FACTORS AFFECTING KNOWLEDGE SHARING ON INNOVATION IN THE HIGHER EDUCATION INSTITUTIONS (HEIs)

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ABSTRACT

It is believed that Information and Communication Technology (ICT) can enhance Knowledge Sharing (KS) with the integration of individual and organizational factors. As a relatively new field of research, studies on KS based on Information Systems (IS) in developed countries is also on the increase. Unfortunately, KS research in the Higher Education Institutions (HEIs) in developing countries is mostly found to be given trivial considerations. It is even rare to find conceptual research model for KS in HEIs in developing countries that integrate individual, organizational and technological antecedent factors together. Therefore, the objectives of this paper are twofold: (i) to explore the best conceptual KS research frameworks based on existing research models in HEIs; and also (ii) to propose a research model that can help explain better the nature of KS in HEIs. The methodology of this study is subjective/argumentative research i.e. idea generation in IS. The proposed research model has been built on the basis of IS theories and from the review of extant KS literature. The study reveals the antecedents and incorporates in the proposed research models which are: perceived self-efficacy for higher education and training, perceived leadership, social network, perceived ICT tools and technology, perceived organizational rewards, perceived organizational climate and perceived organizational trust. The paper explains the antecedents, relevance and theoretical applicability for the integration of the three theories in KS research for HEIs. The finding of this study reveals that the proposed KS research model seems better compare to other existing KS research framework in HEIs in developing countries. The study also reveals that the IS theories integration with ICT technology can explain better for KS research.

Keywords: academics, higher education institutions, knowledge management, knowledge sharing, innovation, developing countries.

INTRODUCTION

Academics are the intellectual leader for developing societies [1]. New knowledge is created and transferred to the people in the Universities. Though relatively still an infancy field of research, studies in Knowledge Management (KM) and KS continue to be on the increase. KS and Innovation are believed to be inter-related and could influence organizational performance. Studies show that individual's knowledge does not renovate simply into institutional knowledge even with the use of knowledge depository. Knowledge is power and source of all actions in the organizations [2, 3]. The concept of KS and institutional innovation capability are now the most emerging issues in KM research for achieving competitive advantage. Although, KM research has been very popular for the effectiveness of business organizations in developed countries for more than two decades, yet according to [4], the KM research is growing and is beginning to help organizations gradually understand the importance of managing knowledge. The extant literatures in KS show that, in developed countries, universities are now immensely undertaking KS research in the KM field to find links to institutional innovation capability. Recent literatures on KM in developed countries suggest that KM phenomenon is continuously being investigated in the United States of America (USA), Canada, Netherlands, United Kingdom (UK). Presently, knowledge workers in the USA constitute 70% of the total workforce. Over the past two decades, there has been a dramatic increase in scientific activity as well as economic advancement based on ICT. The ICT gave birth to the notion of new economic development [5]. The past decade has also witness the rapid development of KM research in many organizations in Europe and America. Many universities in Europe focused on institutional innovation through KS practices using ICT to promote KS. For instance, Germany has launched a programme named "EXIST" while Moscow State University, Russia launched "Formula of Success" for KS practices [6].

Furthermore, previous studies show that individuals' intention has potential impact on KS activities. Most of the previous KS researches have overlooked the technological dimensions of ICT for knowledge sharing. Moreover, individual, organizational and technological determinants for KS research as a whole in HEIs have not been given adequate emphasis in developing countries. Whereas, prior studies suggest that there is a need for a research model [7]. Because, KS with individual, organizational and technological antecedents altogether can improve organizational performance [8]. It can help explains the three dimensions, and this is still hard to find in the extant KM literature.

Therefore, the aim of this paper is to recommend plausible IS theory and research constructs that can help explain the nature of KS in HEIs. It will also explore the best conceptual research framework based on existing research model in HEIs. As suggest by [9]-[10], the methodology of this study is subjective/argumentative research i.e. idea generation in IS.

LITERATURE REVIEW

In the knowledge-based-view of the organizations, knowledge is considered potential to improve organizational performance and competitive advantage [11, 12] and to the long term sustainability and effectiveness of organizations [13]. Knowledge has been considered very significant components and preliminary resources in the organizations. That is why, knowledge sharing is very important for an organization. KM has systematic power to resolve the problems in the organizations.

Knowledge sharing is a process of social communication by individuals and groups in the organizations where knowledge is shared by people's ideas, views among them to come out with new concept [14]. Knowledge sharing means individual willingness to share what they have or have created in an organization [15].

Information systems (IS) research focuses on a diverse form of antecedents that drive on individual knowledge sharing. This requires for status, organizational encouragements and technological support. Despite the fact, numerous driving issues have been discovered. Few researches have dragged them together into a single in helpful model [7]. Instead, [7] Identify KS behavioural climate as incentive or drive, information management ability as capability and organizational IT support as chance. Their investigation reveals that a creativeness behavioural climate has a major influence on KS behavior and perceived organizational use of IT to backup knowledge works stand strong impacts on information management ability and advocating that IT has indirect influences.

Institutional Innovation at HEIs

It is generally considered that the university is the oldest and highest ideal place of learning for knowledge creation for all people in society. Academics play a key role in universities since their principal works are teaching, learning and publication. They disseminate knowledge for the development of society as a whole, because, new knowledge is created in the universities. The ultimate aims of acquiring and disseminating knowledge is the transformation of all personal knowledge and experiences to organizational capabilities. KS is an essential process of organizational innovation capability. Innovation capabilities can be renowned on the forms of knowledge that organizational members sustain. It is significant to the effectiveness and growth of educational institutions [8], [16]. KS enables the organization to improve innovations. It makes innovation capabilities that increase the staff willingness to donate and collect the knowledge. Moreover, KS has a great role of resolving the problems [17]. Besides, [12] has explored out knowledge and intellectual resources as factors govern effectiveness and play significant roles in adopting culture and endorse information and KS in the HEIs. That is why, many universities in Europe have adopted KS programmes hugely. It is now considered as the most important weapon for the success of institutions and its competitive advantage. For instance, the 'EXIST' in Germany and 'Formula of Success in Russia [6]. Despite the fact, unfortunately, academics are not willing to share their knowledge. They are idiosyncratic [17-20].

KM Issues among HEIs in Developing Countries

According to [21], most important issues in KM are IS and applications of IT Infrastructure. These applications include: knowledge repositories, best practices and lessons-learned systems, expert networks and communities of practice. Besides, [22] has identified contemporary problems in the management of knowledge combined with leading-edge research in today's organizations. It is to create, capture, transfer, and use of knowledge of cultural, technological, organizational, and people around the issue. Commendable reference topics such as organizational memory, KM, KS and transfer of enterprises, promoters and inhibitors, as well as emerging technologies of KM provides the most important information, which is set in a variety of practitioners and academics provide important research data.

Furthermore, diverse forms of HEIs in developing countries are involved in education management and service delivery. Certainly, these HEIs are necessary of integrative fields for studying, researching and learning about the knowledge assets that is human intellectual capital and technology. If we find the past study, especially in the developing countries in the last era, educational institutions have worked in a comparatively constant setting and eventually are not in pressure. The comprehensive background has changed the decision and systems of HEIs.

In fact, in comparison with many others developed countries, HEIs in the developing countries are not rich and diverse, by different types of public and private universities. But it is rich and diverse in the UK. Even though, the United Kingdom has a well-developed and widespread business backing infrastructure which is more helpful for the process of education and institutional innovation. For example, a report of UNDP [23] on Enhancing the Innovative Performance of Firms. Moreover, public organizations in developed countries are focusing more on KM practices than developing countries. Yet, in the age of globalization, there has the potential role of academics' in KS in the universities atmosphere to bring prosperity in making knowledge base society in developing countries followed by developed countries. According to the [24], only UAE from the developing countries was listed in Top 10 of Global Competitiveness in higher education and innovation.

Usually, knowledge sharing happened at the person's level or organizations level. In personal level, organizational staffs interact with colleagues or other people of the organizations to assist them to get things done to expedite more effective and skilled way for sharing knowledge. Conversely, knowledge sharing for an organization is to capture, organize, reuse and transform expertise within the institution, so that this knowledge might be used by other staffs in the organizations.

Numerous studies have specifically shown that KS is a significant procedure of innovation. For this reason, it allows an organization to develop innovation and institutional performance [8].

Innovation status between Developed and Developing Countries

According to the [25], the developing countries are ranked lower than developed countries in the world. This indicates that the developing countries' innovation performance is lower than that of developed countries. It is lower even compared to other Asian countries like Singapore and Hong Kong.

Table-1. Global rank of top 10 countries for higher education and training.

Higher Education & Training Top 10	
The Global Competiveness Report 2014-2015	
	Global rank*
Finland	1
Singapore	2
Netherlands	3
Switzerland	4
Belgium	5
United Arab Emirates	6
United States	7
Norway	8
New Zealand	9
Denmark	10

Source: The Global Competitiveness Report 2014-2015
Note: * 2014-2015 rank out of 144 economics

The Framework of the GII-2014, weights Education, ICT, Knowledge Workers, Knowledge Absorption, Knowledge Creation, Knowledge Impact and Knowledge Diffusion among other factors. Moreover, in keeping with [24], the competitiveness as the set of institutions, rules and issues that control the level of output of a country. The level of output, in turn, sets the level of success that can be received by an economy. Various factors drive efficiency and competitiveness. The report [26], demonstrates the 12 pillars of competitiveness. Among them, higher education and training, technological progress and good governance are the most important components of competitiveness.

Since the HEIs are not rich and diverse in the developing countries as in the developed countries like UK. The main cause might be, due to the unsatisfactory level of KS initiative, inappropriate education, lack of ICT infrastructure and its less implementation in organizations. For example, a study conducts in the HEIs in Malaysia reveals that only 47.1% have implemented or started the KM initiative in their organization [27]. Whereas, another study in the same region on SMEs sector demonstrates that the gradation of KM awareness of the SMEs is also at a

low level. Therefore, education and business both sectors are the lower status of economic backwardness. That is why; innovation index is relatively lower in the developing countries than that of developed countries. If this degrading situation continues, it could indirectly impede innovation performance as well as its economic growth in the developing countries.

Lack of Underpinning Theories in Existing KM Models for Developing Countries.

As [28] advises, that "the IS discipline must have a sound theoretical base to support the study of practical issues and innovations. Consequently, there is a need for basic research to be undertaken, both in terms of cross-disciplinary research and of study within individual reference discipline". Furthermore, another research on KS [29] reveal that "Individuals' knowledge does not transform easily into organizational knowledge even with the implementation of knowledge repositories. Rather, individuals tend to hoard knowledge for various reasons". Studies show that individual, organizational and technological dimensions altogether can improve the performance of the organizations. Although prior studies emphasize on academics' knowledge sharing research for higher academic institutions, Intensive KM literature show that knowledge sharing research including ICT technological dimension is insufficient in developing countries for HEIs. Moreover, research with integrative model of individual, organizational and technological determinants altogether with IS theories is very limited for the academic knowledge sharing on innovation. According to [7], research model for KS is required. There are some KS models put forwarded by diverse researchers. A KS research has conducted by [30], delineates that the sharing of knowledge among the academics affects Cultural, Motivation to share knowledge, Management support, Trust, Teamwork spirit, and the degree to which knowledge is recognized as a basis of power. Thus, a comprehensive model with psycho-socio-technological determinants altogether will be a good framework for the KS research in developing countries context.

Individual, Organizational and Technological antecedents in Knowledge Sharing

During the last few years, knowledge sharing schemes have been applied in different global companies. Yet, many companies failed due to lack of limited technical solutions and they did not consider the organizational and cosmopolitan factors that are needed to make a knowledge sharing stage effective [31]. There is no single way as same as many others process to implement KM particularly as it is an integration of technology, culture and human performance. Moreover, [32] has described that KM is comprised of organizational, human and technological problems as well as financial, economic and legitimate issues. Also, [33] states that very significant view of KM is the combination of human, organizational & technological dimensions of knowledge sharing. Additionally, [34] suggests an implementation of

KM of a post-Nonaka form based on the three types: processes, organization and culture and information technology. That is why, [35] recommends persistence to get started in the judgment of cost savings and performance improvement. For this reason, individual, organizational and technological aspect is now the biggest issue in KM practices in the organizations as well the universities. Although, literature reveal that more than 8% KM projects fail [36], Yet, the reviewing literatures show some important antecedents for KS and institutional innovation.

ANALYSIS OF KS RESEARCH MODELS IN HEIs
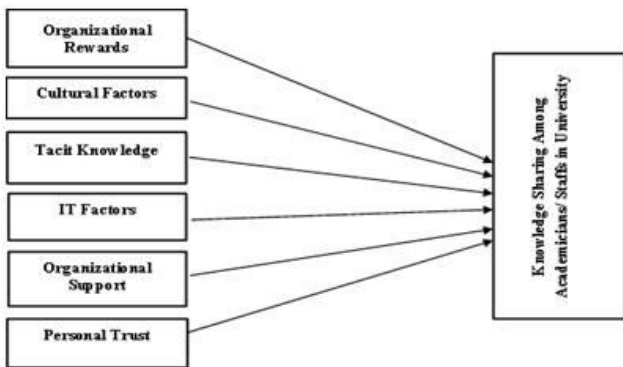
Figure-1. (Source: KS research Model of Azmi, Bakar, Shah & Hamid, 2010 for HEIs.).

In the above KS model (Figure-1), there are six dimensions that contribute knowledge sharing as demonstrated in Figure-1. The discussion of this research model and factors have been shown in Table-2. [37] have made a research framework and conduct KS research adopting individual, organizational and technological antecedents' altogether. Limitation of this model is that they did not adopt any IS theory in their research framework. The researchers have identified that individual, organizational and technological dimensions have influenced KS behavior.
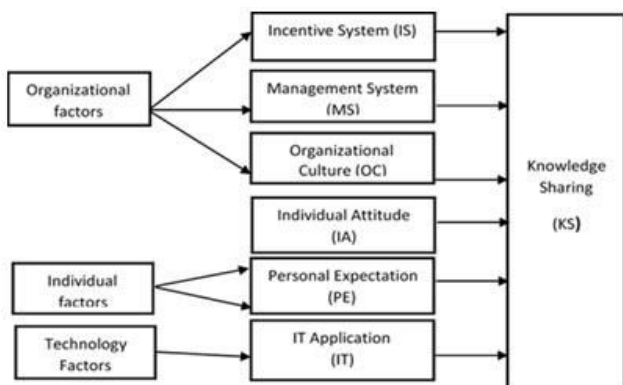
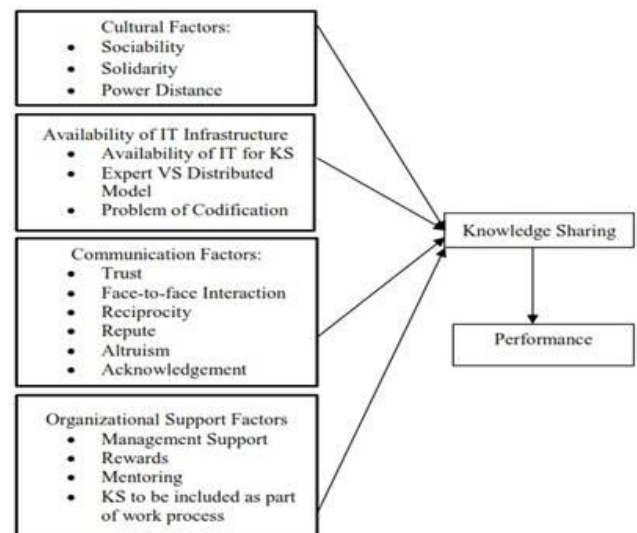**Figure-2.** (Source: KS research Model of Cheng, Ho & Lau, 2009 for HEIs).

Furthermore, in the above KS model (Figure-2), [38] have adopted individual, organizational and technological dimensions that have influenced KS behavior. These are divided into three dimensions as demonstrated in figure-2 and the factors have been shown in Table-2. They have made research framework and conducted KS research adopting individual, organizational and technological antecedents' altogether. They did not adopt any IS theory in their research framework.

Moreover, according to [39], the precursors that effect knowledge sharing actions, these are divided into three types of factors, as has demonstrated below in Figure-3. The factors adopt in the model, has been shown in Table-2. They delineate that the personal factors, organizational factors and technology factors have influenced KS. They have also identified that these can improve knowledge sharing and it can also make innovation activities in the universities.
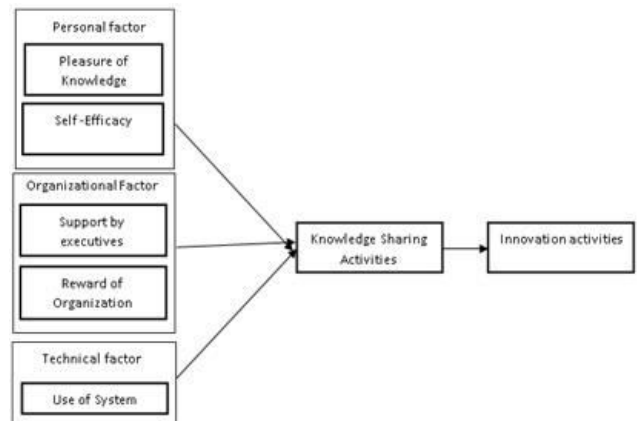
Figure-3. (Source: KS research Model of Lee, Kim & Han, 2010 for HEIs.).

Shortcoming of the above model is that [39] do not adopt any IS theory in their research model.

Figure-4. (Source: KS research Model of Supar, Ibrahim, Mohamed, Yahya & Abdul, 2005 for HEIs.).

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Additionally, in the above KS model (Figure-4), [40] demonstrate that the antecedents that influence KS among academics and their effects on performance in HEIs comprise of four antecedents as has exposed in the Figure-4 and the factors adopt in the model, have been shown in Table-2. This is also a conceptual model. The limitation of the KS research model shows that they have overlooked IS theory.

Moreover, in the following KS model (Figure-5), [8] have also made research framework for HEIs. These are divided into three types of dimensions: individual, organizational and technological antecedents' altogether as has demonstrated in Figure-5, and the factors adopt in the model, have been shown in Table-2. This research put emphasis on KS research for HEIs. Deficiency of this study is that they do not use IS theory. They explain that the dimensions influence KS and it makes innovation performance to the HEIs.
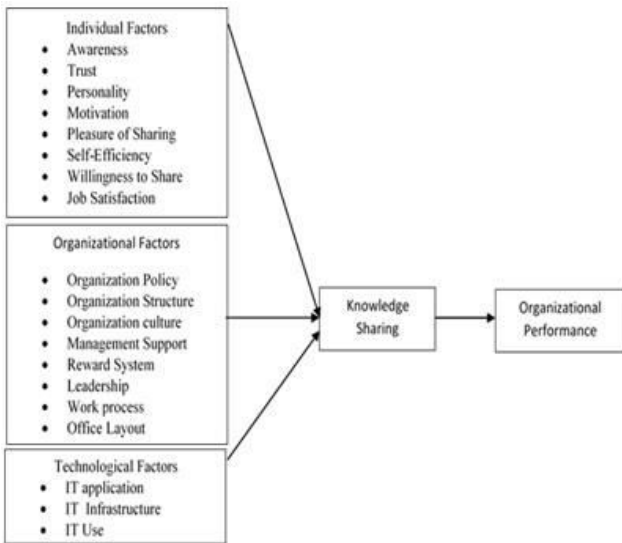

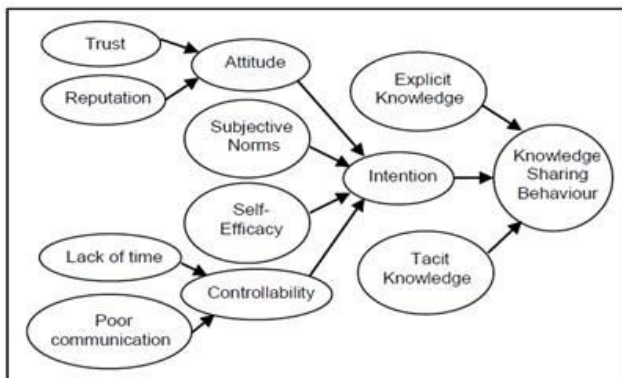**Figure-5.** (Source: KS Research Model of Bulan & Sensuse, 2012 for HEIs.).

Figure-6. (Source: KS Research Model of Skaik & Othman, 2014 for HEIs (extracted).

In the above KS model (Figure-6), [41] have made a KS research framework and conduct a research for academics' knowledge sharing behaviour. They have

adopted IS theory namely Theory of Planned Behaviour (TPB). It has been exposed in the Figure-6 and it has been shown in Table-2. But they did not adopt individual, organizational and technological antecedents together in their research model. They have overlooked technological factors in their study.

At the end of the discussion of the research model of this paper, we expose in the following KS model (Figure-7), and the factors propose for this model, have been shown in Table-2. [18] has made a KS research framework and conduct a research for academics' KS behaviour. They have adopted IS theory namely Theory of Planned Behaviour (TPB). But they have also overlooked technological antecedent in their research model. Likewise, they do not adopt KS intention in their research model. Whereas, intention to KS is a key mediator construct in TRA. Even though, they do not explain why they have ignored this important construct from their study. Therefore, it is explored in their research model that there is a limitation of construct for explaining its generalizing of theoretical underpinning. It has been uncovered in Figure-7.
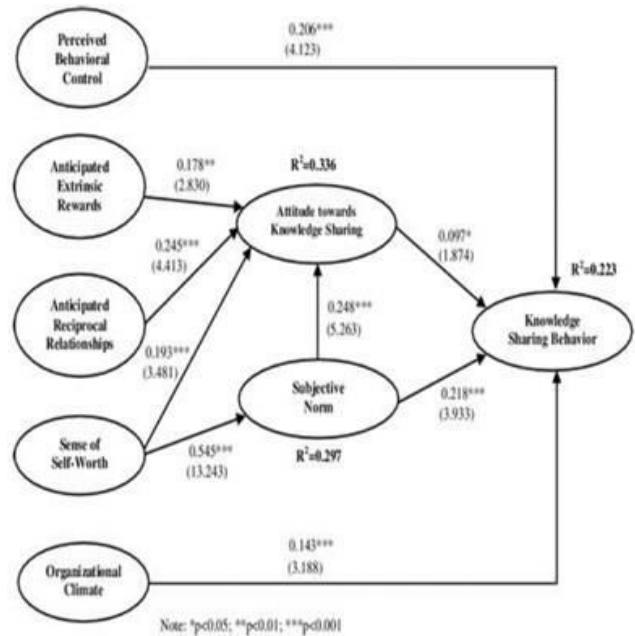

Note: *p<0.05; **p<0.01; ***p<0.001

Figure-7. KS Research Model of Ramayah, Jasmine, Yeap & Ignatius (2013) for HEIs (extracted).

Table-2. Researchers adopt IS theories in the framework of KS studies in HEIs in developing countries.

Reviewed KS Literature in HEIs	Individual, Organizational and Technological as antecedents	Supported by IS theories
Azni, Bakar, Shah & Hamid (2010)	√ (refer Figure-1)	×
Cheng, Ho & Lau (2009)	√ (refer Figure-2)	×
Lee, Kim & Han (2010)	√ (refer Figure-3)	×
Supar, Ibrahim, Mohamed, Yahya & Abdul (2005)	√ (refer Figure-4)	×
Bulan & Sensuse (2012)	√ (refer Figure-5)	×
Skaik & Othman (2014)	√ not including technological antecedent (refer Figure-6)	√ (use TPB)
Ramayah, Jasmine, Yeap & Ignatius (2013)	√ not including technological antecedents (refer Figure-7)	√ (use TRA)
The Proposed Research Model for this Study	√ including technological antecedents (refer Figure-8)	√ (use TRA, TPB & SCT)

Source: From the above specified literatures into the table

## RESEARCH PURPOSE AND METHODOLOGY

The purposes of this study are: (i) to explore relevant theories that can help explain the nature of KS in HEIs; and (ii) also to propose the best conceptual research framework based on comparing other existing research model in HEIs in developing countries. It has been emphasized by [42] that "the IS research community has moved away from concentration upon the technical issues associated with IS and now tends to focus on more behavioural issues". This study is subjective/argumentative research i.e. idea generation in IS [42,43]. There has been dispute in the IS research community on the selection of study methodologies and their appropriateness of diverse features of IS research. The study has adopted IS research methodology, personifies its' leanings to sufficiently backing technology fit in and the transmission of innovation. It is vital to operative practical IS research [42]. Innovative study mainly establishes on belief and theory, it is worthwhile in constructing a theory that can successively be verified [43]. The statistical tool SPSS, SEM-AMOS will be used for analyzing the data for empirical study. The unit of analysis of this further study is knowledge workers i.e. academics, working in the public universities. Five point Likert scale will be used for research instruments. Factor analysis and hypothesis will be tested based on the propose research framework and its constructs. The propose research framework is made up based on the amended model of the Theory of Planned Behaviour

(TPB), Theory of Reasoned Action (TRA) and Social Capital Theory (SCT). Research instruments adapt from previous different KS studies to become accustomed with this research objectives.

RESEARCH HYPOTHESIS

H1: Academics' intention have positive influence on knowledge sharing and universities' innovation capability.
H2: Academics' attitude have positive influence on knowledge sharing intentions.
H2.1: The higher the Self-Efficacy for Higher Education and Training, the higher will be the influence to academics' attitude towards knowledge sharing.
H2.2: The higher the Leadership style, the higher will be the influence to academics' attitude towards knowledge sharing.
H2.3: Social Network has positive influence on academics' attitude towards knowledge sharing.
H2.4: The higher the usage of ICT Tools and Technologies, the higher will be the influence on academics' attitude towards knowledge sharing.
H2.5: Perceived organizational Rewards have positive influence on academics' attitude towards knowledge sharing.
H3: Subjective Norm has positive influence on academics' intention towards knowledge sharing.
H3.1: Organizational Climate has positive influence on subjective norm towards academics' intention to share knowledge.
H4: Perceived organizational Trust has positive influence on academics' intention towards knowledge sharing.

THE PROPOSED RESEARCH MODEL AND PROPOSITION
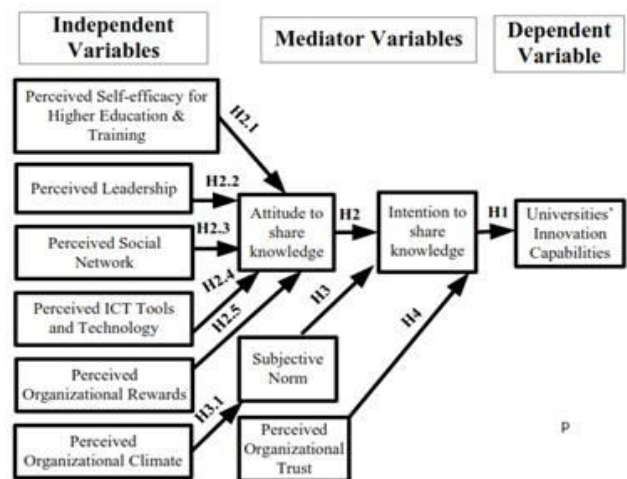
Figure-8. The Proposed Research Model.

The model, proposed in this study, is an extension of TRA and TBP, with additional individual, organizational and technological constructs that are integrated with trust from Social Capital Theory. In fact, numerous theories have been useful for analyzing the prior

studies of KS behavior. Among others, popular IS theories of KS are TPB and TRA [44] and it has been broadly accepted [45]. Both TPB and TRA have variables that can determine individual behavioral attitude, intention and subjective norm i.e. social pressure for KS motivation.

Moreover, we add the construct trust from Social Capital Theory (SCT) to elaborate the idea of KS. It is triggered from most important traditional theory of KS, i.e. SCT. SCT establishes the correlation and significance of discrete in information and KS. Even though, study has also establishes that social capital is capable to influence persons to share know-how within societies and groups [46]. Thus, SCT is now intensively used in Europe for KS research and considers as IS theory. SCT indicates to the level of trust that groups or individual as may have relations base on reciprocal systems, sets of norms and networks between social communications. SCT is based on social relations and profits for the people. If organizational people have trust to the organization, the organizational member will be more pro-active and the organization might be innovative.

Nevertheless, we have reviewed seven KS research models for HEIs. We find that the extant variables do not sufficiently explain the acceptance of KS in academic institutions and its innovative behavior. Therefore, based on the review of previous KM literature, we find it necessary to identify additional variables that can explain better and can impact on KS for HEIs in developing countries. We have added some new variables in our proposed model and assume that it can impact on knowledge workers' attitude and intention towards KS with individual, organizational and technological factors together. By reviewing the extant KM literature, it also reveals that without technological determinants now-a-days, KS in organizations and also in personal level is almost incomplete

Because, people depends on ICT technological tools in their works both on organizational and individual level. This is why; it has a huge influence towards using technological antecedent factors along with psycho-socio determinants for KS. The constructs of this study are Perceived Self-efficacy for Higher Education and Training, Perceived Leadership, Social Network, Perceived ICT Tools and Technology, Perceived Organizational Rewards, Perceived Organizational Climate and Perceived Organizational Trust are the additional variables of IS theory TBP, that are intended to measure the perceptions of the knowledge workers' intention regarding innovation capability of HEIs towards KS. We have omitted the construct controllability of TPB amended model in our proposed research model. Because, prior researchers [41] did not find its influence significant in their study. Our aim is to examine the factors that can influence knowledge sharing of academics for universities performance and innovation capability. As the following factors have been adopted in this research model and assume to have the highest effect on KS intention which is preferred for this study.

Innovation Capability

Innovation can be defined as the creation, recognition and execution of novel ideas, procedures, products or services. It can be obtained by two ways: exploitation and exploration. Besides, innovation is a capability that allows the institutions to create, extend and modify its services and products based on customer demand and approach from the perspective of individual, organization, or a nation, focusing on personal traits. KS and Innovation are inter-related [2]. [17] have claimed in their study that "The higher the knowledge sharing intentions, the higher would be the innovation capabilities of the universities". Effective KS among academics that have influenced by individual, organizational and technological antecedents can improve innovation capabilities of universities [8].

Intention to share Knowledge (ISK)

The term 'Intention to share Knowledge' means that the staffs' willingness to disseminate knowledge to other people. It proposes to disseminate knowledge in each possible ways in the present and the future [19]. Academics' intention has a significant influence on KS behaviour [41], [47].

Attitude to Share Knowledge (ASK)

Attitude is a person's satisfactory and uncomplimentary appraisal of an Individual. Attitude has an effect on particular conducts as a typical social nature. It indirectly impacts only some antecedents which are more closely connected to the conduct in question, that is a person's intention to carry out that behavior. Hence, according to [48], a person's outlook toward disseminating his or her knowledge with others controls his or her intention to perform his actual behavior. Likewise, the term 'attitude' has been identified by the researchers as a significant precursor of KS [49].

Perceived Self-Efficacy for Higher Education & Training (SEHET)

Self-Efficacy is a significant psychological factor that makes behavioral control and refers to a person's belief in his or her ability to perform a behavior. In other word, self-efficacy referred to individual's self-judgment about their capability to share the knowledge [50]. Self-efficacy controls the willingness of an individual to carry out definite functions [8]. It is a dimension that very much relevant with educational training capability for teachers. Usually self-efficacy measures the performance of individual in higher training institutions where lecturers participate training programmes and it can assist determine their efficiency. Individual employee can acquire expertise through training activities and can assist the organization to develop its efficiency. Self-efficacy significantly influences KS behaviour and KS processes that have effect on individual innovation capability in the organization [51, 52].

Perceived Leadership

Leaders play a significant role in the processes of constituting a learning culture within the organization and its dissemination. A good leader must be knowledgeable and capable of conducting team performance. Leadership as a dimension of KS has been recognized more critical. It is most significant because of attitudes, activities and behaviours of organizational managers and leaders. Leadership is required for sharing knowledge and supporting the climate, uses and intentions within organization [53]. Leadership as a precursor has been chosen by extracting from various knowledge sharing researches. For this reason, [12] state that leadership plays an important role in developing and nurturing KS behavior. Furthermore, [54] has find in their study that there is a positive relationship between leadership towards KS behaviour.

Perceived Social Network (SN)

Social Networks have a great impact on human behavioural intentions and it can improve KS both in individual and organizations level. People can communicate each other and exchange their views easily using through social networks in ICT digital tools like, Facebook, twitter, skype, Instagram, LinkedIn, Viber, WhatsApp and all other Apps. High-acting knowledge workers get most of the valued information from other people in their social networks [17]. Besides, [55] identify in their study that social network significantly affect attitude of individual knowledge sharing. Moreover, [47] also identify social network positively influence on KS behaviour in her study. [17] have identified social network has a significant link in developing KS intention that might influence individual's innovation capability.

Perceived ICT Tools & Technology

ICT Tools and Technology can assist people to work better in the organization and ultimately it boosts capability of an organization through diverse use of ICT technology. ICT enables quick search, access and retrieval of information and might support interaction among staffs in the organizations. The use of ICT Tools and Technology to facilitate the improvement of novel processes and its executions are very important for the success of an organization. For example, email, internet, online databases, electronic repository, face book, twitter, and other social networks, groupware, virtual communities, video conferencing, online banking and all business transactions etc. ICT Tools & Technology influences individual knowledge sharing attitude and it has made them sharing research ideas effectively [47], [50]. IT is an important elements and act as mediating role for KS [56].

Perceived Organizational Rewards

Organizational performance can be boosted through reward systems. In the literature, there are two types of reward systems: Tangible and Intangible. Tangible reward is awarded to staffs based on works performance that encounter or surpass the prospects preliminary recognized. Conversely, Intangible rewards are stated as praise established in open by virtue of achievements widely approved in the viewpoint of organizational climate [30]. Intrinsic rewards have a positive effect in improving individual KS intentions that enhances the innovative capability [17].

Subjective Norm (SN)

Subjective norm refers to the perceived social pressure to perform or not to perform the behaviour or performance [57]. Moreover, norm explains acceptable attitudes and behaviors by consent among associates of a community. Subjective norms strongly effect on academics' KS intentions [41, 55].

Perceived Organizational Climate

The term 'Organizational Culture' means organizational behaviours, civilizations, rules and technique at work. Organizational culture has influenced on staff's performance, knowledge and efficiency. The organizations that demonstrate staffs to novel experiences and attempt to capitalize on staff's strengths are generating a human resource asset that will advantage the whole society. This type of organizations and their management be worthy of credit from society and reward from administration [58]. The term organizational culture and climate are same as its meaning. But the researchers have used this both terms as organizational setting. The researchers who conduct their research in quantitative analysis they use the term organizational climate. In the HEIs, the organizational culture has been defined in the literature as a professional bureaucracy. [50] have conducted a study and identified that organizational climate has positive influence subjective norms and KS intention.

Perceived Organizational Trust (POT)

Trust is the maximum human interaction and it is the blood of any organization. Trust is closely relevant to KS. Hence, the institution must provide a setting that enables its employees to belief each other and work together so that employees are interested to share knowledge and involve in dialogues [8]. Interpersonal trust as the gradation of shared belief in employees' purposes, performances and ability about knowledge sharing [59]. Trust in KS influence individual innovation capability in the organization [51] [56] & [60].

DISCUSSION OF THE FINDINGS

This paper discusses elaborately with special reference to other previous KS research frameworks for HEIs in the developing countries perspective. The findings based on the aims of this study, have revealed adequate idea generation in IS research with comparison of the other prior seven KS research frameworks. The argumentative idea has been established through this study. The study has explored that the proposed individual, organizational and technological KS research

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framework with IS theories for HEIs can be helpful to explain the nature of KS theoretical development for developing countries. The strength of this paper is to propose a conceptual research model comparison with previous other conducted research for KS among academics in the HEIs in developing countries. It might be able to boost institutional innovation capabilities.

CONCLUSIONS

Human behavioural intentions have significant role in organizational as well as individual level knowledge sharing activities. This knowledge sharing action is generally increased when individual, organizational and technological factors act together. Universities KS functions might be improved with a systematic way involving ICT technology. Consequently, the universities could be benefitted. Access to more KS practices in the universities is a fundamental requirement especially in the developing countries where people are still expected to be motivated by KM practices. The limitation of this study is the comparison of KS research models that find lack of technological antecedents and IS theory. The factors that influence KS are individual, organizational and technological. It is being believed that effective KS among academics (knowledge workers) might improve the innovation capability of the universities. In the future, an empirical study (cross-sectional survey-based approach) would be conducted to assess and validate the proposed research framework. It is hoped that the continuous study will enhance the understanding of knowledge sharing in the HEIs and its impact on universities' performance in developing countries.

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