

Knowledge Management and Employee's Performance in Telecommunication Industry

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The study aims at examining the impact of knowledge management on employee performance. Two aspects of knowledge management, such as, sharing tacit knowledge and use of technology are examined in relation to employee performance. Validated, self-administered questionnaires were used to gather primary responses from a sample of 300 middle level Information Technology managers using convenience sampling technique. The regression analysis was carried out for deriving results. Overall knowledge management significantly impact employee performance. Moreover the tacit knowledge sharing has greater contributions towards employee performance than the use of technology. For improving performance of employees the managers must use knowledge management approaches such as sharing tacit knowledge and using technology that enhance performance for obtaining better organizational outcomes. Sharing tacit knowledge and adequate use of technology were not examined earlier in the IT sector context in Pakistan, especially in the organization that experienced several phases of re-structuring.

Keywords: employee performance, knowledge management, technology, Pakistan.

JEL Classification Code: M15

Ever increasing advancements give rise to the need of managing knowledge for enhanced performance (Ahearne, Jones, Rapp, & Mathieu, 2008) at individual and organizational levels. It is likely that using information technology support workload management (Amabile, Conti, Coon, Lazenby, & Herron, 1996) and ensure employee satisfaction (Kianto, Vanhala, & Heilmann, 2016). The fast growing knowledge based economy has increased the level of competition among organizations to sustain competitive positions (Muthueloo, et al., 2017). That is why organizations are increasingly concentrating on employees' knowledge, experience and expertise (Torabi, et al., 2017). The spread and efficient use of knowledge has motivated the organizations to adopt knowledge management transitions (Cho & Korte, 2014; Tubigi & Alshawi, 2015).

The concept of knowledge based economy has drawn the attention towards managing knowledge besides being labor and capital intensive. Being knowledgeable provides an edge to work independently and promotes remaining creative (Tajali, et al., 2014). Knowledge management plays a strategic business role in organizations and affects teamwork, human capital and overall effectiveness (Feng, Chen, & Liou, 2005; Marques & Simon, 2006). The knowledge base view states human capital

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Contribution of Authors:

1. Mr. Junaid Ahmad, write the thesis, collect data for research work and analysis through software.
2. Dr. Muhammad Imran Malik, supervised the thesis and overall research work including introduction, literature review, methodology, results, and discussion.
3. Dr. Asim Anwar, has worked on Introduction and literature review.

having important role to play in through acquiring knowledge, developing competencies, building up up-to-date technological skills, development of positive attitude and motivation to work for attaining organizational goals (Kianto et al., 2016). The organizational performance demands using tacit knowledge and explicit knowledge in parallel. Nonaka and Takeuchi (1995) viewed organizational performance based on revival of tacit knowledge. Innovations taking place in the organizations also depend upon how knowledge is strategically used (Torabi et al., 2017) but it is considered that knowledge possessed by humans is generally unique in its being that cannot be controlled or codified thus making its management troublesome (Kianto et al., 2016). Therefore, the sharing of information becomes necessary for continued operations.

At the same time the use of technology directly affects performance in several ways. It helps employees to smartly performing their duties by consuming less time and communicate with clarity. Moreover the storage of data becomes easy and processing of large information becomes possible and helps in ensuring maximum outreach, thus helping the businesses to grow (Imran, Maqbool, & Shafique, 2014).

The telecom sector in Pakistan is largely contributing towards GDP of the country thus people are continuously looking for better offerings and opportunities (Hassan, 2014; Basit et al., 2017). This has forced the telecommunication sector to employ knowledge management systems for supervising and circulating the organizational knowledge (Qureshi et al., 2017). The knowledge management helps organizations to sustain their exclusive competencies in the rapid changing environment that is seen deficient in Pakistan (Qureshi et al. 2017) and needs revival. In the same context few studies have narrated negative and non-significant relationship between technology usage and performance (Ahearne et al., 2008; Avlonitis & Panagopoulos, 2005; Sundaram et al., 2007). Tarafdar et al., (2014) viewed job stress and excessive use of technology, the causes of hampering performance of employees.

The current study focuses on examining effects of tacit knowledge and use of technology improving employee's performance. These efforts are made to help to transform the employee capabilities into useful actions. Possible consequences of knowledge management may help in obtaining competitive advantage, improved employee performance through innovation (Muthuveloo et al., 2017; Carneiro, 2000).

Literature Review

Success is perceived as a bi-product of human knowledge and is an essential factor to achieve and sustain competitive advantage (Lee & Lan, 2011; Liu & Deng, 2015). However, human knowledge becomes obsolete when not properly managed and used in organizations (Karimi & Javanmard, 2014). Therefore, to safeguard loss of knowledge it is necessary to maintain and develop procedures for its better management (OuYang, 2014). Organizational performance is manifested through organizations' abilities to come up with expectations/requirements of the stakeholders for survival in the market. However, in the near past, the organizational performance has been assessed through diverse measures but due to recent advancement in knowledge based economy the arena has shifted from traditional means to modern knowledge management.

The concept of knowledge management was introduced in the year 1990 and drastic technological changes took place thus that era was termed as "knowledge era". It was argued that for implementing the knowledge in its true essence a thorough investigation is required for production, utilization and dissemination of knowledge. So the knowledge management is to deliver the right information to the right people in the organization on the right time. Davenport and Prusak (2000)

suggested that for knowledge management to be efficient and effective, knowledge sharing is a necessary component. Harrison and Leitch (2000) also supported the view that for survival in the dynamic world fluxed with information technology, it is important to keep knowledge sources up to date.

Quintas et al., (1997) opined that knowledge management is the process of collecting and managing the information/knowledge for encountering performance laps. Alvi and Leidner (2001) viewed knowledge management involving use of both tacit and explicit knowledge of the employees enabling them to capitalize productivity. The stepping stone is to make personal knowledge available to others for better organizational positioning. Knowledge sharing and creation become easy through technological use and outreaches across divisions, departments, sections, and even organizational borders.

Moreover the knowledge management helps in time decision making for organizational performance (Horwitch & Armacost, 2002). Cumming (2004) viewed sharing of knowledge as the facility of sharing task related information, a technique to help others, a cooperation tool in problem solving, to develop new ideas and implementation of policies and procedures. So if knowledge is both well created and shared it will increase the commitment of employee towards their personal and organizational goals.

Sharing of tacit knowledge and employee performance

The knowledge related to cognition (in the mind of the human) is called knowledge personified. While the knowledge in documented form (on papers, goods or procedures) is referred as knowledge entrenched. Pathirage et al., (2007) highlighted the interest among the researchers to investigate tacit knowledge. Tacit knowledge is considered as crucial element creating the competitive edge (Nonaka & Takeuchi, 1995). Wong and Radcliffe (2000) argued that the process of converting tacit knowledge into explicit knowledge is very difficult. Tacit knowledge is present in the mind of human beings and can only be understood and received by the mind of another human beings and at-times cannot be documented (Widen-Wulff & Suomi, 2007). The data bank of any organizational knowledge is divided into four types i.e. externalization, Internalization, combination and socialization (Nonaka & Takeuchi, 1995).

Socialization, a part of tacit knowledge, can only be shared through interaction (traditional or technology based). Individuals share knowledge via story telling which enable sharing of complex tacit knowledge. This process enables sharing of complex tacit knowledge that is not visible but it can only be observed (Ryu et al., 2003). Chiu et al (2006) viewed that relevant and reliable knowledge/information sharing can be a source of greater employee performance. Employees having rich experience can share insights that helps organization improve continuously thus aligning resources is the responsibility of the organization. Additionally to keep the sources in-touch the organizations should provide technology continued benefits.

Use of technology and employee performance

The technological developments have made life easy inside and outside the organizations (Stoddart, 2001). Applications and software's such as video conferencing, business Skype, Viber and WhatsApp and so forth have brought the human resource close to one another so that timely and robust decisions can be made (Islam, Malik, Hussain, Ramayah, Shujahat, & Sajjad, 2018). Not only these apps but other financial softwares are helpful in quick financial decisions thus promoting performance. These technological developments help in knowledge sharing (Lee & Al-Hawamdeh, 2002) for better individual and organizational outcomes.

Organizations that realize the importance of knowledge management cannot ignore the role of technology in improving knowledge because it has become the integral part of the organizational strategies and employee performance (Orlikowski, 1992). Stoddart (2001) says that two things play important role on the knowledge assembly, knowledge deployment, and knowledge sharing that is use of technology and data management. Scarcity of such resource in organization can leads to failure. However, some studies have shown the negative perception about the technology usage and employee performance (Tarafdar et al., 2014). These researchers are of the opinion that the technology usage sometimes becomes a stressful job which ultimately reduces employee's performance (Avlonitis & Panagopoulos, 2005).

Hypotheses

The hypotheses developed for the current study are stated below;

H1: Sharing of tacit knowledge has positive and significant impact on employee performance.

H2: Use of technology has positive and significant impact on employee performance.

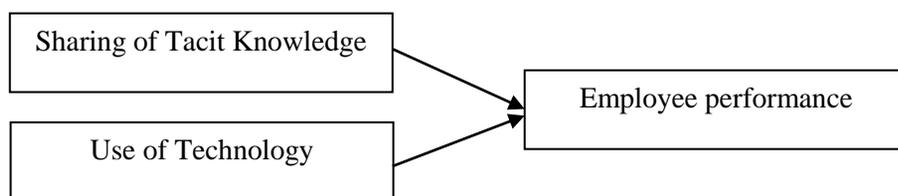


Figure 1. The research framework

Method

Research Design

The study adopted quantitative and cross-sectional research design. The responses are gathered from middle managers working in the IT sector. As per recommendation provided by Lewis, Thornhill & Saunders, 2007; Sekaran, 2003) the cross-sectional data is easy to accumulate and deal with.

Population and sampling

The targeted population for this research is the middle level managers of IT industry. A number of software firms are doing tremendous work in the IT sector within the big cities of the country. A sample of 300 IT managers (middle level) was considered for analysis. As per recommendations of experts a sample size exceeding 200 respondents is considered as large/adequate (Hooper et al., 2008; Hair, 2016). The convenience sampling is used for the reason that the access to the easily available managers was possible. The regression analysis is used for data analysis for the reason that the effect of independent variables on the dependent variable can be examined.

Research Instrument

The knowledge management was bifurcated into two dimensions such as the sharing of tacit knowledge and use of technology that worked as independent variables for the study. The questionnaire for sharing tacit knowledge was adopted from (Kianto et al., 2016) and use of technology from (Roman & Rodriguez, 2015). Five points Likert scale (1 to 5) was used to measure the constructs. Moreover the employee performance was used as a dependent variable and the questionnaire was adopted from (Masa'deh et al., 2017) and five points scale was used. Knowledge sharing examined the knowledge flow in the organization, use of technology is the ability of the

employee to use for gathering and sharing information for performing well and employee performance is the outcome of the activities performed at workplace (subjective measure is used for this study, See questionnaire at the end). The instrument was helpful in finding out the answers to the questions posed above that whether the sharing of knowledge and use of technology enhance employee performance?

Results

Demographic information

The demographic information including gender, age, tenure, sector and education is provided in table below;

Table 1

Demographic Information

Variable	Category	Frequency	Percentage
Gender	Male	230	76.7
	Female	70	23.3
Age	26 to 35	187	62.1
	36 to 45	101	33.6
	46 to 55	12	4.0
Tenure	Less than 1 year	68	22.6
	1 to 3 years	95	31.6
	4 to 6 years	55	18.3
	6 to 9 years	48	15.9
	10 and above	34	11.3
Sector	Public	21	8.4
	Private	278	92.6
Education	PhD	2	0.67
	MS	39	13
	Masters	100	33.33
	Bachelors	159	53

Source: field survey.

The male middle level managers took more interest (76.7%) in the study and responded adequately as compared to the female middle level managers. Moreover it is noted that majority of the respondents were young having age limit between 26 to 30 years (62.1%). The young male and female managers were having 1 to 3 years of project related experience (31.6%). Majority worked in the private sector IT projects (92.6%) and was having bachelors or masters education. The respondents for the study are found to be young and energetic to contribute positively towards this research study by providing original responses.

Reliability of the scales

To analyze the positive interrelation in the variables Cronbach's alpha is used (Sekaran, 2003). The minimum value that is accepted for the Cronbach's alpha analysis is 0.7. All the values are above the minimum accepted value i.e. 0.7 or near to it, which indicates that the instruments used are reliable and acceptable (Wong, 2013).

Table 2*Reliability Analysis*

Variables	Cronbach α	No of Items
Sharing of Tacit Knowledge	.747	06
Use of Technology	.795	05
Employee Performance	.868	10

Source: SPSS output

Correlation Analysis

The Pearson correlation co-efficient is used to measure the relationship between the dependent and independent variables. The correlation value can range from 0 to 1. The 0 represents that there is no correlation. If the value of the correlation fall near +1 it indicates that the variables exhibit the positive and stronger correlation.

Table 3*Correlation*

Constructs	TK	UT	EP
Tacit Knowledge (TK)	1		
Use of Technology (UT)	.375**	1	
Employee Performance (EP)	.567**	.388**	1

** Correlation Sig. at 0.01 Level (2 –tailed)

The correlation table shows that there is significant relationship between variable that are sharing tacit knowledge, use of technology and employee performance. The relationship is significant at .01 levels. There is significant relationship between tacit knowledge and use of technology at the level of $r = .357$, $p = 0.000$. It means that sharing knowledge helps in use of technology at the workplace. Moreover there is significant relationship between sharing tacit knowledge and employee performance with a coefficient $r = .567$, $p = 0.000$. At the same time it is observed that there is significant relationship between use of technology and employee performance with coefficient $r = .388$, $p = 0.000$. It shows that sharing knowledge and use of technology are necessary for enhancing employee performance.

Regression Analysis

Regression analysis is conducted to examine the effect of independent variables on the dependent variable. Generally the R-square, F-statistic, p-values, and the beta values are examined for meaningful results. R^2 is used as coefficient of the determination and it helps in determining the overall effect of independent variables on the dependent variable.

The table below are representing two models where firstly the impact of sharing tacit knowledge is considered as independent variable and in the second model the use of technology is considered as the independent variable having impact on the performance of employees, the dependent variable.

Table 4

Summary - (*β* values in brackets and *p*-values in italics).

Constant stat	Tacit Knowledge Sharing	Technology use	R	R Square	F-
(2.142)	(.493)	(.643)	.694	.482	
<i>0.000</i>	91.651	<i>0.000</i>			
<i>0.000</i>	<i>0.000</i>	<i>0.000</i>			

Note: Dependent Variable: Employee performance

The regression results shown that tacit knowledge sharing and use of technology enhance employee performance in IT sector organizations. Collectively the two independent variables effected employee performance up to 48.2% as depicted by the coefficient of determination (R^2). The F-statistic with a significant value shows that model fitness is adequate for testing. Moreover the beta values are also having significant results such as tacit knowledge sharing has a beta value of 0.493 and use of technology having beta value of 0.643. It becomes clear that although sharing tacit knowledge is good for performance but use of technology has a greater role to play.

In short the two hypotheses developed for examination are up-held supporting the findings of the earlier research studies. The comparison of results in provided in the discussion section of the study.

Discussion

The results of the current study revealed that sharing of tacit knowledge and use of technology are important factors for enhancing employee performance in the IT sector. The employees in the IT sector use technology frequently and for this continuous sharing of knowledge are necessary to have smooth functioning. The structure and nature of their job demand change and up to date knowledge of the new technologies coming in the market (Chen & Fong, 2015). Those who keep their skills up to date with the evolving technology are highly in demand which increases the employee performance (Shujahat et al., 2017). The study was also conducted with the objective of analyzing the abilities of employees in putting efforts to share the work based knowledge among other employees and in the literature review it has been analyzed that there is a significant relationship between the sharing of relevant knowledge with employee and productive output (Raza et al., 2016). Other studies have also investigated the relationship between the selected variables but this study assumed that tacit knowledge and technology are jointly significant predictors of the employee performance of the employees working in the software companies. The relationship between each dependent and independent variable is studied separately. First of all, the tacit knowledge regression is studied with dependent variable. Then the relationship between use of technology and the dependent variables is analyzed separately. Before this study all the similar studies were conducted but not a single study put all these two factors together and especially in software industry (Harrison & Leitch, 2000).

When knowledge management practices are effectively observed within the organization it motivates employees to perform better and committed at work place. Also it will increase encouragement among the employees to share and apply knowledge which can help in increased organizational performance plus employee performance (Bhatti, Zaheer & Rehman, 2011). With such high moral even at times the employee will agree to go beyond what is required of them so that alongside individual success the overall organizational success can be achieved. When organizations do not put much importance to employee performance, there is always confusion between what the

organization wants from their employees or how should they perform to contribute to organizational performance and what their employees expect from their organization in return for their input (Chiang & Hsieh, 2012). There is general dilemma among the employees working in the public sector organizations that they perceive that their way of contribution i.e. ways and methods of working will not enhance organizational performance so instead they engage themselves in following priorities and procedures by default, that displays low level of commitments so knowledge should be willingly offered to its employees where they have access to save it when necessary and they should keep posted this knowledge that will lead toward more employees enhanced organizational performance (Alavi & Leidner, 2001).

Studies revealed that if organizations wants their employees to have better performance than they must provide them with effective knowledge management practices and right management of knowledge is only possible when employee are committed in sharing their knowledge in the work environment (Kasim, 2008; Torabi et al., 2017).

It is important here to note that how employee performance is effected by sharing knowledge? The reasons provided by the employees include; opinion sharing with colleagues resulting in enhanced efficiency (Carneiro, 2000), sharing thoughts help in resolving problems of the employees thus employees consume less time in dealing with problems and get back to their work timely (Román, & Rodríguez, 2015). This also helps in reducing the communication gap between the working individuals and thus reducing power distance help in sharing and seeking information easily and enhances team strength (Kianto et al., 2016; Basit et al., 2017).

Conclusion

The results of this study reveal that knowledge management practices such as sharing of knowledge and use of technology have significant positive impact on the performance of the employees working in software industry in Pakistan. Thus knowledge management and employee performance has direct linkage. It is found that if the right efforts are made to make sure that knowledge among the employees is rightly provided and distributed than it can enhance the individual capacity to perform better.

Practical Implications

Sharing tacit knowledge and use of technology, as a part of knowledge management are significant predictors of employee performance. These are helpful for the project managers when formulating the policies regarding the human resources such as hiring and recruitment, to select such employees who have required knowledge, skills and abilities and have the ability to share the knowledge and can easily use the technology available and introduced by the IT firms over time. The findings are helpful for the software development organizations to formulate work strategies involving/engaging employees in technology use to enhance performance. This study can serve as a guideline for the software project managers to understand that how they can improve the employee job performance. Software project managers are responsible for handling all the resources of the project and they are liable for everything related to the project and are held responsible for managing human resources. Software projects fail mostly due to the human resource mismanagement. Retaining intellectual capital is essential for organizational success for this reason organizations have to manage their employees having crucial knowledge manner so that it turns into "*happy worker is a productive worker*". The knowledge management by is possible through the transfer of tacit knowledge to the other people so that organization do not suffer in times of employees being not available on the other hand the employees knowing how to use the technology is another way the IT firms can manage their knowledge thus enhancing the performance of their employees.

Further the results help in developing an understanding that use of technology tools supported the employees in doing their tasks in time and saved their time. For learning use of technology tools from one another the people shared knowledge that enhanced their work performing patterns. In the light of findings the managers must enhance interaction between people working in various departments for better performance outcomes. Lack of technological knowhow may lead to frustration and creates stress, thus using technology enhances collaboration for better bonding at workplace.

Limitations and Future Directions

To make the results more general it is important to have a larger sample, for the current study data is collected from few software houses operating in the Islamabad region. As the knowledge management and employee performance are the wide range constructs so predicting it accurately with two variables cannot be possible totally. Another limitation of this study is related to measuring the dependent and the independent variables, self-report measures that can generate self-reported bias. This bias can be removed using multiple sources of response gathering. The limitations mentioned can be taken as an opportunity for future research studies.

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Questionnaire Used
Section A - Demographics

Information Required	Category
Gender	Male
	Female
Age	26 to 35
	36 to 45
	46 to 55
Tenure	Less than 1 year
	1 to 3 years
	4 to 6 years
	6 to 9 years
	10 and above
Sector	Public
	Private
Education	PhD
	MS
	Masters
	Bachelors

All the items in section B to D are rated at 1 = strongly disagree to 5 = strongly agreed.

Section B - Knowledge Sharing (Kianto, Vanhala, & Heilmann, 2016) It examined the knowledge flow in the organization

Kianto, A., Vanhala, M., & Heilmann, P. (2016). The impact of knowledge management on job satisfaction. *Journal of Knowledge Management*, 20(4), 621-636.

1. Communication with other members of my work group is efficient and beneficial
2. My colleagues are open and honest with each other
3. Our staff is interactive and exchanges ideas widely across the organization
4. I find it easy to communicate and cooperate with employees from other organizational units and functions
5. There is a mutual understanding between the various organizational units and functions
6. Our staff share information and learns from one another
7. Different opinions are respected and are listened to in this organization

Section C - Use of technology - It assess the ability of the employee to use for gathering and sharing information for performing well.

Román, S., & Rodríguez, R. (2015). The influence of sales force technology use on outcome performance. *Journal of Business & Industrial Marketing*, 30(6), 771-783.

1. I understand the use of IT tools
2. I can easily share the knowledge by using IT tools
3. I can easily get the knowledge by using IT tools
4. I have enough ability to use IT tools
5. I can store knowledge using technology

Section D - Employee performance – It is the outcome of the activities performed at workplace (subjective measure)

Masa'deh, R., Shannak, R., Maqableh, M., & Tarhini, A. (2017). The impact of knowledge management on job performance in higher education. *Journal of Enterprise Information Management*, 30(2), 244-262.

1. Knowledge sharing with other colleagues in the department increases my work efficiency.
2. Knowledge sharing with other colleagues in the department helps me to solve problems at work
3. Knowledge sharing with other colleagues in the department helps me to accomplish my work mission
4. Knowledge sharing with other colleagues in the department broadens my knowledge
5. Knowledge sharing with other colleagues in the department increases my willingness to work with others
6. Knowledge sharing with other colleagues in the department increases my problem solving abilities