

Evaluating Erp Usage Behavior Of Employees And Its Impact On Their Performance: A Case Of Telecom Sector

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Abstract- Acceptance and use of an information system always remained an important concern for practitioners and theorist. This study explores the factor affecting user behavior toward use of ERP system in developed as well as developing country. Performance expectancy, effort expectancy, social influence, facilitating condition, project communication, training, top management support and self efficacy were found frequently used factors to investigate the ERP usage behavior of employees of a telecom, manufacturing, oil and gas, engineering and government service sector. industry. This study also investigates the impact of behavior toward ERP system usage on the employees' performance.

A questionnaire based survey was administered personally on 300 employees of telecom using ERP in sector In response to the survey, 255 valid responses were received. The response rate was 85%. Among the respondents, 71% were male while 29% were female.

The finding indicates that the proposed model over all explains 71% variation in the behavior. While Performance Expectancy, Self Efficacy, Training, and Top Management Support were significant factor while explaining the user behavior toward use of ERP system. Further, the model explains that there is difference about opinion of performance expectancy and effort expectancy related to ERP usage by male and female while effort expectancy related to ERP usage also vary among age and experience groups. Mostly respondents agreed that they liked the idea of using ERP system and they want to become professional in ERP system. Seventy percent respondents say that ERP system has improve their performance in work. behavior toward use of ERP system This research will help the telecom organization management to understand the factors responsible for the employee's.

Keywords- ERP, Telecom Industry, ERP usage behavior, Technology Acceptance.

I. INTRODUCTION

Information and Communication Technology (ICT) refers to electronic computer based technology where information is accessed and used in electronic format using computers (Angello & Wema, 2010). Accurate and timely information in electronic form is a precious asset for an organization.

Planning and decision making functions are highly dependent on these information.

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With the growth in use of Information Technology by organizations, user acceptance of information system has become an important management issue for better management of resources and needs. Business management system integrates all business functions. Enterprise resource planning (ERP) is one of business management systems provide for centralized business processes and functions in a company. ERP implementation requires extensive financial and personnel resources. In some cases, organization fails to attain the benefits from the system. One common reason for its failures is the reluctance or unwillingness of users to accept ERP system. Therefore, a good understanding of end users acceptance of ERP systems is essential to ERP success (Sun., Bhattacharjee & Ma, 2009). ERP deployment in an organization itself does not bring any change to its functions. It is beneficial if the end user use it in their job.

There are a number of potential factors that could influence the usage of an information system. If users are not using a technology or organization fails to achieve target level of use then the system is not considered successful. To implement ERP system, the goal of managers is to achieve the desired level of use of the system Organizations are recognizing that user satisfaction with information systems is one of the most important determinants of the success of those systems ((Gymph, 2007). The theorist and practitioners, exploring the acceptance of user toward information system have developed many models and theories (Ajzen, 1991; Davis, 1989; Venkatesh, Morris, Davis & Davis, 2003; Clarke, 1999; Thompson, Higgins, & Howell, 1994). Kazmi, (2008) found role of strategic IT planning, executive and managerial commitment, IT skills, business process skills, ERP training and learning are very important in successful ERP implementation. Further he stated that the gap between ERP users experience and skills is need to bridge by conducting successful training for employees. Organizational performance depends on individuals' task completion. With the rapid growth in use of computing in organizations, practitioners are constrained to investigate the impact of information technology acceptance on individuals' performance (Huang & Wang, 2009; Law & Ngai, 2007; Nah, Lau, & Kuang 2005; Ramayah & Lo, 2007; Vosburg & Kumar, 2001; and Igbani & Tan, 1997).

Technology acceptance has become a mature field. Scholars and practitioners have investigated ERP usage behavior in various sectors like telecommunication, oil and gas, manufacturing government sector and finance sector (Al-Jabri & Al-Hadab, 2008; Govindaraju et al. (2008); Anjum & Rehman, 2010; Arunthari & Hasan, 2005; Baray,

Hameed, & Badiil, 2006; Bueno & Salmeron, 2008; Calisira & Calisir, 2004; (Chang, Cheung, & Cheng, 2008; Chung & Snyder, 2000; Davenport, 1998; Govindaraju, Maathuis, Bruijn, 2008; Holland, Light, 1999; Gumussoy, Calisir, & Bayram, 2007; Gyampah, 2007; Law and Ngai (2007); Zhang, Huang, Zhang, Huang, 2005; Hossain, Patrick, Rashid, 2002; and Shih, 2006); Ramayah & Lo (2007). According to Rajapakse, & Seddon (2005) ERP adoption rate in developing countries of Asia is very low. The

positive ERP usage behavior leads to job completion on time, which improves the employee's performance. According to Vankatesh et al (2003), little research has addressed the link between user acceptance and individual or organization usage outcomes. This study will explore a set of variables that have their influence on ERP system usage behavior in developed and developing environment. It will provide information as to which variable is more influential in using ERP system by

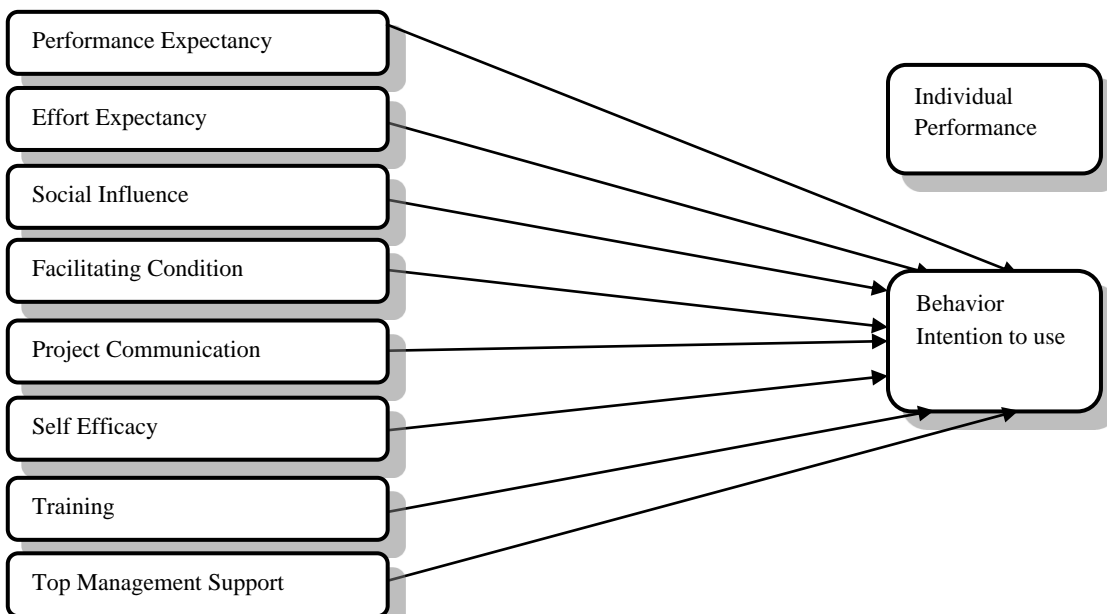


Figure1. The proposed research model

II. RESEARCH HYPOTHESES

In order to achieve the research objective, following research hypotheses are proposed.

H1-Performance expectancy has positive impact on employee behavior intention to use ERP system

H2-Effort expectancy has impact on employee behavior intention to use ERP system.

H3-social influence has positive impact on employee behavior intention to use ERP system.

H4-Facilitating Condition has positive impact on employee behavior intention to use ERP system.

H5-Self Efficacy has positive impact on employee behavior intention to use ERP system.

H6-Project Communication has positive impact on employee behavior intention to use ERP system.

the employees of telecom sector in Pakistan. More over the impact of behavior intention on employee's performance is also measure, the name of the telecom organization is kept confidential in the study and not mentioned here due to organizational polices. This research is expected to contribute to the understanding management to know factors responsible for an employee's behavior toward use of ERP system. The second part of the research is also important in providing information about impact of behavior intention to use system on performance of employees. Based on the factors explored from literature. a research model is

proposed. As shown in figure 1 In this research model, performance expectancy, effort expectancy, social influence, facilitating condition, top management support, project communication, self efficacy and training are the independent variables which have their effect on the behavior intention to use ERP system (dependant variable). While behavior intention to use ERP system has its effect on Individual performance

H7-A relationship exists between top management support and employee behavior intention to use ERP system.

H8-Training has positive impact on behavior intention to use ERP system

H9-Employees performance is positively correlated with behavior intention to use ERP system

III. METHODS

A. Respondents

Questionnaire was distributed among 300 employees working in telecom organization located in Islamabad-Pakistan. In response, 270 questionnaires were returned. Data of 255 completely filled questionnaires were entered in Statistical Package for Social Sciences (SPSS) for analysis. Inappropriately filled questionnaires, 15, were excluded from the data analysis. Therefore, the response rate was 85 %. The response shows that the sample represented

executive, team lead, assistant manager and managers. A pilot test was conducted to verify the various dimensions of the questionnaire such as language used, ease of completing the questionnaire and appropriateness of questions with relevance to usage behavior. Twenty ERP users working in organization were asked to fill in the questionnaire. Feedback was obtained about the clarity, wordings, interpretation, and appropriateness of the questions. The pilot test resulted in several small revisions to the primary instrument that included rewording of a few items No scaled item was dropped or added as a result of the pilot study.

B. Measure

A five point Likert type scale questionnaire based on items adapted from Davis (1989), Taylor & Todd (1995, Venkatesh et al. (2003) and Thompson et.al (1991)

IV. RESULTS AND DATA ANALYSIS

A. Reliability Statistics

To confirm the reliability of the questionnaire, Cronbach's Alpha reliability statistics analysis was conducted. In statistics the corbbach's Aplha value greater than .5 is considered to be a reliable scale.

Table1. Reliability Statistics

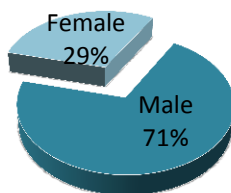
Cronbach's Alpha	N of Items
.967	28

Table 1 shows that reliability statistics of the questionnaire. The value .967 shows that the scale used in the questionnaire is highly reliable.

B. Descriptive Statistics

In order to explore the ERP user responses with respect to gender. A frequency statistics was made.

Figure 2. Descriptive data of gender wise response



The figure 2 shows the frequency distribution of the respondents. Out of 255 responses, 71% were male and 29% were female.

Figure 3. Age wise distribution of ERP users

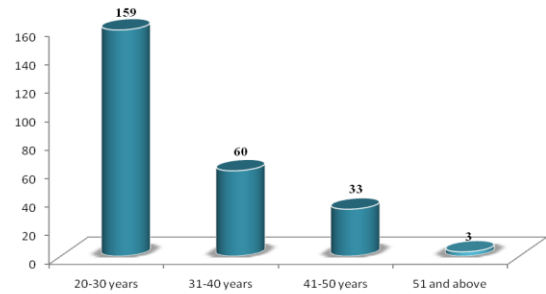


Figure 3 shows the variation in age of the respondents. Out of 255 respondents, majority lies in 20-30 age group (N=159), while 60 respondents are in 31-40 age group, 33 are in 41-50 and only 3 respondents are above 51.

Figure 4. Experience wise distribution of ERP users

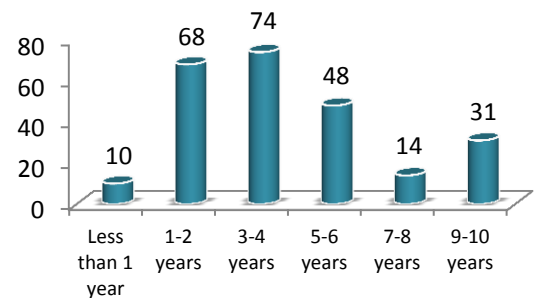


Figure 4 shows the respondents distribution according to their experience. Mostly respondents (N=74) have 3-4 year experience, 68 respondents have 1-2 year experience, 31 are in 9-10 year experience block while 14 have 7-8 and only 10 have less than one year experience.

To find out the respondents' experience in using ERP system. The frequency distribution with respect to their experience in ERP use is shown below.

Figure 5 ERP Usage Experience

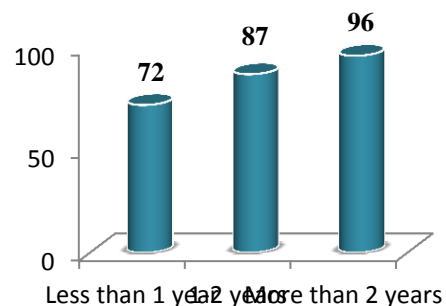


Figure 5 represent the ERP usage experiences possessed by the employees. Mostly respondents (N=96) had more than 2 year experience, 87 having 1-2 year experience while only 72 have less than one year experience in use of ERP system.

A. Hypotheses results and analysis

In table 2 the R2 (.71) value shows that the independent variable explains the 71% variation in the behavior intention

to use ERP system. Here we can say that our model best fits and it explain significant variation in the behavior.

Table2. Regression Analysis

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.843(a)	.711	.702	.38816

Table 3: Detailed Regression Analysis

Dependant variables	R2	Independent variables	Beta	t	Sig
Behavior Intention	.71	Performance Expectancy	.322	4.602	.000*
		Effort Expectancy	-.358	-4.655	.000*
		Social Influence	.007	.094	.925
		Facilitating Condition	.063	.917	.360
		Self Efficacy	.505	6.873	.000*
		Project Communication	.036	.686	.494
		Training	.172	2.967	.003*
		Top Management Support	.189	2.967	.003*

*Note. * Significant at .005 level*

Table 3 shows the beta and significance value of each independent variable in regression model

The significance value (p=.000) in table 3 shows that performance and effort expectancy is significant in measuring the behavior intention. The Beta value, B=.322 of performance expectancy show that performance expectancy contribute to .322 variation the behavior intention. The negative beta and t value indicate that this variable is not positively associated with the behavior intention.. Here we will accept the H1 and H2.

Table 3 shows the regression analysis, the p value (p>.005) shows that Social influence is not a significant variable in measuring the behavior intention . Hence, we reject H3.

The p value (p=.360) in table 3 shows that facilitating condition is not a significant variable in measuring the behavior intention. Here we reject H4.

Table 3 shows the regression analysis, the value (B =.505) shows that the variable Social influence strongest predictor in measuring the behavior intention. The p value (p=.000) also shows that Self efficacy is a significant variable in measuring the behavior intention. Here we accept H5.

In table3, project communication is a not significant variable in measuring the behavior intention. Here we reject H6.

The significance value (p=.003) in table 3 depict that top management support and training contributes significant value while predicting the behavior intention to use ERP system. Here we accept H7 and H8.

To test this hypothesis 9 the regression analysis for model 2 will be implied.

Table 5.4: Regression Model II

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.738(a)	.545	.543	.60026

The table 4 shows that the behavior intention toward use of ERP system can bring 54 % variation in the performance of the employee. Hence, here we accept the H9.

In order to analyze the effect of demographic characteristics on performance expectancy and effort expectancy of the ERP usage behavior as explained in literature review, the constructs of measuring the behavior intention were analyzed with demographic statistics.

Table 5 shows the t-test values of performance expectancy with respect to gender. The significance value p>005 (p=.010) show that there is difference among the opinion of male and female about the performance expectancy associated with the ERP system use.

Table 5: t-test-performance expectancy of ERP system with respect to gender

Statement	N	Gender	Mean	t	Sig.
Performance Expectancy	180	Male	4.01	-3.47	.010*
		Female	4.41		

*Note. * Significant at .005*

Table 6 shows the ANOVA values of performance expectancy with respect to age. The significance value $p < .005$ shows that there is no significant difference between the responses against behavior intention to use ERP system among different age groups.

Table 6: ANOVA Statistics About Performance Expectancy of ERP System Usage With Respect to Age

Statement	Mean				F	Sig.
Performance Expectancy	20-30 years	31-40 years	41-50 years	51 and above	6.06	.001
	4.02	4.36	4.50	3.91		

*Note. * Significant at .005*

Table 7 shows the ANOVA analysis of three groups of ERP usage experience with respect to the performance expectancy of ERP system use. The significance value, $p = .005$, shows that there is no difference among the opinion of respondents of different experience group about the performance expectancy of ERP system.

Table 7: ANOVA Statistics About Performance Expectancy of ERP System Usage With Respect to ERP Usage Experience.

Statement	Mean			F	Sig.
Performance Expectancy	< 1 year	1-2 years	> 2 years	5.32	.005*
	3.88	4.29	4.15		

*Note. * Significant at .005*

The table 8 shows the t-test value of effort expectancy with respect to gender. Significance value in table 5.16 $p < .005$ ($p = .003$) shows that there is no difference between the perception of respondents with respect to their gender about the effort expectancy of ERP system use.

Table 8: T Test Regarding Effort Expectancy of ERP System With Respect to Gender

Statement	N	Gender	Mean	t	Sig.
Effort Expectancy	180	Male	4.00	-3.814	.003
	75	Female	4.41		

*Note. * Significant at .005*

The table 9 shows ANOVA test regarding the perception of different age group about the effort expectancy of ERP system use. Significance value $p > .005$ ($p = .009$) in table 5.17 shows that there is significant difference between the responses about effort expectancy of different age group against behavior intention to use ERP system.

Table 9 ANOVA Test Regarding Effort Expectancy of ERP System With Respect to Age

Statement	Mean				F	Sig.
Effort Expectancy	20-30 years	31-40 years	41-50 years	51 and above	3.958	.009
	4.03	4.15	4.54	4.00		

*Note. * Significant at .005*

Table 10 shows the ANOVA analysis of three groups of ERP usage experience with respect to the effort expectancy of ERP system use. The significance value, $p = .000$, shows that there is no difference among the opinion of respondents of different experience group about the effort expectancy of ERP system.

Table 10: ANOVA Statistics About Performance Expectancy of ERP System Usage With Respect to ERP Usage Experience.

Statement	Mean			F	Sig.
Performance Expectancy	Less than one years	1-2 years	More than 2 years	10.120	.000*
	3.84	4.27	4.30		

*Note. * Significant at .005*

V. FINDINGS

The results of correlation analysis shows that performance expectancy, facilitating condition, self efficacy, training and top management support are strongly correlated with the behavior intention to use ERP system. While effort expectancy, social influence, project communication have medium level correlation with behavior intention to use ERP system.

The R square value (.71) shows that the over all independent variable explains 71% variation in the behavior intention to use ERP system. Here we can say that the model best fits and it explain significant variation in the behavior.

While exploring all variables individually, the variable performance is significant in measuring the behavior intention. The Beta value, $\beta = .322$, show that performance expectancy is stronger predictor of the behavior intention.

Effort expectancy is significant while explaining behavior intention to use ERP system. The negative beta and t value indicate that this variable is not positively associated with the behavior intention. The possible explanation of this negative relation can be the employee's perception as this is the case of mandatory technology (ERP) and even if the system is difficult to use employees has to use the system.

The p value of social influence ($p = .925$) shows insignificant variable in measuring the behavior intention.

The p value ($p=.360$) in the regression analysis of the facilitating condition shows that this is not a significant variable in measuring the behavior intention.

The regression analysis shows that Social influence is a strongest predictor in measuring the behavior intention while project communication is a not significant variable in measuring the behavior intention.

Top management support and training were also found the significant contributor toward measuring behavior intention toward use of ERP system.

The t-test value shows that

- i. There is no difference among the opinion of male and female about the performance expectancy associated with the ERP system use.
- ii. There is no difference between the perception of respondents with respect to their gender about the ease of use of ERP system.

The ANOVA statistics shows that

- i. There is no significant difference between the responses against behavior intention to use ERP system among different age groups
- ii. There is significant difference between the responses about effort expectancy of different age group against behavior intention to use ERP system
- iii. There is significant difference between the responses against behavior intention to use ERP system about effort expectancy among different level of experience groups.

The regression model 2 shows that behavior intention toward use of ERP system can bring 54 % variation in the performance of the employee

VI. CONCLUSIONS

This study was centered on the ERP usage behavior. The aim of this study was to investigate factors affecting the employee behavior toward use of ERP system and its impact on their performance.

The first part of the study explores the literature related to implementation and acceptance issues of ERP. Use of different models and theories of individual behavior of ERP acceptance in different sectors especially in the telecom sector of developed and developing countries have also been discussed.

During the exploration of literature, many factors were identified for measuring the behavior intention toward use of ERP system. Based on the most repeated and influential factors a theoretical model was proposed. The population of this study was telecom organizations' employees who were using ERP system in the company. The sample size of 300 respondents was selected, however, 255 out of 300 selected participants responded. A questionnaire based survey was administered personally on 300 employees who were using ERP system. In response to the survey, 255 valid responses were received. The response rate was 85%. Among the respondents, 71% were male while 29% were female. The findings of this study indicate that the proposed model over all explains 71% variation in the behavior. While Performance Expectancy, Self Efficacy, Training and Top

Management Support were significant factors while explaining the user behavior toward use of ERP system. Further, the model explains that there is difference about the opinion on performance expectancy by male and female. Effort expectancy related to ERP usage among different age groups and different experience group differ. Majority of the respondents agreed that they like to use ERP system. They want to become professional in ERP system use and intend to use ERP for future professional assignments. Seventy percent respondents say that ERP system has improve their performance in work. This research will help the management to understand the factors responsible for the employees behavior toward use of ERP system.

VII. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are given to increase behavior intention toward use of ERP system.

- i. There is need to ensure the employees that by using ERP system they will become a valuable assets to the organization.
- ii. The technical support should be provided to employees to use ERP system.
- iii. Frequent ERP training program should be launched for employees for using ERP.
- iv. The training program for ERP should be easy.
- v. Top management should communicate well in time the employees about the implementation of sub modules of the ERP system.
- vi. The senior management should encourage ERP usage.
- vii. Organization should provided necessary resources to use ERP System.
- viii. Employees should be given guideline for using builtin help in ERP system.

VIII. FUTURE RESEARCH DIRECTION

Current research explains only 71% variation in the behavior of employees. The 29% portion of behavior intention is unmeasured. While this research can only measure the 54% variation in the performance of employees. There is a need of future research which explores the further variables to measures the leftover portion of behavior which was not measured in this research.

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