The Effect of Knowledge Management Infrastructure on Improving The Quality of Service in Higher Education Institutions in Palestine

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Abstract: Nowadays, in this competitive world, institutions have recognized the importance of Knowledge as the best indicator of survival. Considering staff as the most important resource of any organization and as the owners of knowledge. In this scenario, there is a great need to manage knowledge properly by developing its capabilities. Therefore, this study aims at exploring knowledge management Infrastructure (KMI) in Palestinian Higher Education Institutions (HEIs) and its impact on service quality (SQ). KMI is explored with respect to structure, culture and Technology.

This study conducted structural equation modeling to test the hypotheses with (274) questionnaires including (23) questions targeted academic middle managers and faculty member (teaching staff) in HEIs in Palestine. By exploring the model developed in this study, the results show that there is a significant relationship between KMI and SQ. This result is in line with earlier findings in the literature. It also indicated that the dimensions of KMI that have the highest effect on SQ is organizational structure followed by organizational culture; whereas the variable of technology infrastructure has lowest effect on it. It is noteworthy that the results of this study inspired managers and employees to effectively develop and exploit knowledge management capabilities (KMC) to improve the institutions' quality of service. Many academic and practical recommendations were presented based on the findings.

Index Terms - Service Quality, Knowledge Management Capability, Infrastructure, HEIS, Palestine.

1. INTRODUCTION

Nowadays, all organizations are facing challenges in this era of globalization, competitiveness, numerical revolution, financial crises, and many other challenges that urge the management of these organizations to adopt strategies that can help them survive and achieve competitive advantage and increase their productivity and performance. Knowledge is considered as a key competitive and strategic resource in the new knowledge economy (Mara et al., 2011; Shih & Tsai, 2016). The significance of knowledge cannot be overdrawn and the importance of the concept of knowledge management (KM) to all institutions and business organizations in order to improve their performance have been confirmed, and educational institutions are no exception. In this regard, many studies and works in literature confirm the idea that Knowledge Management Capabilities (KMC) has a vital role in achieving organizational success. Nonetheless, most of the literature in this field is investigating the KMC in business organizations (Khafajy, Alzoubi, & Aljanabee, 2016; Liu, Song, & Cai, 2014; Nguyen, 2010; Rangriz & Mehrabi, 2013; Reza & Javadein, 2013). However, previous literature investigating the relationship between KMC (infrastructure) and service quality (SQ) have been done in different sectors such as banking sector, insurance companies and electronic services, but this relation has not been -to date- tested in education environment.

In order to understand what the higher education sector has to provide, it is very necessary to pay attention to the changes that have taken place recently. Actually, during the past decade, higher education institutions (HEIs) faced great pressures and changes such as globalization, mass education, academic competition, budget cuts, reformations, competitiveness, as well as the need to adapt to new requirements, etc. (Zwain, Teong, & Othman, 2012). HEIs are the places where knowledge is imparted and distributed, thus, there should be an emphasis on their ability to manage knowledge to facilitate an effective utilization of their management, administration, teaching and research resources in order to improve their effectiveness (Shih & Tsai, 2016; Zwain et al., 2012). Researchers also stressed on the need to apply the principles of KM to enhance the performance, the quality and reputation of HEIs.

In this regard, this study is investigating KMC and specifically Knowledge management infrastructure (KMI) in education environment. The study aims to investigate the influences of KMI on SQ in Palestinian HEIs.

2. LITERATURE REVIEW

2.1. Knowledge Management Capabilities

Scholars and researchers have not yet come to an agreement on the definition of KMC (Al-attraqchi, Ahmad, National, & National, 2016). Nevertheless, many researchers have used different definitions for KMC. The most known definition which is the definition provided by (Gold & Arvind Malhotra, 2001) which considers it as the capacity or routine of an organization to identify, create, convert, and apply and protect knowledge. KMC can be divided into two aspects: knowledge infrastructure capability (Technology, culture, and structure) and knowledge process capability (Acquisition, conversion, application, protection) (Gold, 2001). Most of the definitions provided in literature focused only on process capabilities, however, the definition presented by (Chang & Chuang, 2011) is considered more general and defined KMC as the ability to use the existing resources and capabilities by the organization in order to create and benefit from the existing knowledge within the organization.

2.1.1. Knowledge Management Infrastructure

The KMI includes the organizational resources that organizations possessed and the predetermined conditions when implementing KM activities (Gold & Arvind Malhotra, 2001; Ichijo & Nonaka, 2007; H. Lee & Choi, 2003). Knowledge management can only be promoted in the case that the organization possesses these conditions and resources. According to (Nasser H. Zaied, Soliman Hussein, & M. Hassan, 2012), knowledge management infrastructure is seen as the mechanism followed by the organization in order to develop its knowledge and stimulate creation, sharing and protection of knowledge within the organization. KMI also refers to those factors which support the activities of KM in organizations and help to create competitive advantage in organizations. (Charles & Nawe, n.d.; Matin & Sabagh, 2015) indicates that to boost the awareness of KM, management staff of institutions of higher education must have well-established hard and soft KMI and should ensure effective promotion of KM practices among their staff.

In his model of effective knowledge management (Gold & Arvind Malhotra, 2001) depending on organizational capability theory identified three main building blocks of KMI: which are technology, structure, and culture. Other researchers have identified various key aspects of KM infrastructures; structure, culture, IT and people (H. Lee & Choi, 2003; Y.-C. Lee & Lee, 2007) and culture and people (Soon & Zainol, 2011). Thus, the elements of KMI capabilities in this study were inclusive of structures, cultures and technology in accordance with the model presented by (Gold, 2001) as being considered the most used model in literature.

Technology

Technology capability refers to the essential information technology structure of organizations, such as hardware, software, internal and external system networks and databases (Yang & Chen, 2007). Technology is frequently indicated in literature as an important infrastructural capability of KM, which enables and supports implementing the core knowledge activities in organization including knowledge creation, knowledge distribution and knowledge application (Gold & Arvind Malhotra, 2001). Technical KMC can help organizations to rapidly acquire, store, and exchange knowledge, it also supports mapping the internal or external sources of knowledge, in addition to integrating organizational knowledge flows, and applying existing knowledge to create new knowledge (Chuang, 2004; Gold & Arvind Malhotra, 2001; Masa, 2016).

Structure

Structure in organizations is defined as the formal operation and structure, in addition to the existence of norms and trust mechanisms (Gold & Arvind Malhotra, 2001; Nonaka, 1991; O'dell & Grayson, 1998). It indicates the presence of norms and all the encouraging strategies within KM (Gold & Arvind Malhotra, 2001; H. Lee & Choi, 2003), it also includes the leadership and team of knowledge management, the advancement of strategic plans and the rewards provided for examination and assessment (Bhatti, Hussain, Iqbal, & others, 2013; Mas-Machuca, 2014).

Culture

Cultural capability refers to the vision and values of organizations, in addition to their attitudes toward learning and transferring of knowledge (Gold, 2001; Hult, Hurley, Giunipero, & Nichols, 2000). (Peachey, 2006) indicated that the best KM initiatives may fail without having a culture that willingly accepts change in organization. Organizational culture is also defined as a complex group of values, beliefs, symbols, and behaviors which affect KM in organizations. Oliver and (Kandadi, 2006) have also defined knowledge culture as: 'A way of organizational life that enables and motivates people to create, share and utilize knowledge for the benefit and enduring success of the organization'. Culture points to the behavior of members which keeps knowledge inside the organization to achieve innovative advantage (H. Lee & Choi, 2003; Y.-C. Lee & Lee, 2007) and refers to the culture of cooperation, trust, sharing and learning (Shih & Tsai, 2016).

A knowledge culture needs to be fostered in an organization to manage the knowledge effectively. (Gholipour, Jandaghi, Ali, & Hosseinzadeh, 2010). Thus, culture knowledge capability is indicated as one of the most important factors that have an effect on knowledge management (Ho, 2009). As culture helps in shaping rules about what knowledge is and which knowledge needs to be managed. In addition, culture helps in defining the relationships between individual and organizational knowledge, it also determines who has to control specific knowledge, and who must share it or who can store it. Finally, culture paves the way for social interaction among employees by determining how knowledge is used in any particular situation. In addition, Culture forms the processes needed for creating, legitimating and distributing new knowledge in organizations. (Nguyen, 2010).

2.2. Service Quality

Service quality is one of the most important research topics for the last few decades (Gallifa & Batallé, 2010).The service quality in the field of education and higher learning particularly is not only essential and important but also an important parameter of educational excellence. Positive perceptions of service quality have a significant influence on student satisfaction and thus satisfied student would attract more students through word-of-mouth communications (Alves & Raposo, 2010). (Ahmed et al., 2010) said that service quality is a key performance to measure the educational excellence and is a main strategic variable for universities to create a strong perception in consumers' mind. Moreover, at higher learning institutions performance measurement of service quality is strongly prohibited to the matching between students' expectation and their experience of a particular service (Tahar, 2008). Numerous scientific papers have already attempted to define quality, and most of the authors agree that it is not possible to arrive at a correct and unambiguous definition (MaCukow, 2000). (A. Parasuraman, Zeithaml, & Berry, 1985) described service quality as the ability of an organization to meet or exceed customer expectations. (Athiyaman, 1997) defined service quality as "Perceived service quality is defined as an overall evaluation of the goodness or badness of a product or service". It has been proved by researchers that quality of service is an important determinant of satisfaction (Shemwell, Yavas, & Bilgin, 1998).

Researchers measure the service quality constructs either as a gap expectation/perception of service or just as a perceived performance alone (Al-Alak & Alnaser, 2012)). Among service quality models, SERVQUAL model is more important than

others. SERVQUAL has earned great popularity and wide application in last decades. The majority of the studies in higher education service quality have focused on student's view of quality, while little attention has been paid on the perspective of academic and administration staff (Khodayari & Khodayari, 2011). (Berry & Parasuraman, 1997), institutions can improve the quality of the service they offer if they listen to and take cognisance of the experience of stakeholders. The SERVQUAL scale is a principal instrument in the services marketing literature for assessing quality. To improve quality, service providers have to identify the key determinants of service quality. (V. A. Z. Parasuraman, Berry, & Zeithaml, 1988) highlight five key determinants of perceived service quality, namely: Reliability, indicates the ability to perform the promised service dependably and accurately, means that the organization delivers on its promises regarding delivery, service provision, and problem solution. Responsiveness, means the being willing to help, is defined as willingness or readiness of employees to help customers and to provide prompt service. Assurance, refers to inspiring trust and confidence, is defined as the employees' knowledge and courtesy and the ability of the firm and its employees to inspire trust and confidence. Empathy, refers to treating customers as individuals, is defined as caring, individualized attention that the firm provides to its customers. Tangibles, is the representing the service physically, are defined as the appearance of physical facilities, equipment, staff appearance, and communication materials that are used to provide the service. These dimensions are also applied in educational sector as well in various set ups.

2.3. KMI AND SQ

Literature indicated that the understanding of an organization's knowledge management capability (KMC) is very important in deploying effectively the resources and in growing its value (Tseng, 2016), in addition, only organizations which have better quality of products and advanced knowledge that helps to create and improve their products and services will be able to survive and succeed in the marketplace (Kongpichayanond, 2013). (Javadein, Ramazani, & Keshavarzi, 2013) stated that the feature of KMI nowadays can be summarized into two main points,: the first one is that organizations that integrate knowledge management infrastructure in their philosophy, this will result in making it a common practice and they will become more superior in the market. The second point is that however knowledge is available but also it is becoming more sophisticated which makes knowledge infrastructure being more complex.

The ability of organizations to develop new products or services depends on their organizational knowledge, that's why service organizations profoundly invest in systems of KM and pay consideration to develop the KMC of their staff in order to help them perform better. In other words, organizations have to effectively use their KMC in order to increase the quality of their service (Butler, 2000).

It was suggested that organizational structure plays an important role in developing the culture of knowledge which in turns helps organizations to improve their performance and service and achieve a competitive advantage (Pandey & Dutta, 2013). Accordingly, it is expected that any positive changes happens to the culture of an organization will influence its performance and will foster other improvements happening in the organization (Mohammad, Mohammad, Ali, & Ali, 2014; Richert, 1999). Technology infrastructure is also considered as an enabler for Knowledge Management processes which indirectly increases its influence on the organization's performance and its competitive advantage (Nguyen, 2010). Organizations which work on improving the technological infrastructure capability will witness improvements in creating competitive advantage (Smith, 2006).

It is also confirmed in literature that universities have to accept, adopt and foster knowledge management consistently to be among the best performers in this world of information and technology (Rabbi, Zandi, & Farrukh, 2015). Universities also should provide a platform of the knowledge management by enhancing their culture and by motivating their human elements.

3. OBJECTIVES OF THE STUDY

The main purpose of this study is to investigate the effect of KMI on improving service quality in HEIs of Palestine. The specific research objectives of the study were to: Examine the effect of KMI (Technology Infrastructure, Organizational culture, and Organizational structure) on improving SQ in (HEIs) in Palestine.

4. CONCEPTUAL MODEL AND HYPOTHESES DEVELOPMENT

The purpose of this research is to understand how KMI can improve SQ in HEIs. Based on the above discussion and review of literature, the conceptual model of this study is presented in Fig. 1 based on the literature review of the study. It consists of two constructs. The independent construct is KMI including (Technology Infrastructure, Organizational culture, and Organizational structure). SQ is the dependent construct of this study. The develop hypotheses will be presented in the model.
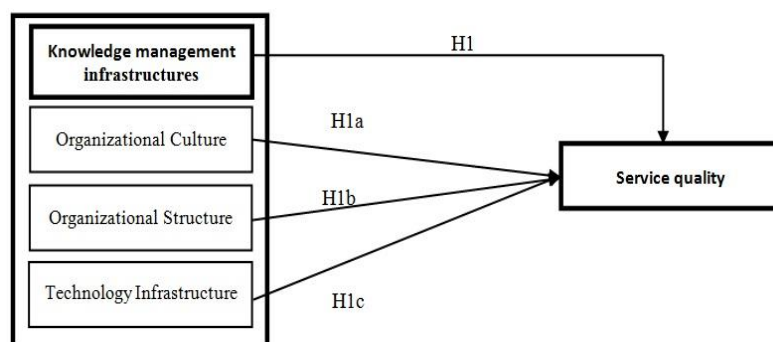

Fig. 1: Conceptual model

Major Research Hypothesis:

H1: Knowledge management infrastructure have significant positive effect on service quality in (HEIs) in Palestine.

Secondary Research Hypotheses:

H1a: Organizational culture has a significant positive effect on service quality in (HEIs) in Palestine.

H1b: Organizational Structure has a significant positive effect on service quality in (HEIs) in Palestine.

H1c: Technology infrastructure has a significant positive effect on service quality in (HEIs) in Palestine.

5. RESEARCH METHODOLOGY

5.1. Study Population and Sample

The study population covers (5) governmental higher education institutions located in Gaza Strip (Palestine). And the study sample included all the HEIs of the study population including (1 Universities, 3 University Colleges, and 1 Community Colleges) on the basis of category (Government). The sampling unit and analysis of the study (respondents) based on (Krejcie & Morgan, 1970), the sample required for the population equals (270). The target respondents were academic middle managers and faculty members (teaching staff) working in the target institutions for their important role in the knowledge management activities as they catch knowledge from top levels of management to lower levels and vice versa (Cho, 2011; Siam, 2015). And academic faculty members also plays a key role in the process of KM as they are considered the center of learning process and the frontline employees who deliver the service to students and have direct contact with them.

5.2. Study Instrument

The instrument used in this study is a questionnaire developed by the researcher through reviewing the literature related to the knowledge management infrastructure and the quality of service. The questionnaire consisted of three parts: The first part of questionnaire includes the demographic information of respondents such as gender, years of experience. The second part of the questionnaire includes the items of knowledge management infrastructure (Technology, structure, and culture) which are adopted from (Gold, 2001). The third part of the questionnaire includes the items related to the quality of service, which were adopted and adapted from SERVQUAL by (Parasuraman et al., 1988). The answers on the last two parts of questionnaire rely on a five-point Likert Scale, ranging from strongly disagree (1); disagree (2); Neutral (3); agree (4); and strongly agree (5). For this study, 295 questionnaires were distributed and out of the 281 returned questionnaires, only valid 274 were usable for analysis.

5.3. Instrument Validity and Reliability

To ensure the validity of the study instrument, the researcher reviewed literature related to the study variables Some academicians and experts were asked to review the study instrument during the preparation phase of the research, based to their opinions and recommendations the questionnaire was finalized to suit the current study, in addition to that, a pilot test was conducted on a small sample of (30) employees to ensure the clarity of items. To test the instrument's Reliability the Cronbach's alpha coefficients were determined in order to insure the internal consistency among questionnaire items. The Cronbach's alpha values were (0.81) for the knowledge management infrastructure items and (0.86) for the items of service Quality and (0.88) for the whole instrument.

5.4. Analysis on Respondents' Profile

The final dataset after data screening process consists of 274 samples. The respondents are 78.1% males, 40.3% aged between 41 and 50 years, 45.2% have an experience up to 10 years, 49.4% have a qualification of master degree, 83.8% are faculty members, and 67.6% are working in HEIs.

5.5. Validity and Reliability of Constructs

As the research use PLS analysis, it is essential to perform some validity and reliability tests of the measurement model which includes composite reliability, outer loading, convergent validity, and discriminant validity (Hair Jr, Hult, Ringle, & Sarstedt, 2016; Sekaran, 2003). As shown in Tables 1a, and 1b reliability is tested by using Cronbach's Alpha and composite reliability and the results shows that the values are above the threshold of 0.7. Therefore, the internal consistency is proven and the model is valid. Collinearity assessment is performed to assure the non-interaction between dependent and dependent variables which measures by using the VIF value. All the VIF value are between 0.2 and 5.0, which satisfies the threshold value. In addition the item must have proper loading within its associated construct and must be more than 0.708 with free cross loading affect. The results in the table shows an adequate level of loading. The average Variance Extracted (AVE) values are above 0.5, therefore convergent validity is achieved. Finally, Table 2 shows the matrix of Fornell-Larcker criterion, which indicates that no discriminate validity issues are. This study satisfies the rule of thumb proposed by (Hair Jr et al. 2016).

Table 1a: Construct Reliability and Validity of Independent Variables

construct	Item	Loading	AVE	VIF	Composite Reliability	Cronbach's alpha
Knowledge Infrastructure Capability - Culture	KIC1	0.780	0.616	2.636	0.889	0.844
	KIC2	0.762				
	KIC3	0.843				

	Item	Loading	AVE	Variance	CR	Cronbach
	KIC4	0.809				
	KIC5	0.726				
Knowledge Infrastructure Capability - Structure	KIS2	0.772	0.573	1.914	0.843	0.752
	KIS3	0.761				
	KIS4	0.729				
	KIS5	0.764				
Knowledge Infrastructure Capability - Technology	KIT1	0.814	0.700	1.699	0.903	0.857
	KIT2	0.874				
	KIT3	0.860				
	KIT4	0.797				

Table 1b: Construct Reliability and Validity of Dependent Variable

construct	Item	Loading	AVE	Composite Reliability	Cronbach's alpha
Service Quality	SQ2	0.782	0.613	0.904	0.872
	SQ4	0.774			
	SQ5	0.701			
	SQ6	0.816			
	SQ7	0.890			
	SQ8	0.720			

Table 2: Discriminant validity – Fornell-Larcker criterion

Construct	KIC	KIS	KIT	SQ
KIC	0.785			
KIS	0.691	0.757		
KIT	0.641	0.435	0.837	
SQ	0.592	0.566	0.494	0.783

5.6. Structural Model

To measure the overall power of the mode, predictive power R2 and predictive relevance are used (Hair Jr et al., 2016). Figure 2 demonstrates the structural model based on the PLS algorithm analysis which shows the predictive power and the path coefficient values of the paths within the proposed model. It can be seen that the proposed determinants can explain 42.1% of the variance in the service quality.

The results is supported with Predictive relevance Q2 of 0.25. The model is moderate in predictive power and have a medium predictive relevance. Table 3 shows the path coefficient values associated with the proposed hypothesis based on the PLS bootstrapping analysis. The rule of thumb as hair et. al, (2015) is T statistic must have a value of 1.96 or higher which is equivalent to the significant value of 5% or less. The three proposed relations H1a, H1b, and H1c are accepted. H1a propose the positive relationships between organizational culture and service quality (Beta = 0.256; T-statistics = 4.68). H1b propose the positive relationships between organizational structure and service quality (Beta = 0.303; T-statistics = 5.67). H1c propose the positive relationships between organizational technology and service quality (Beta = 0.197; T-statistics = 4.56).
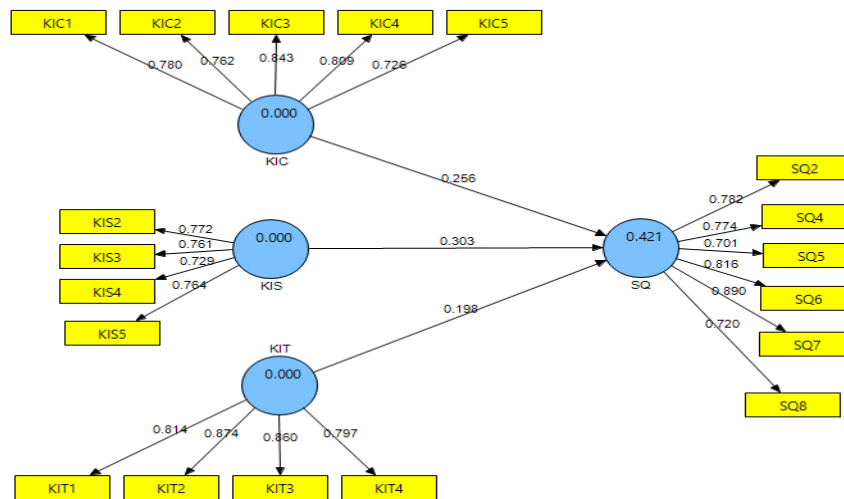
Figure 2: PLS Algorithm Path Model

Table 3: Structural Relationships and Hypothesis Testing

Hypothesis No.	Path	Path Coefficient	T Statistics	Sig Value (1 tailed)	Status
H1a	KIC -> SQ	0.256287	4.678086	0.00001	Accepted
H1b	KIS -> SQ	0.303114	5.672444	0.00001	Accepted
H1c	KIT -> SQ	0.197543	4.559859	0.00001	Accepted
*t-values: 1.65 (10%); **t-values: 1.96 (5%); ***t-values: 2.58 (1%)					

As the three sub hypothesis is accepted with an adequate level of significance at 1%, knowledge management infrastructure have significant positive effect on service quality in (HEIs) in Palestine. The precedence of the determinants of the service quality variance are organizational Structure followed by organizational culture then organizational technology.

6. CONCLUSION AND RECOMMENDATIONS

This study aimed to examine the effect of knowledge management infrastructure (technology, structure and culture) in the quality of services in Palestinian HEIs. Empirical results found that the knowledge management infrastructure has a positive effect on the quality of service. Based on these results the study recommends that the HEIs should pay their full attention to their knowledge management infrastructure including (technology, structure and culture) in order to achieve and enhance the quality of services which will result in acquiring new customers and maintaining the current customers and help institutions to achieve a competitive advantage. The study also recommends future researchers to conduct more studies on the role of knowledge management infrastructure in the quality of services in different sectors and countries in order to generalize the results, because the results of the current study are limited to Palestinian higher education sector.

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