

Enterprise Resource Planning (ERP) Systems in Higher Education: A Deeper Look at Their Failures and the Way Forward

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Abstract

ERP systems are the life blood of institutions of higher education but however they require substantial investments to implement. Many institutions of higher education are not deriving the expected benefits from the ERP implementation due to ERP failures. The aim of the study was to critically examine the causes of ERP failures in higher education from the primary studies. The study used thematic synthesis to generate new concepts from the primary studies. The results that came from the inductive analysis were that the ERP technology is failing to

be integrated in higher education; stakeholders requirements are not considered in ERP systems development and the productivity of the stakeholders are not being enhanced by the ERP systems. The study made the recommendation that there is need to identify critical stakeholders to be involved in requirements engineering to preclude ERP failures.

Keywords: ERP, Higher Education, Failures, Stakeholder, Way Forward

1. Introduction

Enterprise Resource Planning (ERP) software was used in manufacturing companies' way back in the 1970s. It replaced the legacy systems that were disparate and more paper based. The ERP software gained widespread acceptance and replaced other legacy systems from other sectors such as institutions of higher education. In institutions of higher education, ERP systems enabled easy communication amongst departments thereby curtailing their operational costs substantially (Orougi, 2015). Noaman and Ahmed (2015) noted that the higher education sector, their operational environment is different from other sectors more often, the ERP systems in higher education support the organizational processes and objectives of the institution. ERP systems in higher education are implemented to buttress the following operations among other things: student's admissions, financial aid, recruitment, students' records, scheduling of examinations and classes, administrative purposes (ALdayel et al., 2011). Ultimately, the aim of the ERP systems in higher education is to improve the efficiency and accessibility by various stakeholders thereby contributing positively to the productivity of the stakeholders (Abugabah & Sanzogni, 2010).

Abugabah et al (2015) observed that despite substantial investments in ERP systems in higher education, the expected outcomes are not being realized. Institutions of higher education implement ERP systems expecting a surge in the availability of the system, accuracy of the data, productivity level, efficiency and reduction in costs but however these expectations are not realized when the systems are implemented. The ERP debacles to address the above mentioned issues has led to the researchers to scrutinize what causes these debacles of ERP systems in higher education sector. A myriad of researchers have suggested diverse ERP system failures in the education sector but without much success (Kimberling, 2015). There is need for further research on ERP failures and their possible solutions. As stated earlier, around 60 to 80 % of ERP systems fail to meet stakeholder's expectations when implemented (Abugabah & Sanzogni, 2010; Krigsman, 2010).

The rhetorical question that the academic community are asking themselves is: Why are ERP systems failing to meet the expectations of stakeholders in higher education? The anticipated performance and satisfaction of the stakeholders are in parallel with the actual ERP system in place. Bringing the argument very close to home, are we expecting more from the ERP system than what the system can do? Is the problem with the ERP system or with the stakeholders? Judging from these two questions, there is need for further research to establish the root cause of the problem.

The study is guided by the following research questions: What causes ERP systems in higher education to fail to meet the expected outcomes?

1.1 Problem Statement

ERP failures in higher education have not been given much research by the academic world; however institutions of higher education invest substantial amounts of money that run into millions of USD in implementing the ERP systems (Rabaa'I et al., 2009; Ahmer et al., 2016). However, the users are not contented with the performance of the ERP systems (Powell, 2003; Klaus, 2012; Abugabah et al., 2015; Chayakonvikom et al., 2016). The user's productivity levels have not been enhanced by the ERP systems in higher education (Wailgum, 2005; Rajan and Baral, 2015; Mahmud et al., 2017). Users of the ERP system have difficulties in accessing information from the system (Mahanga and Seymour, 2015; Kattoua et al., 2016).

Institutions of higher education are not getting value from their investment in ERP systems, there is need for further research with possible solutions to the causes of ERP system failures to meet stakeholder's needs. ERP systems are artefacts that do not entirely replace the stakeholder's roles in higher education but however will enhance the accuracy, speed and efficiency of tasks done (Mavetera, 2017). ERP implementation in higher education, stakeholder's involvement is negated thereby failing to capture the needs of the stakeholders.

2. Theoretical Background

A number of researches have been done by the academic community on the critical success factors for ERP implementation but little attention has been done on ERP failures in higher education (Abugabah and Sanzogni, 2010). Most of the ERP system implementations have been unsuccessful regardless of the huge financial resources injected into the development of these systems (Abugabah et al., 2013). Institutions of higher education have embraced ERP systems in a bid to enhance efficiency and performance due to pressure from global technological demands. But however, that dream is far from being realized by institutions of higher education. The ERP systems are the life blood of higher learning as can be shown by the following benefits derived from ERP implementation (Alqashami and Mohammad, 2015).

- Strategic- linking the institution with potential customers and suppliers
- Operational- improved customer service
- Managerial- improved decision making
- Organizational – supporting various tasks to achieve the institution's vision

Many institutions are failing to derive the expected benefits from ERP systems because ALdayel et al (2011) noted that many ERP systems are failing to address the needs of the stakeholders. The stakeholders in institutions of high education are diverse and at times they may have conflicting requirements to be implemented in the ERP system. This is mainly caused by a lack of integration between different faculties as they operate autonomously. ALdayel et al. (2011) observed that ERP systems in higher education can be implemented successfully from a technical perspective but it will be a major failure from the stakeholder's perspective.

Sudevan et al (2014) posits that stakeholders can drive the ERP project to failure as much as

they drive the same project to success. In order for the ERP to be a successful, relevant stakeholders should be selected to be part of the ERP development team (Frimpon, 2012; Sudevan et al., 2014). However, Sudevan et al (2014) did not elaborate further how to select relevant stakeholders to be part of the ERP team. There is a huge discourse in the academic arena on the strategies to be used in selecting the appropriate stakeholders who should be involved in ERP implementation.

Sudevan et al (2014) observed that ERP implementation in higher education impacts the stakeholder's interests and there is need to involve them in defining their needs that should be met by the ERP system. Freeman (1984) came up with the stakeholder theory and the theory stipulates that an organization is composed of a group of stakeholders and the organization should strive to meet the interests, viewpoints and the needs of those stakeholders. The interests and needs of the stakeholders are diverse and at times conflicts may arise amongst stakeholders on whose interests or needs should be met first. Chetcuti (2008) also concurs with Freeman when he writes that institutions are social structures composed of stakeholders with diverse interests. These diverse interests should be met by the ERP system.

Very few authors came up with some stakeholder selection strategies that could be used in selecting stakeholders to be involved in ERP implementation. The table below shows the authors together with the stakeholder selection strategy.

Table 1. Stakeholder selection strategy

SN	Author	Stakeholder selection strategy
1	Razali and Anwar (2011)	Identification, Filtering and Prioritization
2	Majumdar et al (2014)	Designation, Experience, Interpersonal Relationship, Domain Knowledge, Power, Technology Skill, Influence
3	Anwar and Razali (2016)	Knowledge, Role, Interest, Communication skills
4	Glinz and Wieringa (2007)	Interest, Role, Stakeholders directly affected by the new system, Developers
5	Ballejos and Montagna (2008).	Functional, Geographical location, Knowledge, Hierarchical Level
6	Babar et al (2015)	Stakeholder Responsibilities, Stakeholder Groups, Stakeholder Aspects or Attributes, Stakeholder Factors, Stakeholder Values, Inclusion and Exclusion Criteria

Razali and Anwar (2011) stakeholder's selection did not cater for the stakeholders' communication skills, age and gender. The communication skill is very crucial as the stakeholders will be in a position to express their requirements fully. Majumdar et al (2014) the matrix used in assigning points to be used in selecting stakeholders is very subjective and too much time can be consumed in assigning points to stakeholders. Influence and power

points to the same thing and they should not be measured separately. Anwar and Razali (2016) stakeholder's selection did not include the gender and experience of the selected stakeholders. The stakeholder's experience is of valuable use as they have used the system before and they can proffer valuable requirements to be implemented in the new ERP system. Glinz and Wieringa (2007) stakeholder's selection strategy did not include the experience, knowledge and the communication skills of the stakeholders. Ballejos and Montagna (2008) selection strategy did not include the stakeholder's experience, communication skills and interest. The stakeholder selection strategy postulated by Babar et al (2015) is very complex to follow and the strategy omitted key selection attributes to be considered such as stakeholder's gender, interest and experience.

3. Research Methodology

3.1 Research Approach

In order to get a deep insight on the failures of ERP systems in higher education, the reviewers conducted a case by case analysis of ERP failures in higher education to establish the causes of the ERP failures. Each ERP failure case, a brief description of the failure was done. The material selection criteria adopted in the study was for articles that addressed ERP systems failure in higher education. The reviewers employed a purposive article search rather than exhaustive searching because the reviewers were looking for articles with different concepts on ERP failures in higher education. The reviewers only considered articles written in English language. Thematic synthesis was used to identify key themes from the primary studies so that new concepts can be produced from the data set (Thomas and Harden, 2008).

3.2 Summary of ERP Failures in Higher Education from the Primary Studies

The ERP literature failure summary had been done in chronological order so that new insights can be discovered on ERP failures.

- Panizzon et al (2016) conducted a study on Project Alfa which was supposed to implement the ERP system for a communal university which is a non-profit higher education institution (HEI) in Brazil. The study looked at the perceptions of the users about the change in procedures that resulted from the implementation of the ERP system. The project was a failure because there was resistance to change in processes at the institution for ERP to be implemented. The software supplier failed to re-design processes at the institution so that the ERP can be implemented successfully.
- Mahanga and Seymour (2015) did a research on ERP implementation in higher education in Africa focussing on Namibia and Tanzania institutions. Their findings were that there was a major problem of integrating the ERP technology into the education sector. Some of the ERP systems supplied by vendors were not designed for instructional purposes making students and lecturers not see the relevance of the ERP systems in the education curricula.
- Noaman and Ahmed (2015) posit that ERP failures in higher education are attributed to the mis-alignment between the ERP software and the business requirements.

Beekhuyzen et al (2001) also noted that at the Griffith University in Australia, the ERP system requested two different student number formats to access the system which led to students receiving incorrect information from the system.

- Aljohani et al (2015) did a research on higher education institutions in Saudi Arabia on the failures of ERP systems. Their findings were that ERP systems are failing to integrate various departments at universities. The ERP systems are also not meeting the needs of the ordinary users but of the top management, hence the ERP systems fail to deliver the expected outcome.
- ERP failure rates in higher education in Egypt are high due to their complex culture (Abdellatif, 2014). The Egyptian culture believes in safeguarding the information as a personal asset to the extent that it cannot be shared with other people. Soliman and Karia (2016) also concurs with Abdellatif findings that culture is the greatest factor that contributes to ERP failures. This makes it difficult to elicit the needs of the users for ERP implementation.
- Bhat et al (2013) argued that stakeholder's satisfaction is a key factor to measure the success of an ERP system in higher education. GBS in India's ERP system failed to meet the expected outcomes because there was poor communication from the top management to other employees on the objectives of the ERP system. The users of the system at GBS further reiterated that the ERP system was not meeting their needs because the users were not involved in the ERP implementation (Bhat et al., 2013).
- Seo (2013:20) contends that there are two sources of authority at any given university: the administrative and the academic authorities. These two sources of authority are the major causes for some of the failures of ERP implementation in higher education. The administrative authority will fear that ERP implementation will eliminate some redundant processes and their job security will be compromised while the academic authority will fear the ERP implementation will expose their transactions and lose control along the way (Seo, 2013:20).
- Nizamani et al (2013) did a study in Pakistan on ERP adoption by institutions of higher education and the findings were that the adoption is still in infancy stage. The major reasons outlined were that there is a general belief that ERP implementation is complicated, lack of skilled manpower to help in implementation, limited resources. Nizamani et al (2015) also noted that lack of top management support is the major cause of ERP failures in Pakistan.
- The RMIT University's ERP system failed to integrate technology into higher education (Mukerji, 2010:50). The ERP costed the University \$47 million and the major causes for the failure were attributed to poor implementation plan, poor corporate governance, little involvement by management, lack of accurate documentation kept (Ketchell, 2003). Albadri (2012:66) propounds that the first critical stage to avert ERP failures in higher education is to do needs assessment: the needs assessment will unearth the requirements that should be met by the ERP system

and if this stage is successfully completed then the ERP system will be a success. Rabaa'I (2009) observed that in Australia a number of Universities' ERP systems failed to deliver the expected outcomes such as the Adelaide University and the University of New South Wales.

- According to Wailgum (2005) students at University of Massachusetts-Amherst campus were left stranded when the ERP system crashed and students failed to register for their classes and perform other activities online. Around 3000 students at the Indiana University were denied financial aid by a faulty ERP system (Wailgum, 2005). At Stanford University, the users' productivity levels were lower using the new ERP system than using the legacy system (Wailgum, 2005).

3.3 Generating Analytical Themes

The themes were generated based on the reviewers' judgement and insights; this brought in some new insights from the primary studies based on the reviewers' research questions. The reviewers considered the ERP failures in higher education and their implications on the stakeholders in meeting the expected outcomes. The reviewers considered the ERP failures in higher education and their implications on the stakeholders in meeting the expected outcomes. The study made use of descriptive themes in order to go beyond the findings of the primary studies so that new concepts and understanding can be generated. The reviewers inferred that ERP technology is failing to be integrated successfully in the higher education sector from the descriptive themes captured from the inductive analysis. The reviewers also considered the implications of ERP failures on the stakeholders in achieving the expected outcomes. The reviewers identified new themes emerging from the failure of integrating the ERP technology in the higher education and its impact on the stakeholders in meeting the expected outcomes.

3.4 Results

The study identified 5 theses which are as follows: (1) ERP systems are not being integrated in the higher education sector to meet the institutional requirements (2) Stakeholder's requirements are not being incorporated when ERP systems are being developed. (3) Marginalized stakeholder's requirements are not being taken into consideration during ERP systems development. (4) Identifying which stakeholders to involve during ERP systems development is a challenge. (5) The productivity of the stakeholders using the ERP systems has not been enhanced. The reviewers decided to keep result 2 and 3 together because there are certain stakeholders who are marginalized in the institution and in most cases their requirements are not taken into consideration because they have less power and influence in the institution but however, they play a pivotal role in meeting the institutional objectives.

4. Discussion

Though the primary studies' data collection and analysis were done in diverse settings, there is need for a higher level of abstraction so that the results can be transferrable to other similar context (Thomas and Harden, 2008). Kandiri (2014:36) postulated that the integration of ERP systems into the education sector is lacking and this has adversely affected the productivity of the stakeholders. Research in the past decade on ERP systems implementation focussed on

the critical success factors but however few researches concentrated on the failures of ERP systems (Françoise et al., 2009; Abugabah, 2010; ALdayel et al 2011). ERP systems in higher education are failing to meet the expected outcomes and the question we need to clarify is this: Are the ERP systems programmed well to meet the users' needs or the users' needs keep changing and the users' expect the ERP system to meet those needs?

Stakeholders play a pivotal role in ERP implementation in higher education since their performance, efficiency and satisfaction is directly linked to the ERP system. The involvement of the stakeholders at the onset of the ERP project is of paramount importance (Sudevan et al., 2014; Salhotra, 2014). The ERP system will need to intergrate the various organizational processes at the institution so that the business processes and business rules are adhered to. The ERP technology should support the organizational business processes which will ultimately enhance the stakeholders' performance and satisfaction. The requirements of the stakeholders can best be articulated by using the organizational processes. The organizational processes can be outlined by the stakeholders during ERP implementation and this will succor in unearthing the roles played by various stakeholders and the resources that will be required to do those roles (Mavetera, 2011:166). Stakeholders require knowledge from multiple perspectives (Ghaisas and Ajmeri, 2013). There is debate in the academic community on the relevance of domain knowledge in addressing the needs of the stakeholders (Hadar et al., 2014; Niknafs and Berry, 2017). Some authors are of the opinion that domain knowledge by a requirements engineer will hinder creativity as some requirements engineers will have tacit assumptions about certain things in the domain but which may be inconsistent with the stakeholder's assumptions (Niknafs and Berry, 2017). However, some authors are of the opinion that domain knowledge greatly assists the requirements engineer to communicate with the stakeholders so that their needs will be elicited (Frimpon, 2012; Hadar et al., 2014; Lech, 2016).

Stakeholders at times expect more from the ERP systems than what the ERP system can do such as understanding, empathy and judgement (Mavetera, 2017). There is a gap in literature to establish how to transfer the knowledge the stakeholders have in doing a specific job during requirements elicitation so that the ERP systems will meet the stakeholder' requirements. Stakeholder's knowledge about performing a specific task can help in reducing the gap that exists between the stakeholders and the ERP system in terms of the ERP system's understanding, empathy and judgement. Diversity in the stakeholder's composition propounded by Jokonya (2014: 110) is of paramount importance when selecting stakeholders for an ERP implementation. The way stakeholders perform any given task helps them to acquire the knowledge for that task, so that is why stakeholders should be involved in ERP requirements engineering.

5. Conclusion

In order for higher education institutions to benefit immensely from the ERP implementation, a holistic approach should be taken that focus on three crucial artefacts namely Stakeholders, Processes and Technology. The ERP system's main goal is to improve productivity of the stakeholders but however the productivity can be enhanced if the system is intuitive and

romantic in nature. This is lacking in many ERP systems used in higher education and most stakeholders they do not see the relevance of the ERP in the education sector. A closer look at this problem will tell us that one crucial artefact has not been consulted on their requirements to be infused in the ERP system. The artefact was simply told to like a system they were not part and parcel during the development. Which is that artefact? The People: This gap needs to be closed on why ERP implementations are failing to meet the stakeholder's expectations in higher education. A lot of papers have been written on ERP success factors but the focus should be on the users' involvement to avert ERP failures.

6. The Way Forward

A lot of ERP implementations have looked at the post implementation problems of the system but however the problem starts with the pre-ERP implementation which is the stakeholders during requirements elicitation. This phase has not been given much attention by the academic community but this is the stage that is causing a lot of ERP failures. Some researches need to be done on pre-ERP implementation focusing on stakeholder's involvement in requirements engineering.

There is need to come up with a stakeholder selection strategy to be used in requirements engineering which caters for all crucial attributes about stakeholders so that rich requirements will be elicited. There is also need for a strategy to deal with conflicting requirements from different faculties in a higher education context. There is also need for research to be done on how requirements engineers can elicit users' requirements in a complex culture. Lastly there is need to come up with an innovative elicitation technique for eliciting the user's knowledge in doing a specific task so that romantic ERP systems will be developed that will enhance the stakeholder's productivity level.

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