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IT Adoption Process in Pakistani SMEs

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Abstract- Information technology plays an important role in every field of life. Implementation and acceptance of IT always remain an important topic for researchers, engineers and practitioners. This study explores IT adoption factors influencing SMEs performance in developing countries. Relative advantages, complexity, ease of use, trialability, observability were found frequently used factors to investigate SME performance. Frequently used factors and new identified factors from advance literature were profitability, communication improvement and attitude of employees for different SMEs.

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IT Adoption Process in Pakistani SMEs

Shreehan Shahid ^α & Irfan Anjum Manarvi ^σ

Abstract-Information technology plays an important role in every field of life. Implementation and acceptance of IT always remain an important topic for researchers, engineers and practitioners. This study explores IT adoption factors influencing SMEs performance in developing countries. Relative advantages, complexity, ease of use, trialability, observability were found frequently used factors to investigate SME performance. Frequently used factors and new identified factors from advance literature were profitability, communication improvement and attitude of employees for different SMEs.

A questionnaire based survey was distributed personally to 240 respondents of SMEs of academic, pipe industry distribution, passport office, post office, nut bolt industry, hotels, banks, hospitals, carpet and fashion industry sector using IT. In response to survey, 162 valid responses were received. The response rate was 77.1%. Among the respondents male percentage is approximately 80.6% and female percentage is 19.4%.

The finding indicates that the proposed model over all explains 81% variation in the performance. While relative advantage, acceptability, eases of use, profitability, communication improvement and attitude were significant factors that indicating SME performance. Majority of the respondents were agreed to use computer for their daily purpose.

Keywords: SMEs, it adoption factors, sme performance, technology acceptance.

1. INTRODUCTION

Over the last decades, information technology plays an important role in every field of life. The business world is changing due to the advances and developments in technology. Information Technology (IT) has played a significant role in business since the 1950s and the use of technology to decrease costs, improve operations, augment customer service, and improve communications has progressed swiftly over the past four decades (Peslak, 2005). Progress in computer technology has been creating a tough need for organizations to adopt this technology in order to remain spirited. However, these computer technologies are unable to bring improvement in the organizational performance without the presence of their effective utilization (Davis, Bagozzi & Warsaw, 1989). IT has been adopted and used within many organizations for many years. Many theorists, practitioners and researchers have shown the usefulness of information technology in the business (Adam, Nelson & Todd, 1992, Andrews & Papp, 2000, Kelly, Guinea & Hunter, 2005, Sarkar &

Sawy, 2003, Weill & Clair, 1999). There are number of potential factors that influence the usage of information system. That is why the role of SME concerns deeply in the development of developed and developing countries (Aragon- Sanchez & Sanchez- Marin, 2005, Beal, 2000, Chau and Turner, 2002, Clapham, 1985, Diermen, 1997, Drew, 2003, Hill, Levy & Powell, 2005, Levis & Cockrill, 2002, Mehrtens, Craggs & Mills, 2001, O'Regan & Ghobadiah, 2004, Rothwell & Zegveld 1982, Sadowski, Maitland & Dongen, 2002). SMEs run the existence of the economies of the countries. Due to the participation in the well developed as well as developing countries SME sector is playing a major role in employment generation, decreasing poverty, accelerated growth, and raised the level of income to spend a stable high class living standard. The only way to reduce poverty and to promote economic growth, through wealth and employment creation SME is the source of income, a growing seed for entrepreneurs and employment providers (UNIDO, 2003). SMEs are important because SMEs comprises over 95 percent of the economy. Computer application act as a catalyst in the growth of economy that enables people to convert knowledge into digital form easily, which can be accessible anywhere around the world. SMEs are different and unique from other bigger businesses, so to manage SME differently from managing bigger businesses (Aragon- Sanchez & Sanchez- Marin, 2005, Beal, 2000, Chau and Turner, 2002, Clapham, 1985, Diermen, 1997, Drew, 2003, Hill, Levy & Powell, 2005, Levis & Cockrill, 2002, Mehrtens, Craggs & Mills, 2001, O'Regan & Ghobadiah, 2004, Rothwell & Zegveld 1982, Sadowski, Maitland & Dongen, 2002). According to Chris MacKechnie (2007) information technology (IT) has become a vital and integral part of every small and medium business plan. So the computers can be used to process, analyze and store vast amounts of data to give the business more quality information. Although SMEs are small in size so these organization are highly dependent on computer technology in promoting the business (Lesjak, 1995). Businesses all over the world rely on computers to function and maintain high standards of efficiency and customer service (Miley, 2011). One of the main reasons that many businesses turned into IT world for their professional needs is the sheer speed at which computers and related technologies can process information. According to the Charlie S (2011) there are many businesses which are in need of the software packages for satisfying their operational as well as functional needs. Due to the development of the

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information technology sector, the SMEs are being able to keep themselves aware of the changes in the global markets. One of the first and largest applications of computers is keeping and managing business and financial records (Tiwari and Malviya, 2007). Chan (2000) explained that in business many manifestations, IT processes data, gather information, stores collected materials, accumulates knowledge and expedites communication. Garicano and Heaton (2009) conducted a study to observe the relationship among information technology and productivity in business. Namani (2009) observed Information technology is changing the economy and traditional business become more

dependent on new technologies. For that reason, it is very important to investigate that how much information technology effective for SMEs.

II. RESEARCH HYPOTHESIS

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

H1 - Relative advantage has a positive impact on SME performance

H2 - Acceptability has a positive impact on SME performance

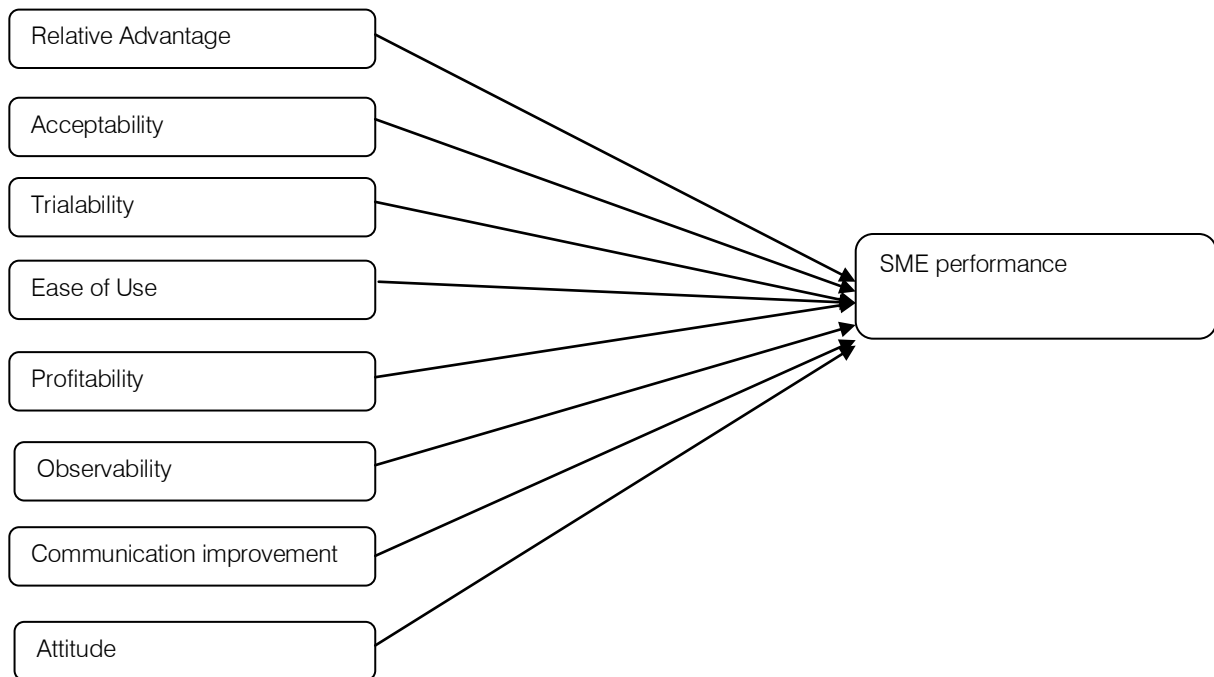


Figure 1 : Research Proposed Model

H3 - Trialability has a positive impact on SME performance

H4 - Ease of use has a positive impact on SME performance

H6 - Observability has a positive impact on SME performance

The SME, in particular the small industries of Pakistan and developing countries, are known to rely on low and obsolete technology. Association with SME and the increasing purchase of products makes it more valuable for the progress of country. Many researchers observed that the information technology has ultimately increased the efficiency of users in SMEs. Information technology involvement in the office helps speed up the movement of information and improves the analysis of information, also in SMEs communication is improved

through the use of intranet and Internet. Workers can work away from the office using mobile technology such as phones, laptops and modems. SME performance leads to good communication on time with customer and also their attitude. According to Venkatesh et al (2003) some research has been done related to IT adoption by organization and its performance. This research will explore a set of variables that have influence on SME performance in developing countries. It will provide information as to which variable is more influential on performance of SMEs. More over the impact of SME performance on profitability has also measured, large quantity of SMEs selected and names are also mentioned. Based on the factors explored from literature, a research model is proposed. As in fig 1, in this research model relative advantage, acceptability, ease of use, trialability, observability, profitability,

communication improvement and attitude are the independent variables and which have their effect on SME performance (dependent variables)

H5 - Profitability has a positive impact on SME performance

H7 - Communication Improvement has a positive impact on SME performance

H8 - Attitude has also positive impact on performance of SME

III. METHODS

a) Respondents

Lists of companies were searched from SMEDA website, so 22 companies were selected, 8 companies could not be answered. The remaining companies on the precompiled list were answered. Finally, 17 companies were agreed to fill up the questionnaire. Questionnaire was distributed among 240 respondents runs and working in SMEs located in Islamabad, Rawalpindi and related cities of Pakistan. In response, 162 questionnaires were returned. Data of 162 completely filled questionnaires were entered in Statistical Package for Social Sciences (SPSS) for analysis. Therefore, the response rate was 71.1%. The response shows that the sample represented from 17 selected companies, each company visit one by one and distributed questionnaire. At the time of questionnaire given to respondent, the respondents need a brief description of the study. For that reason, the simple and understandable statements were included in the questionnaire. A pilot test was conducted to verify the various dimensions of the questionnaire.

b) Measures

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 ANALYSIS

a) Reliability Statistics

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

Table 1 : Reliability Statistics

Cronbach's Alpha	No. of Items
.960	51

Table 1 shows the reliability statistics of questionnaire. The value .960 shows the scale used in questionnaire is highly reliable.

b) Descriptive Statistics

In order to explore IT adopted user responses with respect to gender. A frequency statistics was made.

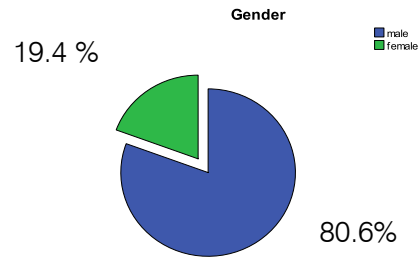


Figure 2 : Descriptive data of gender response

The figure 2 shows the frequency distribution of the respondents. Out of 162 responses, 80.6% were male and 19.4% were female.

Figure 3 shows the variation in age of the respondents. Out of 162 respondents, majority 43.8% lies in 31-43 age groups, while 22.7% respondents are in 44-56 age groups, 33.5% are in 18-30.

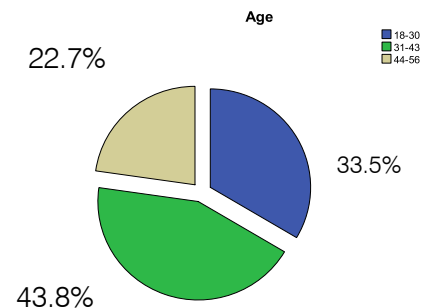


Figure 3 : Descriptive data of age response

Hypothesis Results & Analysis

In table 2 the R² (.814) value shows that the independent variable explains the 81% variation in the IT adoption to use by SMEs. Here we can say that our model best fits and it explain significant variation in the performance.

Table 2 : Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.90(a)	.814	.812	.27620

Table 3 : Detailed Regression Analysis

Independent Variable	R ²	Independent Variables	Beta	t	Sig.
SME performance	.814	Relative Advantage	.192	7.110	.000*
		Trialability	.038	1.083	.279
		Ease of Use	.252	5.884	.000*
		Observability	.048	1.563	.118
		Profitability	-.080	-4.622	.000*
		Communication Improvement	.266	8.520	.000*
		Attitude	.236	9.178	.000*
		Acceptability	.995	268.265	.000*

Note. * Significant at .005 level

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

The significance value ($p=.000$) in table 3 shows that relative advantage is significant in measuring the performance of SME. The Beta value, $B=.192$ of relative advantage shows that relative advantage contribute to .192 variation the performance of SME. So we will accept H1.

Table 3 shows the regression analysis, the p value ($p>.005$) shows that trialability is not significant performance of SME. The Beta value, $B=.080$ of Profitability shows that Profitability contribute to .080 variable in measuring the performance of SME. Hence, we reject H3. The significance value ($p=.000$) in table 3 shows that Ease of Use is significant in measuring the performance of SME. The Beta value, $B=.252$ of Ease of Use shows that Ease of Use contribute to .252 variation the performance of SME. Here we will accept H4. Table 3 shows in regression analysis, the p value ($p>.005$) shows observability is not significant variable in measuring the performance of SME. Hence, we reject

H6. The significance value ($p=.000$) in table 3 shows that profitability is significant in measuring the variation the performance of SME. The negative beta and t value indicate that this variable is not positively associated with the performance of SME. Here we will accept the H5.

Table 3 shows the regression analysis, the value ($B=.266$) shows that the variable Communication Improvement influence second strongest predictor in measuring the performance of SME. The p value ($p=.000$) also shows that Communication Improvement is a significant variable in measuring the performance of SME. Here we accept H7. In table3, Attitude having p value ($p=.000$) shows that attitude is a significant variable in measuring the performance of SME. Here we accept H8. The significance value ($p=.000$) in table 3 depicts that Acceptability is also a significant variable while predicting the performance of SME to Adopt IT. The table 3 also shows that the Beta value ($B=.995$) that identifies Acceptability is strongest predictor in measuring the performance of SME. Here we accept H2.

Table 4 : ANOVA

Statement	Mean									F	Sig.
Performance	RA	Acc	T	EU	O	P	CI	Att			
	4.30	4.29	4.29	4.62	4.12	4.51	4.35	3.50	422.870	.000*	

In table 4 RA stands for Relative Advantage, Acc stands for Acceptability, T stands for Trialability, EU stands for Ease of Use, O for Observability, P for Profitability, CI stands for Communication Improvement and Att for Attitude. Here the significant value ($p=.000$) shows that majority variables are significant and these variables measure the performance of SME. As a whole, the model is significant and has a positive impact on SME performance.

V. FINDINGS

The result of correlation analysis shows that acceptability, Communication improvement, attitude, and ease of use are strongly correlated with the performance of SME. While relative advantage, trialability, observability, profitability have medium level of correlation with performance of SME. The R square value (.814) shows that the overall independent variable explains 81% variation in the performance of SME. Here we can say that the model best fits and it explain significant variation in the performance. While exploring all variables individually, the variable performance is significant in measuring the SME performance. The Beta value, $\beta=.995$, show that acceptability is stronger predictor of the SME performance. Profitability is significant while explaining SME performance. The negative beta and t value indicate that this variable is not positively associated with the SME performance. The p value of trialability ($p=.279$) shows insignificant variable in measuring the SME performance. The p value ($p=.118$) in the regression analysis of the observability shows that is not a significant variable in measuring the performance of SME. The regression analysis shows that Acceptability is a strongest predictor in measuring the performance of SME while trialability and observability are not significant variables in measuring the performance of SME.

The ANOVA statistics shows that the overall independent variables have a significant relationship with performance of SME.

VI. CONCLUSION

This study was concerned on the IT adoption and SME performance. The aim of this study was to investigate IT adoption factors influencing SME. The first part of the study explores the literature related to IT adoption factors and IT usage in SMEs. Use of different standard models and theories of IT adoption in different sectors of SMEs have also been discussed. During the exploration of literature, many factors were identified for measuring the performance of SME. Based on the most common and influential factors a theoretical model was proposed. The population of this study was SMEs. The sample size of 240 respondents was selected, however, 162 out of 240 selected Participants responded. A questionnaire based survey was administered

personally on 17 SMEs who were using IT system. In response to the survey, 162 valid responses were received. The response rate was 71%. Among the respondents, 80.6% were male while 19.4% were female. The findings of this study indicate that the proposed model over all explains 81% variation in the performance of SME. Except trialability and observability, all other variables having relationship to the performance of SME. Only two variables have no significant relationship with performance of SME. Majority of the respondents say that IT usage improves the work of an organization.

VII. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are given to increase performance of SME.

- IT adoption is a need of the staff of SME that will help in reducing work load.
- The technical support should be provided to staff members to use computers.
- Basic learning of computer must be necessary for staff to work on computers.
- The teaching classes must be easy.
- The owner should encourage staff members to use IT/ computers.
- SME should provided necessary resources to the staff to use computer system.

VIII. FUTURE RESEARCH

This research explains only 81% variation in the performance of SME. The remaining 19% portion of performance is unmeasured. There is a need of future research which explores the further variables to measures the leftover portion of performance which was not measured in this research.

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