ERP Implementation Challenges in Ghanaian Higher Education Institution

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Abstract

Enterprise Resource Planning (ERP) systems implementation is increasing rapidly in the higher education institutions, because of the call by various governments on them to streamline processes and functions. However, not all ERP implementations have been successful. There are still challenges in the implementations of ERP especially in the higher education sector. Since ERP implementation comes with high cost and also affects every aspect of the institution, there is therefore the need of investigating the challenges of ERP implementation in HEIs. The study focuses on ERP implementation challenges in the Ghanaian higher education. Using a case study research, data for analysis were collected from some public universities in Ghana and were analyzed using inductive thematic analysis. The findings of the study revealed three categories of challenges: institutional related challenges, financial related challenges and human related challenges, were some of the challenges encountered when implementing ERP systems in the Ghanaian higher education. It is expected that the findings of this study would provide valuable information not only to practitioners but also to academics. The findings will serve as source of general guidance in stimulating future research in this area. Understanding these challenges will assist HEIs to eliminate or mitigate ERP implementation failures.

Keywords
ERP Systems, Implementation, Challenges, Higher Education Institution, Ghana

1. Introduction
An enterprise resource planning (ERP) system is one of the most widely adopted systems used by corporate organizations and institutions to obtain competitive advantage, reduce cost and to enhance organizational cross-functional efficiency and effectiveness through the seamless integration of all information flowing through the organization. Despite the challenges of implementing ERP systems, organizations in the corporate sector have experienced numerous benefits from ERP systems during the last two decades than their counterparts in non-profit sector (Seo, 2013). These successes have encouraged higher education institutions (HEIs) to adopt ERP systems with the same goals that promoted corporate sector adoption (Fisher, 2006) such as increasing operational efficiency and decreasing costs. Apart from these goals, HEIs have also adopted ERP due to the call by various governments on them to streamline processes and functions (Allen et al., 2002). Stakeholders (students, faculty and government) pressure and reduced governmental budgets for universities have also necessitated the adoption of ERP systems in HEIs.

For the past two decades, HEIs have made significant investments in ERP implementation towards improving business processes efficiency and effectiveness. According to Abugabah and Sanzogni (2010), HEIs spent more than $5 billion in ERP investment during the last few years. In spite of these benefits and investments, the implementation of ERP systems in HEIs has been described as complex and challenging (Soliman and Karia, 2016). One study found that about 60 to 80 percent of ERP implementations in HEIs failed to meet expected outcomes and results of implementation were found unsatisfactory (Mehlinger, 2006). The high failure of ERP implementation in HEIs were not based solely on the results of ERP software itself but mostly on high degree of complexity from the massive changes ERP causes in organizations and institutions (Chatzoudes & Tsairidis, 2012). The challenges of ERP implementation are not technologically related issues such as technological complexity, compatibility, standardization, etc. but mostly about organization and human related issues such as resistance to change, organizational culture, incompatible business processes, project mismanagement, top management commitment (Helo et al., 2008; Maditinos, Chatzoudes & Tsairidis, 2012; Seo, 2013).

These organizational and human related challenges need to be researched in higher education institutions in order to eliminate or mitigate the high rate of ERP implementation failure. The aim of this study is to investigate the challenges of ERP implementations in a Ghanaian higher education. The proposed research strategy for this study comprises a multiple case study approach (University of Ghana, University of Cape Coast and Kwame Nkrumah University of Science and Technology) that enables the researchers to collect data for qualitative analysis using inductive thematic technique. The article is developed into five sections. The first section presents the background and objective to the study. The second section composes a theoretical review of ERP systems in HEIs, followed by the challenges of ERP implementation in HEIs. The third presents the proposed method, with the results being described on section four. The fifth section is the conclusion and proposal for future research.

1.1 Research Objective
To investigate the challenges of ERP implementation in higher education institutions (HEIs).

2. Literature Review
The literature review of this research is divided into two thematic sections: the ERP Systems in HEIs and the Challenges of ERP Implementation in HEIs.

2.1 ERP Systems in HEIs
The advancement in technology is empowering and changing the ways in which education providers are operating. The pervasiveness of information technology (IT) and the need to automate organizational processes have led to innovations in higher educational institutions. The academic sector joined the business, finance, and manufacturing enterprises to leverage the power of IT, to gain differentiation and competitive advantages (Karande, Jain, & Ghatule, 2012; Kumara & Guptab, 2012). The higher educational institutions across the world have introduced enterprise resource planning (ERP) systems to automate and integrate their business processes, including recruitment, admission, financial aid, student records, and most academic and administrative services (Ghuman & Chaudhary, 2012). The universities around the world are heavily investing in technology to provide their students with faster and up-to-date information technologies. The ERP systems do not only help to streamline the business processes of the university but also help the students, faculties and various stakeholders as well.

There is an urgent need of ERP systems in Higher Education Institutions worldwide, as various governments have called on them to improve their efficiency and their effectiveness. The challenges of HEIs include increasing expectations of stakeholders such as students and governments, decrease in governmental support, meeting quality and performance requirements, and maintaining competitive educational environments. These challenges have pressured many HEIs to adopt new technological innovations such as ERP systems to replace their aging management and administration computer-based systems. The rapid implementations of ERP systems in HEIs have also necessitated the need for research studies in this area. Indeed, only few researches exist and little is known about what are acquired for achieving a high operation competencies and issues on how ERP systems innovative technologies enable better performances (Soliman and Karia, 2016). In comparison to business environment, Abugabah and Sanzogni (2010) stated that little research has been conducted regarding ERP systems in a university environment. Studies on ERP implementation challenges are needed in HEIs, since HEIs are increasingly and rapidly implementing these systems; otherwise, many ERP systems implementations will fail and this may discourage other institutions of higher education from investing into ERPs.

2.2 Challenges of ERP Implementation in HEIs

Standardization, integration and simplification are the key features of ERP systems. Unlike corporate organizations, HEIs are limited in flexibility with these features (Seo, 2013). Staffs of HEIs (universities) may therefore, be forced to create workarounds by attempting to carry on their previous processes due to lack of flexibility in the system. If staffs' response to the new system in this way, there will be increased in workload, and this may create data gaps between the system and reality.

Another challenge asserted by Pollock and Cornford (2005) was the "generic type of solution" of ERP system. Coming from the corporate industry, ERP system could be a high-risk strategy for universities. This "generic type of solution" of ERP system limits the choices of HEIs of their unique business functions. According to Seo (2013), only few discussions and considerations regarding the challenges that universities might face from generic ERP system adoption have been researched.

Again, as ERP systems are "large integrated packaged solutions" with dynamic complexity, its implementation may be difficult for management and IT staff in the universities, even though they might have comprehensive understanding of their own organizations (Pollock & Cornford, 2005). Universities may find ERP system implementation difficult since they do not always have management or IT staffs that are well-versed in organizational functions.

In the university management hierarchy, there exist two sources of authorities: administrative authority and academic authority. ERP system implementation is believed to reinforce administrative authority as a model of governance (Seo, 2013). For those in academic, there is fear that ERP system implementation which results in increased transparency of their transactions would result in a loss of control even though the academics may be easy to train. On the other hand, administrative staffs may fear for their job security when redundant processes are eliminated, and work functions are automated across the university.

ERP system implementation has also been heavily affected by the organizational culture in corporate world. Many organizational dynamics such as structure, politics, environment, business processes, management decision-making and others play a critical role in the implementation of ERP systems. Further studies and analysis are needed to establish the impact of these organizational dynamics on the implementation of ERP systems. University as a unique institution is different from corporate organization (Pollock and Cornford, 2004) and has a unique culture, but this culture has been affected by today's world of business. According to Tsichritzis (1999), today's universities have been forced to admit that "education is a business and students are the customers". Allen et al., (2002) asserted that ERP implementation encourages universities take a more business-like approach to education, resulting in cultural changes including "the use of managerial language and techniques". There can be resistance to ERP implementation at universities because it involves not merely the adoption of a novel information system, but a holistic reengineering of organizational culture.

3. Methodology

This study adopted a multiple case study approach to investigate the challenges of ERP implementations in a Ghanaian higher education. The study selected University of Ghana (UG), University of Cape Coast (UCC) and Kwame Nkrumah University of Science and Technology (KNUST) as its case studies in the higher education based on the following reasons:

- Their long-term experiences with the use and management of ERP systems, these universities will help to provide the experts (respondents) views to objectively evaluate the system.
- They will help to provide the researchers, rich data and information for their analysis of results.

4. Sample and data collection

Structured interviews were conducted by the researchers on one and one basis with a total of 9 participants at the management and administrative levels of the universities (UG = 3, UCC = 3, KNUST = 3). Even though the nine (9) sampled managers and administrators cannot be taken as representative of the three universities, their inputs and feedbacks were critical since they were involved in most planning and implementation of ERP systems at their respective universities.

Instrument Design
Four structured interview questions were designed to solicit implementation challenges of the ERP systems. In-person interview (face-to-face interview) of 15-20 minutes was conducted with each respondent. Interviews were recorded and subsequently transcribed for analysis.

Data Analysis
Interview data were transcribed and subsequently examined. An inductive thematic analysis was used to derive meanings from the patterns of qualitative data set. Patterns were identified through the actual words and sentences or phrases used by participants in response to the interview questions.

Case Study One: University of Ghana
The university of Ghana uses the ITS (Integrated Tertiary Software) system which is a commercial-off-the-shelf software acquired from a South African higher education solutions giant. The purpose of the ITS is to manage administration and academic activities of the university. The interviews with managers and administrators of the ITS system focused on specific points, which were considered essential for understanding the implementation of ERP systems. Table 1 shows in detail the number of interviewees (Managers and Administrators) at UG, their designations and the time spent during the interview.

Table 1: Profiles of the interviewees at UG

Case	Interviewee	Designation	System	Interview Time
University of Ghana	Manager 1 (M1)	Payroll Manager	ITS System	18 minutes
	Manager 2 (M2)	HR Manager		17 minutes
	Administrator 1 (A1)	Finance Officer		15 minutes

Source: Originated by the researchers

Case Study Two: University of Cape Coast
The topaz ERP system is used at the administration section of the university, and it is one of the topaz Gems designed and developed in-house. Since the topaz ERP system is an accounting software system, it has been adapted by the University of Cape Coast to manage its finance and human resource departments. The interviews with managers and administrators of the topaz system focused on specific points, which were considered important for understanding the implementation and evaluation of ERP systems. Table 2 shows in detail the number of interviewees (Managers and Administrators) at UCC, their designations and the time spent during the interview.

Table 2: Profiles of the interviewees at UCC

Case	Interviewee	Designation	System	Interview Time
University of Cape Coast	Manager 1 (M1)	HR Manager	Topaz System	15 minutes
	Manager 2 (M2)	Payroll Manager		15 minutes
	Administrator 1 (A1)	Finance Officer		15 minutes

Source: Originated by the researchers

Case Study Three: Kwame Nkrumah University of Science and Technology
The KNUST enterprise system or ERP system is an integrated information system built in-house to manage the academic, finance and human resource activities as well as other facilities of the university. The system mainly consists of ARMIS, Panacea, and Synergy Systems. The interviews with managers and administrators of the KNUST system focused on important points for understanding the implementation and evaluation of ERP systems. Table 3 shows in detail the number of interviewees (Managers and Administrators) at KNUST, their designations and the time spent during the interview.

Table 3: Profiles of the interviewees at KNUST

Case	Interviewee	Designation	System	Interview Time
Kwame Nkrumah University of Science and Technology	Manager 1 (M1)	HR Manager	KNUST enterprise System	15 minutes
	Manager 2 (M2)	Budget Manager		16 minutes
	Administrator 1 (A1)	Finance Officer		16 minutes

Source: Originated by the researchers

5. Data Analysis of case studies
5.1 Case Study One: University of Ghana
Barriers or challenges of ERP systems implementation
Manager 1 briefly mentioned users or employees lack of commitments or involvements as one of the challenges they encountered during the implementation stage of the ITS:

"During the implementation of ITS system, the challenge was the lack of staff members' involvements or commitments to the project. While some members were fully committed to the course of the project others were not and this made the project very challenging".

Again, manager 1 stated that:

"Some of the business processes or activities of the university were not in line or in match with the ITS system during its implementation. Hence, there was a problem of internal business processes or activities incompatibility". [M1]

One manager also interviewed made the following statements concerning barriers or challenges of ERP systems implementation:

"The challenge we encountered during the implementation of the project was the training of the staff members on the use of the system. It was challenging because most of them do not have any foundation in computing or they do not have fundamentals of computer literacy. This really posed a challenge to us during the implementation". [M2]

Another administrator member made the following statement:

"The challenge we had during the implementation of ITS system was the staff resistance to the new system. We knew from the beginning that this challenge will surface, because as human as we are when there is a change around us we try to oppose it. But we were able to overcome it through our training sessions". [A1]

5.2 Case Study Two: University of Cape Coast
Barriers or challenges of ERP systems implementation
With respect to the barriers or challenges of ERP systems implementation, manager 2 made the following statement:
"The challenge we had during the implementation of the topaz system was the issue of staff training on the usage of the system. It was challenging in training the staff members who will be using the system, since most of them were not experts in computing or they do not have fundamentals of computer literacy. This really gave us a tough challenge during the implementation". [M2]

Still with regards to the barriers or challenges of ERP system implementation, the following statements were made by manager 1:

"During the implementation of the topaz system the challenges were the cost of project implementation, training of staffs to use the system and staffs' resistance to the system. ERP systems are expensive systems so are their implementation. Cost of implementation can be very high if not properly handled".

"One other challenge we encountered during the implementation of topaz system was the low level of IT/IS maturity within the university. Most sections or units of the university have no computers, software, hardware and databases to support the implementation of the system; Hence, the delay in the implementation of the project. [M1]

One administrative staff also interviewed made the following statement concerning barriers or challenges of ERP systems implementation:

"There was lack of commitments on the part of users or employees during the topaz system implementation. Most staffs were not committed to the project because they see it as a threat to their work. So they were not fully committed to the project and this made the whole project very challenging". [A1]

5.3 Case Study Three: Kwame Nkrumah University of Science and Technology
Barriers or challenges of ERP systems implementation
With respect to the barriers or challenges of ERP systems implementation, manager 1 made the following statement:
"During the implementation of the system, the challenges were employees or users lack of commitments or involvement in the project and the cost of project implementation. Cost of the project along the way began to rise and this made management to question most of the project phases". [M1]

Still with regards to the barriers or challenges of ERP system implementation, the following statement was made by manager 2:

"One other challenge we encountered as project team was the lack of commitments or involvements of university management in the project. Initially, the commitment or involvement in the project was a big challenge, but after several justifications of the project they expressed their interest in the project. So the initial commitment to the project by the management was a challenge". [M2]

One university administrator interviewed made the following statements concerning barriers or challenges of ERP systems implementation:

"One key challenge we had during the implementation of the project was the training of the staffs or users of the system. It was our biggest challenge because after implementing this entire complex and difficult system if the users are not able to use the system, then it means you have done nothing. Staffs are those who are going to use the system, so it is our responsibility to train them to use the system. Majority of them does not have any computing foundation or they do not have fundamentals of computer literacy, so training was a challenge". [A1]

6.Discussions and implications
Discussions of the research findings were done by first reviewing the study's main objective. The study objective was to investigate the challenges of ERP implementation in higher education institutions. The discussions went on by stating the findings of the study whiles relating them to the previous studies. These have been presented as follow:

Research Objective: To investigate the challenges of ERP implementation in higher education institutions (HEIs).

Research Findings:
1. Organizational related challenges (low level of IT/IS maturity and internal business process incompatibility)
2. Financial related challenge (high cost of ERP project implementation)
3. Human related challenges (staffs' resistance to the system, staffs lack of commitments or involvements, lack of top managements involvement or commitments and training of staffs to use the system).

Finding 1: Organizational related challenges (low level of IT/IS maturity and internal business process incompatibility)

Relation to previous studies

Previous researchers (Menon et al., 2019; Soliman and Karia, 201) supported the organizational related challenges such as internal business process incompatibility. The research findings also support the claim by Seo (2013) that the Organizational structure and culture also highly affected ERP implementation. Pollock and Cornford (2005) also support the findings by arguing that ERP systems are generic type of solution, but not a specific solution, hence it is a high-risk strategy for universities to adopt it.

Finding 2: Financial related challenge (high cost of ERP project implementation)

Relation to previous studies

Other researchers (Kulikov et al., 2020; Soliman and Karia, 2016) supported the financial related challenges such as high cost of ERP project implementation. The research findings also support the claim by Seo (2013) that the ERP system implementation was much more costly than expected, and the systems also required significant secondary resources and ongoing maintenance efforts. Pollock and Cornford (2005) also support these findings by arguing that ERP systems implementations are costly projects which required high investments to execute.

Finding 3: Human related challenges (staffs' resistance to the system, staffs lack of commitments or involvements, lack of top managements involvement or commitments and training of staffs to use the system).

Relation to previous studies

Earlier studies by (Kulikov et al., 2020; Menon et al., 2019; Soliman and Karia, 2016) supported the human related challenges (staffs' resistance to the system, staffs lack of commitments or involvements, lack of top managements involvement or commitments and training of staffs to use the system). The research findings also support the claim by Seo (2013) that the top management support was one of the most frequently cited critical success factors during ERP implementation.

Our research findings indicates that during HEIs implementation of ERP there were challenges that have been categorized into three in this study: organizational related challenges (low level of IT/IS maturity and internal business process incompatibility), financial related challenge (high cost of ERP project implementation) and human related challenges (staffs resistance to the system, staffs lack of commitments or involvements, lack of top managements involvement or commitments and training of staffs to use the system).

7. Future research direction

Since ERP implementation challenges are not technological or technical in nature but rather organizational and human related, it is therefore mandatory to investigate these two factors. This study recommends that future research should thoroughly look at the organizational and human related factors that affect the implementation of ERP systems in HEIs.

8. Conclusion

In conclusion, we recall the study's research objective, research question and research findings. The research objective is to investigate the challenges of ERP implementation in higher education institutions (HEIs) and this led to the research question "what are the challenges of ERP systems implementation in higher education institutions".
The findings of the study revealed three main categories of challenges namely: institutional/organizational related challenges (low level of IT/IS maturity and internal business process incompatibility), financial related challenge (high cost of ERP project implementation) and human related challenges (staffs resistance to the system, staffs lack of commitments or involvements, lack of top managements involvement or commitments and training of staffs to use the system).

The research findings practically suggest that the HEIs management and other stakeholders should consider critically these challenges when implementing ERP systems in order to avoid high failure rate. Our study's finding informs the HEI management and stakeholders especially the academia and practitioners on issues concerning ERP implementation challenges. It also informs ERP system vendors, ERP developers and other supporting ERP services on the need to consider these challenges when making decisions about ERP implementations in the HEI.

The research findings suggest to HEIs management and stakeholders the need to develop and implement certain policies and strategies that will guide and direct them to implement effective ERP systems. These policies and strategies will help HEIs to come up with effective ERP systems that influence management decision-making.

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