

**DETERMINANTS OF EFFECTIVE AND EFFICIENT
ENTERPRISE RESOURCE MANAGEMENT IN
ORGANIZATIONS: A CASE OF THE NATIONAL TREASURY,
KENYA**

BY

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DECLARATION

This research project report is my original work and has not been presented to any other University for the award of a degree.

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This research project report has been submitted with my permission as the University Supervisor.

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DEDICATION

I would like to dedicate this research work to my family; John Ngeera, Eunice Mugambi, Ann Kathambi and Samwel Kinoti who are my pillars and sources of great inspiration. My late mentor Winnie Imanyara for her unceasing prayers for God's blessings upon me to be the best I can, may her soul rest in peace . And finally, to my cousins; Bundi, kithinji, Karwitha ,Ken, Gitonga, Kinoti Kendra, Dan among others for their encouragement and undying support.

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TABLE OF CONTENT

	PAGE NO.
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENT	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS	x
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study.....	1
1.2 Statement of the problem.....	7
1.3 Purpose of the study.....	8
1.4 Objectives of the study.....	8
1.5 Research questions.....	10
1.6 Significance of the study.....	10
1.7 Basic assumptions of the study.....	11
1.8 limitation of the study.....	11
1.9 Delimitation of the study.....	11
1.10 Definitions of Significant Terms Used in the Study.....	12
1.11 Organizational of the study.....	12
CHAPTER TWO: LITERATURE REVIEW	14
2.1 Introduction.....	14
2.2 Support from Top Management and effective and efficient ERP projects.....	14
2.3 Staff Commitment and effective and efficient ERP projects.....	17
2.4 Availability of Finances and effective and efficient ERP projects.....	19
2.5 Time Management and effective and efficient ERP projects.....	21
2.6 Theoretical framework.....	23
2.6.1 ERP Implementation Agency Theory Model.....	23
2.6.2 Project management success factors for ERP implementation.....	25
2.6.3 Technology Acceptance Model.....	26
2.6.4 Theory of Constraints-Based Methodology for Effective ERP Implementations.....	27
2.7 Conceptual Framework.....	29
2.8 Explanation of Relationships of Variables in the Conceptual Framework.....	30

2.8.1 Support From Top Management	30
2.8.2 Availability Of Finances	30
2.8.3 Staff Commitment.....	30
2.8.4 Time Management	31
2.9 Gaps in Literature Reviewed	31
CHAPTER THREE: RESEARCH METHODOLOGY	33
3.1 Introduction.....	33
3.2 Research design	33
3.3 Target Population.....	34
3.4 Sampling technique and sample size	34
3.4.1 Sample size	35
3.4.2 Sampling technique.....	35
3.5 Research Instruments	35
3.5.1 Pilot testing of the instruments	36
3.5.2 Validity of the instrument	37
3.6 Data collection procedure	38
3.7 Data Analysis Techniques.....	38
3.8 Ethical considerations	39
3.9 Operational Definition of the Variables.....	39
CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND PRESENTATION ...	41
4.1 Introduction.....	41
4.2 Response Rate.....	41
4.3 Background Information of the Respondents	42
4.4 Department of Work	42
4.5 Work Experience	43
4.6 Enterprise Resource Planning Experience	43
4.7 Top Management Support.....	44
4.7.1 The Cronbach Alpha Test (Reliability Test).....	44
4.7.2 ERP Experience and Top Management Support Cross tabulation	47
4.8 Availability of Finances	48
4.8.1 The Cronbach Alpha Test (Reliability Test).....	48
4.8.2 ERP Experience and Availability of Finances Cross tabulation.....	50
4.9 Time Management	51
4.9.1 The Cronbach Alpha Test (Reliability Test).....	51

4.9.2 ERP Experience and Time Management Cross tabulation	53
4.10 Staff Commitment.....	54
4.10.1 The Cronbach Alpha Test (Reliability Test).....	54
4.10.2 ERP Experience and Staff Commitment Cross Tabulation	57
4.11 Effectiveness of ERP Systems	58
4.12 Ranking of Independent variables	59
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION	61
5.1 Introduction.....	61
5.2 Summary of the findings.....	61
5.2.1 Top Management support	61
5.2.2 Availability of finances.....	62
5.2.3 Time Management	64
5.2.4 Staff Commitment.....	65
5.3 Conclusion	65
5.4 Recommendation	67
5.5 Suggested Areas for further Research.....	68
REFERENCES.....	70
APPENDICES.....	78
APPENDIX I:Letter of Introduction	78
APPENDIX II:Questionnaire	79

LIST OF TABLES

Table 3.1 Operational definition of the variables.....	37
Table 4.1: Level of Work.....	42
Table 4.2: Department of Work.....	42
Table 4.3: Experience at National Treasury	43
Table 4.4: ERP Experience.....	43
Table 4.5: Top Management Support Influence to ERP system effectiveness.....	44
Table 4.7: ERP Experience and Top Management Support Cross tabulation	47
Table 4.8: Availability of Finances Effects to ERP system effectiveness	48
Table 4.9: ERP Experience and Availability of Finances Cross tabulation	50
Table 4.10: Time Management effects to Effectiveness of ERP Systems.....	51
Table 4.11: ERP Experience and time Management Cross tabulation	53
Table 4.12: Staff Commitment Effects to Effectiveness of ERP Systems	54
Table 4.13: ERP Experience and Staff Commitment Cross Tabulation.....	57
Table 4.14: ERP Effectiveness	58
Table 4.15: Ranking of Independent variables	59

LIST OF FIGURES

Figure 1: Conceptual Framework for Determinants of Effective and efficiency ERP projects ... 30

ABBREVIATIONS AND ACRONYMS

CEO:	Chief Executive officer
CM:	Cash Management
CSF:	Critical Success Factor
EIS:	Enterprise Information Systems
ERP:	Enterprise Resource Planning
ES:	Enterprise Systems
EWS:	Enterprise Wide Systems
GL:	General Ledger
ICT:	Information Communication Technology
IS:	Information System
KENGEN:	Kenya Electricity Generating Company
KPLC:	Kenya Power and Lightening Company
TAM:	Technology Acceptance Model
TRA:	Theory of Reasoned Action

ABSTRACT

Kenyan Government through department of Treasury adopted Integrated Financial Management Information System (IFMIS) as the main accounting system for all the government ministries and departments since 2003. The system was to offer real time information that would support effective and timely decision making procedures. The aspect of good governance was also considered as the system was to promote fairness and openness that would uphold the virtues that democratize the entire process of service delivery which has not been realized since implementation of the project. This study This study purposed to explore the determinants of effective and efficient Enterprise Resource Management in Organizations a case study of the National Treasury, Kenya. The objectives of the study were :1.To determine how support from top management is a determinant for effective and efficient Enterprise Resource Planning project at the National Treasury, Kenya 2.To establish the extent to which availability of finances influence effectiveness and efficiency of Enterprise Resource Planning project at the National Treasury, Kenya 3.To determine extent of staff commitment in an organization on effectiveness and efficiency of Enterprise Resource Planning project at the National Treasury, Kenya 4.To establish extent of time management as determinant for effective and efficient Enterprise Resource Planning project at the National Treasury, Kenya. The theories used in this study were technology acceptance model, theory of constraint-based methodology for effective ERP implementation, project management success factors theory for ERP implementation and agency theory model. This study adopted a survey type of design approach that was deployed in data collection, targeting respondents working with the National Treasury department, Kenya. The target population was eighty employees at the National Treasury IFMIS department from which a sample of forty four respondents were drawn. Questionnaires were used as the data collection instrument where probability sampling technique was adopted specifically using simple random sampling technique to consolidate a sample team at the National Treasury and SPSS used for data analysis. The first objective was to find out how support from top management is a determinant for effective and efficient Enterprise Resource Planning system and the findings indicated that top management commitment to the project is necessary to ensure the success of the system, otherwise the project is most likely to fail or fail to deliver the full range of benefits forecasted with mean of 4.56 and standard deviation of 0.607 . Second objective was to establish the extent to which availability of finances influence effectiveness and efficiency of Enterprise Resource Planning systems and the study indicated that financial resources are very critical for success of an ERP project with a mean of 4.28 and standard deviation of 0.454 . The third objective was to determine effects of staff commitment in an organization on effectiveness and efficiency of Enterprise Resource Planning systems and study revealed human resources should be fully committed to ensure success of an ERP project with a mean of 4.39 and standard deviation of 0.645 and the last objective was to find out how time management is a determinant for effective and efficient Enterprise Resource Planning systems and the results were able to show that time management is very critical in ERP project implementation and is a determinant of success with a mean of 4.36 and standard deviation of 1.046. The study recommended the objectives studied are essential and should be reviewed in every ERP project to ensure success of the study. The study suggested that Future research should place emphasis on the implementation process from a holistic perspective. It has also been established through the study that there has been no research conducted to date that has considered the key ERP implementation success factors from the perspectives of key stakeholders

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Enterprise resource planning can also be referred to as Enterprise Wide Systems (EWS), Enterprise systems (ES) or Enterprise Information Systems. Enterprise resource systems are commercial software comprising of packages with demarcated modules that facilitate integration of various different data sets and business transactions in an organization (Markus, 2000). Various modules among others usually integrated in the enterprise resource planning include finance, sales, human resource and quality management. The modules create an integration aspect across the embedded processes within an organization allowing for transactional data sharing between different departments.

Transparency, accountability and upholding of an organization's ethical culture are the main reasons an organization may consider having an enterprise resource planning. With an assurance of improving an organization's efficiency in the use of resources and effectiveness in its processes within the internal environment and with interaction from external environment (Tilley,2007) various organizations from both developed and developing countries have considered acquiring an enterprise resource planning for integration within the existing business transactions.

In developed countries like United Kingdom and United States of America, there has been an increase in integration of enterprise resource planning by various large organizations and government corporations with their business processes (Davenport, 1998). The growing number of corporations using enterprise resource planning systems developed by organizations such as Oracle, Baan, People Soft and SAP, as business information platform systems, has increased the

level of productivity and cost saving in these organizations. According to (Kumar,2000) enterprise resource planning systems have been considered for adoption by a large number of fortune top five hundred firms and with the extensive efficiency of the systems , medium companies have joined in and are adopting the systems for integration of their own business processes.

Despite the benefits derived from adopting Enterprise Resource Planning in both medium sized and large organizations and corporations, the level of adoption in developing countries is far below the anticipated levels (Huang *et al.*, 2004) . Due to the big unexploited potential for adoption in the developing countries, Enterprise Resource Planning vendors like Oracle target developing countries like Kenya for implementation. A large number of developing countries' organizations have already implemented Enterprise Resource Planning systems and more adoption by other organizations is expected to be evidenced.

The motive behind adoption of Enterprise Resource Planning systems by large organizations is to benefit from the best practices of the structured bussiness processes that are entrenched within the modules integrated in the Enterprise Resource Planning. The need to improve productivity by efficiently using the available resources and effectively administering the optimum strategies in decision making has neccessited most organizations to adopt Enterprise Resource Planning systems to have a structured and integrated cross organizational departmental interactions and data sharing (Kraemers and Dissel, 2000).

The implementation process of the Enterprise Resource Planning is usually not a cheap exercise and at times adds to an organization's cost difficulties. Maintenance of the systems also is a costly affair and contributes to the cost difficulties especially to the medium and small organizations (Gargeya and Brady 2005). Research earlier carried out indicate that a full implementation of the

Enterprise Resource Planning system may take approximately between two to three years (Akkermans and Helden 2002) with the cost involved for the implementation amounting to several hundred thousand in dollar currencies. Researchers have identified the underlying successes realized from integrating Enterprise Resource Planning systems within organizations and business processes as well as the failures that have led to adverse effects on the businesses. However, little has been documented on the causes of these failures, the determinants of success and on the mitigation processes to avoid failure in Enterprise Resource Planning system (Sia, 2002). Cultural, infrastructural and social problems in an organization are the major causes of failure-related to Enterprise Resource Planning systems (Huang and Palvia 2001).

Failure of Enterprise Resource planning due to poor implementation strategy will lead to insolvency of an organization and to a close down of an efficiently operating organization in a worst case scenario. In Kenya for example, Uchumi Supermarket was forced to scale down its operations after unsuccessful implementation of an Enterprise Resource Planning which was supposed to upscale its operations and effectiveness on June 2006. This failed implementation at Uchumi led to massive loss of jobs to the then employees and many suppliers lost money due to unpaid debts by the supermarket (Ferratt *et al.*, 2006).

Unrealistic and mismatch between the Enterprise Resource Planning system modules and the existing organizational structures due to over ambitious expansion goals led to unproductive rules and procedures. The solutions offered by the systems were contrary to the needs of Uchumi supermarkets and this misfit was the cause of failure (Soh *et al.*, 2000). The major companies developing Enterprise Resource Planning emerge from Europe and United states of America and consequently replicate the business cultural practices from those regions. For this reason, the mismatch issue is frequently seen in most of the organizations implementing the systems from

different geographical locations. Different cultural practices and legal conditions with differing procedures between Enterprise Resource Planning system production countries and other implementing organizations based in different geographical locations result into a mismatch between the systems modules and company procedures. Identification of factors that lead to successful implementation of Enterprise Resource Planning systems leading to effectiveness and efficiency in the organization is a step forward in ensuring that the success level of implementation of the systems is boosted (Leopoldo and Otieno 2005). Some distinguished big organizations in Kenya have taken a step of faith and implemented Enterprise Resource Planning systems with an aim of achieving high productivity. One of the organizations in Kenya that successfully implemented the system is Kenya Power and Lighting Company. The implementation was actualized in 1973 with integration of SAP R/3 and this was among the pioneer implementations of Enterprise Resource Planning in Kenya. Since this successful implementation, other organizations have followed the same path and acquired different Enterprise Resource Planning systems for integration of their business processes.

Kenyan corporations were also profound to the implementation of Enterprise Resource Planning for improved service delivery and for their internal processes streamlining. Various corporations in Kenya namely Kenya pipeline, Kenya Ports Authority and Telkom Kenya commenced the process of acquiring and implementing Enterprise Resource Planning systems after the successful implementing of the system in Kenya Power and Lighting Company. Many other organizations are in the process of implementing Enterprise Resource Planning systems with their main focus being synchronizing various data sets across different departments and units of business. Likewise, having streamlined business procedures with common optimum decision making

dockets that ensure improved productivity, efficiency and effectiveness within the operations of the organization (Kumar *et al.*, 2000).

A number of Enterprise Resource Planning system implementations have been carried out by JD Edwards specifically in organizations within Kenya, more so in the sectors dealing with manufacturing, petroleum products and companies dealing with both soft and hard drinks. SAP which is an Enterprise Resource Planning system has widely been implemented in companies offering transport and locomotive services and in organizations dealing with generation and distribution of power. With various Enterprise Resource Planning systems in the market, different companies have preferred different systems that are able to perfectly integrate with their existing business procedures and processes (Tilley *et al.*, 2007).

SAP/R3 is designed for implementation by Governments and big entities in business. This system comprises of different but integrated modules that are able to automate an enterprise with numerous departments and processes with an assurance of better performance. Some of the notable organizations with SAP/R3 system include Kenya Pipeline, Kenya Ports Authority KENGEN and Kenya Power and Lighting Company. Baan is another Enterprise Resource Planning system that is designed for large enterprises with different business processes across different departments. This system has been implemented mostly in private organizations where optimizing decision strategies is necessary for profit margin increase. Organizations with Baan system implemented within their business environment include Unga Millers, Bidco and Firestone (Kraemers and Dissel 2000).

Sage line is an Enterprise Resource Planning system designed for medium to small business units with business procedures and processes that are less complex. This system has been implemented in medium sized enterprises in Kenya like General Motors and Kenya Wine Agencies Limited. J

D Edwards which is an Enterprise Resource Planning system favorable for medium sized to large enterprises and mainly implemented in Oil companies has been integrated with Shell and BP organization business processes in Kenya. Sun Systems are resourceful for medium and small business enterprises and have been implemented by EABL and Unilever Kenya. Oracle Financials is the most delineated Enterprise Resource Planning system impeccably fit for Governments and Large organizations (Tilley *et al.*, 2007). The system contains different modules covering business processes across all spectrums of an organization's operations. This system formulates the case study for this proposal with its implementation in the Kenyan Treasury. According to the Kenya Ministry of Finance ICT master plan for period 2001 to 2005, a proposal to acquire a more superior system to replace the existing SIBET was inaugurated. The Kenyan Government identified Oracle as the best suited vendor to develop an Enterprise Resource Planning system that would have more customized and up to date modules as per the current economic realities.

In 1998, a technology company called Oracle embarked on the base line study and eventually developed an Enterprise Resource planning system that was named Integrated Financial Management and Information System (IFMIS). Various imperative modules were identified by the task force developing the system to be integrated and included Revenue Management Module, Cash Management, Procurement Module, and Human Resource Module among others. The system was also to possess an external environment interaction ability in such a way that vital data would be shared among various entities (Tilley *et al.*, 2007). The treasury department would have the capability of authorizing payments that would be processed by the Central Bank of Kenya as well as interaction between other government ministries.

In 2003, Oracle had designed an Integrated Financial Management and Information system (IFMIS) and the actual implementation was aligned to the Government ministries to replace the

SIBET system. Among the modules incorporated in the Integrated Financial Management and Information system (IFMIS) include Government Funds Management, accounts receivable, budgeting for public expenditures ,accounts payable, General Ledger and procurement modules. To enhance the capability and effectiveness of Integrated Financial Management and Information System (IFMIS) analytical tools namely Oracle based Financial Analyzer as well as generator of financial statements were added to the system for facilitation of system processes.

1.2 Statement of the problem

Integrated Financial management and Information System is an Enterprise Resource Planning system designed by Oracle and implemented by the Kenyan Government in the year 2003 to replace the existing SIBET system used as the main accounting system for all government processes. With a common goal to harness the outlined benefits subjugated from the system including effective management of the sourcing procedures and time taken for delivery, streamlining finance processes, providing standardized and relevant statements, the system was viable for implementation (Davenport and Brooks 2004).

The system was to offer real time information that would support effective and timely decision making procedures. Focusing on the enormous menace of corruption threatening efficiency and effectiveness of government entities in quality service delivery to the public, the system was designed to provide oversight roles. Ethical issues were out rightly reflected from the design throughout the structure of the system to ensure transparency and accountability phenomenon are well evaluated. The aspect of good governance was also at the center stage for discussion as the system was to promote fairness and openness that would uphold the virtues that democratize the entire process of service delivery (Aketch, 2013).

There has been a big debate from various spectrums of decision making organs in Kenya including the Council of Governors, Kenya Treasury, and Kenya Court of Law as well as other stakeholders on the effectiveness of Integrated Financial Management and Information Technology (IFMIS). For the 14 years since implementation of the system, it has not fully re-engineered the Kenyan government processes as expected. Public resources have been misappropriated and at some instances the system has failed to structure the expenditure of public resources incorporating dynamics of ethical issues, (Owegi,2006) ,for example the loss of National Youth Service money amounting to Kenya Shillings seven hundred and ninety one million through IFMIS. Due to the shortcomings of Integrated Financial Management and Information System (IFMIS) pointed out; a need arose for investigation on determinants of effectiveness and efficiency of this system.

1.3 Purpose of the study

The purpose of the study was to evaluate determinants of effective and efficient enterprise resource management in organizations: a case of the National Treasury, Kenya

1.4 Objectives of the study

The objectives of the study were:

1. To establish how support from top management is a determinant for effective and efficient Enterprise Resource Planning project at the National Treasury, Kenya
2. To determine the extent to which availability of finances influence effectiveness and efficiency of Enterprise Resource Planning project at the National Treasury, Kenya
3. To determine the extent of staff commitment in an organization on effectiveness and efficiency of Enterprise Resource Planning project at the National Treasury, Kenya

4. To establish the extent of time management as a determinant for effective and efficient Enterprise Resource Planning project at the National Treasury, Kenya

1.5 Research questions

1. How is support from top management a determinant for effective and efficient Enterprise Resource Planning project in National Treasury, Kenya?
2. How does availability of finances for implementation influence effectiveness and efficiency of Enterprise Resource Planning project in National Treasury, Kenya?
3. To what extent does staff commitment influence effectiveness and efficiency of Enterprise Resource Planning project in National Treasury, Kenya?
4. How does time management influence effectiveness and efficiency of Enterprise Resource Planning project in National Treasury, Kenya?

1.6 Significance of the study

The study was conducted to avail knowledge on determinants of effective and efficient Enterprise Resource Planning systems. Citing the vast benefits gotten from implementing Enterprise Resource Planning systems, organizations need to precisely understand factors that will guarantee an effective and efficient system. Identification of factors affecting effectiveness and efficiency of these systems ensured adverse conditions arising out of system failure after the implementation are sidestepped, mitigating the risks factors.

This study will benefit different Integrated Financial Management and Information Systems users working in different departments of Kenyan Government as it pin-pointed the determinants of an effective and efficient system. The users will stand in more advantaged positions to efficiently carry out their day to day operations.

1.7 Basic assumptions of the study

That the study made conclusions and recommendations on the findings only related to the topic and the employees working at the IFMIS department of the National Treasury represents the larger group of employees working with IFMIS project directly and have more information on the project.

1.8 limitation of the study

The study was conducted at the National Treasury, Kenya and that limited the study since there are many other organizations in Kenya that have implemented Enterprise Resource Planning project and are facing challenges. The study also focused on employees of National Treasury IFMIS department but the other employees involved in the project from different departments were not included in the study.

1.9 Delimitation of the study

The study was conducted at the National Treasury, Kenya. National Treasury is under the ministry of Finance incharge of conducting budgetary affairs on behalf of the Kenyan Government and implementing projects that are designed to streamline the financial structures across all the ministries in the Government.

1.10 Definitions of Significant Terms Used in the Study

Organisational factors: allude to the association's qualities that impact its capacity to embrace and utilization of enterprise resource management framework. These incorporate Financial and staff commitment.

Strategic factors: allude to choices or arrangements intended to affect positively the key elements on which the fancied result of an association or framework is based on.

Cost Savings: is the cost benefit accrued by using enterprise resource management project to deliver the organizations intended achievements.

Delivery time: is the scheduled time taken to complete enterprise resource management project from the date of signing concession agreement to the time when the project is functional and is able to effectively and efficiently work with National Treasury.

Risk Allocation: is the process of sharing risks and allocating them to the party best suited to manage the risk in the project structure, this process culminates in binding contractual relationships between project stakeholders.

1.11 Organizational of the study

The first chapter presented background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, basic assumptions of the study, limitation of the study, delimitation of the study, definitions of significant terms used in the study and organizational of the study. Chapter two presented literature review of the study and included theoretical framework, Conceptual Framework and related variables of enterprise resource planning project. Chapter three presented Research methodology of study and included Introduction, research design, target population, sample size, sampling technique, research instruments, pilot testing of the instruments, validity of the instrument, data collection procedure,

data analysis techniques, ethical considerations and operational definition of the variables. Chapter four presented data analysis, presentation of data and interpretation. Chapter five presented summary of the findings, discussions, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents literature review of the study. This includes an overview on determinants of effective and efficient enterprise resource management projects at the National Treasury, Kenya. The review has drawn materials from several sources which are closely related to the theme and objective of the study. The chapter covers: Introduction, theme on first objective, theme on second objective, theme on third objective, theme on fourth objective, theoretical framework, explanation of relationships of variables and gaps in literature reviewed.

2.2 Support from Top Management and effective and efficient ERP projects

Top management support is a vital requirement that has been researched on by scholars and researchers as a basic requirement for achieving success in ERP implementation. According to (Bingi et al. 1999), authorization of ERP project implementation as well as continuous support is left in the hands of top officials in an organization tasked with making key decisions on behalf of the entity. (Sharks and Sumnar 1999) argues that the project intended to be undertaken in the organization should be publicly identified as vital for the organization and given priority over other projects in the organization including adequate allocation of resources.

Senior managers and directors in the organization should commit their own time to be part of the project and make efforts to give advisory and consultation services to ensure that the organization's mission is kept in force by the project as well as improve the entire organizations' operations and strategies on achieving intended deliverables (Holland *et al.*, 1999). Adequate materialistic resources committed for the project by top management should be supplemented by allocation of skilled and talented personnel who are ready to commit enough time and expertise in the project implementation (Roberts and Barrar 1992).

(Jiang *et al.*, 1996) conducted a survey taking into account thirteen factors regarded as factors leading to implementation of a IS project successfully and the outcome on the analysis done showed support from top management as the third most important among the thirteen factors. Adequate resource allocation was also ranked fifth most important factor among the total thirteen factors evaluated. Attitude is the recipe for support harnessed from top management and means that positive attitude by top officials will result in high support for the project to be implemented. Likewise with negative attitude towards the project implementation in an organization by top management will lead to minimal or no support at all for the project and this will translate to failure of the project (Bingi *et al.*, 1999).

Advocating on the prioritized initiative and importance of ERP project by top management in an organization will create a synergy effect in the entire organization leading to commitment by every team member in supporting the project. The advocacy done by top management will further reinforce commitment expected and drawn from employees of the organization (Bingi *et al.*, 1999)

There are several benefits expected to be accrued from ERP implementation and these benefits are advanced as the information technology scope gets advanced. Management of information is a key benefit of implementing ERP project but with the technological advancement, efficient allocation of resources is gaining favour as this is a major role for top management. This capability help ERP projects gain popularity amongst top management officials and command support which is very essential for successful implementation (Earl and Feeny 2004). This capability orients ERP projects as strategic tools besides being functionality tools in an organization.

Both the functionality aspect of ERP and strategic significance to an organization can be privileged through adequate support by the top management. On the other hand, failure to acquire a best designed ERP system, systematic project planning and lack of adequate requirements can be directly linked to minimal or no support from top management (Teo and Ang 1999). In addition to consequences of minimal or no support from top organization, direct involvement of users in the development and implementation cycle of ERP projects is fundamentally related to the degree of support from top management.

Documenting effective coordination and availability of effective communication channels in an organization, top management support in ERP project implementation is regarded as the basic requirement for both. Effective communication achieved through top management support is essential in informing the employees on importance of ERP projects to strategize future expansion and effectiveness of the organization (Loonam and McDonagh 2005). Research conducted earlier has revealed that for any specified IT project to be implemented by an organization, support from top management is mandatory for its success (Johnson, 1995). ERP projects fall into this category hence need top management support for successful implementation.

Further discussing on ERP project implementation, a note is made that ERP implementation is not a matter of having a newly implemented system in the organization without considering the benefits to the organization (Myerson, 2002). Repositioning the organization within its operating environment and creating competitive advantage over competitors is a crucial factor to consider before implementing any software in an organization. This helps transform the organization's business model and put in force continuity principal with alignment with business goals (Sumner, 1999). With adequate support from top management, ensuring adequate resources both

materialistic and labor are being availed in implementation of the project, direction of the project can be easily monitored and evaluated taking mitigation action in cases where the initial design is being deviated from.

Top management playing its oversight and management role should ensure a team is formed with members having the right knowledge and skills to take up the roles of implementing the new system. The project team should have the best talent in the organization and the capability to quickly grasp the technological principles used and more so be able to disseminate the knowledge to other employees. The principle of top management support supersedes the verbal support of top ranking staff and translates to quality time commitment by them to be part of the project and ensuring the project propels in the right direction (Chen, 2001). The project team drawn to implement ERP projects normally has diverse groups of people and this creates an avenue for conflicts escalation. Some conflicts may jeopardize the entire project and need to be addressed by top management (Myerson, 2002). There is need to maintain close ties between the project team to ensure synergy is realized and this is tasked to top management that has the capability of harmoniously solving conflict (Mousseau, 1998).

2.3 Staff Commitment and effective and efficient ERP projects

Internal organizational factors go a long way in determining the success of automating processes and procedures in an organization. Employees are termed as the most valuable resources that are used to achieve any goals in any organization (Miller, 2004). Having employees working with an organization is not enough in implementing any project but rather the key ingredient is having a firmly committed workforce that is capable of turning challenges and hardships into successes. Structures are supposed to be put in place in an organization implementing an ERP project that

will monitor and evaluate the level of commitment both at individual level and at the team level informing decision makers on the right decisions to be made (Wilson, 2004).

The right and favorable policies in an organization that fairly serve the interests of the employees are channels that affirm commitment of employees and ensure they are constantly focusing on achieving the organization's objective rather than focusing on fighting for their survival as employees. The political will should be positively channeled and aligned with the agenda of an organization. With ERP project implementation, lack of commitment will crumple smooth processes deployed in automation of the organization's processes. Without adequate commitment by the project team, a delay in the entire project is experienced and this translates into stretching the allocated resources and ultimately the entire process of ERP project implementation is jeopardized (Johnson,1995).

Incentives are critical in any project implementation especially in the case of ERP implementation where extra effort is a necessity and at times long working hours. Employees need to feel more appreciated and their contribution appreciated and giving those incentives is just one important way of achieving this. Changing negative perception of employees towards the entire concept of implementing ERP project and clearly communicating the benefits and importance of automating organization processes and procedures is as important as having the right employees in the project team. Employee commitment is supposed to be achieved in all levels of the organization's management hierarchy as good commitment in the high levels of an organization directly decode to high levels of commitment in the lower levels of the organization(Loonam and McDonagh 2005).

High levels of commitment in implementing ERP projects from both the project team and the management translates to continuous realization of project milestones and attraction of more and

adequate funding at various project phases leading to successful project implementation. Proper and sequential coordination in executing ERP project implementation and outlined action items are achieved through clear employee roles which are brought about and reinforced by employee commitment at various levels (Huse, 2004). Loyalty advanced by employees to ERP project as well as high measure of energy ensures that implementation process is well designed and actionable tasks assigned sequentially matching talent and skills of the team members. This usually maximizes the synergy much needed to attain success in implementation of ERP projects (Gabrielsson, 2004). In order for ERP project implementation process to have a higher probability of success, perception subject of the employees in a project team should be evaluated and monitored to ensure that retrogressing energy is not experienced in the team and that the right perceptions ultimately contribute to synergizing collective effort of each and every employee in the organization.

2.4 Availability of Finances and effective and efficient ERP projects

ERP project implementation is a complex undertaking of activities that require financial resources for accomplishment and this is realized in different phases of the project literally from design to implementation and finally amalgamation with the organization (Adam and Sammon 2003). Licensing is a crucial exercise undertaken by an organization and at times is a statutory requirement that need to be completed before implementation process of ERP project is commenced. Vendors who trade on ERP software sales also require licenses to be acquired from them before an organization can implement their product. This is critical in the preservation of intellectual property where entities using an innovation from another organization are required to inquire a charge and this sums up to appreciation and encouragement of innovation (Johnson *et al.*, 2005)

Training both for the design team and end users for ERP project is very important as it ensures acquaintance with the software modules and also ensures that the design team is knowledgeable and clearly understands the company mission that is supported by the project (Pearson and Robinson 1997). Training is conducted to different groups at different project phases and assists in successfully achieving the required benefits intended for implementing ERP projects. Finances are required for facilitation process, settling expenses inquired during the training and compensating external consultants and experts if involved in the training. At times training is conducted at a distance location and this demands the project team to travel and at times spend more than a day at the training site. Adequate finances will ensure the logistics are well taken care of and that the intended training is conducted at the intended time.

Maintenance of ERP project after being implemented requires both human resources as well as other material resources. Ensuring the system is optimally operational at all the time is a prerequisite for a successful ERP project (David ,2005). This is only achieved by at all times having a technical standby team to respond in-case of failure and in addition ensuring that measures and policies are enforced to avoid disastrous actions against the organization. All these procedures require finances as the basic necessity both for compensation of the technical team, replacement of machines and software modules and other requirements. Having a prepared team with all tools of trade to deal with a failure including the right skills is essential for mitigation measures that are supposed to be deployed within a very short time possible in case of a risk occurrence(Hussey,1998). ERP project requires accompaniment of very high tech hardware resources. The hardware requirements vary from the simplest gadgets to more complex facilities that in some way support the implementation of ERP projects. Hardware requirement like servers range with size and are available at different expenses with some costing approximately

10million Kenya shillings. This shows that having enough financial resources during ERP project implementation will ensure the right hardware with best specifications is acquired and that the risks of hardware break down is immensely reduced (Pearson and Robinson 1997).

Consultancy services from expertise and experienced individuals and firms offer a competitive advantage to an organization implementing ERP project as their services align the company's strategies with ERP project structures leading to optimal operation and reengineering of operations (Holland *et al.*, 1999). Specialized knowledge and skills are required at different project phases and this is necessary to ensure the best design of the software is implemented in an organization and is perfectly realigned with the organization's vision and structures to achieve optimal results.

2.5 Time Management and effective and efficient ERP projects

Scheduling ERP project implementation activities is fundamentally structured to ensure efficiency and delivery of the project at a specific pre-determined time frame. Time is often described as money, and this arguably means that when time is not well managed with unnecessary delays in project implementation, financial resources will be over-stretched affecting the initial project plan (Ferratt *et al.*, 2006). Creation and well management of work orders with minimal deviations from the initial plan will help the project team to make correct and informed costing of ERP project. Time savings transmute into costs reduction with immense benefits of completing the project in time at minimal cost (Jeffery and Lawrence 1982). Timesheets are time management tools used by project team to make best allocation of resources both physically and time wise. The tool is used to achieve optimal use of resources and allocation of specific resources to committed workers with the right skills and knowledge. With time management, delivery duration of the project is highly reduced by significantly reducing or

eliminating idle time (Teo and Ang 1999). Timely information is also passed to relevant authorities tasked with decision making and this ensures that certain setbacks are able to be addressed in time and avoidance of wrong informed actions is achieved or rather amendment of specific actions likely to pessimistically affect the ERP project are corrected in time (Stratman ,2002).

Time management where external parties are involved like in some scenarios where vendors and suppliers do not act with urgency which could be the case for the project team, this can affect the delivery time of the project. Advance arrangements need to be put in place with several options identified for specified tasks undertaken by external parties to literally avoid disappointments that may be caused by external parties (Sumner, 1999).

Strategic context of an organization is a dynamic factor that continuously changes with time. The strategy of any given organization is fundamentally considered in designing ERP system and is designed to propel the company to the next level. Time management is essential in this context as implementation of ERP project should be within a certain timeframe before strategies of the organization change making the alignment of the project and strategies a hard task (Tilley and Bruce 2007). To meet deadlines and predetermined time frames, ERP projects should be carefully planned, well managed by effective project leaders with cooperation from project team and timely integrated with the organization structures.

Complex technology that consumes time to learn should be simplified to the most basic concept for end users to take a shorter period of time to get knowledge on how to make use of ERP systems. Well-articulated schedules and programs should be strictly followed ensuring that the participants being trained on ERP functionalities are committed, time conscious and anxious to learn as much as possible. Spending a lot of time in training ERP systems erodes the initial

aspect of eliminating time wastage as some employees regard training schedules as time to relax and take a break from hard work in the organization and productivity is immensely reduced at that particular time (Mc Millan; Willis-Brown 2001).

Risk evaluation is a strategic activity done before commencement of any ERP project, the assessment of risk should have time estimate element and mitigation factors identified with consideration to the phase of the project. Time management if effectively done is able to systematically intervene in evading specific risks that are associated with certain time frames in the project's life cycle. (Bruce and Hallam 2007)

2.6 Theoretical framework

Various theories and models have been reviewed to examine the determinants of effective and efficient ERP projects and include: Implementation Agency Theory Model, Project management success factors for ERP implementation, Technology Acceptance Model and Theory of Constraints-Based Methodology for Effective ERP Implementations

2.6.1 ERP Implementation Agency Theory Model

Decision makers in an organization accredits outsourcing of information systems as a superior option when it comes to acquiring of ERP systems in an organization. Outsourcing can be associated with many optimistic attributes like the factor of specialization and economies of scale when it comes to the trade of information processing (Davis, 1986). Vendors who specialize in the provision of information systems usually have less costly products and services due to the power of economies of scale. Specialization is also a factor that leads to effectiveness from vendors leading to provision of well specialized and less cost of service provision as

compared to similar services that would be offered in an organization if adaption of in-house built system is settled on (Davis et al., 1989)

Coordination of many vendors and agencies involved in implementation of ERP systems is inevitable as the activities involved are intricate with success conditioned on how well the parties involved will support each other in the achievement of a common goal. Clear and objective terms of reference should be drafted by the organization acquiring ERP systems and the vendors implementing the systems should precisely understand the conditions stated in the terms of reference document (Legris *et al.*, 2003). Billing and other agreement should be incorporated in the agreement that has to be signed and each party allowed to retain a copy of the same. Project design and direction also need to be agreed on with a clear chain of command and reporting structure being stipulated for avoidance of time wastage due to an impasse as a result of misunderstanding which could have been avoided. Information systems contracting out with the vendors or implementation consultants stand out to be the principal-agent relationship at its precisely articulated strategy with presence of a legal contract binding document (Legris et al., 2003).

Client- vendor contract forms in the aspect of ERP implementation forms a critical subset of the working relationship and hence can be literally scrutinized from a perspective of Agency theory model. These analyses most importantly outline the elements most critical in the sustainability of a good working relationship between client and other implementation agents in ERP commissioning in an organization (Fishbein and Ajzen 1975). The model stipulates that with the consultants assuming the position of agents and on the other hand clients occupying the space of principal, distinctive agency problems are anticipated to crop up in their relationship and this model relates to the study in examining the role of clients in adequately giving necessary

attention to the determinants of effective and efficient ERP projects and ensuring each determinant is adequately mitigated and posters negligible risk to the project.

2.6.2 Project management success factors for ERP implementation

ERP implementation is a program which incorporates different projects in it for successful integration in an organization. Knowledge acquired in project management is very essential in determining the success in ERP implementation and on response to the knowledge requirement, vast documented literature is available from various writers and researchers to avail the project management skills especially in the sector of organizational research (pinto and Slevin 1987; Shenhar *et al.*, 2002). A number of researchers and scholars have enlisted a variety of dos and don'ts for implementation of various IS projects including ERP implementation. Various success factors on ERP implementation were identified and provided by (Akkermans and Helden 2002) through a fundamental intensive literature review that was supported by rating the factors conducted by senior management of fifty two U.S. organizations that had in the past implemented ERP.

Abandonment of IS projects implementations have also been documented in the past and various explanations given as a cause for failure of these projects. (Ewusi and Mensah 1997) contributed into the knowledge pool as to why numerous setbacks in IS project implementation are encountered with the source of this information resulting from fortune 500 companies in U.S survey on the terminated IS projects. (Keil *et al.*, 1998) notably recommended for integration of project risk software in the implementation process that would knob the issue of risk.

Summing up the factors identified that result to success in IS project implementation by ((Akkermans and Helden 2002), (Ewusi and Mensah 1997), (Keil *et al.*, 1998)) include; selection of IS software as per the need, adequate and timely consultations of all spectrum in the

implementation process, team work from employees with adequate support from decision makers in the organization and well planning for the IS project implementation. Through study of empirical aspects in ERP projects, (Ferratt et al., 2006) validated these factors and were indeed regarded as success associated for ERP projects implementation. Five outcome statements were found to be positively correlated and need arose to integrate them into a single outcome factor which was identified as effectiveness. Regression analysis conducted on these factors indicated that all the factors leading to success of ERP implementation significantly affected the outcome hence the factors were included in the study of ERP implementation (Ferratt *et al.*, 2006).

2.6.3 Technology Acceptance Model

Technology acceptance model abbreviated as (TAM) was introduced by (Davis,1986) which resolved to adoption of Reasoned Action theory that was tailored for ensuring users accepted IS without resistance. TAM's main agenda is to review the determinants into play in regard to the acceptance of computing technology reception among different sectors with different end users and ensure optimistic behavior is exhibited on adaptability of information systems technology across sectors.

With TAM, qualitative research can be achieved where external factors like beliefs, intentions and attitudes can be traced and explained on adapters of technology (Davis *et al.*, 1989). According to this model, simplicity of technology use with friendly user orientation is of much importance in the degree of adaptability and easy acceptance. The technology is in addition required to offer adequate significance edge in creating more efficiency and effectiveness in the job performance of the end users adapting the technology. Ease of use of the implemented technology is perceived as the capability to apply minimal effort by the end users of which translates to effective and quality functionalities.

TAM suggests that there exists external influences affecting how users accept adaptability of technology which ultimately influences attitude towards ease of use as well as attitude on the perceived usefulness of the technology (Davis *et al.*, 1989). (Legris et al., 2003) indicates that empirical studies conducted in favour of TAM elements validated incorporations of these elements in technology acceptance. Tools deployed alongside TAM have also demonstrated effectiveness in yielding results confirmed statistically (Legris et al., 2003).

Reasoned Action Theory differs in a great way from TAM in that there is a subjectivity approach in Reasoned Action Theory which is not the case in TAM. The subjective approach is one's perception that people who are important to someone have the idea that they have a leeway of either acting or not acting on the behavior being addressed (Fishbein and Ajzen 1975).

Varying findings were identified by (Hartwik and Barki 2001) on the subjective approach. The study was conducted with having end users being categorized into voluntary use and mandatory use. The study reviewed that subjective approach had more impact on the category of mandatory use as compared to voluntary use. The findings informed extension of TAM by incorporating the subjective approach as an element in evaluating mandatory intention to system use (Venkatesh and Davis 2000).

2.6.4 Theory of Constraints-Based Methodology for Effective ERP Implementations

The benefits harnessed from implementation of ERP projects have been so far acknowledged and documented through research and case studies focused on the same issue. A number of challenges likewise faced by big organizations in the process of ERP implementations have also been identified and are well known for the purpose of making ERP projects implementation free of challenges. ERP projects implementation benefits and challenges are dimensionally evaluated

into two broad aspects that determine the success or failure of implementation and are categorized as functional and technical.

Technical design of ERP systems should congruently put into consideration the specific requirements of an organization according to its existing structural design and achieve the outlined benefits expected in an organization based on ERP system implementation. With the consideration of theory of constraints, a streamlined articulate methodology of technical design of the system is outlined and this ensures that both success and failure elements are incorporated to ensure successful ERP project implementation. This methodology of ensuring successful implementation of ERP project is tested and verified using statistical data collected from SAP R/3 implemented project by packaging manufacturers based in European countries. This study was focused on success elements specifically on project management for ERP project implementation where (Ewusi and Mensah 1997; Keil et al., 1998) categorized success elements on best practices outlining four main best practices as; support from top management, IS selection proficiency, team members contribution , adequate training and consulting capability. (Ferratt *et al.*, 2006) through his study, validated the elements through study of empirical ERP project implementation.

Though the study, five questions drawn from the elements studied for the empirical study were seen to be positively correlated and translated to form a single outcome element which is effectiveness. The study outlined through the regression analysis done showed that the success elements affected the outcome which is effectiveness hence we incorporate these elements in ERP project implementation study (Ferratt *et al.*, 2006).

2.7 Conceptual Framework

Four main variables are evaluated in details that are considered to influence the effectiveness and efficient of ERP system projects. The variables to be evaluated include; support from top management, availability of finances, staff commitment and time management. In this model, these elements will be the subject of study and will be subjected to measurement, analyzed and conclusions made according to findings. The parameters generated will be used to draw conclusions and solve the phenomenon of ERP project efficiency and effectiveness.

Independent variables

Dependent variable

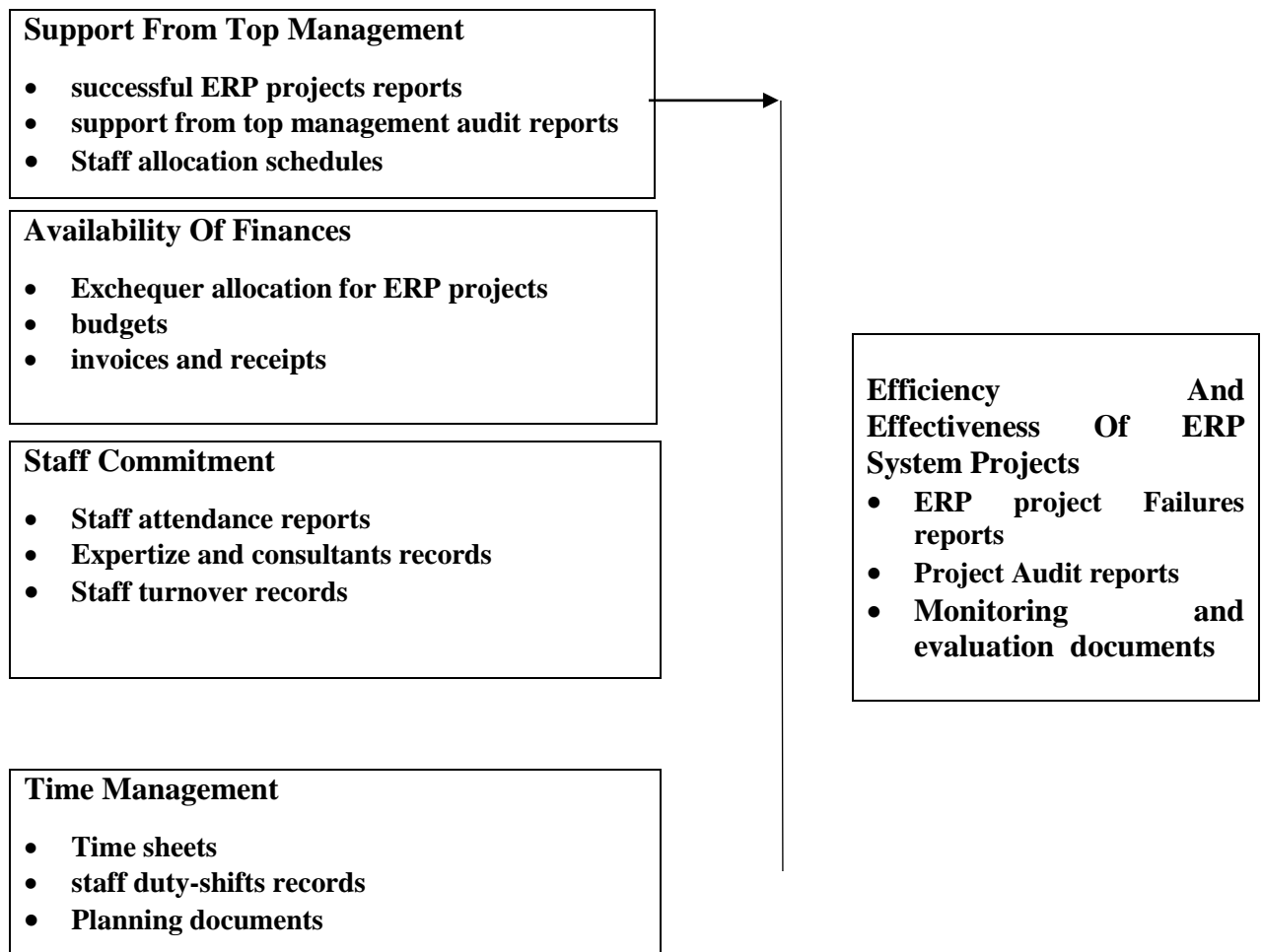


Figure 1: Conceptual Framework for Determinants of Effective and efficiency ERP projects

2.8 Explanation of Relationships of Variables in the Conceptual Framework

2.8.1 Support From Top Management

Top management support is a vital requirement in every project especially in implementation of enterprise resource management project. Senior staff incharge of controlling the structures and dimensions of the project are required to support the implementation of the project by giving sound directions and availing the necessary resources required for achievement of a quality project that is able to solve the predetermined problems. With adequate support from top management, an enterprise resource management project is able to ensure effectiveness and efficiency of enterprise resource management project.

2.8.2 Availability Of Finances

Finances is a key requirement for an enterprise resource management project as purchase of the necessary structures and payment of the staff team is essential to ensure that the best expertise is used in the project implementation process. To achieve effectiveness and efficiency of enterprise resource management project, having adequate budgetary allocations and ensuring the right technology is used is critical. The project management need to access their allocations to ensure that the available finances will complete the project to avoid scenarios of closing down the projects before it can achieve the intended results.

2.8.3 Staff Commitment

Commitment is critical in every project and this is highly a necessity across any stakeholder involved in the project right from design stage to the point of close down. Motivation can be achieved from different dimensions right from the human resource policies to the remuneration policies of the company. With high levels of motivation from the staff working directly or

indirectly with the project there is a good chance of achieving effectiveness and efficiency in enterprise resource management projects.

2.8.4 Time Management

Time management is essential in ensuring that the allocated resources fully complete the activities of the project within a certain budgetary allocation. Managing time effectively also ensures the project design is able to solve the intended problems as delaying the project might demand for a change in the project design as some problems intended to be solved are time based. When time is managed well during an enterprise resource management project, effectiveness and efficiency of the project is largely realized.

2.9 Gaps in Literature Reviewed

The competitive pressure unleashed by the process of globalization is driving implementation of ERP projects in increasingly large numbers; the primary purpose of implementing ERP is to run the business in a rapidly changing and highly competitive environment. Umble *et al.*, (2003) argues that firms that implement the strategy of operational excellence restructure their delivery processes to focus on efficiency and reliability, and use state-of-the-art information systems that emphasize integration and low-cost transactions. According to (Armstrong, 2005) organizations are trying to become more competitive and efficient by transforming into digital firms where nearly all core business process and relationships with customers, suppliers and employees are digitally enabled. Between Feb and Dec 2010, KenGen implemented ERP to turn weaknesses in its internal environment into strengths and in-turn use these strengths to counter threats in its external environment. But ERP implementation is a complex and difficult process that can potentially reap enormous benefits for successful companies or be disastrous for those

organizations that fail to manage the implementation process. (Nicolaou, 2004) reiterates that far from being the magic ingredient which allows operations to fully integrate all their information, ERP is regarded by some as one of the most expensive ways of getting zero or even negative return on investment. (Umble et al., 2003) is categorical that “An ERP implementation is like the corporate equivalent of a brain transplant.

Many organizations underestimate the effort, cost and strain which an ERP implementation inflicts upon the organization. The complexity of an ERP project is easily misjudged and the consequences are potentially grave. ERP implementation is strenuous, complex, delicate process often accompanied by behavioral and systemic challenges in form of resistance to change, non-supportive culture, structure misalignment, lack of user training, communication hurdles, low top management commitment, poor management of consultants, poor allocation of resources and inadequate incentives. All these challenges impact the process. The above challenges need to be identified and dealt with for the strategy to work as intended. Studies on strategy implementation have been conducted by several scholars.

Notable researchers in this area are: (Kim, 2005) dealt with effectiveness and problems of strategy implementation of financing higher education in Kenya by Higher Education Loans Board, (Kothari, 2004) considered challenges to strategy implementation at Madison Insurance (K), (Johnson, 1995) studied strategy implementation and its challenges at African Braille centre, (Markus,2000) delved into challenges in strategy implementation at the (ECK) Electoral Commission of Kenya. In her study, (Otieno,2008) identified human resource management challenges facing Kenya Pipeline Company in the implementation of ERP. Due to contextual, sectoral and managerial differences among organizations studied; lessons drawn from the above studies on strategy implementation challenges cannot be used to gainfully explain strategy

implementation challenges faced in the Kenya National Treasury IFMIS case. An empirical study needed to be conducted on Kenya National Treasury to point out challenges of ERP strategy implementation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented Research methodology which included introduction, research design, target population, sample size and sampling procedures, data collection instrument, pilot testing of the instruments, validity of the instrument, reliability of the instrument, data collection procedures, data analysis techniques, ethical considerations and operational definition of the variables.

3.2 Research design

This research adopted a survey type of design approach that was deployed in data collection targeting respondents working with the Kenya Government Treasury department. The research targeted a unit in the Kenya Treasury dealing with integrated financial management and information system. Detailed information from the predetermined population at IFMIS department was collected and was analyzed in this research

A need therefore arose in this research context of conducting a quantitative research with an aim of obtaining data that enlightened on the relationship between the determinant factors with ERP

project effectiveness and efficiency. In order for the objectives of the research to be achieved, determinants that affect effectiveness and efficiency of ERP project were the subject in the questionnaire design and were filled by the correspondents. Primary data was collected from IFMIS users at the National treasury using these questionnaires that sampled the views of the respondents on determinants of effectiveness and efficiency of ERP projects from their experience out of using IFMIS system.

This survey was expected to generate quantitative data that was analyzed using SPSS which is a statistical software to get statistics out of the sample from each determinant. The statistics from the samples on each determinant was subjected to comparison and determinant's degree of influence was known and therefore provided further insights on how to improve ERP projects' effectiveness and efficiency.

3.3 Target Population

According to (Orodho, 2003) small populations can form samples and studied as distinct cases. The choice of the target population was guided by the topic of the study which was determinants of effective and efficient Enterprise Resource management in Organizations, a case of the National Treasury Kenya. National Treasury IFMIS department employees comprised the population targeted by this study with eighty people according to official National Treasury Human Resource records where a sample of forty respondents was drawn.

3.4 Sampling technique and sample size

A Sample is a small part of the large population that is considered to be a representative of the large population (Cooper, 2003). A random selection process will be used, where the probabilities of each employee being included in the sample is proportional to the size of the population

3.4.1 Sample size

A sample is a portion that presents the whole population. A representative sample is considered to be 10%-60% of the population (Kothari,2004) in this case 55% of the population will be 44 respondents. Simple random sampling method was be used to select the 44 respondents from 80 employees of the National Treasury,Kenya.

3.4.2 Sampling technique

Probability sampling technique was adopted specifically using simple random sampling technique to consolidate a sample team of IFMIS users as respondents at the National Treasury department of IFMIS. Probabilistic sampling method gave correct information regarding a large population that is practically not possible to study each element and give specific conclusion. According to (Kothari,2004) probabilistic method was used to draw a much smaller sample that was researched on to make a generalized conclusion of the target group, heterogeneity existing in a group as well as variations efficiently and systematically recorded.

3.5 Research Instruments

Questionnaires were the most convenient and effective data collection tools administered in this research and were directly filled by IFMIS users at the National Treasury seeking to get their opinion on determinants of efficient and effective ERP projects and specifically on IFMIS project. Questionnaires popularity as a tool of collection of information was due to the simplicity and ability of most people to understand and easily respond to paper based questions. Self-administered method of questionnaires were used in this research where the respondents were given an opportunity to write directly their response on paper.

The questionnaires intended to be used in collection of data comprised of three main parts meant for the respondents where the first section was to collect basic background information about the respondent. This part is important in understanding the respondent's environment and general

information that may influence their response. The second section technically aimed at drawing information from the respondent on determinants of efficient and effective ERP project. This part provided critical information that was analyzed to inform on measures taken for having efficient and effective ERP projects.

The Last section of the questionnaire sought to get information on determinants' effects to the IFMIS project general scope. Analysis was done on the response captured through the questionnaires hence made the information quantitative. I assigned numerical values to the response rating as follows; 5 to represent strongly agree, 4 to represent agree, 3 to represent neutral, 2 to represent disagree and 1 to represent strongly disagree.

The questionnaires was delivered physically by a research assistant to the respondents at the National Treasury head office with an introductory letter approved by the University attached for each respondent. The letter informed the respondents the purpose of the research and the assurance of anonymity that was honored. A reference contact number was provided in the letter for confirmation purpose in case of any doubts demonstrated by the individual respondents for clarification purposes. No record was captured on the identity of organization or individual giving response through the questionnaires.

3.5.1 Pilot testing of the instruments

A test of the questionnaires prepared was done before the actual information was collected administered to a selected small sample with the same characteristics as the actual selected sample intended for the actual information collection (Kothari 2004). The test sought to measure the validity and reliability of the instrument identified by following the exact procedural design deployed in the actual collection of data and it revealed all weaknesses or likely challenges to be experienced during the actual data collection. A small number of pre-test sample was drawn, one

percent to ten percent of the actual sample size was adequate (Mugenda and Mugenda 1999). Five percent was used in this research translating to a pre-test sample size of two respondents and further amendments of the questionnaire was effected based on the finding from the pre-test exercise which indicated a 90% fitness of the questionnaire in collecting the intended information.

3.5.2 Validity of the instrument

Instrument validity means accuracy, meaningfulness and technical soundness of the research instrument (Mugenda and Mugenda 1999). It is the degree to which a test measures what it is intended to measure. To this effect questionnaire or interview guide are said to be valid when they actually measure the intended parameters. To enhance the instrument validity, the researcher instruments were appraised by the supervisor to provide expert opinion and evaluate the applicability and appropriateness of the content, clarity and adequacy of the instruments from a research perspective. A pilot test of the instruments were conducted among 5 randomly selected respondents to ensure validity in the content of each research instrument and the instrument was appraised at 99% by the supervisor and allowed to deploy it.

3.5.3 Reliability of the instrument

The degree to which the instrument is able to produce the same results after repeated trials according to (Mugenda and Mugenda 2003). The researcher employed the test-retest method in order to test reliability of the research instruments. The research instruments were subjected into a test process with 5 respondents on two different occasions within two weeks and the correlation between the two set of scores computed to give results on the reliability of the instrument where Cronbach Alpha Test (Reliability Test) was used revealing an internal consistency and reliability of $\alpha = 0.970$ which is acceptable for deploying the instrument.

3.6 Data collection procedure

To generate data for this study, the researcher will visit the sampled respondents drawn National Treasury IFMIS department and schedule for a meeting in which the questionnaires' will be distributed. The interviews will be conducted on the agreed dates and the proceedings will be recorded. The questionnaires will be distributed to the sampled households with the aid of a research assistant, and the completed questionnaires collected later on an agreed date. This will be helpful in increasing the questionnaire return rate and in reducing the chances of delay. Instructions will be carefully explained to the respondents during the issuing of the questionnaires and they will also assure that the information given would be treated confidentially and used only for the purpose of the study. The completed questionnaires will be checked for completeness and appropriateness of the responses.

3.7 Data Analysis Techniques

Primary data collected through questionnaires were entered in a spreadsheet and then SPSS used to analyze the data to define specific statistics on the samples drawn from the selected sample of the population. Analysis of the first section in the questionnaire adapted descriptive statistics analysis method and sought to calculate different percentages, ratios and also define frequencies in the data. The second part of the questionnaire which captured the most important information on this research as opposed to section one which was generalized information adapted Likert's scale of 5 ordinal opinions of the correspondents.

On analysis of the second part of the questionnaire, SPSS was used to compute the relative ranking after calculating each determinant's response mean score. In addition, Spearman's correlation analysis was used in second section with an aim of defining the extent to which each

determinant relate to each other. The determinants are the independent variables and spearman's correlation analysis seeked to determine their relationships.

3.8 Ethical considerations

The research addressed ethical issues via use of an introductory letter which explained the purpose of the study. A letter from NACOSTI was acquired. It ensured that the respondents gave their information voluntarily and that the respondents had the right to know the purpose of the study and the right to confidentiality and anonymity. Research from other writers was cited and referenced.

3.9 Operational Definition of the Variables

Table 3.1 Operational definition of the variables

Objectives	Variables independent	Indicators	Measurement scale	Types of data analysis
To find out how support from top management is a determinant for effective and efficient Enterprise Resource Planning system	Support from top management	Number of successful ERP projects out of top management support Level of support from top management Number of top management officials directly involved in ERP project	Nominal Ordinal	Descriptive statistics
To establish the extent to which availability of finances influence effectiveness and efficiency of Enterprise Resource Planning systems	Availability of Finances	Amount of money dedicated to ERP project Ratio of budgetary allocation to ERP project The Amount of money spent on consultants and expertize	Nominal Ordinal	Descriptive statistics

To determine effects of staff commitment in an organization on effectiveness and efficiency of Enterprise Resource Planning systems	Staff commitment	Number of hours per day each employee spends on ERP project The level of expertise available for ERP project The turnover ratio of employees in the ERP project	Nominal Ordinal	Descriptive statistics
To find out how time management is a determinant for effective and efficient Enterprise Resource Planning systems	Time management	The intensity of schedule allocation on activities The number of employees working on time management Types of systematic plans available for time management	Nominal Ordinal	Descriptive statistics
	Dependent variable Efficient and effective ERP project	Reduced cases of ERP project Failures	Nominal Ordinal	Descriptive statistics

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

This chapter presents the analysis of data findings on the factors affecting effectiveness of ERP Projects. The research targeted forty four users from the entire population of eight users working with Integrated Financial Management Information System at The National Treasury. The procedure used in analyzing the results was aimed at establishing the relative importance of the various factors responsible for effectiveness of ERP Projects.

The questionnaire gave each respondent an opportunity to identify the factor that was likely to affect the effectiveness of ERP systems by giving the response “Strongly Agree”, “Agree”, “Neutral”, “Disagree”, “Strongly Disagree” frequency occurrence of the variables; and the impacts of each factor on effectiveness of the ERP projects. For each variables of ERP projects effectiveness, the percentages of respondents’ response were ranked for analysis purpose. On the basis of the ranking of the variables, it was possible to identify the most important factors that affect the effectiveness of IFMIS as an ERP system at the National Treasury.

4.2 Response Rate

The questionnaires were sent to forty four respondents and out of which only thirty six questionnaires were received back fully completed reflecting a seventy nine percent response rate. This therefore translates to the agreement that was indicated by (Cooper and Ghindler 2003) who indicated that a response rate between 30% and 80% of the total sample size can be generalized to represent the opinion of the entire population.

4.3 Background Information of the Respondents

Table 4.1: Level of Work

Accounts	36.11%
Procurement	27.78%
Super user	19.44 %
Finance	16.67%

Since the aim was to get information on factors affecting effectiveness of ERP projects at the National Treasury, respondents from the following designations were targeted; Procurement officers, Finance Officers, Accounts Officers and Super Users were targeted because they are the people who directly interact with the system on a day to day basis. The study sought to establish the background information of these respondents. The results in the figure 4.1 below shows that 36.11% were accountants while 27.78% were procurement officers, 19.44% were super users and 16.67% were finance officers. The summary of the findings are shown in the figure 4.1 above.

4.4 Department of Work

Table 4.2: Department of Work

Accounts	44.4%
Procurement	33.3%
Finance	13.9 %
Others	8.3%

The thirty six respondents were coming from different department as indicated in the figure 4.2 above, 44.4% of the respondents were from accounts department, 33.3% from procurement department, 13.9% from Finance department and the remaining 8.3% from other departments. This clearly indicates that at the National Treasury the larger group of people using IFMIS is

from accounts department, and the least are from other departments excluding procurement and finance departments.

4.5 Work Experience

Table 4.3: Experience at National Treasury

Period	Frequency	Percent
Less than 1 year	3	8.3
1-3 years	11	30.6
4-8 years	10	27.8
9-12 years	6	16.7
13 or more years	6	16.7
Total	36	100.0

On the number of years worked in their respective positions at the National Treasury, the study established that the respondents for sometimes with IFMIS and therefore the information provided by them was perceived as good enough for the research. In respect to direct interaction with IFMIS as a system on a day to day basis, the study revealed that most employees have worked with IFMIS between one to eight years. The results were as follows;

4.6 Enterprise Resource Planning Experience

Table 4.4: ERP Experience

Period	Frequency	Percent
Less than 3 months	4	11.1
7-11 months	7	19.4
1-3 years	10	27.8

More than 3 years	15	41.7
Total	36	100.0

The study discovered that a greater number of respondents have more than 3 years experience with ERP which is 61.1%, 27.8% of respondents have 1-3 years of experience in ERP and only 11.1% of respondents have 7-11 months of experience. This information was very useful to the researcher now that a greater number of the respondents had worked with ERP system for more than three years, it was evident that this group of respondents had more knowledge in the system and knew its challenges. The table 4.4 above shows the results for the ERP experience of the respondents.

4.7 Top Management Support

4.7.1 The Cronbach Alpha Test (Reliability Test)

Table 4.1: Top Management Support Influence to ERP system effectiveness

Statement	S.D	D	N	A	S.A	Mean	SD
The view of Top Management	0	0	4	16	16	4.33	0.676
Adequate Leadership	0	0	7	17	12	4.14	0.723
Capital/money and human resource availability	0	0	2	12	22	4.56	0.607
Top Management Familiarity with the system	0	5	7	12	12	3.86	1.046

The first independent variable was Top Management Support. In the Table 4.5 above, the internal consistency and reliability of data was proved by the use of Cronbach Alpha Test. The Cronbach Alpha Test of reliability has the following interpretation rules. If the value is between 0.4 to 0.7 it indicates of medium internal consistency and reliability. If the Cronbach Alpha value is between 0.7 and 1.0, indicates of high internal consistency and reliability. Reliability analysis of the questionnaire on Top Management support revealed a high internal consistency and reliability of $\alpha = 0.970$.

The first objective of this study was 'To determine the extent to which top management support influences effectiveness of ERP projects'. To achieve this objective, the respondents were asked to give their level of agreement to four statements in respect to this objective, the statements were as follows; The view of Top Management influence the effectiveness of the ERP projects, Adequate leadership from top management influences ERP projects, The degree to which top management make the capital/money and human resources available affects the ERP projects effectiveness, Top management's role/Involvement in the ERP Projects affects its effectiveness and The degree of the top management familiarity with the ERP system's functionalities and its potential benefits affects its effectiveness. Among the four objectives investigated, according to Table 4.5 Top Management Support was rated as the most important factor that affects effectiveness to ERP systems by means of ranking.

The most rated statement for this objective was the Top Management making capital/money and human resource available for the ERP systems to be effective with a mean of 4.56 and a standard deviation of 0.607. This finding indicates the success of a major project like an ERP completely hinges on the strong, sustained commitment of top management. This commitment is always on making capital/money and human resource available for the system to be effective. The commitment should also percolate down through the organizational levels results in an overall organizational commitment. An overall organizational commitment that is very visible, well defined, and felt is a sure way to ensure a effectiveness of ERP projects.

This finding may also mean that organizations intending to implement an ERP system must be willing to dedicate some of the employees to the project for its effectiveness to be felt by the users, the ERP systems starts from implementation and therefore this team should be very competent to ensure that the implementation is a success to start with, after the system has been

implemented, another competent team is required to day to say transactions with the system and all these are provided by the Top Management individuals. Often companies do not realize the impact of choosing the internal employees with the right skill set. The importance of this aspect cannot be overemphasized. Internal resources of a company should not only be experts in the company's processes but also be aware of the best business practices in the industry. Organizations should take this exercise seriously and make the right choices. Top management commitment and support leads to overall organizational commitment across an organization. It results in the successful ERP implementation (Umble and Umble 2002).

The second rated statement for this objective is the Top Management view on the system with a mean of 4.33 and a standard deviation of 0.676. This finding may mean that Top Management individuals should have positive view about the system as they are the champions of this kind of a project. A project champion is person who performs the crucial functions of transformational leadership, facilitation and marketing the project to the users. Championship should also be considered as a critical enabling factor. Top Management champions play a critical role in acceptance of the technology as they have authority to make substantial organizational changes happened. Top Management role has someone or some people from positions like CIO or CEO.

The Top Management individuals should make things happen and ensure that management of the project is conveyed to all levels; top management support is maintained throughout the project, necessary resources are provided at critical junctures, parties at loggerheads are brought together and, decisions and compromises are enforced. The other statement on Top Management Support objective is adequate leadership from the Top Management with a mean of 4.14 and a standard deviation of 0.723. This finding may mean that senior management must demonstrate their

commitment by showing strong leadership and working towards achieving an early success. This finding may also mean that identifying a dedicated project leader and a team for your ERP implementation will help ensure that the project goes smoothly. Identifying a team leader with strong project management skills who can facilitate team communication, address any issues that may arise, and keep the implementation on schedule is very critical for the project success.

The least rated statement on top management support objective is Top Management Familiarity with the system with a mean of 3.86 and a standard deviation of 1.046. Though it was the least rated statement, it was still above the considered significant. Since the response to each statement varied from 1 to 5, a mean score of 3.5652 (71.3%) and above was considered significant. This finding may mean that familiarity with the system is also critical when it comes to the systems effectiveness, the Top Management should at least have an idea of what the system is all about and the functionality of the system, so that when they are spear heading the team they have the required knowledge for mobilization.

4.7.2 ERP Experience and Top Management Support Cross tabulation

Table 4.6: ERP Experience and Top Management Support Cross tabulation

ERP Experience		Top Management Support		
		Yes	No	Total
Less than 3 months	Count	1	3	4
	Percentage	25.0%	75.0%	100.0%
7-11 months	Count	1	6	7
	Percentage	14.3%	85.7%	100.0%
1-3 years	Count	7	3	10
	Percentage	70%	30%	100.0%
More than 3 years	Count	13	2	15
	Percentage	86.7%	13.3%	100.0

Total	Count	22	14	36
	Percentage	61.1%	38.9%	100.0%

Cross Tabulation was further done on the years of experience in ERP with the Top Management Support objective. In Table 4.6 above, respondents who have worked with ERP for a period of 1-3 years have agreed that Top management Support influences the ERP effectiveness and the same for respondents who have worked with ERP for more than 3 years. The opposite was evident from respondents who have worked with ERP for less than 1 year.

4.8 Availability of Finances

4.8.1 The Cronbach Alpha Test (Reliability Test)

Table 4.7: Availability of Finances Effects to ERP system effectiveness

Statement	S.D	D	N	A	S.A	Mean	SD
Having a budget dedicated to ERP project	0	0	0	26	10	4.28	0.454
Efficiency use of available financial resource	5	7	7	10	7	3.19	1.348
Finances for training and capacity building	23	6	4	3	0	1.64	0.990
Finances for ERP project maintenance and purchase of required hardware equipment	1	0	16	16	3	3.56	0.773

In the Table 4.7 above, the internal consistency and reliability of data was proved by the use of Cronbach Alpha Test. The Cronbach Alpha Test of reliability has the following interpretation rules. If the value is between 0.4 to 0.7 it indicates of medium internal consistency and reliability. If the Cronbach Alpha value is between 0.7 and 1.0, indicates of high internal consistency and reliability. Reliability analysis of the questionnaire on Availability of Finances revealed a medium internal consistency and reliability of $\alpha = 0.699$

The other objective of this study was to ‘To determine the extent to which Availability of Finances affect the effectiveness of ERP projects. To achieve this objective, the respondents were asked to give their level of agreement to four statements in respect to this objective, the statements were as follows; Having a budget dedicated to ERP project determines success of the entire implementation process, Efficiency use of available financial resources determines success of ERP project, . Availability of finances for training and capacity building in ERP project is a determinant of its success and Availability of financial resources for ERP project maintenance and purchase of required hardware equipment is a determinant for effective and efficient ERP projects

Among the four objectives investigated, according to Table 4.8 Availability of Finances was rated as the least important factor that affects effectiveness to ERP systems by means of ranking.

The most rated statement among the four was having a budget dedicated to ERP project with a mean of 4.28 and a standard deviation of 0.454. This finding may mean that the introduction of budget brings forth foreseeable costs and impacts upon a business. A company has to adapt to the budgets prepared. To achieve the desired ERP performance, the company has to radically avail budgets for different purposes.(Jih and Owings 1995) suggested that management is taking a more holistic approach to the redesign and packaging of business processes and their relation with information technology. The benefits from having budgets arise from combinations of organizational costs with information and information technology (Hammer and Champy 1993, Davenport 1993, Lillrank and Holopainen 1998, Jarrar and Aspinwall 1999). The second rated statement was Finances for ERP project maintenance and purchase of required hardware equipment with a mean of 3.56 and a standard deviation of 0.773. This finding may mean that

organizations planning to implement ERP system should first understand their business hardware requirements and maintenance needed over time.

The third rated statement was efficiency use of available financial resource with a mean of 3.19 and a standard deviation of 1.348. This means that efficiency use of available financial resource is important to the management and should be prepared to alleviate potential wastage. The respondents showed a very slow reaction when it comes to availability finances for training and capacity building with a mean of 1.64 and a standard deviation of 0.990. This shows that respondents are very less concerned with what capacity building as compared to the other factors investigated.

4.8.2 ERP Experience and Availability of Finances Cross tabulation

Table 4.8: ERP Experience and Availability of Finances Cross tabulation

ERP Experience		Availability of Finances		
		Yes	No	Total
Less than 3 months	Count	0	4	4
	Percentage	0.0%	100.0%	100.0%
7-11 months	Count	1	6	7
	Percentage	25.0%	75.0%	100.0%
1-3 years	Count	5	5	10
	Percentage	50.0%	50.0%	100.0%
More than 3 years	Count	8	7	15
	Percentage	53.3%	46.7%	100.0%

Total	Count	14	22	36
	Percentage	38.9%	61.1%	100.0%

Cross Tabulation was further done on the years of experience in ERP with the Availability of Finances objective. In Table 4.8 above, respondents who have worked with ERP for a period of 1-3 years are agreeing that Availability of Finances affects the ERP effectiveness and the same for respondents who have worked with ERP for more than 3 years. The opposite is evident from respondents who have worked with for less than three months; this might indicate that respondents who have worked with ERP for less than three months do not have sufficient knowledge when it comes to Availability of Finances

4.9 Time Management

4.9.1 The Cronbach Alpha Test (Reliability Test)

Table 4.9: Time Management effects to Effectiveness of ERP Systems

Statement	S.D	D	N	A	S.A	Mean	SD
Scheduling of ERP project	0	0	3	16	17	4.39	0.645
Maintaining an updated project timesheet	3	6	7	14	6	3.39	1.202
Having expertize and the right competences	0	2	10	17	7	3.81	0.822

The third independent variable was Time Management. In the Table 4.9 above, the internal consistency and reliability of data was proved by the use of Cronbach Alpha Test. The Cronbach Alpha Test of reliability has the following interpretation rules. If the value is between 0.4 to 0.7 it indicates of medium internal consistency and reliability. If the Cronbach Alpha value is between 0.7 to 1.0, indicates of high internal consistency and reliability. Reliability analysis of the questionnaire on Time Management revealed a high internal consistency and reliability of $\alpha = 0.801$.

The study objectively sought to establish the extent at which tools and Time management methods used affects effectiveness of ERP systems. When doing a pilot test, the results were that Time management was moderately significant when it comes to the system effectiveness. For this independent variable, the respondents were asked to indicate their level of agreement on three statements that were stated that affect effectiveness of ERP projects. The statements were; Scheduling of ERP project activities systematically is essential in determining success of the project, Maintaining an updated project timesheet is essential for ensuring ERP project success and Having expertize and the right competences is essential in time management hence ERP project successes. The results are in the table 4.9 above.

Among the four objectives investigated, Time management was rated by the respondents as second last variable that affects effectiveness to ERP systems. According to the findings, the most rated statement by the respondents in respect to Time management that affects effectiveness to ERP systems was Scheduling of ERP project with a mean of 4.39, Having expertize and the right competences followed with a mean of 3.81 and the least rated under Time management as a variable was Maintaining an updated project timesheet with a mean of 3.39.

The finding indicated that employees were very much concerned on time management and this may mean that for success of ERP projects, time management need to be taken serious by both the management and employees. These employees need to be assigned time frames as per their inclinations and skill sets

In an attempt to change the attitudes of potential users of ERP, management must first try to affect the cognitive component of users' attitudes in regard to time management. A major strategy for achieving this goal is communication on set timelines and importance of managing their own time effectively. One effective communication strategy is to inform potential users of the benefits of time management. Top management, in the same way, can create more effective

awareness for time management by communicating its benefits to the workers. In many cases, ERP Implementation failed because of lack of communication on importance of time management (Al-Mashari and Zairi 2000). Knowledge about what time management can deliver to the organization and its workers can build anticipation for time management programs. Nevertheless, one must watch out for unrealistic workers' expectations, which may deepen the resistance problem, thus causing its failure from the outset. Moreover, the success of future introduction initiatives depends on building a cumulative base of credibility by management.

4.9.2 ERP Experience and Time Management Cross tabulation

Table 4.20: ERP Experience and time Management Cross tabulation

ERP Experience		Time Management		
		Yes	No	Total
Less than 3 months	Count	3	1	4
	Percentage	75.0%	25.0%	100.0%
7-11 months	Count	5	2	7
	Percentage	71.4%	28.6%	100.0%
1-3 years	Count	4	6	10
	Percentage	40.0%	60.0%	100.0%
More than 3 years	Count	7	8	15
	Percentage	46.7%	53.3%	100.0%
Total	Count	19	17	36
	Percentage	47.2%	52.8%	100.0%

Cross Tabulation was further done on the years of experience in ERP with the time Management objective. In Table 4.10 above, respondents who have worked with ERP for a period less than one year are agreeing that Time Management needs to be effected in order for ERP systems to be effective with 75.0%. The opposite came from respondents who have worked with ERP for more than one year; this might mean that respondents who have worked with ERP for more than 1 year do not support time management as such.

4.10 Staff Commitment

4.10.1 The Cronbach Alpha Test (Reliability Test)

Table 4.31: Staff Commitment Effects to Effectiveness of ERP Systems

Statement	S.D	D	N	A	S.A	Mean	SD
conducive working environment	0	4	3	5	24	4.36	1.046
Supporting and favorable policies	2	3	9	11	11	3.72	1.162
Team work culture	0	0	2	4	30	4.78	0.540

The last independent variable was staff commitment. The internal consistency and reliability of data was proved by the use of Cronbach Alpha Test. The Cronbach Alpha Test of reliability has the following interpretation rules. If the value is between 0.4 to 0.7 it indicates of medium internal consistency and reliability. If the Cronbach Alpha value is between 0.7 and 1.0, indicates of high internal consistency and reliability. Reliability analysis of the questionnaire on staff commitment revealed a high internal consistency and reliability of $\alpha = 0.970$.

The study objectively sought to establish the extent at which staff commitment affects effectiveness of ERP systems. When doing a pilot test, the results were that staff commitment was very significant when it comes to the system effectiveness. For this independent variable, the

respondents were asked to indicate their level of agreement on three statements that were stated that affect effectiveness of ERP projects. The statements were; having a conducive working environment enhances employee commitment hence ERP project success, Supporting and favorable organization policies enhances employee commitment to ERP projects and having a team work culture enhances employee commitment to ERP projects leading to its success. The results are illustrated in figure 4.11 above.

The respondents reported that team work culture is a leading factor affecting effectiveness to these ERP systems with a mean of 4.78. Conducive working environment followed with mean of 4.36. However, the respondents rated Supporting and favorable policies as the least factors that can barely affect effectiveness to ERP systems with a mean of 3.72. This result might mean that end-users across the organization should have team work culture from the onset of ERP implementation. Although teamwork is a cornerstone of ERP implementation, staff commitment is usually only emphasized and the courses are centered on computer/system operation rather than on understanding the ERP concept and spirit.

The respondents have supported staff commitment as it is believed that the benefits generated by the system increased when there was high levels of commitment from staff members implementing ERP systems. These results may also mean that in order to build the necessary capacity, it is important to create a commitment culture early in the project and to treat the whole process as an important opportunity with commitment being part of an ongoing process. Commitment should be emphasized to senior managers, technical staff and end users, and should support users on how to use the new system and how it affects business processes effectively.

The effective implementation, operation and maintenance of an IFMIS require staff with the necessary knowledge and skills. Lack of capacity is regarded as one of the main causes for the delay in the implementation process experienced by Ghana, whilst the emphasis that was put on capacity building and commitment through training in Tanzania was one of the main contributors to their success. (Diamond and Khemani 2006).

(Brar, 2010) argues that low capacity for system implementation at the sub-national level, such as provincial and regional governments, is one of the major challenges in the implementation of an IFMIS in developing countries. This aspect is especially relevant in the South African context with its nine provinces and the consequent demand that the duplication of efforts creates for skills and knowledge, of which a shortage already exists. (Farelo and Morris 2006) contend that the human resource development issue within government needs prioritization, the education system needs to be aligned with the information and communication technologies (ICT) demands of the country and scarce ICT skills need to be attracted and retained particularly within government.

Capacity building is a major factor affecting the success of ERP implementation, especially in developing countries (Chene, 2009). An ERP comprises more than only implementing a project; it also means planning for capacity building. A comprehensive training programme is therefore vital for the success of the project and should be compiled as early as possible as it boosts levels of commitment among implementers.

4.10.2 ERP Experience and Staff Commitment Cross Tabulation

Table 4.42: ERP Experience and Staff Commitment Cross Tabulation

ERP Experience		Staff Commitment		
		Yes	No	Total
Less than 3 months	Count	3	1	4
	Percentage	75.0%	25.0%	100.0%
7-11 months	Count	6	1	7
	Percentage	85.7.0%	12.3%	100.0%
1-3 years	Count	4	6	10
	Percentage	40.0%	60.0%	100.0%
More than 3 years	Count	7	8	15
	Percentage	46.7%	53.3%	100.0%
Total	Count	20	16	36
	Percentage	55.6%	44.4%	100.0%

Cross Tabulation was further done on the years of experience in ERP with the staff commitment objective. In Table 4.12 above, respondents who have worked with ERP for a period less than one year are agreeing lack of staff commitment affects ERP systems effectiveness; this may be as a result that they are just working with the system but have not undergone any thorough training on these ERP systems hence lack of commitment to it. The opposite was evident from respondents who have worked with ERP for more than one year; this might mean that respondents have been trained and they are knowledgeable about the system and need no further training as of now.

4.11 Effectiveness of ERP Systems

Table 4.53: ERP Effectiveness

Variable	Yes	Percentage	No	Percentage	Total
ERP Effectiveness	7	19.4	29	80.6	36

The respondents were required to indicate whether the system has met its objectives ever since it was implemented. Based on the findings as shown in table 4.13 above, over 80% of the respondents revealed that the system has not met its objectives as was stated before implementation. 19.4% however agreed that the system has achieved its stated objectives. Despite the attributes and major advantages provided by ERP systems, the implementation of such systems is not always effective. Most enterprises are not able to fully justify their investments in ERP software, since the bulk of ERP benefits remain hidden. In their survey, (Marnewick and Labuschagne 2005) reported that 25 percent of ERP installations exceed the initial cost and about 20 percent cannot be completed. Moreover, ERP systems often fail to meet organizational goals soon after their implementation. The cause of the general disappointment regarding ERP system effectiveness lies in a number of reasons, including a misconception about the system's potential (Bradford and Florin 2003; Hong and Kim 2002; Marnewick and Labuschagne 2005; Motwani et al., 2005).

In this highly automated, IT-led business environment, companies are forced to keep up-to-date with the new technologies to remain competitive (Palaniswamy and Frank 2000; Siriginidi, 2000; Al-Mashari, 2001). ERP systems provide distinct advantages to companies adopting them as they can integrate business applications using real-time information. Therefore, ERP systems

provide the means for management to respond to the increasing business needs in more effective and efficient ways. The main benefits of ERP systems are seen as the production of real-time data shared across the organization and consequently the integration and automation of business processes. This is particularly important in this new business environment where automation, effectiveness and efficiency in operations and real-time data are important factors for business success. The provision of timely information improves the decision-making process, planning and control of ERP adopters. Consequently, higher effectiveness and efficiency in operations and improved customer satisfaction are the ultimate benefits derived from ERP systems (Duff and Jain 1998; Gupta, 2000).

4.12 Ranking of Independent variables

Table 4.64: Ranking of Independent variables

Variable	Yes	No	Mean
Top Management Support	22	14	1.61
Availability of Finances	14	22	1.39
Time Management	19	17	1.53
Staff Commitment	20	16	1.56

Ranking of independent variables was later done by use of mean using SPSS to explicitly determine which of the independent according to the respondents affects ERP systems effectiveness. The study established that Top Management Support has a larger effect to

Effectiveness to ERP Projects with coefficient a mean of 1.61. Staff Commitment was the second with a mean of 1.56, Time Management followed with a mean of 1.53 and the last variable was Availability of Finances with a mean of 1.39. Since the response to each statement varied from 1 to 2, a mean score of 1.5 and above was considered significant. Based on this, Top Management Support and Staff commitment were found to have a greater effect to Effectiveness of ERP Projects. The table 4.14 above shows the summary findings of the study

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter presents the summary of the study, conclusion drawn from the findings and recommendation made there-to. The conclusion and recommendations drawn were focused on addressing the purpose of this study which was to determine the factors affecting effectiveness to ERP projects a case of the National Treasury.

5.2 Summary of the findings

The study was designed to examine the factors affecting effectiveness of ERP projects and the case was the National Treasury. Four objectives were stated based on factors affecting ERP effectiveness. The objectives were Top Management Support, Availability of Finances, Time Management and Staff Commitment.

5.2.1 Top Management support

The first independent variable was Top Management support, the study revealed that top management support highly affects ERP effectiveness and which in turn influences the firm's performance and this further the findings by other researchers including (Holland ,1999), who said that successful implementations require strong leadership, commitment and participation by top management. The commitment of top management has been recognized as one of the most important elements in the effectiveness to ERP system. Since the primary responsibility of top management is to provide sufficient financial support and adequate resources for building a successful system. The study also revealed that top managers must be willing to become involved and to allocate valuable resources to the implementation effort. Based on the findings

on making financial and human resource availability by the top management, it is concluded that financial resource availability influences the implementation of ERP effectiveness.

The Top Management Support was ranked first by respondents as a factor affecting effectiveness to ERP systems with a mean of 1.61. On the reliability aspect, reliability analysis of the questionnaire on Top Management support revealed a high internal consistency and reliability of $\alpha = 0.970$. Cross Tabulation was done on the years of experience in ERP with the Top Management Support objective. Respondents who have worked with ERP for a period of 1-3 years have agreed that Top management Support influences the ERP effectiveness and the same for respondents who have worked with ERP for more than 3 years. The opposite was evident from respondents who have worked with for less than 1 year.

5.2.2 Availability of finances

The second independent variable was Availability of finances. Among all the four variables investigated, Availability of finances was rated the least variable that affects effectiveness to ERP projects. The study revealed that the introduction of an ERP system brings forth foreseeable costs and impacts upon a business. A company has to avail the necessary financial resources as required. To achieve the desired ERP performance, the company has to radically finance their business processes. This study can also conclude that organizations budget preparation implementing ERP system should first understand their business requirement, document them and change them accordingly. The study also revealed that reengineering may change costs provisions for many needs and management needs to be prepared to alleviate potential financial challenges.

Availability of finances was ranked fourth and last by respondents as a factor affecting effectiveness to ERP systems with a mean of 1.39. Reliability analysis of the questionnaire on Availability of finances revealed a medium internal consistency and reliability of $\alpha = 0.699$. Cross Tabulation revealed that respondents who have worked with ERP for a period of 1-3 years were agreeing that Availability of finances affects the ERP effectiveness and the same for respondents who have worked with ERP for more than 3 years. The opposite was evident from respondents who have worked with for less than three months. The third independent variable was Time management; this study critically examined three aspects that are closely associated to this variable. This study revealed that Time Management is one of the critical factors when it comes to ERP effectiveness; this study also concludes that employee perception on managing time resource affects ERP projects effectiveness. These findings are similar to those of (Stebel, 2005) who postulates that the effective adoption of an ERP system requires proper Time management and an understanding of the organization culture.

The study also revealed that recognizing the need for time management in order to stay competitive is very important and if not considered, the system will never meet its intended objectives. A culture of shared values and a strong corporate identity is critical to facilitate time management, and an enterprise wide structure and culture change should be managed. A time management strategy should be developed as soon as an ERP system is conceived, taking into consideration the change implications for diverse users, that is, from all the departments using the system in their day today activities and who will support the new systems. If this aspect is not addressed early in the project, the project will constantly be faced with resistance and obstacles from all those who will use the systems regularly.

5.2.3 Time Management

Time Management was ranked by respondents as the third factor affecting effectiveness to ERP systems with a mean of 1.53. Reliability analysis of the questionnaire on time Management revealed a high internal consistency and reliability of $\alpha = 0.801$. Cross Tabulation revealed that respondents who have worked with ERP for a period less than one year are agreeing that Time Management needs to be effected in order for ERP systems to be effective. The opposite came from respondents who have worked with ERP for more than one year; this might mean that respondents who have worked with ERP for more than 1 year do not support Time management as such. The last independent variable studied was Staff commitment; a total of six issues that were deemed to be associated with the variable were put under scrutiny. This study revealed that formal education and training should be provided so that implementers can gain an understanding of how the system works and how it will impact their work which can result to high levels of commitment. Staff commitment is important in the implementation of the approach so it is important to ensure that staff commitment analysis is conducted prior to trainings to ensure trainings are made as simplified and as relevant as possible and are boosting commitment. This study adds on study done by Vickland and Nieuwenhuijs where they stated that training is essential to unlocking client readiness and is the best way to ensure sustainability of a system through employee commitment (Vickland and Nieuwenhuijs, 2005).

This study also revealed that commitment equally plays an important role in effectiveness. The best way to overcome resistance to commitment will be through clear communication, education and training, as well as through 'quick wins' that demonstrate the benefits of the commitment (Rozner, 2008). The critical role of commitment was also revealed during the study, the researcher has concluded that the success of the ERP projects should be with adequate

commitment prior and during the implementation. The study also revealed that users who have been employed recently have not been trained and this made the researcher to conclude that as Staffing may increase, organizations should have on job and off the job training throughout to increase commitments.

In order to build the necessary capacity, it is important to create a commitment culture early in the project and to treat the whole process as a learning opportunity with staff commitment being part of an ongoing process. Training should be provided to senior managers, technical staff and end users, and should teach users how to use the new system and how it affects business processes.

5.2.4 Staff Commitment

Staff Commitment was ranked second by respondents as factor affecting effectiveness to ERP systems with a mean of 1.56. Reliability analysis of the questionnaire on Change Management revealed a high internal consistency and reliability of $\alpha = 0.893$. Cross Tabulation revealed that respondents who have worked with ERP for a period less than one year were agreeing lack of Staff Commitment affects ERP systems effectiveness; this may be as a result that they are just working with the system but have not undergone any thorough training on these ERP systems. The opposite was evident from respondents who have worked with ERP for more than one year.

5.3 Conclusion

The study confirmed that Enterprise Resource Planning system approach is an important investment that every organization needs to consider to remain competitive. It is however important to ensure that critical factors that affects effectiveness of these systems are noted. Identification of these critical factors permits managers to obtain a better understanding of issues surrounding ERP implementation.

The commitment of top management has been recognized as one of the most important elements in the successful implementation of ERP system. Since the primary responsibility of top management is to provide sufficient financial support and adequate resources for building a successful and effective system. Top management needs to publicly and explicitly identify the project as a top priority and managers should legitimize new goals and objectives.

This study also concludes that to achieve the desired ERP performance, companies have to radically re-design their business processes. This study can also conclude that organizations planning to implement ERP system should first understand their business culture, document them and change them accordingly.

This study also concludes that Time Management affects effectiveness of ERP projects. For ERP systems to be effective requires proper Time management and an understanding of the organization culture. The study also concludes that recognizing the need for staff commitment in order to stay competitive is very important and if not considered, the system will never meet its intended objectives.

An ERP project comprises more than only implementing a project; it also means planning for the costs and availing the necessary financial resources throughout the implementation process. A comprehensive training programme is therefore vital for the success of the project as it increases commitment and should be compiled as early as possible. Training is essential to unlocking client and user's readiness and is the best way to ensure sustainability of a system. As a conclusion, training should be provided to senior managers, technical staff and end users, and should teach users how to use the new system and how it affects business processes.

5.4 Recommendation

1. The study recommends that the top management should be at the forefront in championing the implementation process by providing leadership that motivates employees and ensuring that all financial and human resource are available and also that legal and other regulations are adhered to in order to ensure effectiveness of the project.
2. The study recommends that top management should ensure the systems designs in the project are compatible with the existing business procedures by encouraging staff effectiveness and commitment. This will ensure the approach is cost effective since there is no need to have ineffectiveness.
3. The study also recommends effective approach techniques that include studying the existing structures and needs of the users and causes of potential resistance and top management should deal with the situation using appropriate strategies and techniques in order for ERP projects to be effective – a framework of Time management strategies in phases, awareness strategies, feelings strategies and adoption strategies is suggested; and evaluation of the status of Time management efforts.
4. The study recommends that organizations should have well knowledgeable and committed consultants in place to help with training. The trainings should be done properly by the ERP Consultants, that is, training a group of people in the organization known as the Core Team. This core team in turn trains the rest of employees who are actually responsible for day-to-day transactions called the End Users and in the process a commitment culture is established. Managers can use the factors identified and validated in this study to better prepare themselves for a successful implementation of ERP projects.

5.5 Suggested Areas for further Research

Research on ERP implementation and critical success factors can be a valuable step toward enhancing chances of implementation success. A review of the ERP critical success factor/implementation literature reveals that in many cases, CSFs are presented based on a review of already published literature or limited case studies. As a result, one key limitation of this research is the occurrence of duplication in the frequency analysis of the success factors. Further, in situations when previous researchers have attempted to identify success factors through their own empirical research, they have very often focused on only a specific aspect of the implementation or a specific kind of factors. Therefore, there is little or no research that encompasses all significant factors considerations. Future research should place emphasis on the implementation process from a holistic perspective.

It has also been revealed that there has been no research conducted to date that has considered the key ERP implementation success factors from the perspectives of key stakeholders. This is a significant finding. While several studies have attempted to interview representatives from various stakeholder groups, they have not reported findings so that individual views of different stakeholder groups are identified.

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APPENDICES

APPENDIX I: Letter of Introduction

TIMOTHY MUTUMA MUGAMBI
P.O BOX 1853
SARIT CENTRE

Dear Sir/ Madam,

RE: TRANSMITAL LETTER

Hello, my Name is Timothy Mutuma from the university of Nairobi and I am conducting a research on “Determinants of Effective and Efficient Enterprise Resource Management In Organizations: A Case of The National Treasury, Kenya this study is for academic purpose . You have been selected to participate in this research.

The result of this research will be completely confidential. You need not to indicate your name on the questionnaire. Please feel free to seek for clarification where you do not understand.

Yours faithfully,

Timothy Mutuma Mugambi

APPENDIX II: Questionnaire

Date of Interview.....

Tick in the boxes and fill in spaces where appropriate.

A. General Information

1. What is your Sex?

Male

Female

2. What is your age in years?

Below 18

18 to 34

35 to 45

55 & above

3. At what level do you work?

Super User

Accountant

Procurement Officer

Finance Officer

Others please specify.....

4. For how long have you been working in the National Treasury?

Less than 1 year

1 - 3 years

4 - 8 years

9 - 12 years

13 or more

6. For how long have you been using ERP (Enterprise Resource Planning) system?

Less than 3 months

3- 6 months

7 - 11 months

1 - 3 years

More than 3

years

Section B

The questions below refer to determinants of effective and efficient ERP projects.

Please indicate to the amount of agreement with the statement mentioned.

Top Management Support

7. Top management support determine efficient and effective ERP projects

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the reasons for lack of top management.....
.....

8. Adequate leadership from top management influences ERP projects

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the reasons for poor leadership.....
.....

9. The degree to which top management make the capital/money and human resources available affects the ERP projects effectiveness

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the reasons for less resources allocation

.....

10. Top management’s role/Involvement in the ERP Projects affects its effectiveness committee

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

11. The degree of the top management familiarity with the ERP system’s functionalities and its potential benefits affects its effectiveness?

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

Availability of Finances

12. Having a budget dedicated to ERP project determines success of the entire implementation process

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the percentage of revenue which need to be dedicated to ERP projects.....

.....

13. Efficiency use of available financial resources determines success of ERP project

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify ways of financial mismanagement.....

.....

14. Availability of finances for training and capacity building in ERP project is a determinant of its success

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

15. Availability of financial resources for ERP project maintenance and purchase of required hardware equipment is a determinant for effective and efficient ERP projects

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

Staff commitment

16. Having a conducive working environment enhances employee commitment hence ERP project success

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the reasons for minimal commitment.....

.....

17. Supporting and favorable organization policies enhances employee commitment to ERP projects

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the policies necessary.....

.....

18. Having a team work culture enhances employee commitment to ERP projects leading to its success

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

Time management

19. Scheduling of ERP project activities systematically is essential in determining success of the project

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the tools which can be used for project scheduling

.....

20. Maintaining an updated project timesheet is essential for ensuring ERP project success

Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
-----------------------	--------------	----------------	-----------------	--------------------------

If agree specify the frequency you recommend in days

.....

21. Having expertise and the right competences is essential in time management hence ERP project successes

Strongly Agree	Agree	Neutral	Disagree	Strongly
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(5)	(4)	(3)	(2)	Disagree (1)
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If agree specify the level of expertize essential for optimum management.....