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Significance of Factors Influencing Online Knowledge Sharing: A Study of Higher Education Sector in Pakistan

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Abstract

Considering the importance of knowledge sharing in personal and professional life, this study focuses on behavior of knowledge sharing in online world. Henceforth, it explores the effect of different individual aspects like personality traits, engagement in online social networking sites and online community of practices on the online knowledge sharing behavior. In order to attain the goal of measuring the relationships, this study attempted a simultaneous multiple regression analysis technique to check their effect on online knowledge sharing behavior. One of the important and major contributions of this study is that the engagement of individuals in online social networking sites and online community of practices plays a very vital role in their online knowledge sharing behaviors in Pakistan. These findings are significant since they provide a better insight to the behavior of students when it comes to online knowledge sharing as a result of online social interaction. This study can find many utilities regarding the course contents and online study plans in educational institutes and personnel screening of human resource in commercial organizations.

Keywords: online knowledge sharing, online community of practices, online social networking sites.

1. Introduction

Education and the educational institutes play a very important role in constructing and building the nations. The strength of a nation is defined by the human resources polished by the educational institutes. Higher education not only provides individuals the knowledge for themselves but it gives them an insight how to align the random images of economic and social issues. The responsibility of grooming the students with skills and empowering them with advanced knowledge regarding their aptitudes lies with higher education. In this hi-tech era only qualified graduates find a way to significantly use technology, combined with the knowledge gained during the education tenure, can be used for policy making, decision making and ultimately for economic and social

development (Iqbal, 2004). However, Pakistani education system has not well used the penetrating effects of using online social networks for sharing knowledge. Sociability is natural to human beings (Dalkir, 2005), therefore, the interaction of students is also certain and when students interact with each other anyway, they share knowledge as well. Today's progressed societies have triggered the world to contract into a global village, a concern of the modern era, has brought diverse groups closer than ever (Cundiff, Nadler & Swan, 2009) that demands and favors the flow of knowledge. In addition, social bonding and the cohesiveness of individuals in Pakistani society with diverse demography encourages knowledge sharing among them that, in turn, highlights the new prospect of discoveries when they interact in their institutes. Therefore, it will be interesting and worth exploring the different factors that might possibly enhance the sociability among the students that may lead to higher level of knowledge sharing.

Communication among the diverse groups with diverse demography and unlike experiences gives rise to constructive conflicts along with distinct development and evolutions as well (Verde, Lopez, Gonzalez & Salvado, 2011). Moreover, where interaction of different personalities uncovers the horizons for the collaborative synergy, there one's sharing of knowledge also determines the new perspectives of already existing scenes. Higher education has many objectives; however, this study is about the influence of online social interaction and personality traits on the knowledge sharing among the students of higher education institutes situated in Islamabad, Pakistan.

Knowledge sharing has highlighted itself as a very important issue in the last decade and had also been a focus of attention for the researchers. Knowledge sharing, no matter what, is being observed not only in the professional lives as the requirement of job but in our daily lives as well. Since the inclusion of online knowledge sharing in daily life cannot be denied hence, its importance in different fields also needs to be given an appropriate consideration. Therefore, there are certain factors that undoubtedly affect the behavior of online knowledge sharing among the individuals. These factors can be internal like the personality attributes, behaviors, and attitudes of the individuals; or external like society, organization, group members etc., that have a tendency to influence the level of online knowledge sharing among them.

The objectives of this study are to understand the role of personality trait, engagement in online social networking sites and online community of practices on online knowledge sharing behavior. This study also aims at examining the extent to which these variables altogether predict the online knowledge sharing in students' behavior and also to provide an insight of the online knowledge sharing in Pakistan business education sector/academia among students.

This study covers personality, online social networking sites and online community of practices only because personality is the internal trait i.e., inherent to individuals that cannot be denied in any case. Secondly online social orientation are contextual factors since The et al. (2011) mentioned that there are two types of factors that affect the knowledge sharing i.e., internal and external/contextual. Therefore, it will be interesting to study the role of both internal and contextual factors in online knowledge sharing.

2. Literature Review

Knowledge is, no doubt, a highly valued asset of all (Lauring & Selmer, 2011; Tohidinia & Mosakhani, 2010; Kamasak & Bulutlar, 2010; Chatzoglou & Vraimaki, 2009;

Vazquez, Fournier & Flores 2009; Matzler et al, 2008; Pai, 2006; Cabrera, Collins & Salgado, 2006; Liao et al., 2004; Bonifacio & Molani, 2003), either tangible or intangible (Cockrell & Stone, 2010; Hara & Hew, 2007) or traditional (Li & Luo, 2010; Wu & Yeh, 2007). Knowledge has been accepted as a crucial characteristic for the human survival and the organization's existence too (Makani & Marche, 2012; Burns, Acar & Datta, 2011). Furthermore, it has been considered as an individual characteristic (Arling & Chun, 2011; Suppiah & Sandhu, 2011; Kumar & Ganesh, 2011; Xue, Bradley & Liang, 2011; Jafari et al, 2010; Kijl, 2010; Ling, Sandhu & Jain, 2009; Pai, 2006; Baalen, Ruwaard & Heck, 2005; Paavola, Lipponen & Hakkarainen, 2004) but few researchers consider it altogether as a group activity (Cockrell & Stone, 2010). Consequently, once it is disseminated it facilitates the groups, organizations or institutions to which they belong (Tohidinia & Mosakhani, 2010; Ling, et al., 2009; Vazquez et al., 2009; Liao et al., 2004). Therefore, the significance and worth of knowledge can be denied neither for individuals nor for the organizations; also the knowledge is a fundamental unit of all structural and functional activities.

Knowledge has been defined in different ways by different researchers (Robert, 2009). Adaileh and Atawi (2011) argued knowledge to be the blend of experiences, values and expertise that helps giving an idea to further experience. Pai (2006) defined it as the mixture of information and data along with the expertise, opinions and skills. Alavi, Kayworth and Leidner (2006) claimed knowledge to be the information and experience owned by the individuals. Knowledge cannot be limited to the job or organization ((for example, Suppiah & Sandhu, 2011; Burns, et al., 2011; Adaileh & Atawi, 2011; Rai, 2011; Cyr & Choo, 2010; Petruzzelli, Albino & Carbonara, 2009; etc). Knowledge is an individual possession that is carried wherever the individual moves. Consequently, knowledge can be used in every field of life not necessarily be the professional only. To summarize, knowledge can be defined as the understanding based on the experience, expertise and skills adhered and provide an insight to appraise future events.

2.1 Knowledge Sharing

In this period of progress, sharing knowledge has become a critical concern (Huang & Li, 2009; Liu, 2008). Individuals who interact with each other share knowledge either knowingly or unknowingly. Knowledge sharing has changed the traditional mindset and been proved to be a source of new ideas (Wang, Su & Yang, 2011; Kijl, 2010; Kamasak & Bulutlar, 2010; Henneberg, Swart, Naude, Jiang & Mouzas 2009; Kimmerle, Wodzicki & Cress, 2008; Lin & Lee, 2006; Schulz, 2003). Literature has discussed following different requisites of knowledge sharing that can be grouped as; (i) understanding of context; and, (ii) willingness to share. When knowledge is subjected to be shared, individual's willingness to cooperate plays a very important role (e.g. Martins & Meyer, 2012; Hsieh, Hsieh & Wang, 2011; Mishra & Bhaskar, 2011; Xue et al., 2011; Chen & Hung, 2010; Lin & Lee, 2006; Braun & Hollick, 2006; Chiu, Hsu & Wang, 2006) because knowledge sharing is not a one way action ((Arling & Chun, 2011; Adaileh & Atawi, 2011; Baalen et al., 2005) and acquisition, Hall (2006) argued, can happen without codification. Hence, knowledge sharing is successful when the parties show propensity to share their knowledge, inherent from their unique experiences and results. Therefore, if the knowledge is shared with the willingness of the parties it encourages the worth and significance of the knowledge shared for both the parties i.e., the receiver and the sender.

2.1.1 Definition of Knowledge Sharing

The concept of knowledge sharing evolved in the last decade and has been researched from different perspectives (Matzler et al., 2011; Burke, 2011; Ogunseye et al, 2011; Koch, 2011; Chen, Huang & Hsiao, 2010; Ford & Staples, 2010; Sugarman, 2010).

Knowledge sharing is a momentous activity (Burke, 2011; Sondergaard, Kerr & Clegg, 2007) and is defined in the literature differently. Henneberg et al. (2009) described knowledge sharing as joint process. Vazquez et al. (2009) and Pai (2006) claimed knowledge sharing as the process of transferring knowledge from one grouping to another. Lin and Lee (2006) argued knowledge sharing as the activities of community members to facilitate the knowledge exchange in order to achieve the goals while Kumar and Ganesh (2009) proposed knowledge sharing as the exchange of any kind of knowledge between two parties. Ford and Staples (2010) considered knowledge sharing as the process of departing one's knowledge to the recipient. Ling et al. (2009) defined knowledge sharing as the spreading of knowledge and information. Cummings (2004) argued knowledge sharing to be the information, understanding or and task related know how about any product or procedure. These authors have specified the nature of knowledge though the sharing of knowledge can be personal and professional as well. Although willingness to share has been mentioned extensively in the literature however, has not been included in the definition. Therefore based on above discussion it can be summarized that knowledge sharing is the intentional or unintentional process of mutual willingness of parties, one or more, in which one or many share knowledge regarding anything and the others seek it.

However, little attention has been given to knowledge sharing from the perspective of the online social orientation (Wang & Noe, 2010; Hara & Hew, 2007), personality traits i.e. extroversion and openness to experience (Matzler et al., 2011). No matter what is the motivation of knowledge sharing but the personality traits, online social orientation cannot be ignored while studying knowledge sharing among the students. This study, therefore, aims at identifying role of social orientation and personality in online sharing knowledge.

2.2Personality and Knowledge Sharing

No individual possesses all the knowledge required (Bakker et al., 2006). In addition, the individuals are likely to differ according to the personality traits so does their propensity to share knowledge (Hsieh et al., 2011; Matzler et al., 2011; Matzler et al., 2008). The research done in the last decades the five factor model (FFM) of personality is considered more consistent to present a reliable personality taxonomy framework (Liu, 2008; Matzler et al., 2008; Wu & Yeh, 2007).

It is also claimed that the FFM sufficiently covers the sphere of a normal adult human personality (Matzler et al., 2011; Amayah, 2011; Teh et al., 2011; Liu, 2008; Wu & Yeh, 2007; Cabrera et al., 2006) and the researchers have replicated the FFM using various scales and measurements considering different analyzing techniques from different perspectives (Cabrera et al., 2006). Liu (2008) stated the cross-cultural generalizability of the five factor model that enhances its credibility across the world. Since the generalizability of FFM is unquestionably acceptable allover therefore, the FFM is an appropriate choice for research in a country like Pakistan.

The FFM for personality contains the five human dimensions; neuroticism (vs emotional stability), extroversion (vs introversion), openness to experience (vs closeness to experience), agreeableness (vs rudeness) and conscientiousness (vs non dependability) (e.g. Matzler et al., 2011; Amayah, 2011; Teh et al., 2011; Liu, 2008; Matzler et al., 2008; Wu & Yeh, 2007; Cabrera et al., 2006; Chang, 2006; etc.). Neuroticism is linked with depression, anxiety, insecurity and instability. Agreeableness is characterized by the cooperation, cheerfulness, support and helping others while conscientiousness defines dependability, organization, reliability and success oriented. Extroversion characteristic indicates the individuals who are more sociable, confident, energetic, and talkative and like interacting with others. Openness to experience defines the daring behavior and positive attitude towards new experiences as they are more inclined in the direction of curiosity, intelligence, manners and broadmindedness. Therefore, this study considers openness to experience and extroversion traits as the dimensions of personality variable and defines openness to experience implies willingness to know about the other's distinguished insights and extroversion on the other hand seeks socializing and talking to others (Matzler et al., 2008; Wu & Yeh, 2007). From FFM, Carbera et al. (2006) included agreeableness, conscientiousness and openness to experience while Matzler, et al. (2011) incorporated agreeableness and conscientiousness with knowledge sharing through effective commitment. However, extroversion and openness to experience have not been given an appropriate attention in literature. Openness to experience and extroversion will be significant predictors for knowledge sharing. Extroverted students tend to share the information, they get from other sources, with other team members or who so ever seeks it (Teh et al., 2011). Teh et al. (2011) also found that the students in Asia tend to have high score in openness to experience. Therefore, when individuals with different personality traits interact in different social networks, they tend to share knowledge accordingly.

2.3 Online Social Orientation

Knowledge sharing is a social process which is rendered by the individual knowledge and their social interactions (Kinnie & Swart, 2012; Xue et al., 2011; Corso, Giacobbe & Martini, 2009; Chiu et al., 2006). Individual knowledge, on the other hand, is embedded in the social interactions that forms a network (Burke, 2011; Matzler et al., 2011; Lauring & Selmer, 2011; Wolf, Spath & Haefliger, 2011; Li & Luo, 2010; Watanabe, Yoshida & Watanabe, 2010; Lauring, 2009; Pablos, 2005; Schulz, 2003; Earl, 2001). Therefore, the interaction of the individuals though individually or in groups, plays an important role in networking and knowledge sharing.

Literature has highlighted the importance of online social networking with two main benefits of online social networking, one as a source of knowledge and other as an opportunity to share knowledge. It is found as well that social orientation is important for individuals and the networking is a natural process that occurs at workplace and community (for example, Kinnie & Swart, 2012; Suppiah & Sandhu, 2011; Burke, 2011; Koch, 2011; Kijl, 2010; Cyr & Choo, 2010; Sugarman, 2010; Li & Luo, 2010; Zboralski, 2009; Lauring, 2009; Pablos, 2005). In addition, when the individuals interact and socialize with each other, they come to know about the different experiences of other members. This also encourages the sharing of knowledge among the members. Therefore, social orientation has a very vital role to play in knowledge sharing among individuals since social networks exist in every kind of organization. Sustained and vibrant

environment gives individuals opportunity to meet and interact with new people and share knowledge (Lee, Kim & Kim, 2012; Lauring & Selmer, 2011; Xue et al., 2011; Kostakos & Kostakos, 2010; Chen et al., 2010; Sondergaard et al., 2007; Hustad, 2007; Chiu et al., 2006; Earl, 2001). Different researchers claimed that the social interaction among the individuals can be electronically or face to face (Rai, 2011; Marouf, 2007; Hustad, 2007; Baalen et al., 2005). Thus, information of any such physical or online community enhances the chances of mutual interaction and also the sharing of knowledge among the affiliates of particular group. Every individual member of a social network is a potential source of knowledge (Ogunseye et al., 2011; Lauring & Selmer, 2011; Kijl, 2010; Corso et al., 2009). This study includes the following two types of online social orientation as variables i.e., (i) online social networking sites (OSNS); and, (ii) online communities of practices (online CoP's).

2.3.1Online community of practices (Online CoP's) and Knowledge Sharing

The term "Community of Practice" was first introduced by Wenger and Leave in early 1990's (Jeon, Kim & Koh, 2011; Corso et al., 2009). The contribution of the individuals in such socializing set up is voluntary and they are privileged with an access to the contributions made by others (Tseng & Kuo, 2014; Huang & Li, 2009; Rolland & Labbe, 2008; Zhang & Watts, 2008; Cabrera et al., 2006; Chiu et al., 2006). Such networking is voluntary and is composed of individuals with inherent willingness to socialize irrespective of their geographic locations. Therefore, they include the members of different backgrounds that participate in these sites.

Ford and Staples (2010) stated that individuals who have a tendency to share knowledge, they support the knowledge sharing around them as well. In addition, it has also been argued extensively (Wolf et al., 2011; Ogunseye et al., 2011; Tohidinia & Mosakhani, 2010; Bennett et al, 2010; Fernandez & Gardey, 2010; Chen & Hung, 2010; Ling et al., 2009; Zboralski, 2009; Ling et al., 2009; Chatzoglou & Vraimaki, 2009; Borzillo, 2009; Rolland & Labbe, 2008; Patrick & Dotsika, 2007; Hara & Hew, 2007; Marouf, 2007; Hustad, 2007; Patrick & Dotsika, 2007; Lee et al, 2006; Chiu et al., 2006; Baalen et al., 2005; Downes, 2005; Ardichivili, Page & Wentling, 2003; Renko, Autio & Sapienza, 2001) that the individuals with common professional interests or job functions interact with each other in common activities and group themselves to form a community of practice that are ahead of any hierarchy and merit. It has also been stated extensively that the individuals with common interests and professions form communities. In addition, such communities have become more dependent on internet and have an online presence as well. However, no attention has yet been paid to this online CoP's in literature.

Additionally, these online communities provide one-to-one and one-to-many communication, consequently becoming a source for professional development (Bennett et al., 2010; Hara & Hew, 2007). These are the CoP's that soothe and compact the flow of new ideas and provide opportunities to open new realms of thoughts for the existing members. Such online professional groups of individuals, not only tend to make others contributions and thoughts available but also urge the passive members to share their views. Hara and Hew (2007) found the reason for the success of CoP's that major part of human knowledge is intangible and tacit in nature. Nonetheless, these communities share the knowledge not necessarily for the professional goal achievement although other non-professional purposes as well. Such informal and self-organizing networks help fostering the knowledge sharing among the groups (Amayah, 2011; Zboralski, 2009; Corso et al.,

2009; Lai & Lee, 2007; Gomez & Rico, 2007). Consequently, individuals can reap the outcomes of knowledge and valuable intellectual resources by interacting with each other (Iaquinto et al., 2011; Chen & Hung, 2010; Huang & Li, 2009; Chiu et al., 2006; Liao et al., 2004; Abrams, Cross, Lesser, & Levin, 2003; Mentzas, Apostolou, Young & Abecker, 2001). Therefore, when the individuals with common professions and the mutual field of studies interact with each other they form community of practice. Such community of practice not only provides the opportunities to the members to interact but also shows them new ways to share their experiences and ideas related to their field with each other. Consequently, online community of practice is an internet-based official or unofficial, non-hierarchal and self-organizing group of experts and/or those who share same profession. Therefore, online CoP's provide professionals an opportunity to interact and share their experiences, skills, expertise that is unique to every member.

2.3.2 Online Social Networking Sites (OSNS) and Knowledge Sharing

The digital media, undoubtedly, has updated the socializing among the individuals to the online entertainment and social networking activities (Teh et al., 2011; Bennett et al., 2010; Hara & Hew, 2007; Chiu et al., 2006). Ogunseye et al. (2011) defined social networking as the relationship in specific group of people while some researches mentioned that the interaction may be through chat, e-mail, forums, blogs, specialized portals, RSS feeds and web conferencing etc. (Mishra & Bhaskar, 2011; Bennett et al., 2010; Rolland & Labbe, 2008). Such online or internet based networking sites today include Facebook, Youtube, Twitter, Hi5, Myspace etc. (Ogunseye et al., 2011; Bennett et al., 2010; Steiner, 2009). The nature of social interaction via OSNS is nonprofessional and totally upon the will of the individual member

The social networking helps in determining the way of sharing and interpreting the knowledge shared, which depends upon the existing knowledge in mind and the individual past experiences and the personality traits as well (Hsieh et al., 2011; Amayah, 2011; Sligo, Tilley & Murray, 2011; Sandhawalia & Dalcher, 2011; Quintan, Casselman, Reiche & Nylund, 2011; Watanabe et al., 2010; Alavi et al., 2006; Patrick & Dotsika, 2007; , Leenders et al, 2006). Therefore, based upon the above discussion, online social networking is the online group of people where linkages between the individuals are non-instrumental based on mutual interests and the engaged individuals regard each other's as friends.

3. Theoretical Framework

Knowledge sharing has been defined differently in the literature by different researchers (Wang et al., 2011; Kijl, 2010; Kamasak & Bulutlar, 2010; Ford & Staples, 2010; Ling et al., 2009; Kumar & Ganesh, 2009; Henneberg et al., 2009; Vazquez et al., 2009; Henneberg et al., 2009; Kimmerle et al., 2008; Pai, 2006; Lin & Lee, 2006; Cummings, 2004; Schulz, 2003).

Willingness to share knowledge has been addressed thoroughly in the literature. However, the willingness to share knowledge has not been mentioned in any of the definitions used in the literature. Therefore, this study defined the online knowledge sharing including the willingness to share knowledge as a component of knowledge sharing.

Personality has been researched extensively by different researchers such as Baig, Khan & Chaudhry (2014), Teh et al. (2011), Amayah (2011), Hsieh et al. (2011), Matzler et al. (2011), Matzler et al. (2008), Liu (2008), Wu and Yeh (2007), Marouf (2007), Cabrera, et al. (2006) and Chang (2006) and different results have been obtained all over the world. However, the personality traits extroversion and openness to experience have not been studied with knowledge sharing particularly taking online social orientation and the demographic diversity into account. Therefore, this study attempts to combine online knowledge sharing behavior, personality, online social orientation and the demographic diversity that has not been studied before altogether. Thus formulating the first hypothesis for the study:

- **H_1:** Personality has an effect on online knowledge sharing

Individual knowledge and sharing it with others is rendered by the social interaction among the individuals and has been highly emphasized in the literature for instance, Burke (2011), Matzler et al. (2011), Lauring and Selmer (2011), Wolf et al. (2011), Li & Luo (2010), Watanabe, Yoshida and Watanabe (2010), Lauring (2009), Pablos (2005), Schulz (2003) and Earl (2001). They have witnessed the social interaction with the physical interaction of the parties; however, the online social interaction has not been paid an adequate attention. Therefore, in this study attempt has been made to consider online social interaction that is explained with the help of two variables i.e., (i) online communities of practices; and, (ii) online social networking sites. Communities of practices have been a topic of focus in the past by the researchers (Jeon et al., 2011; Ogunseye et al., 2011; Wolf et al., 2011; Gerner et al., 2011; Lauring, 2009; Zboralski, 2009; Corso et al., 2009; Corso et al., 2009; Ling et al., 2009; Rolland & Labbe, 2008; Hustad, 2007; Braun & Hollick, 2006; Baalen et al., 2005; Bonifacio & Molani, 2003) nonetheless online existence of communities of practices has not been thought of before in the literature. Similarly, online social networking sites were studied in the past (Ogunseye et al., 2011; Chen et al., 2010; Fernandez & Gardey, 2010; Watanabe et al., 2010; Henneberg et al., 2009; Sondergaard et al., 2007; Braun & Hollick, 2006; Downes, 2005) nevertheless their role in knowledge sharing has not been focused in the past. Consequently, this study takes both online communities of practices (online CoP's) and online social networking sites (OSNS) as the two variables that study their online existence and their role in online knowledge sharing behavior. Therefore, devising the second and third hypotheses of the study:

- **H_2:**Engagement in online social networking sites has an effect on online knowledge sharing

- **H_3:**Engagement in online community of practices has an effect on online knowledge sharing

In a nut shell, apart from the extensive study in literature on the variables i.e. personality, online social orientation and online community of practices, they have not been studied with knowledge sharing particularly from the dimension that this study is considering. Therefore, on the basis of the gaps determined by the literature reviewed above; this study attempts to formulate an integrative model (see figure 1) for online knowledge sharing behavior that consolidates all these variables into one comprehensive model to measure the effect of personality, online social orientation and demographic diversity on online knowledge sharing behavior.

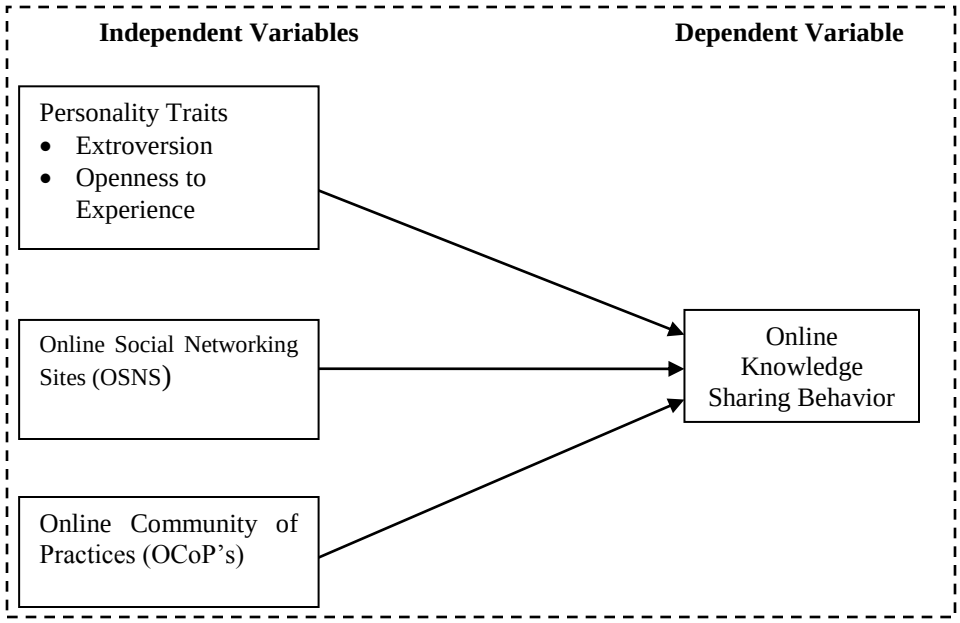

Figure 1: Theoretical Framework

The above mentioned theoretical framework includes five variables i.e., (i) online knowledge sharing behavior (ii) personality traits; (iii) online social networking sites; and, (iv) online community of practices. Personality, online social networking sites and online community of practice are independent variables and knowledge sharing is dependent variable.

4. Research Methodology

This study underpins the quantitative approach of research for testing the hypotheses developed. The target population for this study was the students of department of the management (Makani & Marche, 2012). One of the major reasons for targeting the population of students for this study is due to the fact that students are more satisfied with sharing their knowledge with others, hence, knowledge sharing has been observed more in students than any other group of people (Lauring & Selmer, 2011; Teh et al., 2011; Mustafa & Abubakar, 2009; Schulz, 2003). Moreover, students have also proved to be more involved in online interaction than other individuals (Teh et al., 2011; Lee et al., 2006). The sampling design used for this study was the stratified random sampling with proportional allocation (Weiss, 2005). This sampling design was chosen since the data was divided into two strata i.e. public sector and private sector universities and the total size of population was also known. Tabachnick & Fidell (2001) mentioned that a data of more than 200 is considered as a large sample. Since the sampling was the stratified random sampling with proportional allocation, therefore, the sample was taken 5% of the population. The sample drawn was 476, thus, meeting the criteria of good and large sample size as described above. This study used both primary and secondary data for the data collection. This study used questionnaire survey as a technique for collecting data. The questionnaire contained five parts and 44 items in total. The first part of the questionnaire was about the particulars of the respondents. It comprised of 6 items

inquiring about the demographics. Following table shows the demographic profile of the respondents:

Table 1: Demographic Profile of the Respondents

Demographic Factor	Frequency	Percentage
Gender		
Male	133	41.7
Female	186	58.3
Total	319	100
Age (years)		
17-22	190	59.6
23-28	121	37.9
29-Above	8	2.5
Total	319	100
Degree in Progress		
Bachelors	123	38.6
Masters	168	52.7
MS/M.Phil	24	7.5
Ph.D.	04	1.3
Total	319	100
Mother Tongue		
Urdu	110	34.5
Punjabi	112	35.1
Sindhi	19	6
Baloch	1	0.3
Pashto	42	13.2
Others	35	11
Total	319	100
Nature of University		
Public Sector	225	70.5
Private Sector	57	17.9
Others	37	11.6
Total	319	100
Residential Status		
Hostelite	132	41.3
Non-Hostelite	169	52.8

Others	18	5.6
Total	319	100
Monthly Expenditure (PKR)		
Less than 3,000	64	20.1
3,100-7,000	115	36.1
7,100-10,000	49	15.4
10,100-13,000	33	10.3
More than 13,000	58	18.2
Total	319	100

The second part of the questionnaire was about the personality traits of extroversion and openness to experience. The scale of extroversion and openness to experience was adapted from the Teh et al. (2011). There were 10 items total in the personality variable; addressing the traits of extroversion and openness to experience with an alpha reliability of 0.72. These items were measured on five point Likert scale ranging from 1 to 5; 1 being the highest state of disagreement and 5 being the highest state of agreement. The third and fourth part of the questionnaire addressed the variables of engagement in online social networking sites and online community of practices containing 12 and 9 items respectively. The scale for these two variables was self-developed. The scale was also developed on five point Likert scales ranging from strongly disagree to strongly agree. The scale of online social networking sites had an alpha reliability of 0.77 while that of online community of practices had an alpha reliability of 0.88. In the same way, the fifth part of the questionnaire contained the scale of knowledge sharing behavior as shown in table 2:

Table 2: Alpha Reliability for the Variables and Sub Factor Items

Variable	Factor Component	Variables and Sub Factors	No. of Items	Alpha Coefficient
	1	Extroversion	5	0.724
	2	Openness to Experience	5	0.700
I		Personality	10	**0.724**
	1	Online presence	5	0.765
	2	Social networking sites Use (SNS Use)	7	0.741
II		Online Social Networking Sites (OSNS)	12	**0.776**
	1	Opportunity to Share Knowledge	4	0.694
	2	Community of Practices (CoP's)	5	0.880
III		Online Community of Practices (Online CoP's)	9	**0.888**
IV		Online Knowledge Sharing	6	**0.805**
	Total		**37**	**0.914**

This scale was adapted from the study of Ling et al. (2009). It contained 6 items that had an alpha reliability of 0.80 and were adapted according to the knowledge sharing behavior in an online context. The contents of the questionnaire were also validated by the experts of different fields of social sciences so as to get a better insight of the contents

appropriateness and then pilot tested. The response rate for the study was 67%. This study used the three types of correlations for this study i.e., (i) inter item correlations; (ii) item total correlations; and, (iii) inter scale correlations. The factor analysis used for this study was the principle component factor analysis, however, before conducting the factor analysis, Kaiser-Meyer-Olkin (KMO) was conducted to know the adequacy of sample for conducting the factor analysis and the Bartlett's Test of Sphericity was conducted to measure that the variables used in this study are not correlated in the population. Principal component factor analysis was used with VARIMAX rotation to determine if the items loaded in one factor measured the respective construct; having an eigenvalue more than one. All the factors showed a factor loading of above 0.40. The dependent and the independent variables (personality, online social networking sites and online communities of practices) of this study were also factor analyzed for the validity of its constructs. The principal factor analysis was conducted in with VARIMAX rotation that deals with adequacy of the items regarding measurement of the respective constructs with an eigenvalue of above one. Pai (2006) suggested that the VARIMAX rotation does not allow any correlation among the loaded factors. However, before running the validity factor analysis for the variables of the study KMO and Bartlett's tests was conducted to check the appropriateness of the variables for running the principal component factor analysis. The KMO and Bartlett's test showed a value of 0.702 for the KMO measure of sampling adequacy and Bartlett's test was significant at $p<0.001$. Therefore, the variables were checked for the validity factor analysis. The validity factor analysis for the personality variable is shown in table 3.

Table 3: Rotated Factor Loading Matrix for Personality Variable

S. No.	Item No.	Factor 1	Factor 2
1	8 (ext1)	.662	
2	9 (ext2)	.604	
3	10 (ext3)	.679	
4	11 (ext4)	.730	
5	12 (ext5)	.744	
6	13 (oe1)		.673
7	14 (oe2)		.510
8	15 (oe3)		.667
9	16 (oe4)		.802
10	17 (oe5)		.680

The data analyzing software, SPSS, loaded the personality items in two sub factors i.e. extroversion and openness to experience. Originally, these two constructs were used as the sub variables for the main independent variable of personality. The first five items showed the factor loading of above 0.60 and that next five items also loaded together,

showing a factor loading above 0.50, making one factor of openness to experience. The factor loaded items are also presented in table 8 for further understanding. Moreover, the online social networking sites variable when factor analyzed in SPSS, it extracted the items into two sub factors; loading first 5 items in one factor, showing a factor loading above 0.60 and the other seven items in the other factor with significant values of factor loading (see table 4). Since this factor had not been split into further sub factors, though after the two factor loaded matrix was obtained; these factors were named accordingly. The first five items loaded in first factor were named as online presence and the rest of the seven items were named as social networking sites use (SNS Use). The items loaded separately in two sub factors are also explained further in the table 4 for a better overview.

Table 4: Rotated Factor Loading Matrix for Online Social Networking Sites Variable

S. No.	Item. No.	Factor 1	Factor 2
1	18 (Osns1)		.725
2	19 (osns2)		.727
3	20 (osns3)		.732
4	21 (osns4)		.719
5	22 (osns5)		.661
6	23 (osns6)	.841	
7	24 (osns7)	.859	
8	25 (osns8)	.577	.306
9	26 (osns9)	.537	
10	27 (osns10)	.418	
11	28 (osns11)	.531	
12	29 (osns12)	.525	

Similarly, the online community of practices (Online CoP's) was also factor analyzed using the SPSS software that also revealed the rotated factor loading matrix that loaded the items of this variable into two factors. There were few items that showed double loading i.e. they loaded in both the factors; hence they were included in the sub factor that showed higher values for such items as shown in table 10. The factor loading is considered to be significant as long as they show a value more than 0.30 (Tabachnick & Fidell, 2001). The factor loading ranged from 0.478 to 0.939. Therefore, the item number 36 was included in the factor that showed a lower value as compared to the value in the other sub factor because it was more compatible with the CoP's sub factor when weighed with the two factors as shown in table 5.

Table 5: Rotated Factor Loading Matrix for Online Community of Practices Variable

S. No.	Item. No.	Factor 1	Factor 2
1	30 (cop1)		.533
2	31 (cop2)	.567	.570
3	32 (cop3)	.512	.610
4	33 (cop4)		.702
5	34 (cop5)	.939	
6	35 (cop6)		.755
7	36 (cop7)	.478	.579
8	37 (cop8)	.939	
9	38 (cop9)		.609

In addition, the online knowledge sharing variable was also analyzed using the factor reduction analysis that showed the factor loading of items in only one factor that did not show any sub factors to this variable. Table 11 elaborates it quite well loading all the items in one factor with a factor loading of more than 0.60. Therefore, the items of the online knowledge sharing variable are presented in table 6 since they did not subdivide into any sub factor.

Table 6: Rotated Factor Loading Matrix for Online Knowledge Sharing Variable

S. No.	Item No.	Factor 1
1	39 (ks1)	.604
2	40 (ks2)	.796
3	41 (ks3)	.740
4	42 (ks4)	.716
5	43 (ks5)	.722
6	44 (ks6)	.700

The descriptive statistics are shown in table 7.

Table 7: Descriptive Statistics

Item No.	N	Mean	Std. Deviation	Skewness	Kurtosis
8	318	3.32	1.142	-.269	-.779
9	317	3.47	.956	-.415	-.055
10	318	3.74	.961	-.622	.016
11	318	3.25	1.139	-.229	-.808
12	319	3.66	1.090	-.483	-.605
13	319	3.72	.959	-.528	.007
14	318	4.00	.952	-.714	-.105
15	319	3.79	1.042	-.603	-.333
16	319	4.18	.950	-1.109	1.027
17	319	3.87	1.066	-.654	-.255
18	319	4.28	.888	-1.090	1.001
19	319	3.94	1.081	-.917	.125
20	319	3.91	1.243	-.919	-.310
21	318	3.97	1.259	-.974	-.304
22	319	3.68	1.253	-.494	-1.067
23	319	3.69	.988	-.645	.077
24	319	3.69	.975	-.533	-.185
25	319	3.53	1.087	-.388	-.526
26	319	3.40	1.158	-.294	-.816
27	319	3.92	1.038	-.916	.361
28	319	3.24	1.123	-.225	-.679
29	319	3.55	1.039	-.546	-.015
30	319	3.26	1.285	-.212	-1.081
33	318	3.10	1.249	-.065	-1.012
35	319	3.17	1.188	-.241	-.849
38	319	3.65	1.045	-.717	.124

31	318	3.48	1.142	-.433	-.536
32	318	3.35	1.197	-.289	-.846
34	319	3.50	1.107	-.555	-.318
36	318	3.48	1.142	-.433	-.536
37	319	3.96	1.035	-.861	.227
39	319	3.26	1.285	-.212	-1.092
40	318	3.35	1.197	-.289	-.846
41	319	3.65	1.045	-.717	.124
42	319	3.96	1.035	-.861	.227
43	318	3.48	1.142	-.433	-.536
44	318	3.35	1.197	-.289	-.846

5. Results and Discussions

Hypotheses testing for all the variables were conducted at the 0.05 level of significance as it is the normal practice in research (Sekaran, 2001). In statistics, significance means probably true. The significance levels show how likely is the result due to chance. 0.05 level of significance means that there is a 5% chance that the findings will not be true (Weiss, 2005). Therefore, this study shows a 95% chance that the results are true.

Three of the hypotheses were tested with the regression analysis. Different researchers described that the multiple regression analysis is used to measure the effect of one or many variables in predicting other variable(s) (Tabachnick & Fidell, 2001). This study has used multiple regression analysis because simple regression uses only one independent variable and one dependent variable (Hair, et al., 2006; Tabachnick & Fidell, 2001; Cohen & Cohen, 1975) since this study has one dependent variable and more than one independent variable, thus showing the individual as well as collective influence of the independent variables on that one dependent variable (Tabachnick & Fidell, 2001; Cohen & Cohen, 1975). Therefore this study used multiple regression analysis. However, there are few assumptions of regression analysis that should be met in order to run the regression analysis; they are; (i) independence of observations; (ii) normal distribution of data; (iii) outliers; (iv) linearity of data; (v) homoscedasticity; (vi) mulitcollinearity and singularity. This study met the assumptions of the multiple regression analysis; therefore, three hypotheses were tested using multiple regression analysis. In order to measure the effect of the independent variables on the dependent variable; regression equation was developed. Since the general equation for regression analysis can be written as follows:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_n x_n + E \qquad (A)$$

Where

Y is the dependent variable

β_0 is the y-intercept of the equation

$\beta_n$is the standardized coefficient of the respective independent variable

$x_n$is the respective dependent variable

E is the unstandardized coefficient error

This study includes three independent variables that were checked with the regression analysis i.e., personality variable, online social networking sites and online community of practices; to find their effect on the dependent variable of online knowledge sharing behavior; putting the variables in equation A:

$$Online\ Knowledge\ Sharing = \beta_0 + \beta_1\, Personality + \beta_2\, OSNS + \beta_3\, OCoP's + E$$

The regression equation gives a comprehensive and integrative view of how the dependent variables of personality, OSNS and OCoP's will explain the online knowledge sharing behavior. The regression shows the following results as shown in table 8.

Table 8: Simultaneous Multiple Regression Analysis Summary for Personality, OSNS and OCoP's predicting Knowledge Sharing (N = 317)

Variable	B	SE	t	β
Personality	-0.10	0.03	-0.03	0.00
OSNS	0.21	0.04	5.42	0.15***
OCoP's	0.80	0.02	29.00	0.82***

***p<0.001, R^2 = 0.87; F (3,314) = 707.53; Adjusted-R^2 = 0.87 β = Standardized Coefficients, SE = Unstandardized coefficient standard error

The R^2 value shows that 87% variance in the online knowledge sharing behavior can be characterized with personality, OSNS and OCoP's as checked by regression. The value of adjusted R^2 indicates a revised estimate of the variability in the dependent variables. Nonetheless, for this study it does not show deviation from the value of R^2 indicating that these independent variables cause approximately 87% change in the behavior of online knowledge sharing. When the variables were checked for significance; personality variable did not show a significant impact on the behavior of online knowledge sharing (p=0.760). The standardized β coefficient for the personality variable (extroversion and openness to experience) did not tend to affect the behavior of knowledge sharing when it comes to online knowledge sharing. However, the independent variable of engagement in online social networking sites showed a positive effect on the online knowledge sharing behavior. The standardized beta coefficient indicates that 15% change in the online knowledge sharing behavior can be explained by the engagement in online social networking sites. Furthermore, the independent variable of involvement in the online community of practices causes 82% variability in the online knowledge sharing behavior. Therefore, the results show that the engagement in online social networking sites and online community of practices positively and highly significantly boosts the online knowledge sharing. In contrary, personality does not indicate and effect on knowledge sharing behavior when it comes to the online knowledge sharing.

Online knowledge sharing behavior, in this study was considered at the individual level. Past researches have focused the managerial and organizational context of knowledge sharing while this study covers the individual perspectives of knowledge sharing. This study found that the online knowledge sharing is significantly related to the

communication modes and the social networks that individuals use for their social interaction, either it is related to the profession or for personal interests. This finding is very much aligned with the findings of Kimmerle et al. (2008). It also supports the results of Tohidinia and Mosakhani (2010) that more the individuals are willing to share the knowledge easier it gets to attain the outcomes. The results of personality variable showed that extroversion and openness to experience do not have a positive effect on the online knowledge sharing behavior. In addition, the two personality traits i.e. extroversion and openness to experience showed a consistency with the results obtained by Hsieh, Hsieh and Wang (2011) and endorse their findings that extroversion and openness to experience do not have an effect on the knowledge sharing behavior. In addition, the lack of effect of openness to experience on online knowledge sharing was further supported by Wang, Noe and Wang (2011), Amayah (2011), Teh et al. (2011). However, the results of this study regarding the openness to experience contradict with the findings of Matzler, et al. (2008), Matzler, et al. (2011), Hsu, Wu and Yeh, (2011), Wang and Yang (2007) and Cabrera, Collins and Salgado (2006) that openness to experience tends to show a positive effect on the knowledge sharing. The other personality trait of extroversion also could not find a consistency with the findings of Hsu, et al., (2006), Teh et al., (2011) that extroversion has a positive effect on the knowledge sharing. The lack of alignment in the results of openness to experience and extroversion is mainly due to the fact that the knowledge sharing focused in this study is the online knowledge sharing. Secondly, the personality traits checked in the past were considered at the team level with physical interaction of the individuals. However, this study has taken individual level knowledge sharing into the account. Another possible reason is the difference of the cultural values and the traditions prevailing in the society. Pakistani society being the collectivist society did not show a positive trend with the online knowledge sharing. However, Amayah (2011) reasoned the absence of relationship of openness to experience and extroversion with a lack of interest in sharing the knowledge since the individuals with such attributes may seek the knowledge more than sharing it with others.

One of the major focuses of this study was to check the effect of online community of practices and online social networking sites on the online knowledge sharing behavior of the individuals. Interestingly, this study found very significant role of engagement in online community of practices on the online knowledge sharing behavior that supports the findings of many researchers such as Wolf et al. (2011), Ogunseye et al. (2011), Zboralski (2009), Zhang and Watts (2008), Abrams et al. (2003) and Renko et al. (2001). These researchers also found that the physical community of practices fosters knowledge sharing among the individuals. This study also supports the idea put forth by Ardichvili et al. (2003) that the social interaction and communication in an online community of practices is equally important as that in a physical community of practices. Henceforth, there also happens adequate online knowledge sharing via online community of practices regarding the professions and the work related tasks. Moreover, this study also proved that the online community of practices does play a positive role in supporting the online knowledge sharing behavior of the members that was also proved by Jeon et al. (2011) regarding the physical community of practices. This flow of knowledge in online community of practices can be attributed with the fact that the technology has been intensified in every field of life and most of the work done is online, either its educational

or professional. Therefore, this online presence has made the social interaction with other individuals very easy and has supported the knowledge sharing behavior as well.

In addition to the significant results regarding online community of practices, engagement in online social networking sites also found a positive relationship with the online knowledge sharing behavior of the individuals, thus, emphasizing the results of Wolf et al. (2011), Bennett et al. (2010), Huang and Li (2009), Steiner (2009), Kimmerle et al. (2008) and Hara and Hew (2007). This study also supports the findings provided by Abrams et al. (2003) that not only the work related interactions tend to enhance the opportunities to share knowledge but common interests also foster this behavior. Therefore, online social communication that takes place in different social networking sites also becomes a source of knowledge sharing. The results of this study endorse the verdict of Renko et al. (2001) that the social interaction that is frequent, tends to have more inclination towards the knowledge sharing. This positive relationship of the online social networking sites with online knowledge sharing behavior is because of the fact that the individuals who interact socially more tend to share knowledge more with each other. Individuals tend to spend more time online, more they interact and more they are inclined towards sharing their knowledge with each other.

6. Contributions

This is the first study in Pakistan regarding online community of practices and online social networking and has contributed towards the framework development that has not been studied before. However, the findings of the study will help the Higher Education Commission of Pakistan in proposing and modifying the course contents and study policies. The findings will also help the organizations while hiring the fresh candidates by knowing their preferences about sharing knowledge. Additionally, the organizations by knowing the effect of online social orientation on the knowledge sharing will help the Human Resource managers in evaluating the individual propensity towards online knowledge sharing. Findings of this study also highlight the preferences of individuals for online social interaction that has become possible and somewhat necessary in this era of technology and advanced gadgets. Consequently, these have uncovered the possibility of online learning about new things and happenings related to interests and professions. Therefore, it makes the interaction easier with far away professionals who can add to the knowledge base and understanding of the employees in local organizations. Henceforth, it is not limited to the professional interaction but can be applied to the common interests as well.

7. Limitations and Recommendations

In addition, this study also recommends that if the mixed methods are used for the data collection and data analysis, the findings will be more generalized and rigorous as this study has used only the quantitative methods of research. As an answer to the query put forth by Siemens (2005) that can the technology mold our thinking process, it has become the need of the hour to redefine and restructure our sources and interaction that play a role in shaping our thought process and ultimately our behaviors. This is the time to embrace the technology for the good of society and mankind.

8. Future Study Directions

Results of the study propose more ideas for the future researches in the field of both management and psychology. Since this study considers only two traits of personality that is extroversion and openness to experience; future studies can take all five traits of personality proposed in big factor model theory. In addition, other factors can also be included in the study that have not been included in the research model that can mediate or/and moderate variables like trust, ethics etc.; thus, proposing a more comprehensive model addressing the online knowledge sharing attitudes and behaviors in coming years. Moreover, this study can also be conducted on the management personnel and other industries so the findings can be verified. In this regard, apart from the educational institutes it can be conducted in the organizations as well for knowing the current online knowledge sharing behavior of the management and future trends of organizations about the online knowledge sharing. Apart from that, more generalized results can be obtained by conducting the causal relationships with the longitudinal research design.

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