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ERP IMPLEMENTATION IN HIGHER EDUCATION: PRODUCTIVITY AND USER'S UNDERSTANDING OF ERP CONCEPTS

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Abstract

Motivation/Background: The review of extant literature suggests that ERP Implementation in general and ERP post implementation scenario in particular, in higher education in Indian context appear to have been a less explored area. The review also shows that although two factors, namely, user's understanding of ERP concepts and their productivity, appear to be important to the success of ERP during post implementation stage, there is a very little or no evidence of studies in this area. Motivated by the observation, this paper reports an empirical study on the association between the two factors, in ERP post-implementation stage, in higher education institutions, especially, in an Indian context.
Method: The study employed a descriptive design to examine the research problem. A search of multiple journals was carried out using key words identified in an initial review of literature. Successive rounds of review of abstract of articles led to identification of a few studies, which were examined in details to identify the gaps. Subsequently, using a purposive sampling and a survey of target respondents, the primary data was collected and analysed. The hypothesis to address research problem were analysed and interpreted using chi square test of independence.
Results: The most important finding of the study was lack of research focusing on relationship between two important factors impacting ERP post-implementation stage, in the chosen setting. The investigation showed that the two factors under study, were dependent on each other.
Conclusion: The outcome of the analysis, besides contributing to the body of knowledge in the gap area, would also be of great use for going in depth on the influence of these factors during the ERP post-implementation stage, in higher education institutions, especially in the Indian context.

Keywords: ERP Concepts; ERP Post-Implementation; Higher Education; Productivity.

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1. Introduction

According to (Boykin, 2001; Yen, Chou, & Chang, 2002; Bahssas, AlBar, & Hoque, 2015;), enterprise resource planning (ERP) system is a commercial management solution which includes a set of integrated comprehensive software, which, when efficaciously applied, can deliver integration of the business processes and departments in an organisation. The comprehensive set generally comprises of established applications and apparatuses related to business functions including sales and distribution, financial accounting, purchase, materials management, production planning, manufacturing, supply chain, and customer management. As per (Al-Mashari & Zairi, 2000), these packages possess the capability to enable movement of data across entire, interior and exterior, supply chain processes of a company. The author further declares that an ERP system implementation can result in performance enhancement of network of supply chain by facilitating cycle time reduction (Gardiner, Hanna, & LaTour, 2002). For any company or any institution, Enterprise Resource Planning (ERP) system provides a comprehensive solution for their operational requirement on day to day basis or a periodical basis. Traditional systems of maintaining records have become obsolete due to the evolution of third and fourth revolution of the world.

Although there has been an attraction towards procurement and usage of ERP, the flip side of the same has been the cost and glitches faced during the implementation. There have been instances of failures in the past, which have led to some frictions. But in the dynamic and complex changing scenario of the world, applying and implementing ERP systems appear to be the only way out.
In the higher education institutions, there have been difficulties faced while implementing ERP systems. There have been many factors which have resulted in failure of implementation of ERP. Some of the factors include the understanding of ERP system per se by the users and the productivity of these users after the implementation of ERP in their institutes. There are only very few studies that have focused on these two parameters of ERP implementation.

(Klaus, Rosemann, & Gable, 2000) define ERP systems as an all-inclusive, wrapped software solutions that enable assimilation of entire set of business processes and departments giving a holistic picture of the business from a single database and architecture of information technology. (Yu, 2005) highlighted the significance of training during and after ERP implementation, and found that although there is notable dissimilarity, many of the studies in extant literature on ERP mingle education and training. While ERP training is related to the process of imparting knowledge on operational abilities like, accuracy of data input, generating pre-programmed and customised outputs, function of particular department, ERP education relates to imparting knowledge on concepts of ERP including impact on productivity, business process reengineering (BPR) and its usefulness, conflicts and its resolution during operation, features of implemented system. The author also noted that while user education is the foundation of ERP post-implementation journey of an organizations, past studies have only highlighted user training and concluded that the after go-live, ERP users across the organizations must be educated. (Stedman, 1999) noted that recognising the significance of user training, Oracle and PeopleSoft special offers included remote training using satellite, for users of the company buying their solutions. (Lassila & Brancheau, 1999) examined the roll-out of fresh software solution and established preliminary user orientation to be significant. Furthermore, these authors noted that companies tend to slash down cost of training while accepting Commercially-Off-The-Shelf (COTS) solutions like ERP, which impacts the outlook of the user adversely leading to operational disruptions during post-implementation

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phase. The authors also noted that the knowledge transfer on features of the solution as well as associated work flows, should be included in scope of training. (Umble, Haft, & Umble, 2003) found that training and education of ERP users in a company, is quite important for ERP project success. (Shaqrah & Al Maliki, 2018) recognizing the importance of users, noted that workforces increase capabilities to enhance understanding of enterprise system, which is very significant for go live phase.

According to (Stone, Good, & Baker-Eveleth, 2007; Thompson, Compeau, Higgins, & Lupton, 2007; Umble et al., 2003; Urbach, Smolnik, & Riempp, 2009), companies to enhance their outcomes resort to using information systems solutions, which, as found by (Al-Mashari, Al-Mudimigh, & Zairi, 2003), are treated by companies as tools to deliver better performance. This, especially applies, in sense of perpetual changes in operating environment of the business requiring companies to adapt, as noted by (Al-Hakim, 2006).

A study by (Law & Ngai, 2007) indicated that that companies choose to implement ERP solutions with an objective to improve outcomes by harping on enhanced efficiency and scaled up effectiveness. (Sabherwal, Jeyaraj, & Chowa, 2006) argue the significance of aspects related to users in the success of Information System implementation. (Yeh, 2012) in their study indicate that the employee engagement at work influences performance positively. However it has also been noted by (Stone et al., 2007) that companies that fail to understand user's operational requirements with respect to information systems, may face consequences of unsuccessful ERP implementation leading to failure in delivering most of the anticipated results. Thus, missing focus on ERP users, as noted by (Amoako-Gyampah, 2007; Buonanno et al., 2005; Dey, Clegg, & Bennett, 2010; Kositanurit, Ngwenyama, & Osei-Bryson, 2006; Kositanurit, Osei-Bryson, & Ngwenyama, 2011; Mabert, Soni, & Venkataramanan, 2003; Skok & Legge, 2002), multiple ERP implementations have been unsuccessful in delivering expectation in terms of their working. It therefore, implies that impact of ERP systems on the users is an important consideration examine their utility leading to improved effectiveness and efficiency of users consequently impacting productivity at the organization level.

The literature review above suggests that user's concepts of ERP and productivity appear to be important factors contributing to the success of ERP during post implementation stage. It is also noted that Extant literature related to these factors show a very little or no evidence of studies showing interrelation between the two factors, especially as applicable to the context of ERP post implementation stage. Exploring the association among these two factors during the ERP post-implementing stage, in a higher-education institution, is one of the main purpose of the current study.

Accordingly, this study examines the association between the user's understanding of ERP concepts and their productivity during the ERP post-implementation stage and therefore, attempts to fill this gap contributing to the body of knowledge, through an empirical examination in higher education institution setting, in India.

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2. Materials and Methods

A study was conducted to examine the relationship between *"understanding of ERP Concepts"* and *"Productivity"* of users of ERP during post-implementation stage. The details of the study are as below"
Sample Size: 101
Sample Design: Purposive
Research Design: Descriptive Design
Data Collection Method: Primary Data using Questionnaire
Hypothesis: Following hypothesis were used.
H0: Understanding of ERP Concepts and Productivity of users are independent of each other
H1: Understanding of ERP Concepts and Productivity of users are not independent of each other
Tool: Chi square test of independence was used for the above objective.

3. Results and Discussions

Following were the results of the data analysis of the study.

Table 3.1: CROSSTABULATION - The ERP System increases your productivity. * Your understanding of ERP concepts are quite good.

		Your understanding of ERP concepts, are quite good.					Total
		Very Poor	Poor	Neutral	Good	Very Good	
The ERP System increases your productivity.	Strongly Disagree	0	1	0	1	0	2
	Disagree	0	3	1	1	0	5
	Neutral	0	0	4	5	1	10
	Agree	0	3	10	44	3	60
	Strongly Agree	1	0	0	16	7	24
	Total	1	7	15	67	11	101

Table 3.2: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	52.487a	16	0
Likelihood Ratio	40.787	16	0.001
Linear-by-Linear Association	16.75	1	0
N of Valid Cases	101		

a. 20 cells (80.0%) have expected count less than 5. The minimum expected count is .02.

It is clearly evident from the Table 3.1, that 44 of the users of ERP have consented that the understanding of ERP concepts are good, they also have perceived that their productivity has been on an increasing scale after the implementation. 16 respondents have specified that ERP has helped improve their efficiency.

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Further from Table 3.2 showing outcomes of the Chi Square test, it is evident that the p value is less than 5 %, accordingly, the null hypothesis stands rejected.

4. Conclusions and Recommendations

The results of the Chi Square test in earlier section, clearly indicated that the Null hypothesis is rejected. Thus, it may be concluded that the two factors being investigated namely, *"Understanding of ERP Concepts"* and *"Productivity of users"* are not independent of each other, but are significantly associated.

These two factors have to be considered along with other factors while studying the impact of ERP implementation.

Some of the other demographic factors, gender, job type, and education level can also be included along with the above factors to understand the impact of ERP post-implementation stage.

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