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The hurdles encountered with the Implementation of ERP in the management of academic affairs in Public Universities in Kenya

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Abstract
The inclusion of ERP in universities is a sure way of enhancing the quality of education in developing nations in the 21st century. As a developing Nation, Africa stands to develop faster in all areas than ever before. In particular, ERP have the potential to revolutionize methods of data harnessing, implementation and management. Through these innovations, the quality of education shall concomitantly be enhanced. However, how well equipped is the African Country, Kenya, to better use Enterprise Resource Planning (ERP) within the ICT system in administering data gathering, implementation and management in Universities? The universities offers training for Manpower Development required for Political Economic and Social Development of the nations and therefore are required to have better ICTs infrastructure to enhance quality education. Enterprise Resource Planning (ERP) systems promise multidimensional benefits and competitive leadership in managing information if integrated in academic affairs. Grounded in systems theory, this empirical study aimed at providing a roadmap for holistic examination of the efficiency of integrating ERP systems in the management of academic affairs in universities. The objective of this study were to; assess the hurdles encountered by universities that have implemented ERP in the provision of security to examination data in universities in Western Kenya. The target population was 11 Deputy Vice Chancellor Academic affairs, 11 Registrar Academic affairs, 66 Deans of Faculty / Schools, 220 chairmen of Department, 11 IT Personnel and 1100 Lecturers. Stratified random sampling and purposive sampling were used to select respondents for the study. Questionnaires, interview schedules were used to collect data for the study. A sample of 16 DVCs and academic Registrars, 8 IT technicians, 120 Deans of faculties/schools and CODs and 320 lecturers were selected for the study from 8 universities. A total of 464 respondents participated in the study. The instruments of data collection were the questionnaire, interview schedules and content analysis. The study recommended that there should be in-servicing of staff on the use of ERP system, adoption of ERP system in improving the efficiency in academic, universities should meet the CUE requirements of integrating technology such as ERP in the management of academic affairs, they should improve on the perception of including technology of ERP in managing academic affairs.

Keywords: hurdles, efficiency, universities, data and management

1. Introduction

Globally the integration of ERP was identified in the Swedish diary company in Sweden that assisted the company to standardize the key process in the diary company (Holmstrom, 2002). At the University of London the management integrated ERP in order to depart from the traditional computer systems that could not translate and capture data easily across boundaries (Pollack, 2005). It was reported that the telecommunication industry in South Africa implemented ERP systems to enhance data accuracy by reducing duplication of data entry (Finger, 2001) [2]. The integration received a positive reaction from the employees at the industry. There has also been a growing increase in using ERP systems developed by SAP, oracle, Baan PeopleSoft and J.D Edwards as business information systems in large organization and government corporations in United State of America, United Kingdom, Canada and Australia due to its ability to handle voluminous data (Davenport, 1998) [1]. The systems eliminated manual processes, integrated data on a common system and improved internal communication; analyzed sophisticated data and reduced dependence on paperwork. Also Massachusetts institute of technology (MIT) integrated ERP in the 1990s to handle the administrative complexes and improved the work environment and according to Goeun (2013) [4] the system shortened the time in data processing.

In Kenya Otieno (2010) [5] found out that different companies had integrated ERP systems that were being upgrade. BIDCO oil refineries, Bamburi cement, Agro chemical and food company, Ken GEN and Kenya power and lighting company integrated ERP systems to manage their enterprise. The ERP systems integrated improved the performance of the companies in terms of their profit margins, brought changes to the way people worked within the organizations and reduced paperwork despite the complexities of the systems. BIDCO oil

refineries had integrated Baan an ERP system package that was widely accepted and offered less investment. The Agro chemical and Food Company integrated Ebizframe an ERP system that was of customized to fit old processes and had low level complexities. KenGEN and Kenya power and lighting company integrated System Application Product (SAP) systems an ERP system that was developed in the 1970s that was three-tier architectures of data base application and user interface and the largest vendor in the ERP market in the 1990s. The system unified technologies into a single platform and performed the core business function within the companies. Another study carried out by Njia (2014) established that top level management supported the implementation of ERP in commercial banks in Kenya. The ERP systems effectively implemented affected the firms' performance. Universities in Kenya as any other organization faces common problems of coordinating resources, controlling costs and facilitating enterprise among staff that involves handling of massive data like any other organization.

ERP systems integration was the standard tools which have been implemented by universities in order to boost data management and process huge volumes of data within set time limits in academic affairs. The ERP systems implemented meant to improve data management asserts the global trend where integration of ERP is meant to handle massive data and enhance management efficiency of academic affairs in universities.

1.1 The purpose of the study

The purpose of this study was to assess the hurdles encountered with the implementation of ERP in academic affairs processes in selected public universities in western region of Kenya.

1.2 Objectives of the study

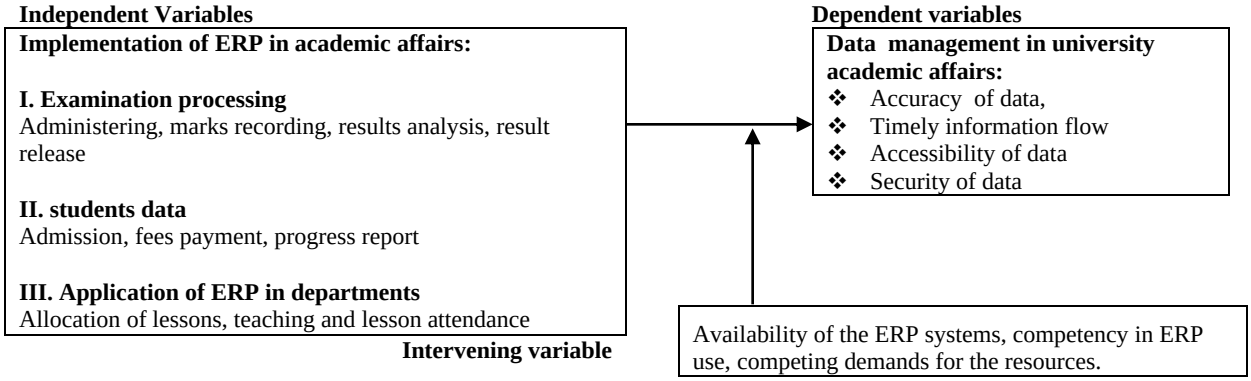
The objectives of this study were to: Assess the hurdles faced with the implementation of ERP in the provision of security to examination data in public universities in Western region of Kenya.

1.3 Research Question

i) What are the hurdles faced with the implementation of ERP in the provision of security to examination data in public universities in western region of Kenya?

1.4 Conceptual Framework

This study was guided by a conceptual framework that illustrated the interrelationships between the variables. Efficiency in managing academic data in universities is illustrated in accurate, accessible and secured data. To enhance efficiency in management of academic data universities have adopted ERP systems to manage the voluminous data. The conceptual framework indicates that the implementation of ERP influenced data management in terms of accuracy, accessibility, secured and improvements in timely flow. However availability of ERP systems, competencies in ERP use and competing demands for the same resources affects both the implementation and data management. The Conceptual framework is presented in figure 1



***Source*:** Researcher's Own Conception

Fig 1: Relationship between study variables

The implementation of ERP to realize efficiency is enhanced by its inclusion in examinations processes, students' data and departmental units. The examination processes entails administration, recording of marks, analysis of results, and release of results and storage of results. Students' data is key in managing academic affair in universities especially data on progress report, admission, fees payment, and students' results and the application in departments entails lesson allocation and lesson attendance. The assumption of the conceptual framework is that the implementation of ERP to enhance efficiency is determined by the intervening variables like competency in using ERP. For the universities to realize the efficiency of implementing and applying ERP in academic affairs, the competency of the users of the systems in paramount. However the availability of ERP and the competing demands for the resources are very instrumental in influencing the integration of ERP systems in academic affairs. The systems theory and the conceptual frame work were used concurrently in the study. The implementation of ERP is a great input in universities to assist in data management. The systems theory and the conceptual frame work focused on the inputs, outputs and feedbacks and the efficiency in using ERP is enhanced through competencies of the users.

2. Literature Review

2.1 The challenges facing examination processes in universities

A study by Mbirithi (2013) [8] focused on management challenges that compromised the quality of university education. The study found out that insufficient fund was the biggest management challenge that in turn affected research, teaching and learning. The curriculum was not adequately implemented due to inadequate teaching and learning resources. These challenges had implications on the quality of education offered in the selected in Kenya. The study sought to investigate the nature and magnitude of management challenges that face Kenya's public universities and their implications for quality education. The study had four research objectives that were to determine the nature and magnitude of management challenges facing Kenya's public universities in relation to their missions, the implications of management challenges on the quality of university education, identify the strategies public universities have put in place to cope with challenges to ensure quality of education and proposed strategies the universities could be adopted to mitigate the management challenges.

This study was both qualitative and quantitative in nature; hence employed descriptive design. The study was carried out in three Kenya's public universities which were purposively sampled. The sample constituted the following: 3 vice-chancellors, 8 deputy vice-chancellors, 53 deans of schools, 158 chairpersons of departments, 12 leaders of academic and non-academic staff unions each, 12 leaders of students associations in the three public universities and 3 heads of boarding and accommodation sections. Four types of research instruments were used in data collection: questionnaires for deans of schools, chairpersons of departments and leaders of academic and non-academic staff unions, interview guides for VCs, DVCs and heads of boarding and accommodation sections, observation schedule, and document analysis. The data were analyzed both quantitatively and qualitatively. Quantitative data were analyzed using descriptive statistics aided by statistical package for social sciences (SPSS). Quantitative data were presented in frequencies, percentages and tables while qualitative data were organized into thematic categories according to the objectives of the study.

This study established that public universities that took part in the study did not have enough teaching and learning resources, especially lecture halls, computers, textbooks and library space. The study found out that insufficient fund was the biggest management challenge as it affected all the other areas of research, teaching and learning. It was also revealed that the curriculum was not adequately implemented due to inadequate teaching and learning resources and teaching staff. All these management challenges were found to have an implication on the quality of education offered in the universities.

In management of examinations, over 60% of respondents from all three universities indicated that there was late submission of examinations by staff, while more than 45% of the respondents from all universities indicated that there was also lateness in marking and submission of results. Concerning loss of data and examination leakages, over 35% of respondents from all the universities indicated that there was loss of data due to computer crashes and examination leakages from secretaries and lecturers. Over 60% of respondents from all the universities indicated there were high rates of cheating due to high student numbers and low numbers of invigilators. At least 45% of respondents from all the universities indicated that there would be loss of quality university education, while over 50% indicated that students' integrity would not be measured accurately and at least 45% indicated that there would be low quality grades. The study established that there was examination supervision problem due to large numbers of students sitting for examinations against few supervisors.

Further this study found that 34(48.1%) of the deans of schools and heads of departments from Kenyatta University, 14(31.2%) of the deans of schools and heads of departments from Egerton University and 34(34.8%) from University of Nairobi had inadequate computers. The trend implies that the computers available in most schools were not adequate to meet the needs of the students and lecturers alike. More than 35% of deans of schools from Kenyatta and Egerton universities indicated that the ratio of students per computer was high. Six (46.0%) of deans of schools from Kenyatta University and 22 (73.3%) deans of schools from Nairobi University indicated that there should be at least two students per computer, 7 (54%) of Deans of schools from Kenyatta University and 4 (40%) of Deans of schools from Egerton University indicated that teachers have little access to computers except those in IT department.

Only Nairobi University deans of schools 28 (93.3%) indicated that measures are being taken to ensure levels of computerizations are high. Document analyses had shown that there was inadequate ICT infrastructure across the three universities. This study did not give clear information on whether the challenges were resolved via technology application and it had a small sample size whose findings could not concrete. Mbirithi (2013) [8] focused on management challenges that compromised the university quality education and he was not clear on how the challenges were mitigated. The current study filled the gap by providing information on the implementation of ERP to resolve the examination data challenges.

2.2 Implementation and Competency in ERP

Technology competency is a pre-requisite in technology implementation Kajuna (2009) [3] in his study purposed to investigate and evaluate the nature of technology implementation at the University of Dar-es-Salaam in Tanzania. The study examined the classroom practices and what surrounded the learning and teaching processes using technology from the perspective of teachers and students. It also evaluated the use of technology at the University based on four of Ely's eight conditions for adoption of innovations and ACOT's stages of development of technology integration. Two research strategies were used: Interviews and document analysis. Twenty-four students, ten faculty members, one head of a department, and one faculty dean were interviewed. They were selected from the Faculty of Science and Faculty of Education.

The findings revealed that although there were significant efforts and positive attitudes toward the use of computers in

learning and teaching, the process of technology integration at the university faced impediments that affected its effectiveness. The impediments included lack of enough computers, absence of sound computer knowledge and skills of teachers and students so as to effectively integrate technology into learning and teaching, absence of adequate and effective teachers' professional development the programs on technology, and lack of effective technology planning and technology plans. The result of this study indicated that the four Ely's conditions of diffusion of innovations were not effectively met at the university and that the university's technology integration process was leveled at entry and adoption stages of ACOT's Stages of Development.

The researcher used semi-structured interviews of students, faculty academic staff (teachers), and heads of department/faculty. Semi-structured interviews were conducted in order to remain focused, given a limited time for administering the questions, yet to also allow for flexibility but this give room for biases since it was the only method of data collection.

Kajuna (2009) [3] also focused on what technologies were available, strategies to implement, technology plan and training and the stakeholders perceptions, knowledge and skills of technology. The study found out that lack of enough knowledge was a challenge. The respondents did not use technology in teaching because they did not have knowledge of computers. The illiteracy made technology integration ineffective, the current technology was said to be changing very fast and that teachers were overwhelmed because they did not have time to train in the advanced technology. Some teachers also indicated that most students especially first years entered the university completely computer illiterate so it was difficult to use technology to teach them. This study did not attempt to look at the challenges facing the whole academic affairs and other examination processes except teaching and learning limiting technology integration to the class room and not all the academic processes in the University of Dar es salaam. In terms of methods, this study used telephone interview as one of the methods that could not provide more concrete evidence of what the process of technology integration at the university looks like that the research could have done by physical presence in the field.

A study by Otieno (2010) [5] revealed that all the company leaders were not qualified to use the company computers. They had only trained on the beginning of windows and DOS and the training was internal especially in the finance department. ERP systems were perceived as being difficult and had a lot of complexities to understand and use. The complexity of the systems discouraged its adoption and led to greater difficulty in its implementation and further usage. The implementation was quiet involving and required cooperation between vendors, project teams and the management. For instance SAP R/3 has more than 3000 configuration tables and one can spend more than a year to go through the tables.

Further this study indicated that lack of confidence, Insufficient training and knowledge led to ERP failure and the use of foreign experts in implementing the systems as well as reliance on their headquarters abroad often led to lack of confidence in ERP consultant. Lack of skills by both users and high staff turnover compromised lack of capacity to cope with ERP. This study did not address the competency of the human resource in handling the ERP system but instead highlighted why the systems failed where they were implemented, the current study has detailed the competency of the human resource in the usage to enhance data accuracy in the examination processes.

Muscatello *et al*, (2003) [10] reported that the rectification of the training deficiencies was accomplished in three ways: reassignment or replacement of managers, hiring of new personnel with substantial knowledge in manufacturing and ERP systems, and training of managers and key employees. Two types of training were provided: fundamental ERP systems education and technical training in the usage of the ERP software. In companies A, C and D, ERP training was provided by outside consultants. In company B, since substantial implementation time was lost in the prolonged reengineering exercise, executive management made a decision to replace several managers with new managers with ERP knowledge and experience, rather than losing more time training the managers. The new managers helped to train the retained managers and other key employees. Vendor personnel implementing ERP systems provided software training. All the companies spent considerable time and training emphasized the keystrokes, screens, reports and other tools needed to obtain user information.

However, the research indicates that most mid-market manufacturing managers had not increased their education or training to the level of larger corporations. Thus, the concepts of ERP processes are somewhat foreign and vague to mid-market managers. This may cause a smaller firm to have to invest significantly more time and money than a larger firm, and in some cases may require the demotion or replacement of individuals who cannot meet the new responsibilities. The companies A, B, C and D's names were concealed for the purposes of data collection. The study focused on the training of the managers and not their competency in using ERP systems.

From the reviewed literature, the following gaps were identified. Kajuna (2009) [3] focused on the nature of technology available implementation at the University of Dar es Salaam and the findings revealed that although there were significant efforts and positive attitudes toward the use of computers in learning and teaching, the process of technology integration at the university faced impediments that affected its effectiveness. The impediments included lack of enough computers, absence of sound computer knowledge and skills of teachers and students so as to effectively integrate technology into learning and teaching, absence of adequate and effective teachers' professional development the programs on technology, and lack of effective technology planning and technology plans. However this study used telephone interviews hence it could not provide concrete evidence the current study filled the gap.

Otieno's (2010) [5] findings revealed that the company leaders were not qualified to use the ERP technology due to insufficient training and knowledge that lead to failure and using of foreign experts in implementing the systems and Muscatello *et al* (2003) [10] showed how the companies rectified training deficiencies to assist in the installation of ERP. This study had high level of ICTs incompetency the

prompt training. The current study majored on ERP competency to enable implementation that enhanced data accuracy.

3. Methodology

3.1 The Study Population

The study population is the one from which the researcher used to generalize the finding of the study to the whole population. From the study population accessible population was drawn. The accessible population was established from the 11 universities found in the western region of Kenya. The study therefore targeted 11 DVC for academic affair,11 Academic Registrars, 11 IT personnel,220 CODs, 66 Deans of schools or faculties and 1100 Lecturers the respondents who were included for the study because they are directly involved in the dealing with the management of university academic affairs. The DVCs for academic affairs initiates the policies for the management of academics in universities are geared to efficiency, the Deans and CODs directly deal with the management of students' academics and the lecturers are directly invoved in the learning and teaching of students. Therefore they were best suited to provide information on the efficiencies of ERP the in manging academic affairs. The information technology personnel are directly involved in technology implementation and training in technology use. Therefore they are expected to provide information on the types of ERP implemented and their efficiency in managing academics in universities.

3.2 Sample and Sampling Procedures

Sample is a small proportion of the population to be used in the study so as to make inferences about the entire population (Best, 1998). Sampling was done at university level where the respondents were the DVC academic, registrar academics, HODs, IT personnel, dean of school/ faculty and lecturers since they had the required information on the university academic affairs required for the study**.** Stratified random sampling technique was used to select the different categories of universities. This method according to Mugenda and Mugenda (2003) [9] when used where the population is divided into groups then the required cases are then randomly selected from the population sub groups. Purposive sampling was used to facilitate comparison and correlation. In this study 8 universities were used in the study. According to Mugenda and Mugenda (2003) [9] social science research like this study used the following formula to determine the sample size. To get the representative sample the 11 universities were purposively sampled into categories of universities depending on those that had implemented and were using ERP in general management, those that had implemented ERP and they were using it in academic affairs and those that were in the process of implementing ERP. A total of 8 universities representing 73% of the target universities were used in the study. The sample was considered ideal for the study. According to Gay (1983) a sample of 30% was considered to be appropriate for the studies in social sciences.

Table 1: Sample size of respondents in universities in western region

Region	No. of Univs	DVC / Registrar	Deans / CODs	IT personnel	Lecturers
Western	1	2	15	1	40
Nyanza	3	6	45	3	120
Rift Valley	4	8	60	4	160
Total	8	16	120	8	320

The data in Table 1 shows different sizes of sample for this study. Stratified random sampling was used to select the Lecturers, Deans and CODs for the study but purposive sampling was used to select the DVCs academics, Registrar academics and the IT technician. Eight universities were selected for the study. This is because the university was used as unit of analysis and there were a minimum of 8 public universities selected for the study. The stratification for Lecturers was based on the courses they teach while Deans and CODs were based on the school of faculty and the department they headed respectively. The number of respondents for each category depended on the size of the respective population, in total there were 516 respondents.

4. Data Analysis, Presentation, Interpretation and Discussion

4.1 Introduction

This chapter presents data analysis, presentation, Interpretation and discussion of findings of the study on ERP systems integration and its efficiency in the management of academic affairs in universities in Kenya. The study was designed to determine the implementation of ERP in enhancing the accuracy of examination processes. The study also sought to identify the role of ERP in the provision of safety mechanism on examination. In addition the study established the use of ERP in accessing students' data in the management of academic affairs and lastly the study sought to establish the application of ERP and improvements attained in data management in the managing academic affairs in western region.

4.2 Demographic data

It was also important to establish when the universities were established to consider whether it could be sampled into the study. Figure 2 indicates when the universities were established.

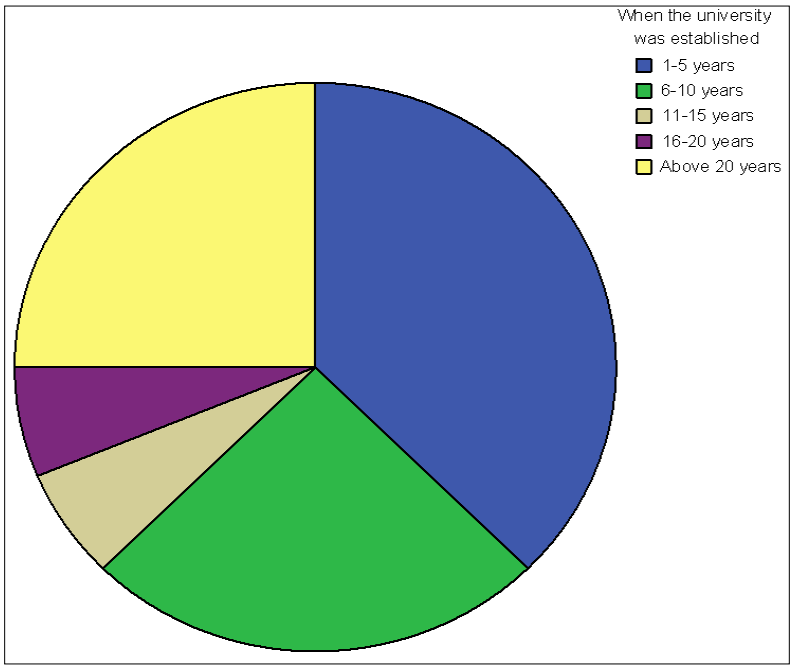


Fig 2: When the universities were established

The finding in figure 2 indicated that 6(37.5%) of the universities had been established between 1-5 years and between 6-10years at least 4(25%) of the universities had long been established hence they were suitable to be used in the study. The universities that had a long period of establishment like above 10 years had the high opportunity of integrating such technology due to their financial stability and high enrollment that calls for technology implementation in managing academic affairs. Every university had several academic programmers offered. Table 2 show some of the courses offered in the universities that were involved in the study

Table 2: The Programmes offered in public universities Programmes offered in public university

Programmes	Offered %	not offered %
Education	16(100)	0(0.0)
Agriculture	4(25.5)	12(75.0)
Engineering	7(43.8)	9(56.5)
Law	6(37.5)	10(62.5)
Health sciences	10(62.5)	6(37.5)
Medicine	10(62.5)	6(37.5)
Disaster management	6(37.5)	10(62.5)
General Sc/Arts	9(56.5)	7(43.8)

The findings revealed that most of the universities offered a variety of programmes with 100% of the respondents indicating that the highly offered programme was education and 10(62.5%) indicated that health sciences was another programme that was offered and 9(56.5%) indicated that general sciences and arts was offered in public universities. This implied that there was no greater distinction between the programmes offered in universities and the numerous programmes offered and the large numbers of students propelled the universities to include technology in the academic affairs. This was echoed in the interview schedule with the IT personnel. The findings of the current study indicated that majority of the respondents were male with the ages of between 40-50 years. Again most of the respondents had sufficient experience in working in the universities. Also most of the universities had been established for a long period of time. The programmes offered in the universities were many due to increased demand for university education and number of students. The findings were similar to what was reported by Kajuna (2009) [3] which indicated that the courses offered and the large number of students in the universities propelled the implementation of ICTs. The technology implementation depended on the large number of students hence large classes were considered suitable for technology implementation for the purposes of efficiency in data management. The experiences provided the know how in desiring to integrate technology for enhancing quality in university education. The findings of the current study showed that most of the university's academic staff were highly qualified and experienced hence capable of adopting ERP in managing academic affairs. The findings agreed with Kajuna (2009) [3] which indicated that potential knowledge and skills acquired through experience was a prerequisite in technology implementation especially the ICTs. Again the current study on the establishment of universities were similar to those of Rico (2000) which revealed that universities had long been established and had overwhelming number of students being admitted in the universities of Georgetown, Louisiana and university of Nebraska-lincoln. The large number of courses offered was a clear indicator of the universities dealing with large sets of data to handle due to large number of students the propelled universities to integrate ERP.

4.3 The challenges faced by examination processes in universities

To determine ERP use in the provision of safety mechanism examination data in universities in western region of Kenya,

the respondents were asked to establish the challenges faced by examination processes in universities.

4.3.1 The Implementation of ERP and the challenges facing Examination Processes in Universities

The respondents in the universities that had implemented ERP were to indicate whether universities had examination challenge that propelled them to implement the ERP. The findings are shown in table 3.

Table 3: The perception of the DVC & Registrar academic staff on the implementation of ERP and the challenges facing Examination processes in Universities

Programmes	Offered %	not offered %
Education	16(100)	0(0.0)
Agriculture	4(25.5)	12(75.0)
Engineering	7(43.8)	9(56.5)
Law	6(37.5)	10(62.5)
Health sciences	10(62.5)	6(37.5)
Medicine	10(62.5)	6(37.5)
Disaster management	6(37.5)	10(62.5)
General Sc/Arts	9(56.5)	7(43.8)

Key: C= Challenge NC= Not Challenge

Finding deduced from table 3 Showed that impersonation, wrong degrees and honours were minor challenges facing examination processes in universities. This was indicated by 12(75%) of the respondents. However missing marks and erroneous marks appeared to be the major challenges facing the examination processes in universities. This was shown by 12(75%) and 9(56.3%) of the responses given by DVCs and Registrars, To establish the relationship, on the DVCs and Registrars perception the hypothesis that there is no significant relationship between Implementation of ERP and the challenges facing the accuracy of Examination Processes in Universities was tested. The findings in table indicate that the DVCs and Registrars agreed that the use of ERP systems unlike disconnected computers resolved the challenges facing examination processes in the universities warranting the inclusion of a system like ERP that could centralize information for easier access as the ($p>0.05$). For the characteristics whose association was significant, the extent of relationship was low except in examination leakages. The deans and CODs perception on the challenges facing examination processes in universities was sought and the findings are summarized in table 4.17

Table 4: the perception of the Dean & CODs on the implementation of ERP and the hurdles Examination data processes in Universities

Challenges	C %	NC %	Mean	SD	X^2	df	sig
Leakage ofexams	3(18.8)	13(81.3)	1.81	0.403	9.905	2	0.002
Erroneous marks	9(56.3)	7(43.8)	1.44	0.512	1.778	1	0.185
Missing marks	12(75)	4(25)	1.25	0.447	0.762	2	0.383
Wrong degrees	4(25)	12(75)	1.25	0.447	0.762	1	0.383
Wrong honour	4(25)	12(75)	1.25	0.447	0.762	1	0.383
Impersonation	4(25)	12(75)	1.00	0.000	1.371	1	0.242

Findings deduced from table 4.17 showed that erroneous and missing marks were the major challenges facing examination processes in universities. This was shown by 66(64.7%) and 56(54.9%) of the responses by Deans and CODs respectively whereas wrong degrees and honours were minor challenges facing examination processes in universities. This was also shown by 24(23.5%) and 16(15.7%) of the respondents. The Deans and CODs perception on using ERP to resolve examination data challenges presented in table showed that, there was significant relationship between the use of ERP and resolving of examination data problems with $p>0.05$. Hence the null hypothesis that there is no significant relationship between the use of ERP and resolving of examination data was rejected. For the characteristics whose association was significant, the extent of relationship was low. Further the perception of lecturers was sought on the challenges facing examination processes and the findings are summarized in table 4.18

Table 5: The perception of the lecturers on the implementation of ERP and the hurdles facing of Examination data processes in Universities

Hurdles	C %	NC %	mean	SD	X^2	df	sig
Leakage of exams	96(32. 3)	201(67.7)	1.51	0.592	53.688	2	0.000
Erroneous marks	129(43.4)	168(56.6)	1.18	0.498	12.558	2	0.002
Missing marks	207(69.5)	90(30.5)	1.54	0.500	9.165	1	0.002
Wrong degrees	20(6.7)	277(93.3)	1.19	0.394	9.385	1	0.000
Wrong honour	15(5.1)	282(94.9)	1.17	0.381	14.911	1	0.000
Impersonation	126(42.2)	171(57.8)	1.76	0.426	21.266	1	0.000

Key: C= Challenge NC= Not Challenge

Findings from table 4.18 showed that 207(69.5%) of the respondents indicated that missing marks was one of the major challenges facing examination processes in universities while wrong degrees and honors were some of the minor problems facing examination processes in universities with a response of 6.7% and 5.1% respectively. The findings as shown in Table 4.15 indicate that the mentioned problems were unanimously agreed upon with ($p<0.05$) by lecturers' that the use of ERP did not resolve the examination processes problems. Therefore the hypothesis that there is no significant relationship between use of ERP and resolving of academic data problems was not rejected for all the factors ($p<0.05$). For the characteristics whose association was significant, the extent of relationship was low) except for missing marks. The findings from the table indicate that there was no significant difference between the implementation of ERP and the challenges facing examination processes in universities ($p>0.05$) in all the challenges. For the leakages of examinations whose association was significant, the extent of relationship was low. Therefore the calculations in the table indicated that there was no significant relationship in the perception of lecturers on all the challenges that affect examination processes in universities with $p>0.05$. This therefore means that the null hypothesis that there is no significant relationship between lectures perception on challenges that affect examination processes in universities was not rejected. For the examination leakage whose association was significant, the extent of relationship was low. Further the information gathered from interviews with the IT personnel confirmed that before the integration of ERP, universities faced several examination challenges that propelled them to integrate the systems. The previous

management information systems were perceived not to be efficient because they could not capture data of the large number of students and therefore lecturers were burdened. The universities were more than willing to integrate ERP to resolve the challenges facing the examination processes. This implies that the major challenges facing university examination processes were missing and erroneous marks. This could be attributed to large numbers of students in the universities whose data is not quickly captured by the academic staff. The students keep on correcting their marks and clarifying their degrees now and then as per the observations made.

The findings of the current study indicated that public universities faced hurdles in the provision of security to examination processes. This agreed with the report of Mbirithi 2013) [8] which revealed that public universities faced a series of examination challenges that tended to compromise the quality of education. Universities under study had inadequate ICT infrastructure. The current study dealt with the implementation of ERP as a solution to the hurdles while the reviewed study sought to investigate the nature and magnitude of the challenges. That included insufficient fund that in turn affected research, teaching and learning. The findings of the current study differed with the reviewed study that missing marks was a major challenge. The curriculum was not adequately implemented due to inadequate teaching and learning resources. These challenges had implications on the quality of education offered in the selected universities in Kenya. The study further revealed that the management of examinations had faults. There was late submission of examinations and marks by staff, loss of data and examination leakages due to computer crashes and leakages from secretaries and lecturers. There were high rates of cheating due to high numbers of students and low numbers of invigilators. All this led to loss of quality education in university education. However it differed with the current study which focused on the implementation of ERP to resolve the challenges facing examination processes in universities.

4.4 Respondents Competency in using ERP for Examination Data in Universities

The respondents were to establish the extent of their competency in using ERP to enhance examination data accuracy. The findings on DVC and registers competency are shown in table 6.

Table 6: Descriptive statistics on DVCs and Registrars perception on the competency of using ERP for examination data

Competency on	Extent of competency on examination data in%							
examination data	C %	FC%	NC %	Mean	SD	X^2	df	sig
Exam administration	12.5	75.0	12.5	1.38	0.719	0.762	2	0.683
Mark recording	12.5	75.0	12.5	1.38	0.719	0.762	2	0.683
Result analysis	18.8	68.8	12.4	1.94	0.574	1.039	2	0.595
Result release	37.5	50.0	12.5	1.75	0.683	3.810	2	0.149

***Source*:** Field data, 2016

Key –C-Competent FC –Fairly Competent NC- Not Competent SD-Standard deviation

The findings in Table 4.5 indicate 12.5% of the respondents were competent in the using ERP in examination administration and marks recording respectively and 75% were fairly competent in using ERP for examination administration and marks recording respectively and only 12.4% were not competent in using ERP in result analysis. On result analysis and releasing of results 68.8% and 50% of the DVCs and Registrars were fairly competent in using ERP. The mean and standard deviation for individual factor were also close. This indicated that the respondents had same perception over the competency in ERP use. However, it is important to note that the standard deviation of more than one indicates that the scores were not close to one another but were spread in the four scores between one and four. Result analysis and result release were rated high with mean of one.

Analysis of the chi- square showed that there was significant difference in the perception of respondents on the competency of using ERP in enhancing data accuracy on the five rated factors as the chi-square values were greater than the critical value of 0.05 therefore the null hypothesis was rejected. The study found out that most of top level managers were competent in ERP use in the management of academic affairs. This could be attributed to the increased ICTs in management of institutions and in servicing in using ERP. The study established that the top level academic managers in most of the universities had embraced the use of ERP in managing their academic affairs. The responses of the Deans and CODs on the competency in using ERP are shown in table 7

4.5.Descriptive statistics on Deans and CODs perception on the competency of using ERP on examination data

Table 7

Competency in Extent of competency on examination data in % ERPC								
	%	FC%	NC%	Mean	SD	X^2	DF	SIG
Exam administration	25.0	64.6	10.4	1.46	0.679	71.593	2	0.000
Mark recording	29.2	62.5	8.3	1.46	0.648	97.364	2	0.000
Result analysis	31.3	58.3	10.4	1.76	0.614	86.335	2	0.000
Result release	36.2	55.3	8.5	1.72	0.612	84.625	2	0.000

***Source*:** Field data

Key – C-Competent FC –Fairly Competent NC- Not Competent SD-Standard deviation

The responses provided by the Deans and CODs in Table 4.20 indicated that their perception was high (1.00) on all the characteristics. The standard deviation is also less than one. This equally implied that there was low deviation in responses. The findings provided indicated that 25% of the Deans and CODs were competent in using ERP in examination administration and 29.2% of the respondents were competent in marks recording and 58.3% and 55.3%

were fairly competent in result analysis and result release respectively. A very low response of 8.5% indicated that they were incompetent in using ERP. The perception of lecturers on the competency of ERP use was sought and the findings are summarized in table 8.

Table 8: Descriptive statistics on Lecturers perception on the competency of examination data

Competency	Extent of Competency of examination data in %							
Examination data	C	FC	NC	Mean	SD	X^2	df	sig
Exam administration	35.9	43.8	20.3	1.86	0.770	22.832	1	0.000
Mark recording	46.2	38.5	15.3	1.71	0.761	31.655	1	0.000
Result analysis	27.7	56.9	15.4	1.86	0.684	24.149	1	0.000
Result release	22.6	59.7	17.7	1.97	0.673	31.008	1	0.000

***Source*:** Field data, 2016

Key – C-Competent FC –Fairly Competent NC- Not Competent SD-Standard deviation

The Lecturers response as indicated in Table 8 showed that 46.2% of the respondents were competent in using ERP in marks recording and 35.9% were competent in using ERP in examination administration in universities. Only 59.7% of them were fairly competent in result release 59.7% and 56.9% of them in result analysis. The findings indicate that a low response of 15.3% of them was incompetent in marks recording and 15.4% of them in result analysis. The mean and standard deviation for individual factors are also close. The standard deviation of less than one indicated that the scores were close to one another but were spread in the four scores between one and four. Examination administration, result release. Result analysis and marks recording were rated high with mean of between 1.71 and 1.97 respectively. The implication of this is that the Lecturers were on average competent in using ERP for the examination processes. This could be attributed to the in-servicing of the Lecturers in the use of ERP systems. Interviews with the IT personnel showed that universities were in the process of internally training the academic staff on using ERP.

The findings of the current study showed that most of the respondents were fairly competent in the use of ERP in managing examination processes. His was an observation that concurred with Kajuna (2009) [3] which indicated that most of the respondents in the study were fairly competent in the use of ICT in teaching and learning. This differed with Kajuna (2009) [3] which revealed that lack of enough knowledge and competency was a challenge in ICT use. The respondents did not use technology in teaching because they did not have knowledge of computers. The illiteracy made technology integration ineffective, the current technology was said to be changing very fast and that teachers were overwhelmed because they did not have time to train in the advanced technology. Some teachers also indicated that most students especially first years entered the university completely computer illiterate so it was difficult to use technology to teach them meaning they were not competent to use the technology.

The current study also differed with Otieno (2010) [5] which revealed that all the company leaders were not qualified to use the company computers. They had only trained on the beginning of windows and DOS and the training was internal especially in the finance department and that ERP systems were perceived as being difficult and had a lot of complexities to understand and use. The complexity of the systems discouraged its adoption and led to greater difficulty in its organization involved.

5. Findings, Conclusion and Recommendations

5.1 Findings

Findings on hurdles encountered in the provision of security for revealed that universities on a large extent encountered incompetence of the respondents in using ERP. This led to the conclusion that most of the incompetence were in result analysis, release and marks recording. It was also concluded that most of the incompetence were in examination processes and the university was keen on resolving the hurdles that were encountered in using ERP systems. It was also concluded that some of the challenges facing examination processes like missing marks in universities could be resolved with the implementation of ERP.

5.2 conclusions

Findings on hurdles encountered in the provision of security for revealed that universities on a large extent encountered incompetence of the respondents in using ERP. This led to the conclusion that most of the incompetence were in result analysis, release and marks recording. It was also concluded that most of the incompetence were in examination processes and the university was keen on resolving the hurdles that were encounterd in using ERP systems. It was also concluded that some of the challenges facing examination processes like missing marks in universities could be resolved with the implementation of ERP.

5.3 Recommendations

1. The university academic staff members should be encouraged to embrace in servicing in using ERP to improve on their competencies in handling massive data.
2. Universities should be encouraged to resolve some of the examination challenges through the implementation of ERP that can handle voluminous data in order to minimize errors.
3. The university's academic staff should be encouraged to positively perceive ERP in managing academic affairs in order to maximize the benefits of the ERP systems.

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