Factor Performance for ERP Systems Acceptance a Descriptive Statistical Analysis from Saudi Arabia Companies

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Abstract: *ERP systems have become crucial for the organisations in present day context. The organisations in this competitive marketplace are required to adopt advanced techniques for improvement of their overall work practices. However, incorporation of technology may be opposed by the employees due to their lack of understanding of the technology or its associated benefits .The research here examines how user training and education, and perceived benefits for users influence the acceptance of ERP systems within the organisations. Primary data has been collected from the organisations listed on Saudi Arabian exchange. The responses have been collected and represented in the form of tables. Additionally, t-test has been conducted to answer the research hypotheses formed for this research. The results suggest that the employees consider it worthwhile to have appropriate training and education program for the employees and the benefits involved with the ERP systems should be shared as well, to encourage employees for acceptance of the ERP systems.*

Keywords: *ERP, Acceptance, User training, user education, training program, benefits of ERP, benefits to users.*

1. INTRODUCTION

Acceptance of ERP systems can be a crucial factor to ensure the success of ERP system implementation in an organisation (Sandhu, 2013). The organisations are required to check for their human resources and encourage them to use ERP systems to attain success in ERP system implementation. For this purpose, the organisation may be required to make use of different strategies. The employees would not accept ERP systems unless they are able to use it. Therefore, the organisation should introduce necessary training and education program to train the employees to make appropriate use of the ERP system (Al-Ariefy, 2011; Basoglu et al., 2007). This helps the employees in understanding the manner in which they can use ERP system in their everyday life.

Furthermore, the employees should be made aware of the benefits associated with the ERP systems for the users (Bueno and Salmeron, 2008; Al-Mudimigh et al., 2011). This could play a key role in encouraging employees to adopt the ERP systems in their everyday practices. The employees would not resist in using technology if they are able to understand the possible benefits associated with the usage of this.

Thus, the research here explores the relationship between these variables to understand how the ERP system acceptance in Saudi Arabia listed companies can take place in a successful manner through the use of appropriate training and education, and exploring the benefits for users in a suitable manner (Sandhu, 2013; Hameed et al., 2012a). The responses have been collected from the sample to reach to findings for this study.

2. LITERATURE REVIEW

Acceptance of technology can be termed as the strategy for utilisation of the resources and practices for the growth and success of an organisation (DeLone and McLean, 1992; Wier et al., 2007; Hameed et al., 2012a). The organisations adopt ERP system after the decision is made by the management for acceptance of technology. It becomes crucial to take the consent of

employees too, so as to attain success through the usage of technology (Zhang et al., 2005; Gemino et al., 2006). Thus, the research here has been conducted to understand the manner in which user training and education, and perceived benefits for the users can be beneficial for influencing acceptance of ERP systems within Saudi Arabia listed organisations.

2.1 ERP User Training and Education

Many times it happens that the employees resist from the usage of ERP systems (Sandhu, 2013; Gyampa and Salam, 2004; Gumussoy and Calisir, 2009). This is mainly due to the reason that the employees are incapable of using technology for their job. They fear that the usage of technology would increase complexities for them and would result in an overall loss for them (Teo and Ranganathan, 2004). Therefore, before the implementation of ERP systems, it becomes ideal to provide the employees with required training and education facilities. Each of the employees should be trained to become capable of using ERP system in an easy manner (Schniederjans and Kim, 2003; Dechow and Mouritsen, 2005; Adams et al., 1992).

The organisation should thus conduct training program in such a manner that the employees are able to learn the technology in an easy manner (Wu and Wang, 2007). The training program should be for the benefit of employees so as to enhance their capabilities of using the technology (Calisira and Calisir, 2004; Bueno and Salmeron, 2008; Summer, 2005). This would raise the confidence of employees towards the ERP system as they would be capable of using the technology, which would result into reduced chances of their opposition towards the ERP system acceptance. It seems ideally suited to the needs of organisations in Saudi Arabia, as the employees would have an optimistic view towards the usage of technology for their everyday work practices. The hypothesis formed to test for this purpose is:

H1: User training and education positively influences the acceptance of ERP systems within organisations listed in Saudi Arabia.

2.2 ERP Perceived Benefits for Users

The employees would not accept the technology unless they are aware of its associated benefits (Kanellou and Spathis, 2013; Al-Gahtani et al., 2009; Adamson and Shine, 2003). In this regard, the role of an organisation is quite crucial to encourage the employees for acceptance of technology. For this purpose, the benefits associated with the usage of ERP systems should be highlighted with utmost importance. The employees would be encouraged only if they come to know about the positive factors associated with the ERP systems (Scheer and Habermann, 2000; Mabert et al., 2003; King and Burgess, 2006). The organisation should thus highlight the manner in which ERP system would result into improved productivity of the employees, and enhanced professionalism within the organisation (Damanpour and Wischnevsky, 2006; Chan and Ngai, 2007).

Management of information systems would also be enhanced through the usage of well integrated ERP systems (Basoglu et al., 2007; Al-Ariefy, 2011; Wang et al., 2006; Alam, 2009). The benefits associated with this should be discussed with the employees. They should be made aware of the manner in which ERP systems would be benefiting their everyday work practices through greater control over information (Hasan and Ahmed, 2007; Sandhu, 2013; Law and Ngai, 2007; Nah et al., 2001; Ahituv, et al., 2002). Once the employees understand that the ERP systems are for their and organisational benefits, it becomes easy for the management to incorporate the technology within their organisational work practices. So, prior to incorporation of the ERP system, organisation should highlight the benefits involved with the technology. Below is the hypothesis to be tested for this purpose:-

H2: Perceived benefits for users positively influence the acceptance of ERP systems within organisations listed in Saudi Arabia.

2.3 Acceptance of ERP System

The usage of ERP systems is growing at a rapid pace and it becomes ideal to adopt the ERP system within organisational work practices (Salmeron and Herrero, 2005; Tsao et al., 2004). The non-usage of this technology could lead to the failure of organisation in this competitive business era (Ngai et al., 2008; Al-Mashari, 2002; Karahanna et al., 2006). So, the organisations are

required to take the consent of their employees and encourage them for acceptance of ERP systems. The technology acceptance by an organisation would only be successful if the employees have a positive view about the technology. The employees should be optimistic towards technology usage, and that would result in benefit of the organisation (Al-Mudimigh et al., 2011; O'Leary, 2000; Hong and Kim, 2007). The non-acceptance of technology could however result into failure of the entire ERP system and its associated cost (Hameed et al., 2012b; Waarts et al., 2002; Jeon et al., 2006). So, the organisation should firstly encourage the employees for acceptance of the ERP systems. Thus, below is the hypothesis to be tested for this aspect:-

H3: The respondents are positive towards ERP acceptance within organisations listed in Saudi Arabia.

Thus, each of the aspect would be tested by conducting surveys. The primary and secondary data would be used in combination for attainment of the purpose of this research.

3. DATA COLLECTION

This research is based on the primary as well as secondary data. For the purpose of collecting primary data, the companies listed in Saudi Arabia were chosen in random. The companies were sent mail for responding to the survey. For this purpose, the questionnaire was designed using Likert 5 scale rating system. Besides this, the researcher also met the management of organisations by visiting their premises and distributing the leaflet asking for participating in the survey. The strategy was found quite useful as the management and operational staff of the organisations' IT departments had responded quickly to the mails by participating in the survey. Around 750 responses were received, but some of them were filled partially. So, in total 526 responses were collected for the questionnaire. So, these responses were taken for further study by making use of statistical analysis approach.

Thus, an informed consent was taken from each of the respondent who participated in the survey. The researcher ensured to follow ethics and maintained anonymity of each of the respondent. Once the responses were analysed, each of the response would be discarded so that there is no risk of loss of anonymity of the respondents.

4. RESULT AND DISCUSSION

The professionals of Saudi Arabia listed organisations were asked to participate in the survey by responding their opinions for three different measures such as user training and education, perceived benefits for the users, and ERP acceptance.

4.1 Enterprise Resource Planning Systems ERP User Training and Education

This measure of user training and education is formed of 13 different variables as can be noted in table 1. Cronbach's Alpha for each of the variable was found to be above 0.8 suggesting that their reliability is quite acceptable (Cronbach's Alpha of 0.7 or more is considered as acceptable). The average too was found to be 0.831 representing that the responses are reliable for further study.

The interrelationship between user training and education and its influence on the acceptance of ERP systems has been thoroughly reviewed in this regard by several researchers (Adams et al., 1992; Gemino et al., 2006; Wang et al., 2006; Ngai et al., 2008; Waarts et al., 2002; King and Burgess, 2006). The organisations may make use of training and education facilities so as to encourage their employees for accepting ERP systems' usage. Through the provision of appropriate training programs, employees and managers are prepared for using the technical functionalities. The employees would not be able to use technology unless they are trained in the field. By provision of required degree of education and training facilities, the employer can encourage employees to accept the technology (Sandhu, 2013; Wier et al., 2007; Jeon et al., 2006; Zhang et al., 2005).

The mean for each of the variable was found between 3 and 5. Through the provision of training programs, the understanding of employees can be improved, which is a useful approach to guide the employees and encourage them for accepting the ERP system (Teo and Ranganathan, 2004; Alam, 2009; Summer, 2005; DeLone and McLean, 1992; Salmeron and Herrero, 2005). Through this approach, they are able to learn the exact approach that should be followed to make

appropriate utilisation of the ERP system (O'Leary, 2000; Calisira and Calisir, 2004). The least mean was recorded for "understanding was improved after training" with the value of 3.7 representing that the majority of respondents believed that each of the variables taken for study to measure effectiveness of user training and education on acceptance of ERP are crucial. It can be noted from the table that each of the variable had played a crucial role in influencing the acceptance of ERP systems. The highest mean was found for the variable "all ERP users are trained" while the lowest was for "understanding was improved after training".

Overall, the respondents who agreed represented 40.1% of the sample while those who strongly agreed were 34.5% of the sample. 16.8% were however neutral towards the questions asked related to this measure. Only 1.9% strongly disagreed for the importance of user training and education for influencing the acceptance of ERP systems. Therefore, the ERP acceptance can be greatly influenced if the employees are provided with rigorous training and education programs to enhance their understanding of the ERP systems and prepare them to make use of the technical functionalities of ERPs without any hurdle (Adamson and Shine, 2003; Bueno and Salmeron, 2008; Dechow and Mouritsen, 2005; Hong and Kim, 2007).

Table (1). *Cronbach's Alpha, Means, standard deviations and responses (%) to the first factor, User training and education variables (statements)*

Factor User training and education	Cronbach's Alpha α	Mean	Standard Deviation	SD %	D %	N %	A %	SA %
				1	2	3	4	5
1. Ongoing support for training and education	0.816	4.24	0.87	1.1	3.2	11.8	38.0	45.8
2. All ERP users are trained	0.824	4.26	0.83	0.8	3.2	10.3	40.3	45.4
3. All users are being trained in the ERP basics	0.820	4.24	0.81	0.8	2.3	11.8	42.2	43.0
4. Instructors are provided to train users	0.816	4.08	0.93	2.3	3.0	16.9	39.5	38.2
5. Everyone is educated enough to understand ERP	0.817	4.10	0.90	2.1	7.8	19.6	40.6	29.9
6. Training and education established belief in ERP	0.820	3.88	0.99	1.5	4.9	18.3	39.9	35.4
7. Qualified instructors are provided to train users	0.822	4.03	0.93	1.9	6.8	23.2	33.7	34.4
8. Good training materials are provided	0.820	3.92	1.01	1.9	7.6	20.5	40.3	29.7
9. The provided training was complete	0.819	3.88	0.98	3.0	14.8	17.3	38.6	26.2
10. understanding was improved after training	0.817	3.70	1.10	3.2	12.7	18.6	38.2	27.2
11. The training gave me confidence in the ERP	0.819	3.73	1.09	2.9	7.6	17.7	42.8	29.1
12. The training was of adequate length and detail	0.817	3.88	1.01	1.1	3.2	11.8	38.0	45.8
13. Qualified instructors are provided to train users	0.819	3.89	0.95	0.8	3.2	10.3	40.3	45.4
Total	**0.831**	**3.99**	**0.55**	1.9	6.6	16.8	40.1	34.5

In order to test whether user training and education is crucial factor for influencing ERP acceptance, t-test has been conducted. Since the p value = 0 < 0.05, we accept the null hypothesis. Thus, it can be stated that user training and education positively influences the acceptance of ERP systems within organisations listed in Saudi Arabia.

Table (2). *one sample t test for the mean of training and education*

One-Sample Test					
	Test Value = 3				
			Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	t	df			Lower	Upper
TE	41.20	525	.000	.9878985	.940798057	1.034998954

4.2 Enterprise Resource Planning Systems ERP Perceived Benefits for Users

The measure of perceived benefits for users has been tested through its 5 different variables as can be viewed in table 3. The reliability test for these factors is quite satisfactory as all the variables seem acceptable. Thus, the mean for this measure of perceived benefits for users impacting acceptance of ERP is acceptable. The results can therefore be used for further study.

Prior to encouraging the employees of an organisation to use ERP systems, it becomes crucial to make them aware of their associated benefits (Adams et al., 1992; Teo and Ranganathan, 2004; Al-Gahtani et al., 2009; Gyampa and Salam, 2004; Sandhu, 2013). Thus, the trainer need to highlight the benefits associated with usage of technology in organisation's everyday practices. Once the employees are convinced for the benefits associated with the technology, then only they would be keep learning the new technique (Law and Ngai, 2007; King and Burgess, 2006; Salmeron and Herrero, 2005). Furthermore, it becomes crucial that the trainees are made aware of the manner in which ERP system would lead to improvement in the performance of employees as well, due to appropriate Management Information Systems (Gemino et al., 2006; Scheer and Habermann, 2000; Hameed et al., 2012a).

For all the variables, mean was found between 3 and 4, representing that all the factors are equally important for influencing the acceptance of ERP system within the organisations. The mean for these were close to 3.5 for all the variables, representing consistency, however the highest mean was recorded for "guaranteed usefulness and ease of use of ERP". More than half of the respondents had agreed for perceived benefits for users with the ERP acceptance, while those who were neutral represented 36.6% of the sample.

Table (3). *Cronbach's Alpha, Means, standard deviations and responses (%) to the third factor, Perceived Benefits for Users statements*

Factor Perceived Benefits for Users	Cronbach's Alpha α	Mean	Standard Deviation	SD %	D %	N %	A %	SA %
				1	2	3	4	5
1. ERP improved Work conditions	0.836	3.42	0.70	1	6.5	45.2	44.1	3.2
2. Users' are motivated to use ERP	0.843	3.58	0.71	1	7.4	27.2	61.8	2.7
3. Training and education are supported to help establish beliefs ERP	0.847	3.55	0.70	1	6.3	33.1	56.5	3.2
4. guaranteed usefulness and ease of use of ERP	0.835	3.64	0.67	1	3.6	30.4	60.8	4.2
5. Users are more focused to do their jobs	0.833	3.43	0.70	1	5.5	47.1	42.6	3.8
Total	**0.867**	**3.52**	**0.62**	**1**	**5.9**	**36.6**	**53.2**	**3.4**

The employees need to be aware that they are trained so as to enhance their focus over the job roles (Basoglu et al., 2007; Damanpour and Wischnevsky, 2006; Wang et al., 2006; Hasan and Ahmed, 2007; Mabert et al., 2003; Nah et al., 2001). This is clearly beneficial for employee performance as they are able to stress on the functionalities without due concern over the complexities involved. The employees should be therefore informed about the manner in which they can make appropriate use of the ERP system so as to save their time and at the same time result into enhanced performance for rapid growth of the organisation and an overall benefit to

them and the organisation (Kanellou and Spathis, 2013; Ahituv, et al., 2002; Chan and Ngai, 2007; Hong and Kim, 2007; Hameed et al., 2012b).

In order to test whether perceived benefits for users is crucial factor for influencing ERP acceptance, t-test has been conducted. Since the p value = 0 < 0.05, we accept the null hypothesis. Thus, it can be stated that perceived benefits for users positively influences the acceptance of ERP systems within organisations listed in Saudi Arabia.

Table(4). *One sample t test for the mean Perceived Benefits for Users*

	One-Sample Test					
	Test Value = 3					
			Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	t	df			Lower	Upper
4.3 PBU	*4.4* 19.45	*4.5* 525	*4.6* .000	*4.7* .5224	*4.8* .470	*4.9* .575

C Enterprise Resource Planning Systems ERP Acceptance

The table here represents responses collected for various variables of ERP acceptance. Here too, Cronbach's Alpha was found to be more than 8 for each of the variable under study, which represents the response are reliable. The researcher thus carried out further analysis considering the acceptance of responses collected for the research. Overall value of Cronbach's Alpha was noted as 0.822 showing satisfactory responses by the respondents who participated in the survey.

Table (5). *Cronbach's Alpha, Means, standard deviations and responses (%) to the sixth factor, ERP Acceptance variables*

Factor ERP systems Acceptance	Cronbach's Alpha α	Mean	Standard Deviation	SD %	D %	N %	A %	SA %
				1	2	3	4	5
1. Increased demand for real time information for decision making	0.803	4.24	0.85	1.3	3.2	9.7	41.8	43.9
2. Business process re-engineering	0.806	4.14	0.87	1.1	4.2	12.2	44.9	37.6
3. Cost reductions	0.807	4.14	0.81	1.3	2.9	10.1	51.9	33.8
4. Application of new business plan	0.813	4.06	0.91	1.5	4.8	15	43.7	35
5. Development of activities into new areas	0.812	4.07	0.94	2.3	4.4	14.1	42.4	36.9
6. Effective communication	0.803	4.05	0.88	1.9	2.5	17.1	45.8	32.7
7. Efficient data processing	0.805	4.07	0.88	1.9	3.4	13.5	47.9	33.3
8. The desires to fit with industry standards	0.813	3.89	0.98	1.9	6.8	22.4	38.4	30.4
9. match compatibility with existing values, belief, and past experiences	0.811	3.91	1.03	2.1	8.9	18.8	36.3	33.8
10. Increased integration of application	0.808	3.97	0.97	1.7	8	14.8	43	32.5
11. The availability of a broader knowledge and skills	0.806	3.99	0.96	1.7	7.4	14.1	43.9	32.9
Total	**0.822**	**4.05**	**0.60**	**1.7**	**5.1**	**14.7**	**43.6**	**34.8**

The acceptance of ERP systems is necessary for appropriate utilisation of technology by the organisations (Al-Mashari, 2002; Schniederjans and Kim, 2003; Tsao et al., 2004; Jeon et al., 2006; Summer, 2005; Mabert et al., 2003). For this purpose, the employees were asked for their views regarding different variables of ERP system acceptance (Wu and Wang, 2007; Damanpour and Wischnevsky, 2006; DeLone and McLean, 1992; Sandhu, 2013). The employees had different opinions related to this aspect. The mean of majority of variables was quite close to 4. Few of them were lesser, with one variable accounting for the mean of 3.89. However, the

average of this was 4.05 representing acceptance of the ERP system by the respondents. The majority of respondents agreed forming 43.6% of the sample, while those who strongly agreed were 34.8% of the sample. around 15% of the respondents were neutral towards the acceptance of ERP systems while those who disagreed represented 5.1% of the sample.

According to the studies by (Al-Mudimigh et al., 2011; Dechow and Mouritsen, 2005; Al-Ariefy, 2011; Waarts et al., 2002; Gumussoy and Calisir, 2009; Hasan and Ahmed, 2007; Schniederjans and Kim, 2003), it seems imperative for the organisation to encourage employees to accept ERP system, otherwise their opposition may lead to an overall failure of the ERP system implementation. The organisation should thus work in this regard to ensure that there is no opposition by the employees (Zhang et al., 2005; Karahanna et al., 2006; Nah et al., 2001; Scheer and Habermann, 2000).

In order to test whether the respondents are positive towards ERP acceptance, t-test has been conducted. Since the p value $= 0 < 0.05$, we accept the null hypothesis. Thus, it can be stated that the respondents are positive towards ERP acceptance within organisations listed in Saudi Arabia.

Table (6). *one sample t test for the mean of ERP Acceptance*

					95% Confidence Interval of the Difference	
One-Sample Test						
	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
ERP_A	40.151	525	.000	1.0470100	.995782642	1.098237434

5. CONCLUSION

With the increase of competition, organisations are required to incorporate advanced techniques for their growth and survival. Rapid advancement of technology has resulted into offering an extensive range of options for the organisations to result into better performance. Thus, the ERP systems have become an integral part of organisational work practices. The organisations however face challenges against ERP system acceptance by the employees. The findings here suggest that the organisation should make appropriate use of user training and education prior to introducing the ERP systems. This encourages the employees to accept ERP systems in their job roles due to their awareness and capability towards using the technology.

Furthermore, the benefits associated with ERP systems should be highlighted by the organisation, which could lead to an encouragement of the employees towards using ERP systems. By appropriate usage of these techniques, an organisation can successfully incorporate the ERP systems into their business practices. This leads to improved performance of the organisation as the employees have positive opinion towards the ERP systems and make optimal use of the technology for organisational growth and advancement.

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