, an overspent budget. If the customisation is not implemented properly, the organisation will have an unreliable system due to the poor quality of customisation, unresolved system bugs and insufficient testing (Wong, Chau, Scarborough, & Davison, 2005).

Based on the arguments above by Proviti (2012) and Wong *et al.*, (2005), there will always be a technical risk regardless of the organisation's decision to customise the ERP system or not.

#### **4.2.6 Security risk**

Many organisations underestimate the importance of effectively designing the security of end user access to avoid or minimise the costs related to redesigning that lead to the unnecessary segregation of duties and the inability to remove access. Therefore, the security of end user access should be driven by the segregation of duties and access rules that are approved by the internal and external auditors (Proviti, 2012).

There should be a proper hierarchy in each process to ensure that the proper segregation of duties is in place and the newly implemented system does not expose the organisation to security risks by granting access to those who should not have access to specific applications.

#### **4.2.7 Lack of alignment of ERP system and business process**

The organisation's management and business processes owners are often not involved in the implementation of the ERP system and, in some cases, lack the knowledge and understanding of the business process affecting the decision to choose the ERP system. Thus, the organisation might end up implementing an ERP system that is not aligned to the business processes, resulting in project failure or a need to reengineer their business processes at a possible extra cost (Venkatesh & Aarthy, 2012).

#### **4.2.8 Ineffective communication and poor change management**

The ERP implementation project could probably fail because of poor communication between technical experts and customers rather than as a result of technical problems. This mostly applies when an outsourced company performs the ERP implementation/upgrade and where it is assumed that the customers are the company for whom the ERP system is implemented. In most cases, the customer finds it difficult to follow the technical language spoken by experts (Mandal & Gunasekaran, 2003).

Another form of poor communication may be the communication between management and the end users of the ERP system. If management does not inform the key end user of its plans to implement/upgrade before, during and after the implementation, there might be end user resistance to the change that may occur. It may be necessary to change the way people do things as well as their views and knowledge of the ERP system that is to be implemented before it is implemented (Mandal & Gunasekaran, 2003).

End user resistance has been associated with most types of system change, and even more so for ERP projects that are combined with business process reengineering. Most users worry that their roles might be eliminated or changed from the usual way of doing things due to the implementation/upgrade (Grabski *et al.*, 2001).

Summer (2000) also highlighted the lack of user commitment to the implementation of an ERP system. Their study confirms the same arguments made by Mandal and Gunasekaran (2003) and Gabski *et al.* (2001).

A study conducted by Khvalev (2010) included a list of risks that could be found in the implementation of an ERP system. The risks in Table 1 below by Khvalev (2010) include most

of the risks highlighted above by Summer (2000), Mandal and Gunaseran (2003), Gabski *et al.* (2001), Venkatesh and Aarthy (2012) and Proviti (2012).

In their study, Khvalev (2010) ranked the risks according to their importance and impact on the organisation with the top listed risk as being most important and the bottom listed risk as the least important. However all risks should be taken into account and addressed when organisations plans to implement/upgrade the ERP system.

**Table 1: ERP implementation risks**

1.	Lack of top management commitment and support
2.	Unclear goals and objectives
3.	Limitation in resources
4.	Insufficient training of end-users
5.	Failure to redesign business process
6.	Poor of changes and risks management
7.	Lack of business and technical knowledge
8.	Poor project management
9.	Ineffective communications
10.	Poor conflict management
11.	Lack of competence of ERP's consultants
12.	Poor motivation and project team work
13.	Lack of proper project planning and controlling
14.	Underestimation of organisational structure and business processes
15.	Lack of metrics for evaluating project efficiency and benefits
16.	Lack of vendor support and partnership
17.	Ineffective project cost and time management
18.	Poor integration of the infrastructure systems
19.	The design and implementation of system disrupts the business operations
20.	Lack of metrics for evaluating project work by phases
21.	Insufficient automation
22.	Underestimation of system technical architecture
23.	Poor software troubleshooting
24.	Data losses
25.	Insufficient testing phase

Source: Khvalev (2010)

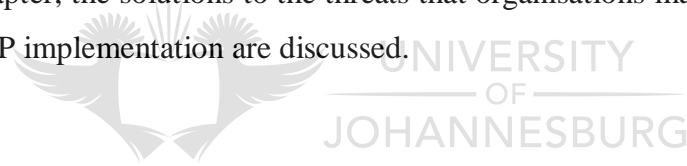
### 4.3 CRITICAL LINK TO EMPIRICAL STUDY

From the above definitions, it can be noted that there are various ERP implementation risks and threats with which the HEI and users of the Oracle system are faced. The definitions discussed above will be addressed in the questionnaire that will be sent to the independent external auditors of the HEI and 18 key end users of the finance expenditure staff. The auditors and the HEI finance expenditure staff will identify the risks that are most applicable for the HEI.

### 4.4 CONCLUSION

Owing to the vastness and pervasiveness of implementing an ERP system (especially for first-time implementation), the risks are equally prevalent in breadth and scale. Consequently, there are many mistakes that companies may make when not adequately focusing efforts on both post and prior period implementation. It is important for an organisation to be aware of the probable threats that might affect their business before, during and after the implementation of an ERP system.

In the following chapter, the solutions to the threats that organisations may implement before, during and after ERP implementation are discussed.



## **CHAPTER 5**

### **SOLUTIONS**

#### **5.1 INTRODUCTION**

Organisations implement/upgrade their ERP systems to gain a competitive advantage in their industry or market. Thus, it is of utmost importance for the newly implemented/upgraded ERP system to function properly and meet the initial goal of the organisation. For an organisation to have a successful ERP implementation/upgrade there should be proper measures and controls in place to mitigate the risks that may occur before, during and after implementation.

To mitigate the risks and threats discussed in chapter four, organisations should apply the following controls before, during and after the implementation/upgrade of an ERP system.

#### **5.2 SOLUTIONS**

##### **5.2.1 Project plan**

The first important control to implement for a successful ERP implementation/upgrade is for an organisation to draw up a live project plan. The project plan should include the strategy of how the ERP system will be implemented and the steps to be followed. It should also include the names of the project steering committee members and the departmental functions they represent.

Mandal and Gunasekaran (2003) state that the following questions need to be asked when drafting a project plan to ensure a successful ERP system implementation:

- What are the specific information needs at the operational and managerial levels for various functional areas?
- How will the proposed ERP system integrate with the existing information systems?
- What is the schedule for adoption of the new system?
- Who are the key role players of the project and what are their roles?
- When is the ERP system implementation deadline?
- Where will the implementation take place?
- What resources are needed?

Grabski *et al.* (2001) agree with Mandal and Gunasekaran (2003) that in order to maintain control over the project, organisations may need to develop a detailed system implementation plan that provides direction for the project team by setting out the project goals and targets. The detailed system implementation plan assists in the timely identification of potential risks resulting from identified delays. If the plan has enough detail it will allow the opportunity to identify the project specifics up front and to understand the level of complexity.

### **5.2.2 Top management support and risk management**

The involvement of upper management in the ERP implementation process is essential for risk mitigation because management can more adequately identify, assess and monitor risks. As management works with the ERP project team, project risk assessments can be better aligned with the ERP implementation milestones and are therefore more effective in measuring project progress (Proviti, 2012).

Every project needs a champion. A recent article by Black & ERM initiative faculty of 2013 argues that the Chief Financial Officer (hereafter CFO) needs to own the project as he or she bears the risk of its failure. Risk champions help to express the importance of the solution throughout the company and make sure that everyone understands the changes being made and how they add value. Behind every great ERP implementation is a great CFO and Chief Information Officer (hereafter CIO). While the CFO owns the project, the CIO should be a key ally throughout the project (Blake & ERM Initiative Faculty, 2013).

Through the formulation of a steering committee, appointment of a project sponsor, and internal audit involvement, an organisation could minimise the loss of control associated with the decentralisation of decision making. A steering committee enables senior management to directly monitor the project team's decision-making processes by having ratification and approval rights on all significant decisions, thereby ensuring that there are adequate controls over the project team's decision-making processes (Grabski *et al.*, 2001).

Venkatesh and Aarthy (2012) concur with Blake and the ERM Initiative Faculty (2013) and Proviti (2012), as their study states that through the formulation of a directing committee, appointment of a project sponsor, and internal audit participation, an organisation should have control associated with the decentralisation of decision-making. An expert team enables senior management to monitor the assignment team's decision-making processes reliably by having



authorisation and approval rights on all significant decisions, thereby certifying that there are ample controls over the project team's decision-making processes. In addition to the formulation of an expert team, a project sponsor should be assigned to direct the ERP project's progress and secure funding when more funds are needed than originally budgeted for. In summary, through the formulation of the expert team, appointment of a project sponsor, and internal audit's involvement, the organisation could reduce the business risks associated with the probable loss of control resulting from the ERP system implementation.

### **5.2.3 Aligning business processes with the ERP system**

To reduce the risk associated with a lack of configuration of the ERP system and business procedures, administrations should engage in business process reengineering (Venkatesh & Aarthy, 2012). Initially, the rethinking and essential reform of business processes allows an organisation's operational procedures to be aligned with an ERP system and allows an organisation to better find the full profits offered by the ERP system. It also results in the ERP application originating as a business initiative.

In addition, strategic precision as well as consistency of purpose is attained. A comprehensive requirements description for ERP selection increases the possibility of the ERP system meeting the organisation's system requirements and supports the essential operational procedures.

Thus, in order to minimise the risks associated with a lack of alignment of the ERP system and business processes, an organisation should reengineer business processes, develop a detailed requirements specification, conduct system testing prior to the system implementation and closely monitor the system's performance.

### **5.2.4 Testing phase**

Testing is divided into the following phases during and after the ERP implementation/upgrade. These tests do not replace one another and should be performed at the correct intervals (Proviti, 2012).

- Unit testing-stand-alone test that involves testing of individual transactions and sub-processes;
- Integration testing-end-to-end testing that simulates real business transactions;
- User acceptance testing (UAT)-allows end users to apply learned training skills and give feedback.

To mitigate ineffective testing, project managers should ensure timely unit testing so that the other tests do not suffer due to time constraints with the resultant test compression.

### **5.2.5 Proper project management**

The reduction of the risks associated with project complexity mainly depends upon the formulation of an expert team, senior managers' support, selection of a project sponsor, the development of a detailed implementation strategy, project management, a project team with sufficient skills, and participation by both consultants and internal audit.

In ERP system application projects, senior managers are often involved through their appointment on a team of experts. Senior management's direct participation in the system implementation project often increases the projects seeming importance within the organisation. It is advisable to appoint an executive-level individual with a wide knowledge of the organisation's operational procedures. The project manager will be responsible for the project outcome.

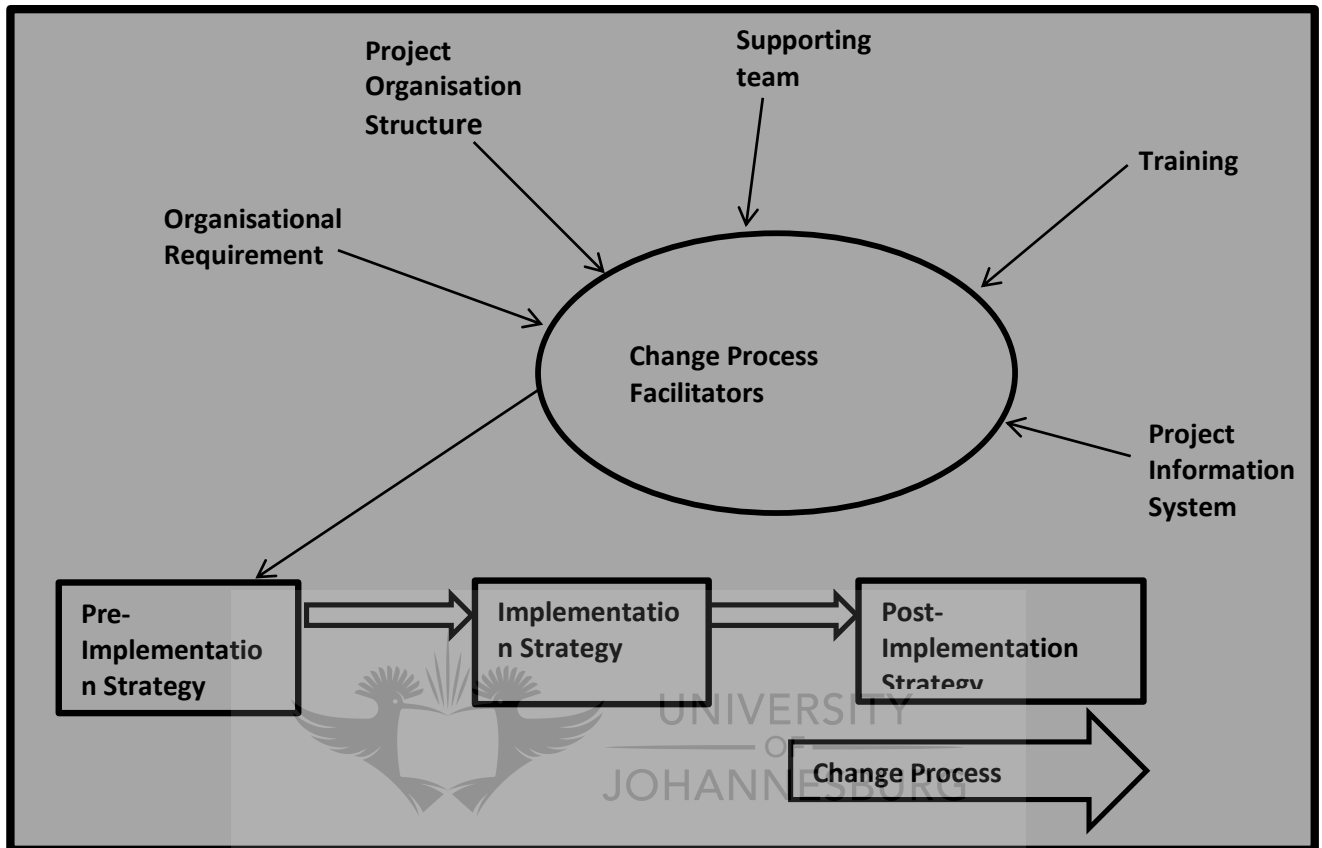
In summary, the minimisation of business risks related with project complexity largely depends upon the formulation of an expert team, senior managers' support, selection of a project sponsor, a detailed requirements description, the development of a detailed execution plan, a project group possessing adequate skills, and the participation of the consultants and internal audit (Venkatesh & Aarthy, 2012).

Grabski *et al.* (2001) concur that strong project management is crucial to the success of any large endeavour. This is especially true in ERP implementation projects that can span several years and cost millions of rands.

### **5.2.6 Effective communication and change management**

Grabski *et al.* (2001) argued that a manager's soft skills (such as communication and team building skills) are among the most important skills required for a successful ERP implementation. Users' involvement in the ERP project was also identified as important to gain the users "buy-in" for the project. Involving the users in the project enables the project team to be aware of the users' requirements and to address their concerns.

Grabski *et al.* (2001) further state that to ensure that users are aware of the impact the ERP project will have on their responsibilities, many organisations develop a communication plan and issue regular reports to keep the users informed.



**Figure 2 Change management strategies and consideration**

Source: Grabski et al., 2001

Figure 2 above illustrates the process to be followed by an organisation to ensure success in the change management. The processes to be followed in change management are discussed in detail below.

### 5.2.7 Training and education

An organisation cannot completely rely on consultants to implement an ERP system, as consultants have only a partial knowledge of the organisation's operations. Thus, a close working relationship between the consultants and the organisation's project team will lead to a valuable skills assignment in both directions. Moreover, training that is available through the consultants, the vendor, or through some intermediaries provides a valuable resource to develop skills that may be lacking in-house. These controls are seen as important in diminishing the

risks related to a potential lack of skills. Sometimes an innovative group, "super users", is formed during the ERP implementation. These individuals gain knowledge of the new detailed business procedure and technical system through their implementation needs and training (Venkatesh & Aarthy, 2012).

ERP system end users should have positive motivational attitudes and commitment toward the innovation. Knowledgeable super users should implement proper end user training modules together with sessions in transferring information about the newly implemented ERP system. These measures allow for successful change management when implementing an ERP system.

#### **5.2.7.1 Structure**

An adaptive and flexible structure with strong communication mechanisms and network across structural boundaries allows the proper flow of business processes. Most organisations use the business hierarchy when structuring the architecture of their ERP system; this allows adequate segregation of duties and eliminates the probability of a risk.

#### **5.2.7.2 Decision processes**

The setting of broad and strategic, as opposed to narrowly defined operational or technical goals is required, with greater top management involvement at an early stage, and support throughout the project implementation process.

#### **5.2.8 Auditors' involvement**

Internal audit's involvement is also vital to help identify and manage potential project risks and ensure effective internal controls. All these types of controls are important in minimising the risks associated with project complexity (Grabski *et al.*, 2001).

The auditor's role is to evaluate whether there are adequate controls within the project management and business processes. The primary objective of auditing IT development project is dual (Hettigei, 2005):

- Safeguard capital investments. Auditors should evaluate controls within the project management processes and proactively make recommendations to mitigate risks that may hinder achieving project objectives and goals;



- Proactively recommend internal controls. Auditors should ensure that adequate controls are incorporated during the development phases of business and system processes before they are introduced to the business operation.

From the above arguments by Hettigei (2005) and Grabskie *et al.* (2001), it is evident that the role of the auditor is vital before, during and after the ERP implementation for the organisation to mitigate the probable risks that may occur.

### 5.2.9 Budget management and variance analysis

Ensuring tight control of the budget can be the difference between a successful implementation and one that "goes-live" successfully but at a massive overrun in costs. To be able to control a budget, an organisation needs to identify the real costs of ERP. These costs can include hardware, training, organisational change management, developments, staff cover for project members and the software (Proviti, 2012). This requires constant monitoring and change control where additional work is required.

It is critical to establish project milestones and key sign off points in order to compare the budget at each stage and more frequently if possible, and to control the budget. Active management of the budget is the only way to manage and control overruns and alterations to the project. This includes the auditing of budget expenditure from the software vendor to verify vendor invoices to consultants' timesheets (Grabski *et al.*, 2001).

A study conducted by Khvalev (2010) (see Table 2) includes a list of solutions to possible risks in the implementation of an ERP system. This list includes most of the solutions highlighted above by Gabski *et al.* (2001), Venkatesh and Aarthy (2012), Hettigei (2005) and Proviti (2012).

Khvalev (2010) ranked the solutions according to their importance and impact on the organisation with the top solution being the most important and the bottom solution the least important. However all solutions may be applicable depending on the risk experienced by the organisation implementing/upgrading the ERP system.

**Table 2: ERP Implementation solution**

1. Top management support
---------------------------

2. Business process reengineering
3. Change management and risk management
4. Clear goals and scope
5. User training and education
6. Project team competence
7. Effective communication
8. Use of project management to manage implementation
9. Technical and business knowledge
10. Use of ERP's consultants
11. Conflict management
12. Effective project planning and control
13. Motivation and team work
14. User participation
15. Project results rating
16. Vendor support and partnership
17. Effective project cost and time management
18. Integration of the infrastructure
19. Systems
20. Avoidance customisation
21. Project work by phases rating
22. Automation and integration of the business process
23. Technical functionality
24. Software troubleshooting
25. Software data stability and reliability
26. Testing phase

Source Khvalev (2010)

### 5.3 CRITICAL LINK TO EMPIRICAL STUDY

The above solutions can all be implemented by the HEI to prevent ERP implementation threats and fraud from taking place. The empirical study will determine, from the feedback of the independent external auditors and 18 key financial expenditure end users of the HEI, what solutions are currently being adopted by the HEI to ensure that the ERP implementation project is a success.

### 5.4 CONCLUSION

The above provides a clear indication that there are various solutions that the HEI can implement to ensure that ERP implementation threats do not negatively influence their operations and financial reporting and that risks can also be effectively mitigated.

The solutions that should be implemented will depend on which risks the organisation is faced with. As various solutions address different risks, it is of the utmost importance that the correct risks are identified to ensure that they are effectively mitigated.

The following chapter will provide information on what threats, as indicated in chapter four, and solutions, as indicated in chapter five, the higher education institution is faced with on a daily basis and how the independent external auditors address these risks and what solutions they suggest that the HEI should implement.

The next chapter will also provide information on how the HEI's finance expenditure key users are impacted by the ERP implementation/upgrade, what risks they consider are applicable and what solutions they would suggest.



## **CHAPTER 6**

### **EMPIRICAL STUDY**

#### **6.1 INTRODUCTION**

The study aimed to establish if sufficient procedures were conducted by the HEI to ensure an efficient and effective implementation of the Oracle ERP system. The analysis also determined whether the end users and independent external auditors of the HEI are aware of threats and solutions imposed by the newly upgraded system from version 11 to version 12. The impact of the upgrade on financial reporting was also analysed.

#### **6.2 APPROACH TO THE EMPIRICAL STUDY**

##### **6.2.1 Selection of population**

The HEI's finance expenditure key role players and their independent external auditors were selected as the population for testing in the empirical study. The key role players within the finance expenditure department at the HEI and their independent external auditors were asked to complete a questionnaire relating to the Oracle version 12 upgrade.

Two separate questionnaires were prepared.

- One for the HEI expenditure staff and
- the other for the HEI independent external auditors. This group was selected to complete the questionnaire due to their broad knowledge and because they had worked on the previous Oracle version 11 before it was upgraded to version 12.

##### **6.2.2 Methods applied in the empirical study**

###### **6.2.2.1 Questionnaire**

As stated above, the empirical study consisted of two separate questionnaires that were sent to the HEI finance expenditure staff and HEI's independent external auditors on 5 September 2014. The questionnaires were sent electronically to the relevant parties under a covering message from the research study supervisor (a copy of the covering letter is attached as Annexure 1). Follow-up calls were made to all parties who had not responded within the required time.

The information in the questionnaire sent to the HEI finance expenditure staff covered the following areas (a copy of the questionnaire is attached as Annexure 2):



- Question 1 aimed to determine what ERP implementation threats were applicable to the higher education institution.
- Question 2 sought possible solutions that the HEI finance expenditure end users would recommend to address the ERP implementation threats.
- Question 3.1 aimed to determine how the end users jobs were affected by the newly upgraded ERP system.
- Question 3.2 aimed to determine the overall impact of the ERP implementation/upgrade on financial reporting.
- Question 3.3 sought to identify the level of satisfaction with regard to the ERP system.
- Question 3.4 aimed to identify the significant changes of financial and auditing reports after the implementation/upgrade of the ERP system.

The information in the questionnaire sent to the HEI's independent external auditors covered the following areas (a copy of the questionnaire is attached as Annexure 3).

- Question 1 aimed to determine what ERP implementation threats were applicable to the higher education institution.
- Question 2 wanted to ascertain the possible solutions that the independent external auditors would recommend to address the online security threats.
- Question 3.1 aimed to determine whether the higher education institution is aware of the ERP implementation threats that they are faced with.
- Question 3.2 aimed to determine whether the higher education institution is aware of the impact that the ERP implementation threat will have on the organisation.
- Question 3.3 aimed to determine whether there are sufficient and effective actions and procedures in place to address the implementation of threats.
- Question 3.4 aimed to determine whether executive management are involved in their organisations continuous improvement of controls related to ERP implementation threats.
- Question 3.5 aimed to understand whether external auditors play an important role in assisting management in identifying and addressing these ERP implementation threats.
- Question 4 aimed to identify if there was room for improvement in the manner in which the organisation and auditors address ERP threats.
- Question 5 aimed to identify the overall impact of the ERP implementation/upgrade.

### **6.2.2.2 Questionnaire design and testing**

The questions in the questionnaire were based on information obtained from the literature study. The questionnaire sent to the HEI finance expenditure staff was designed to ensure that participants could easily complete the questions. The participants were required to answer only "yes" or "no" to the questions, except for question 3 where they had to select one of the following answers: "to a larger extent", "to a lesser extent", "positive", "negative" "not at all". The questionnaire sent to the HEI's independent external auditors also included answers that required a "yes" or "no" to questions except for question 3 and 5 where they had to select one of the following answers: "to a larger extent", "to a lesser extent", "positive", "negative" or "not at all". All the questions provided an opportunity for the participants to provide their comments if desired. The participants were able to complete the questionnaire either electronically or manually.

## **6.3 RESPONSE RATE**

Eighteen questionnaires were sent to the HEI's finance expenditure key role players and two questionnaires were sent to the HEI's independent external auditors.

From the questionnaires addressed to the finance expenditure staff, a 100% response rate was achieved. All questionnaires were completed and returned and all the questions were answered. From the questionnaires sent to the HEI's external auditors, a 50% response rate was achieved; not all the questions were answered.

## **6.4 RESEARCH FINDINGS**

The objective and findings of each question in the questionnaire will be explained and discussed below.

### **6.4.1 ERP implementation threats applicable to the HEI**

#### **6.4.1.1 Question objective**

The objective of this question was to determine what ERM implementation threats the HEI faces and which threats are not applicable to the institution from an HEI finance expenditure perspective.

### 6.4.1.2 Findings

**Table 3: ERP Implementation threats applicable to the HEI as per HEI finance expenditure end users**

Are you of the opinion that the following ERP implementation threats with regard to the recent Oracle version 12 upgrade are applicable to your higher education institution?	YES	NO
Lack of top management commitment and support	22%	78%
Unclear goals and objectives	22%	78%
Insufficient training of end-users	39%	61%
Failure to redesign business processes	33%	67%
Poor changes and risks management	33%	67%
Ineffective communication	39%	61%
Poor project management	44%	56%
Lack of competence of ERP's consultants	28%	72%
Poor motivation and project teamwork	44%	56%
Lack of vendor support and partnership	39%	61%
Ineffective project cost and time management	39%	61%
Data losses	17%	83%
Insufficient testing phase	39%	61%

Source: Questionnaire (own calculation)

From the literature in chapter four, it is clear that ERP implementation upgrade threats affect organisations to a significant extent. The majority of the HEI's finance expenditure employees were not in agreement during the empirical study. Finding as per questionnaire indicates that the exposure to ERP implementation threats is minimal compared to what is indicated in the literature review. The highest ranked threat was below average (44%) in both poor project management, and poor motivation and project teamwork respectively.

The HEI's finance expenditure staff ranked data losses as the threat that affected them the least. This indicated that all the data on the previous version migrated to the new upgraded version and that it was accurate, valid and complete (83% no threats).

From the table above, it can be seen that the threat of lack of top management support and unclear goals and objectives are the second least threats that they face (78% no threats).

## 6.4.2 ERP implementation solutions applicable to the HEI

### 6.4.2.1 Question objective

The objective of this question was to determine which ERM implementation threats the HEI experience, and which threats are not applicable to the HEI according to the HEI's finance expenditure perspective.

### 6.4.2.2 Findings

**Table 4: ERM implementation solutions applicable to the HEI as per the HEI's finance expenditure end users**

In your opinion, which of the following solutions for ERP implementation threats, with regard to Oracle version 12 upgrade, will you advise your client to make use of?	YES	NO
Top management support	89%	11%
Business process reengineering	72%	28%
Change management and risk management	56%	44%
User training and education	100%	0%
Effective communication	100%	0%
Use of project management to manage implementation	94%	6%
Effective project planning and control	94%	6%
Avoidance customisation	61%	39%
Testing phase	89%	11%
Budget management and variance analysis	78%	22%

Source: Questionnaire (own calculation)

From the above table it can be seen that the majority of the solutions can be applied by and recommended to the HEI. The most prominent are user training and education and effective communication (100%). The second most prominent is effective project planning and control (94%).

The deciding factor on what solutions to use will depend on the risks that the organisation faces. It is important that the correct solutions be implemented to address the ERP implementation threats.

From the questionnaires submitted by the HEI's finance expenditure staff, it can be concluded that the process and procedures to ensure that risks and threats are addressed were in place as there were minimum threats to the education institutions (the highest threat was 44% below average).

### 6.4.3 Effect of newly upgraded Oracle system on end users

#### 6.4.3.1 Question objective

The objective of this question is to determine how the HEI's finance expenditure users are affected by the newly upgraded Oracle version 12.

#### 6.4.3.2 Findings

**Table 5: Effect of the newly upgraded Oracle 12 version on the end users**

How did the upgrade affect the roles of the finance expenditure staff?	Positive	Negative	Not at all
	39%	22%	39%

Sources: Questionnaire (own calculation)

The above table indicate a balanced perspective on how the HEI finance expenditure is affected by the newly upgraded Oracle version; 39% of HEI finance expenditure staff indicated that the upgrade positively affected their individual roles in performing their duties and 39% indicated that the upgrade did not affect the performance of their duties. This is a good indication that the majority of users are positive about the performance of their work. However, 22% of the end users indicated that the upgrade had a negative impact on the performance of their duties as the reports on the newly upgraded system were not customised and took a lot of time to print.

### 6.4.4 Overall impact of the ERP implementation/upgrade on financial reporting

#### 6.4.4.1 Question objective

The objective of this question is to determine the overall impact of the upgrade of Oracle version 12 to the financial reporting of the HEI's finance expenditure.

#### 6.4.4.2 Findings

**Table 6: The overall impact of ERP implementation/upgrade on the financial reporting of the HEI**

What is the overall impact of the ERP implementation/upgrade on financial reporting?	Positive	Negative	Not at all
	61%	11%	28%

Source: Questionnaire (Own Calculation)

The above table indicated that there has been a positive overall impact in the financial reporting of the HEI's finance expenditure. This is a good indication that ERP upgrade improved the reports used by the educational institute for reporting purposes.

#### 6.4.5 HEI's finance expenditure end users satisfactory levels in the newly upgraded system

##### 6.4.5.1 Question objective

The objective of this question is to determine the user's level of satisfaction with the newly upgraded Oracle system.

##### 6.4.5.2 Findings

**Table 7: HEI user's satisfaction levels with the upgrades Oracle system**

What is your level of satisfaction with the ERP system?	Positive	Negative	Not at all
	83%	0%	17%

Source: Questionnaire (own calculation)

The above table indicates that 83% of the HEI finance expenditure staff is positively satisfied with the Oracle version 12 system. This is a good indication that the educational institution has taken precautions to address the ERP implementation threats, as they know that end users need to be satisfied when using the upgraded system for competitive advantage.

#### 6.4.6 Significant changes on financial and auditing reports after the implementation/upgrade of the ERP system

#### 6.4.6.1 Question objective

The objective of this question is to identify if there are significant changes as a result of the upgrade of the Oracle system to version 12.

#### 6.4.6.2 Findings

**Table 8: Significant changes on financial and auditing reports after the implementation/upgrade of the Oracle system**

What are the significant changes of financial and auditing reports after the implementation/ upgrade of the ERP system?	Positive	Negative	Not at all
	67%	0%	33%

Source: Questionnaire (own calculation)

The above table and indicates that 67% of the end users perceive significant positive changes in their financial and auditing reports due to the Oracle version 12 upgrade. The end users rated no negative impact, as the remainder (33%) perceived no impact at all. This is a good indication that the upgrade had a positive impact, as it is one of the organisation objections when implementing an ERP system to improve the way of doing business for competitive advantage.

#### **Results from the HEI's independent external auditors:**

#### 6.4.7 ERP implementation threats applicable to the HEI

##### 6.4.7.1 Question objective

The objective of this question is to determine which ERM implementation threats the HEI faces and which threats are not applicable to the institution according to the independent auditor's perspective.

### 6.4.7.2 Findings

**Table 9: ERM implementation threats applicable to the HEI as per HEI's finance expenditure end users**

Are you of the opinion that the following ERP implementation threats with regard to the recent Oracle version 12 upgrade are applicable to your HEI?	Yes	No
Lack of top management commitment and support	0%	100%
Unclear goals and objectives	0%	100%
Insufficient training of end-users	0%	100%
Failure to redesign business processes	0%	100%
Poor changes and risks management	0%	100%
Ineffective communication	0%	100%
Poor project management	0%	100%
Lack of competence of ERP's consultants	0%	100%
Poor motivation and project teamwork	0%	100%
Lack of vendor support and partnership	0%	100%
Ineffective project cost and time management	0%	100%
Data losses	0%	100%
Insufficient testing phase	0%	100%

Source: Questionnaire (own calculation)

From the table above, it can be seen that the independent external auditor does not agree with the literature review, as none of the threats listed in the literature are applicable to HEI. This agrees to what the HEI finance expenditure staff is indicated in the questionnaires submitted and analysed above.

This is a good indication that the HEI has taken precautionary measures to ensure that the organisation is not faced with probable threats as a result of the upgrade.



## 6.4.8 Possible solutions

### 6.4.8.1 Question objective

The objective of this question is to determine which ERP implementation solution the educational institution should apply.

### 6.4.8.2 Findings

**Table 10: Possible solutions for use by the educational institution**

In your opinion, which of the following solutions for ERP implementation threats, with regard to Oracle version 12 upgrade, will you advise your client to make use of?	Yes	No
Top management support	100%	0%
Business process reengineering	100%	0%
Change management and risk management	100%	0%
User training and education	100%	0%
Effective communication	100%	0%
Use of project management to manage implementation	100%	0%
Effective project planning and control	100%	0%
Avoidance customisation	100%	0%
Testing phase	100%	0%
Budget management and variance analysis	100%	0%

Source: Questionnaire (Own calculation)

From the table above it can be seen that all the solutions can be applied and recommended to the HEI. The key control is to ensure that the implementation/upgrade of the ERP runs smoothly with improvements that will result in competitive advantage.

## 6.4.9 HEI awareness of the ERP implementation threats

### 6.4.9.1 Question objective

The objective of this question is to determine whether the educational institution is aware of the ERP implementation threats that they face.

#### 6.4.9.2 Findings

**Table 11: HEI's awareness of the ERP implementation threats**

Are you of the opinion that your audit clients are aware of the implementation risks faced by their organisations?	To a larger extent	To a lesser extent	Not at all
	100%	0%	0%

Source: Questionnaire (own calculation)

The above table indicates that the majority of the educational institution participants are aware of the ERP implementation threats that they face (100%). The independent external auditors also indicated that the HEI is largely aware of the threats (100%).

This is a good indication that the HEI is aware of the threats and thus could indicate that they would implement sufficient controls to address the probable threats that could be faced by their organisation.

#### 6.4.10 HEI's awareness of the impact that ERP implementation/upgrade threats may have on their organisation

##### 6.4.10.1 Question objective

The objective of this question is to determine whether the HEI is aware of the impact of the threats that could affect their organisation.

##### 6.4.10.2 Findings

**Table 12: Is the HEI aware of the impact that ERP implementation/upgrade threats may have on their organisation?**

Are you of the opinion that your audit clients understand the impact of the ERP implementation risk on their organisation?	To a larger extent	To a lesser extent	Not at all
	100%	0%	0%

Source: Questionnaire (Own calculation)

The above table indicates that the education institution is largely aware of what threats the ERP implementation may have on their organisation. This is a good indication that the educational institution would thus take the necessary precautions to address these threats. This is confirmed

in the questionnaire submitted by the HEI finance expenditure staff, as most of the threats were prevented by the organisation when upgrading the Oracle system.

#### **6.4.11 Procedure implemented by the HEI to address the ERP implementation threats**

##### **6.4.11.1 Question objective**

The objective of this question is to determine whether the HEI implemented procedures to address the ERP implementation threats that they face.

##### **6.4.11.2 Findings**

**Table 13: Procedures implemented by the HEI to address the ERP implementation threats**

Are you of the opinion that your audit clients have sufficient and effective actions and procedures in place to address the implementation risks?	To a larger extent	To a lesser extent	Not at all
	100%	0%	0%

Source: Questionnaire (own calculation)

The above table indicates that 100% of the HEI have implemented sufficient and effective procedures to address the ERP implementation threats. This is a good indication that the HEI is very aware of the impact that the ERP implementation threats will have on their organisation as indicated in Table 1.3, and that they are addressing this by implementing sufficient and effective procedures.

#### **6.4.12 Involvement of the executive management of the HEI in improving control to address the ERP implementation threats**

##### **6.4.12.1 Question objective**

The objective of this question is to determine whether the HEI's executive management are involved in improving the controls that should address the ERP implementation threats.

#### 6.4.12.2 Findings

**Table 14: Involvement of executive management of the HEI in improving controls to address ERP implementation threats**

Are you of the opinion that your audit clients' executive management is involved with their organisation's continuous improvement of controls related to ERP implementation risks?	<b>To a larger extent</b>	<b>To a lesser extent</b>	<b>Not at all</b>
	100%	0%	0%

Source: Questionnaire (own calculation)

The above table indicates that the executive management of the HEI is involved in the continuous improvement of the controls that should address the ERP implementation threats. This supports tables presented above together with the questionnaires submitted by the HEI finance expenditure employees.

#### 6.4.13 Overall impact of ERP implementation/upgrade on auditing

##### 6.4.13.1 Question objective

The objective of this question is to identify the overall impact of ERP implementation/upgrade on auditing.

##### 6.4.13.2 Findings

**Table 15: Overall impact of ERP implementation/upgrade on auditing**

What is the overall impact of the ERP implementation/upgrade on auditing?	<b>Positive</b>	<b>Negative</b>	<b>Not at all</b>
	100%	0%	0%

Source: Questionnaire (own calculation)

The table above indicated that the Oracle version 12 upgrade had a positive impact on auditing. This is a good indication and agrees with the questionnaire submitted by the HEI finance expenditure employees.

#### 6.4.14 Is there room for improvement in an educational institution?

##### 6.4.14.1 Question objective

The objective of this question was to determine whether the educational institution, their IT department, IT auditors, and independent external auditors should improve the controls that they implement to prevent ERP implementation threats from taking place.

##### 6.4.14.2 Findings

**Table 16: Is there room for improvement in the HEI?**

Are you of the opinion that there is room for improvement in the manner in which the following parties address ERP Implementation threats?	Yes	No
The organisation (audit clients)	100%	0%
The organisation's IT department	100%	0%
The IT Auditor	0%	0%
The external Auditor (audit firm)	0%	0%

Source: Questionnaire (own calculation)

The external auditors indicated that there would always be room for improvement as the ERP financial systems continuously improve and have new versions. Organisations should be able to keep up with the changes and ever revolving technologies. The external auditors indicated that the organisation and its IT department play a major role in implementing and preventing ERP threats. The auditors chose not to respond as to whether IT auditors and the external auditor (audit firm) play a role in ensuring improvement because they felt that the implementation of controls to address the threats of ERP implementation was the sole responsibility of the educational institution and that their role, as IT auditors, was limited.

## 7 CONCLUSION

It can be concluded that the HEI managed to implement proper controls and take proper precautions as they did not experience the ERP implementation threats described in chapter four (literature review). This was confirmed by the HEI's finance expenditure staff who indicated that the organisation was not faced with the above mentioned threats during and after the implementation of the Oracle version 12 upgrade. The HEI independent external auditors

also indicated that the organisation is aware of the threats that may be faced by the organisation when upgrading Oracle to version 12 and has taken the necessary precautions.

The questionnaire findings indicate that while there are various threats associated with the ERP implementation, various solutions can be implemented to ensure that these threats are addressed.

From the questionnaires submitted by the HEI's finance expenditure staff, it can be concluded that the HEI had all the proper measures in place. The majority of the participants indicated that most generic threats faced by other organisations were not faced by the HEI during their Oracle version 12 upgrade.



## **CHAPTER 7**

### **CONCLUSION**

#### **7.1 INTRODUCTION**

In this chapter, the significant findings from the literature study and the findings from the empirical study are discussed. Areas for future research are also identified.

#### **7.2 CONCLUSION**

##### **7.2.1 Literature review**

Significant findings from the literature study include the following:

- Owing to the vastness and pervasiveness of implementing an ERP system (especially for first-time implementation), the risks are equally established in breadth and scale. Consequently, companies may make many mistakes if they do not focus their efforts on both the post and prior period of implementation adequately.
- The HEI should be aware of the probable threats that might affect its business before, during and after the implementation of an ERP system.
- The HEI has various solutions that it can implement to ensure that ERP implementation threats do not negatively influence its operations and financial reporting, and that risks are mitigated effectively.

##### **7.2.2 Empirical study**

Based on the theoretical foundation obtained from the literature review and the findings from the empirical study, the following can be determined:

- From the questionnaires sent out in the empirical study, the conclusion can be drawn that the HEI was not faced with ERP implementation treats; only insignificant threats were identified as per the questionnaires submitted by the HEI's finance staff. The highest insignificant threat addressed was poor project management, and poor motivation and project team work. However, the HEI's finance expenditure staff indicated that the Oracle version 12 upgrade had an overall positive impact on the financial reports and has brought a positive change in the performance of their duties.
- The independent external auditors indicated that the Oracle version 12 upgrade had a positive impact on auditing and that their audit work client, the HEI, was aware of the ERP implementation threats and the impact they could have on the organisation. They

also indicated that the executive management was involved in the improvement and communication of these ERP implementation threats.

- The findings indicate that the HEI did not experience any of the ERP implementation threats during and after the Oracle version 12 upgrade. This could be because the HEI was aware of the impact the threats could have on the organisation and implemented sufficient and effective preventative procedures.
- Both the HEI's finance expenditure staff and independent external auditors indicated that all (100%) of the solutions, as indicated in two separate tables above, would be applicable to the HEI.
- From the questionnaires submitted by the HEI finance expenditure staff, it can be concluded that the HEI had all the proper measures in place; the majority of the participants in the questionnaire indicated that most generic threats faced by other organisations were not faced by the HEI during their Oracle version 12 upgrade.

### **7.3 AREAS FOR FUTURE RESEARCH**

The following areas for future research were identified:

- The effect of ERP implementation for the HEI's finance department as a whole should be investigated.
- The role of the external auditors should be determined. They should be involved in the implementation stage of ERP, such as giving suggestions on what internal controls are to be implemented, and they should also be part of the testing team.

### **7.4 CONCLUSION**

The empirical study indicated that the HEI had adequate measures and controls in place to ensure that the ERP implementation/upgrade threats, highlighted in the literature review, were addressed. The independent external auditors indicated that it is the sole responsibility of the organisation to ensure that controls to address the probable ERP implementation threats are in place and that these controls are continually improved upon.

The empirical study also indicated that there was a positive overall improvement in financial and audit reporting by both the HEI's finance expenditure staff and independent external auditors and that no significant changes were brought by the upgraded Oracle system.



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## ANNEXURE 1: COVERING LETTER FROM THE STUDY SUPERVISOR



8 September 2014

To Whom It May Concern:

This study investigates the effects of the implementation and upgrade of financial ERP systems, particularly Oracle System, on financial reporting and audit. It also determines whether the independent external auditors play a vital role in the process of implementing internal controls in the implementation and upgrade of Oracle System at the Higher education institution (hereafter HEI). With the ever-evolving information technology, it is of utmost importance that necessary controls are implemented. A sample of 18 Oracle system users from the HEI finance department and its auditing firm is surveyed and the results of the survey are used to provide advice to organisational management on measures that should be implemented in order to ensure smooth systems implementation and post-implementation results

The research is being undertaken by Lethiwe Nzama, who is currently a master's student at the University of Johannesburg, under the supervision of Mrs Rozanne Janet Smith. It forms part of a master's study on "The effect of enterprise resource planning systems on the financial statement audit of a higher education institution".

This short questionnaire should not take longer than five minutes to complete, and your response as part of the population is critical to the success of the research. Your input will be of immense value. All information will be treated as confidential and will only be used to produce aggregate results. If you have any objection to completing the questionnaire, please state your reason and return the questionnaire for control purposes.

We thank you in anticipation of your co-operation.

**Mrs. Rozanne Janet Smith**

**B Com, B Com (Hons), M Com, Professional Accountant (SA)**

**Study Leader**



## ANNEXURE 2: QUESTIONNAIRE HEI FINANCE EXPENDITURE STAFF

### INSTRUCTIONS:

1. This questionnaire can be completed either electronically or manually.
2. For electronic completion:  
Mark your answer in the appropriate box with a cross (x) [by clicking on the appropriate box with your mouse] or type in the relevant information as requested.  
If you need to navigate between blocks, use the TAB function or cursor arrows.  
Should you wish to change your answer in any of the check blocks, simply click on that box again to clear it, and re-select your answer.  
Once completed, please save the file and send the attachment to [lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)
3. For manual completion:  
Print and complete the questionnaire. Please mark your answer in the appropriate box with a cross (x) or supply the relevant information as requested.  
Please return the completed questionnaire by fax or by emailing the scanned document: e-mail: [lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)
4. Please do not hesitate to supply additional information that might be of relevance to this research.
5. The return date for the completed questionnaire is 19 September 2014.
6. Should you wish to contact Lethiwe Nzama, you can do so on 072 765 8834 or [lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)

All information will be treated as confidential and will only be used to produce aggregate results.

Your co-operation is greatly appreciated.  
Thank you in anticipation.

**Are you of the opinion that the following ERP Implementation threats with regard to the recent Oracle version 12 upgrade are applicable to your higher education institution?**

(Please mark yes or no) [Yes = Y; No = N]

	Y	N
1. Lack of top management commitment and support	<input type="checkbox"/>	<input type="checkbox"/>
2. Unclear goals and objectives	<input type="checkbox"/>	<input type="checkbox"/>
3. Insufficient training of end-users	<input type="checkbox"/>	<input type="checkbox"/>
4. Failure to redesign business processes	<input type="checkbox"/>	<input type="checkbox"/>
5. Poor changes and risks management	<input type="checkbox"/>	<input type="checkbox"/>
6. Ineffective communication	<input type="checkbox"/>	<input type="checkbox"/>
7. Poor project management	<input type="checkbox"/>	<input type="checkbox"/>
8. Lack of competence of ERP's consultants	<input type="checkbox"/>	<input type="checkbox"/>
9. Poor motivation and project team work	<input type="checkbox"/>	<input type="checkbox"/>
1.10. Lack of vendor support and partnership	<input type="checkbox"/>	<input type="checkbox"/>
1.11. Ineffective project cost and time management	<input type="checkbox"/>	<input type="checkbox"/>
1.12. Data losses	<input type="checkbox"/>	<input type="checkbox"/>





1.13.Insufficient testing phase

Comments:

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2. In your opinion, which of the following solutions for ERP implementation threats, with regard to Oracle version 12 upgrade, will you advise your client to make use of?

(Please mark yes or no)[Yes = Y; No = N]

	Y	N
1 Top management support	<input type="checkbox"/>	<input type="checkbox"/>
2 Business process reengineering	<input type="checkbox"/>	<input type="checkbox"/>
3 Change management and risk management	<input type="checkbox"/>	<input type="checkbox"/>
4 User training and education	<input type="checkbox"/>	<input type="checkbox"/>
5 Effective communication	<input type="checkbox"/>	<input type="checkbox"/>

- 3 Use of project management to manage implementation
- 7 Effective project planning and control
- 3 Avoidance customisation
- 3 Testing phase
- 2.10 Budget management and variance analysis

**3. Please read the below options and insert the appropriate answer into the boxes on the right. Feel free to provide comments after each and every answer.**

- a) Positive
- b) Negative
- c) Not at all

**3.1 How the upgrade did from the older version of ERP to the new version affected you in your job?**

Comments:

a)
b)
c)

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**3.2 What is the overall impact of the ERP implementation/upgrade on financial reporting?**

Comments:

a)
b)
c)

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**3.3 What is your level of satisfaction with the ERP system?**

Comments:

a)
b)
c)

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**3.4 What are the significant changes of financial and auditing reports after the implementation/upgrade of the ERP system?**

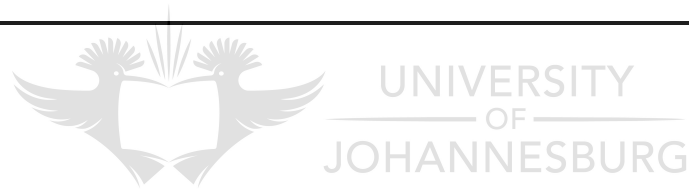
Comments:

a)
b)
c)

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Thank you profusely for sparing the time to complete the questionnaire. Remember to save and return the answered questionnaire back by email:

[lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)

### ANNEXURE 3: QUESTIONNAIRE- HEI EXTERNAL AUDITORS

#### INSTRUCTIONS:

1. This questionnaire can be completed either electronically or manually.
2. For electronic completion:  
Mark your answer in the appropriate box with a cross (x) [by clicking on the appropriate box with your mouse] or type in the relevant information as requested. If you need to navigate between blocks, use the TAB function or cursor arrows.  
Should you wish to change your answer in any of the check blocks, simply click on that box again to clear it, and re-select your answer.  
Once completed, please save the file and send the attachment to [lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)
3. For manual completion:  
Print and complete the questionnaire. Please mark your answer in the appropriate box with a cross (x) or supply the relevant information as requested.  
Please return the completed questionnaire by fax or by emailing the scanned document:  
e-mail: [lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)
4. Please do not hesitate to supply additional information that might be of relevance to this research.
5. The return date for the completed questionnaire is **19 September 2014**.
6. Should you wish to contact Lethiwe Nzama, you can do so on 072 765 8834 or [lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)

All information will be treated as confidential and will only be used to produce aggregate results.

Your co-operation is greatly appreciated.

Thank you in anticipation.

**Are you of the opinion that the following ERP Implementation threats with regard to the recent Oracle version 12 upgrade are applicable to your higher education institution?**

(Please mark yes or no)[Yes = Y; No = N]

	Y	N
1.1. Lack of top management commitment and support	<input type="checkbox"/>	<input type="checkbox"/>
1.2. Unclear goals and objectives	<input type="checkbox"/>	<input type="checkbox"/>
1.3. Insufficient training of end-users	<input type="checkbox"/>	<input type="checkbox"/>
1.4. Failure to redesign business processes	<input type="checkbox"/>	<input type="checkbox"/>
1.5. Poor changes and risks management	<input type="checkbox"/>	<input type="checkbox"/>
1.6. Ineffective communication	<input type="checkbox"/>	<input type="checkbox"/>
1.7. Poor project management	<input type="checkbox"/>	<input type="checkbox"/>
1.8. Lack of competence of ERP's consultants	<input type="checkbox"/>	<input type="checkbox"/>
1.9. Poor motivation and project team work	<input type="checkbox"/>	<input type="checkbox"/>
1.10. Lack of vendor support and partnership	<input type="checkbox"/>	<input type="checkbox"/>
1.11. Ineffective project cost and time management	<input type="checkbox"/>	<input type="checkbox"/>



1.12.Data losses

1.13.Insufficient testing phase

Comments:

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UNIVERSITY  
OF  
JOHANNESBURG

**2. In your opinion, which of the following solutions for ERP implementation threats, with regard to Oracle version 12 upgrade, will you advise your client to make use of?**

(Please mark yes or no)[Yes = Y; No = N]

	Y	N
2.1. Top management support	<input type="checkbox"/>	<input type="checkbox"/>
2.2. Business process reengineering	<input type="checkbox"/>	<input type="checkbox"/>
2.3. Change management and risk management	<input type="checkbox"/>	<input type="checkbox"/>
2.4 User training and education	<input type="checkbox"/>	<input type="checkbox"/>
2.5 Effective communication	<input type="checkbox"/>	<input type="checkbox"/>

- 2.6 Use of project management to manage implementation
- 2.7 Effective project planning and control
- 2.8 Avoidance customisation
- 2.9 Testing phase
- 2.10 Budget management and variance analysis

**3. Are you of the opinion that your audit clients (please mark the appropriate box)?**

- a) To a large extent
- b) To a lesser extent
- c) Not at all



3.1 Are aware of the implementation risks faced by their organisations?

a)
b)
c)

3.2 Understand the impact of the ERP implementation risk on their organisation?

a)
b)
c)

3.3 Have sufficient and effective actions and procedures in place to address the implementation risks?

a)
b)
c)

3.4 Executive management is involved with their organisation's continuous improvement of controls related to ERP implementation risks?

a)
b)
c)

3.5 Are you of the opinion that the external auditors play an important role in assisting management in identifying and addressing these ERP Implementation threats?

a)
b)
c)

**4 Are you of the opinion that there is room for improvement in the manner in which the following parties address ERP implementation threats?**

	Y	N
4.1 The organisation (audit clients)		<input type="checkbox"/> <input type="checkbox"/>
4.2 The organisation's IT department	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
4.3 The IT Auditor		<input type="checkbox"/> <input type="checkbox"/>
4.4 The external Auditor (audit firm)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

**5 What is the overall impact of the ERP implementation/upgrade on auditing?**

a)
b)
c)

Comments:

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Thank you profusely for sparing the time to complete the questionnaire. Remember to save and return the answered questionnaire back by email:

[lethiwe.nzama45@gmail.com](mailto:lethiwe.nzama45@gmail.com)



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