

# Critical Success Factors in Enterprise Resource Planning Systems Implementation in Kenyan Universities

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**Abstract:** Enterprise Resource Planning (ERP) systems provide institutions with the opportunity to integrate individual stand - alone information systems thereby becoming a significant tool to improve transparency, efficiency and effectiveness. However, most institutions in Kenya have not successfully implemented it and thus not realizing the envisioned benefits. The objective of the study was to find out critical success factors in implementation of ERP in universities. The researchers adopted a case study methodology and the main instruments of data collection were structured questionnaire, administered through purposive and random sampling, and semi - structured interviews. The research targeted a population of 450 respondents; which yielded a possible sample of which 210; out of that, 160 questionnaires were returned duly filled representing 76% of targeted sample drawn from different ERP user departments. The researchers found out 10 critical factors grouped into processes and specifications, organizational and operational factors, usability factors, and people factors. The study recommends teamwork mentality besides top management playing a leading role during ERP implementation. Other recommendations include Business process reengineering and software modification to be considered simultaneously in ERP implementation, management and the employees should receive ERP - concerned education and training before, during and even after ERP implementation, ERP interface design should be appealing and easy to use, amongst others.

**Keywords:** Enterprise Resource Planning (ERP); Critical Success Factors (CSFs); Information Systems; Implementation; Integration

## 1. Introduction

This paper sought to examine what critical success factors (CSF) are required for successful implementation of an Enterprise Resource Planning (ERP) system in a university environment.

### 1.1 Background to the Study

Enterprise Resource Planning (ERP) is one of the technologies that many organizations and institutions have adopted. In the current competitive world, organizations, institutions and government agencies have to adapt themselves into the constantly changing and evolving conditions in order to survive and advance (Saad, 2009; Aris et al., 2009). It is necessary to establish a common information system infrastructure and to integrate the corporation business workflows to this system so as to increase efficiencies in the day - to - day operations.

Kumar et al. (2000) define ERP systems as “configurable information systems packages that integrate information and information - based processes within and across functional areas in an organization”. This software eases, if well implemented, the integration of all the functional or modular information flows across the organization into a single package having a common database (Terry, 2005). Thus, it allows easy and immediate access to information regarding such things as inventory, product or customer data, and prior history information (Shehab et al., 2004).

Setting up a common information system infrastructure, otherwise called ERP, is not easy and comes with challenges making some systems have complete failure, partially successful and others successful, though the latter is difficult to achieve.

Understanding the critical success factors in implementing ERP systems is a challenging process for many organizations worldwide. According to Bhatti (2005), an ERP system enables an organization to integrate all the primary business processes in order to enhance efficiency and maintain a competitive advantage. Conversely, without successful implementation of the system, the anticipated benefits of improved productivity and competitive advantage would just be a reverie.

Implementing an ERP system is time consuming and costly since an ERP system once implemented is extremely difficult to reverse as it is too expensive to undo the changes ERP brings into an organization (Brent et al., 2008). There are several failed ERP attempts, and companies lost not only invested capital in ERP package, but also a major portion of their businesses (Nah and Delgado, 2006). Therefore, ERP implementation is thought to be intricate and needs to be carefully managed to reap the benefits of an ERP solution (Bingi et al., 1999). In addition, the difficulties and high failure rate in implementing ERP systems have been widely cited in the research papers.

Universities have implemented ERP systems as part of gaining competitive advantage over other institutions and a tool for improving efficiency besides modernization of the institutions. The successful implementation of ERP systems versus challenged implementation raises a million - dollar question “What factors contribute to successful implementation of ERP system?” This paper is attempting to address the parameters that influence successful implementation of an Enterprise Resource Planning (ERP) system in a university environment.

## 1.2 Existing ERP Critical Success Factors Theories

Holland and Light (2002) defined CSFs as those factors that are needed to ensure a successful ERP project implementation or a factor, which, if addressed, significantly improves the chances of a successful project implementation

Different authors on different research areas, which are not related to IHL, have carried out many researches about the CSFs of ERP implementation generating different theories and factor checklists.

According to Esteves (2000) the reason of the high failure rate of ERP implementation is due to technology, in addition to management. Some of the management parameters mentioned include the Management support, ERP teamwork composition, Project management, business process engineering, Change management, just to mention a few. Parr and Shank (2002) employs the project management method to set up the ERP project process, and suggested the CSFs in ERP implementation process. The suggested CSFs are as follow: Management support, Release of business experts with relevant knowledge onto the project, Empowered decision makers, Deliverable dates, Champion, Vanilla ERP, Smaller scope, Definition of scope and goals, Balanced team, and Commitment to change by both users and management.

Somers and Nelson (2001) summarizes the literatures and list some 22 success factors of ERP implementing and rank these as: Top management support, Project team competence, Interdepartmental cooperation, Clear goals and objectives, Project management, Interdepartmental communication, Management of expectations, Project champion, Vendor support, Careful package selection, Data analysis, Conversion, Dedicated resources, Use of steering committee, User training, Education on new processes, Business Process Reengineering, Minimal customization, Architecture choices, Change management, Vendor Partnership, Vendors' tools use, and Use of consultants. The shortcoming of this finding is that only 3 out of 86 'companies' in the industry surveyed belong to the education sector, thus it is difficult to judge whether all the CSFs are relevant to Kenyan universities.

Umble et al. (2003) summarizes the literatures and lists the 9 CSFs including: Clear understanding of strategic goals, Commitment by top management, Excellent project management, Organizational change management, A great implementation team, Data accuracy, Extensive education and training, Focused performance measures, and Multi - site issues.

Gargeya and Brady (2005), using content analysis approach and searching more than 100 articles and books, identified and proposed the following factors for ERP implementation: Working with functionality; Internal Readiness/Training; Project team support; Adequate testing and Project Management (Planning, Development and Budgeting)

Aris et al. (2009), in their research, classify the factors into 3 i. e. Strategy, People and Organizational. Under strategy, Top management commitment, ERP strategy, Clear goals,

focus and scope and legacy systems management are identified. Training and education, employees attitude, empowerment, project team and user involvement are classified under people factors. Organizational factors constitute organizational culture, effective communication, computer culture, effective project management, change management and process management.

Razvan et al. (2009), in their study on Romanian Education System, identify communication structure, management involvement, organizational culture, implementation team competences and inter - department communication as the core critical factors of an ERP project implementation in Romanian universities.

## 2. Summary of Major Findings on Critical Success Factors

Descriptive statistics, component and factor analysis were used to analyze the data. The study found out 10 factors classified into organizational and operational factors, people characteristics factors, process and specifications, and usability factors.

### 2.1 Organizational and Operational factors

Organizational and Operational factors included top management support, Business Process Engineering (BPR) and institution - wide commitment.

Support from top management is the first step of ERP implementation. Without top management approval, no further ERP project would progress. Top management support does not solely deal with early approval but also support during and after the ERP implementation. This support can provide time, money and human resources.

BPR refers to a process of aligning the operations of an institution with the ERP software to be implemented. Institutions should keep the ERP package as much as possible and reengineer their operations to conform to the package. Reengineering the operations can aid in smoother ERP implementation since few customizations of the code will be affected.

Since ERP systems are institution - wide information systems that integrate information and information - based processes within and across all functional areas in an organization, it's imperative to get support from all functional segments of the organization. Every person and department is responsible for the overall system and key users from different departments are ensured to commit to the project implementation.

### 2.2 People factors

Education and training of users support from user departments, and composition of project team identified formed the people characteristics factors.

ERP, just like any other system, needs training of system users. It is therefore important that user training be

emphasized, with heavy investment in training and re-skilling of developers in software design and methodology.

ERP team work and composition factor is another very important factor which should be called into attention when implementing ERP. Building a cross-functional team that incorporates business and technical knowledge are essential for success of ERP. Bingi et al. (1999) asserted that the team should be co-located together at an assigned location to facilitate working together.

Interdepartmental communication and cooperation are prerequisite for ERP implementation success as an ERP system is tightly integrating different institution functions. The communication and cooperation between different departments in an organization will have a large effect on the smooth flow of the required information and expertise among the departments.

### 2.3 Usability factors

Usability factors included user friendly ERP and appropriate selection of ERP package prior to implementation. Choosing the right ERP package is not easy. The selection process starts with an identification of system scope, business objectives and business processes. Some ERP packages provide better solutions in certain functional areas. User friendliness of ERP is described in terms of user interface. User interfaces exist for ERP, and provide a means of input which allow the users to manipulate a system, and/or output, allowing the system to indicate the effects of the users' manipulation.

### 2.4 Processes and Specification Factors

Processes and specifications factors consisted of definition of ERP processes, and user and system specifications. ERP processes define critical processes and workflow that is followed by an institution when implementing ERP. It is also very important that the system analyst work with the users to determine how the current system functions and what the users want from the new system

## 3. Conclusion

This research was intended to provide practical new insights on critical parameters in the implementation of an ERP system in a university environment. Identifying one key success factor was impossible and ambiguous due to the complexity of an ERP implementation project; thus, this research found 10 key factors, classified into 4 groups that can all contribute to the success of an ERP implementation project. It is hoped that the research findings presented in this dissertation can aid the management of universities in decision regarding the development and implementation of the ERP.

## 4. Recommendations

To improve the success of ERP systems implementation in universities, the study recommends:

- 1) The teamwork mentality should be encouraged during the ERP implementation. ERP implementation is a large, complex and diverse task. The teamwork by all

organizations is the key to achieve the on-time under-budget completion of ERP implementation.

- 2) Management and the employees should receive ERP-concerned education and training before the system is implemented, which enables them to realize what ERP is, what ERP could achieve (both benefits and risks), and what significant changes ERP will bring.
- 3) Establishment of a department which will spearhead ERP development and implementation.
- 4) Business Process Reengineering and software modification should be considered simultaneously in ERP implementation so as to align the institution's processes with the ERP software that is implemented.
- 5) The top management should play a leading role in championing the implementation of ERP including motivating project team members and mediating in times of conflicts.
- 6) ERP system should be appealing and easy to use. This can be achieved by designing user interfaces using latest Graphical User Interface (GUI) technologies such as MockFlow, Altia, GUI Design Studio, among other tools.

## 5. Suggestions for Further Research

Future research could focus on how these critical success factors differ among various implementation partners such as managers, IT specialists, vendors, and consultants. Additionally, the study further recommends study on the relationship between human and technical factors affecting implementation of ERP systems.

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