



**Knowledge Sharing in Higher Education Institutes: An Empirical Investigation of Individual Characteristics**

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# Knowledge Sharing in Higher Education Institutes: An Empirical Investigation of Individual Characteristics

## Abstract

**Purpose:** The aim of this research is to investigate the relationship between individual characteristics and knowledge sharing in Higher Education Institutes (HEIs) of Pakistan.

**Methodology:** The study used a quantitative research methodology. Our empirical data consisted of 370 responses from the academic staff of six HEIs of Pakistan.

**Findings:** The findings revealed a significant impact of dispositional factors on knowledge sharing. More precisely, extroversion, openness to experience, agreeableness, emotional intelligence, and religiosity were positively associated with knowledge sharing, while neuroticism was found to be negatively associated with knowledge sharing.

**Originality:** The paper tested a micro level model of knowledge sharing in HEIs and contributed to the body of knowledge by jointly investigating the relationship between religiosity, emotional intelligence, personality traits and knowledge sharing. To the best of researchers' knowledge, no study has been conducted, so far, which tested these variables jointly. Thus, the present research filled this knowledge gap.

**Implications:** This micro-level model of knowledge sharing has some potential implications for the decision makers in the context of HEIs. To enhance the knowledge sharing in HEIs, the decision makers should take the findings of this study into consideration while hiring the academicians in the universities. The decision makers should give priority to the potential candidates who have a higher level of extroversion, openness, and agreeableness. Further, while making hiring and other job-related strategies, religiosity and emotional intelligence of the potential candidates should not be ignored.

**Keywords:** Religiosity, Emotional intelligence, Knowledge sharing, Personality traits, Five-factor model of personality, Structural equation modelling, SmartPLS

## 1. Introduction

From the last few decades, knowledge management and its process have gained the attention of the practitioners and academicians. Many researchers suggested that knowledge management and its process should be the central aim of human resource development (Gourlay, 2001)

Knowledge sharing has been identified as a vital and significant process of knowledge management as well as an effective tool for knowledge management (Blankenship & Ruona, 2009; Yeşil & Dereli, 2013).

Study of the literature showed different trends in knowledge sharing, ranging from professional groups and nonprofessional groups in private and public organisations. Some recent studies' focus covered accountant (Phang & Yau, 2010), engineers (Zhen, Jiang, & Song, 2011), managers (Tangaraja, Rasdi, Ismail, & Samah, 2015) medical practitioners (Razzaq *et al.*, 2013), information technology (IT) personnel (Teh & Sun, 2012), employees in hotel industry (Yang, 2007), employees of oil industry (Tohidinia & Mosakhani, 2010), employees from construction industry (Zhang & Fai Ng, 2012) students of postgraduate studies (Isika, Ismail, & Khan, 2013), and teachers (Bibi & Ali, 2017; Chen & Wang, 2011), to name few. However, the focus of studies in public universities is relatively low as compared to the corporate sector, especially in the Pakistani context. Universities are a hub of knowledge and play a very momentous function in exploring knowledge with the help of research and distribute knowledge by publications of students' efforts and teachers' research findings. Universities also work in collaboration with different businesses including entrepreneurial, social and cultural enterprises by giving them innovative ideas, support their R&D through their research and design training sessions for their employees.

Considering the present situation, it is quite rationalised to expect that the HEIs/universities would adopt a proactive perspective for the nourishment of their strategies to manage their knowledge, and it is reasonable to expect that they would have a very fine and well-honed underpinning about the management and optimisation of knowledge resources. However, in most developing countries, like Pakistan, this is not the case; the university teachers are very passive in knowledge sharing. While, there is a strong body of knowledge in the domain of knowledge management and knowledge sharing in a commercial environment, but a very little

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3 research is done on knowledge sharing in universities (Fullwood, Rowley, & Delbridge, 2013).  
4 Accordingly, the current research will endeavour to fill this literature gap.  
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7 Knowledge is omnipresent in the individuals (Amayah, 2013; Lin & Hwang, 2014) and  
8 organisations should utilise this resource to gain and maintain competitive advantage as the  
9 knowledge belongs to human being, so organisations need the cooperation of the individual to  
10 share their knowledge with their colleagues in the organisation (Gupta, 2012; Lin & Hwang,  
11 2014). Many studies have shown a positive association of knowledge sharing with the  
12 effectiveness of the organization and innovation capability of the organization (Muzaffar &  
13 Alshare, 2015; Yeşil & Dereli, 2013), and improved productivity (Noaman & Fouad, 2014).  
14 Some other researchers have shown a positive impact of the knowledge sharing on individual  
15 performances (van Woerkom & Sanders, 2010) (van Woerkom & Sanders, 2010). Knowledge  
16 sharing also helped in shaping individual innovative behavior (Yu, Yu-Fang, & Yu-Cheh, 2013).  
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25 Amnyah (2011) stated that to implement the knowledge management activities  
26 successfully, it is essential to analyze the factors which are affecting the individuals to share  
27 knowledge. Based on Al-Hawamdeh (2003), scholars should also focus on individual  
28 perspectives of knowledge sharing, rather than on technological or organization-level factors  
29 (Amayah, 2011) as knowledge is produced by the individuals and individual characteristics  
30 impact on the process of knowledge sharing. Thus, this study aimed to investigate the individual-  
31 level factors (five-factor model of personality, emotional intelligence and religiosity) for  
32 knowledge sharing behavior in public HEIs of Pakistan.  
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36 Few prior types of research have empirically investigated the impact of personality traits by  
37 utilising the five-factor model of personality (Gupta, 2008; Matzler, Renzl, & Mu, 2008; Pei-lee  
38 Teh, Yong, Chong, & Yew, 2011). However, most of these researches have been conducted in  
39 Western economies, and to the best of the authors' knowledge, no study has been conducted to  
40 jointly investigate the relationship between religiosity, emotional intelligence, personality traits  
41 and knowledge sharing.  
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49 Considering that fact that the social environment and culture may affect the personality  
50 and behavior of an individual (F. Agyemang & Boateng, 2016), it is imperative to investigate the  
51 association between individual-level factors and knowledge sharing in the Pakistani context, as  
52 most of the previous research has been conducted in Western culture.  
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## 2. Related Literature and Hypothesis Development

### *Knowledge Sharing*

Knowledge can be seen as information that is presented in such a way that it has meaning to the person consuming it. Nonaka (1994) describes knowledge as existing in two dimensions: explicit and tacit.

- Tacit knowledge can also be described as “personal knowledge.” It consists of values, viewpoints and intuition that is gathered through experience. One example would be the knowledge of faculty members that could be tentative and imprecise due to it being linked to personal experiences, resulting in it not always being coupled to measures of learning outcomes that are well-defined.
- Explicit knowledge is also known as “codified” knowledge, and it can be communicated and spread easily. The knowledge contained in textbooks is codified as symbols like words, formulae and numbers, or physical items such as photographs, documents, procedures and databases. Knowledge workers do however seem to share a mix of tacit and explicit knowledge among themselves, with the explicit knowledge being highly impersonal and informal (F. G. Agyemang & Boateng, 2019).

Within an organisation, however, tacit and explicit knowledge are not separate, but rather complement each other and expand through social activities and interaction (Nonaka & Takeuchi, 1995). Knowledge sharing occurs when people spread the knowledge they have and distributes it within an organization. Knowledge sharing can be defined as any activity where organizations, groups or individuals diffuse or transmit knowledge. Knowledge sharing can, however, arouse the feeling of a conflict of interest amongst the individuals involved. When knowledge is shared through combination and socialization, a person’s tacit knowledge is shared and then becomes another person’s tacit knowledge. This also happens when explicit knowledge is shared. During this process, knowledge is internalized and externalized both in the organization and the individual (Lahti & Beverley, 2000). As knowledge is shared and distributed within an organization through everyday dialogue, knowledge sharing should not be seen as a supplementary organizational activity, but as inherent to the activities carried out by the

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3 organization's members on a daily basis. ). Elaborating on the individual, organizational attitudes  
4 and behaviors influencing the knowledge sharing, several authors (Boer, Berends, & Van Baalen,  
5 2011; Cabrera, Collins, & Salgado, 2006) introduced a number of theories with the purpose of  
6 explaining people's knowledge-sharing behaviour. This study is explicated from the perspective  
7 of the Big Five or Five Factor Model of Personality as introduced by McCrae and John (1992).  
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### 12 ***Knowledge Sharing in Universities***

14 Knowledge sharing can be stated as sharing the ideas, information, expertise, and suggestions  
15 with peers in the organization (Al-Kurdi, El-Haddadeh, & Eldabi, 2018) . In other words, it is a  
16 set of behaviors that involve the exchange of information or helping others. There is another  
17 definition of knowledge sharing as a systematic activity in order to transfer and exchange  
18 knowledge and experiences within a group or an organization with a common goal (Peter  
19 Salovey & Mayer, 1990). Universities as an educational and research environment are  
20 appropriate places for knowledge sharing. In fact, universities, like other organizations, have  
21 competitive environments, so it is necessary to make sure that in this environment knowledge is  
22 appropriately generated, transferred and shared among individuals. Faculty members are  
23 considered as primary sources of production and application in academic institutions, and their  
24 major activities are teaching, researching and doing related professional activities (Seonghee &  
25 Boryung, 2008). These people tend to share their knowledge through formal and informal  
26 groups, electronic communications and training workshops with colleagues (Hulland, 1999).  
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### 38 ***The Personality Traits and Knowledge Sharing***

39 Knowledge is produced, stored and shared by individuals rather than organizations (Chan Kim,  
40 Mauborgne, Kim, & Mauborgne, 1998), and individuals differ in how they share knowledge (Teh  
41 *et al.*, 2011). Knowledge sharing depends on individuals' willingness and consent for sharing of  
42 their most important assets, including information, experience and whatever lessons they have  
43 learned through their work processes and interpersonal interactions. Personality traits have been  
44 examined with respect to knowledge management at the individual-level, including the  
45 relationship between personality traits, innovation and knowledge management in the  
46 biotechnology sector (Hsieh, Hsieh, & Wang, 2011). The relationship between knowledge  
47 sharing and the big five-factors of personality has also been studied (Pei-lee Teh et al., 2011). An  
48 individual's personality traits, including openness to experience, agreeableness, and  
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3 conscientiousness, are examples of individual factors that may influence knowledge sharing  
4 (Matzler *et al.*, 2011). Personality seems to be the most important of these factors that correlate  
5 with knowledge sharing quality. Several other studies also postulate that an individual's  
6 characteristics can predict why some individuals share knowledge while others not (F.  
7 Agyemang & Boateng, 2016; Amayah, 2013; Cabrera *et al.*, 2006).  
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### 12 ***Extroversion***

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14 Basser and Shackelford (2007) stated that individuals with high extroversion trait of personality  
15 are inclined to be more sociable. Past studies revealed that extrovert is energetic, enthusiastic and  
16 optimistic (Farrukh, Ying, & Mansori, 2016; Rahman, Mannan, Hossain, Zaman, & Hassan,  
17 2018a). It is advocated that extroverts have positive emotions and they contribute a great number  
18 of efforts for satisfaction of team (Barrick, Stewart, Neubert, & Mount, 1998; McCrae, 1996;  
19 Watson, Clark, & Carey, 1988). As the extrovert personality individuals are emotionally positive  
20 and are more satisfied in working in teams, so it is reasonable to expect them to be more positive  
21 in knowledge sharing. In fact, where people are high on extroversion, knowledge sharing is  
22 highly likely to be effective and successful (F. Agyemang & Boateng, 2016). By these qualities,  
23 we can say that the employees who are having extrovert trait will share more knowledge.  
24 Therefore, we stated our first research hypothesis in the following form:  
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33 *Hypothesis 1: Extroversion is positively linked to knowledge sharing.*  
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### 36 ***Neuroticism***

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38 According to Benet-Martinez and John (1998), neuroticism personality is characterised by  
39 different moods, especially negative such as sadness, tensions, and anxiety. The researchers  
40 showed that people who are having high neuroticism generally show a negative attitude towards  
41 their fellow being (Benet-Martínez & John, 1998). The low anxiety levels and high self-  
42 confidence characteristics of emotional stability make it easier for such individuals to engage in  
43 knowledge-sharing behavior (F. Agyemang & Boateng, 2016). From this, we can predict that  
44 employees who score high on neuroticism may be a bit reluctant to share knowledge. Thus, our  
45 second research hypothesis is stated as follows:  
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51 *Hypothesis 2: Neuroticism is negatively linked to knowledge sharing.*  
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### ***Agreeableness***

Barrick and Mount (2004) stated being tolerant, mild natured, harmonious, open-hearted and joyous are the attributes of high agreeableness in employees. They prefer working with each other not against each other (Liao, Chang, Cheng, & Kuo, 2004), focus on their relationships with others and always try to keep them companionable and pleasing (Organ & Ryan, 1995). According to recent studies, agreeableness (Farrukh et al., 2016; Farrukh, Ying, & Mansori, 2017) is an individual's personality trait which is a collection of different characteristics including honesty, truthfulness, self-sacrifice, commitment, simplicity and cool-mindedness. People with a high level of agreeableness are supportive and helpful and are more likely to share knowledge (F. Agyemang & Boateng, 2016; Memon, Nor, & Salleh, 2016). Thus, on the basis of the characteristics of agreeableness, we postulate the following third research hypothesis:

*Hypothesis 3: Agreeableness is positively linked to knowledge sharing.*

### ***Conscientiousness***

Bozionelos (2004) defined conscientiousness as a coalition among the sense of responsibility, intensity and consistent hard work. According to Barrick and Mount (1991), individuals with high conscientiousness are reliable, responsible, well mannered, high achieving and persistently hard-working. The characteristics of conscientiousness personality are proficiency, discipline, obedience, endeavouring achievement, self-organised and consideration (Costa & McCrae, 1992). Conscientiousness people are more likely to socialise in the organisation; these characteristics are vital in the process of knowledge sharing. In a recent study, (Memon et al., 2016) found a positive association between knowledge sharing and conscientiousness. Hence, by characteristics possessed by the conscientiousness people and the results of prior studies (Matzler et al., 2008; Memon et al., 2016), we conjecture the fourth research hypothesis as follows:

*Hypothesis 4: Conscientiousness is positively linked to knowledge sharing.*

### ***Openness to Experience***

Openness to experience is defined as a multi-dimensional phenomenon including enhancement of benefits, adaptive thinking, responsiveness to innovation and capability of developing realistic ideas and goals (Bozionelos, 2004). Digman (1990) gave another definition, according to which creativity, thinking from different perspective and keenness to learn together are known as



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3 openness to experience. According to this study, a person having openness in his/her personality  
4 have characteristics. Few recent studies found a strong and significant impact of openness to  
5 experience on knowledge sharing (F. Agyemang & Boateng, 2016; Matzler et al., 2008; Memon  
6 et al., 2016). Keeping in view the characteristics attached to the openness to experience trait, we  
7 can expect that people with a higher level of openness will be more likely to share knowledge.  
8 Accordingly, we postulate the fifth research hypothesis in the following form:  
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13 *Hypothesis 5: Openness to experience is positively linked to knowledge sharing.*  
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### 16 ***Religiosity and Knowledge Sharing***

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18 A growing body of the literature proposes that religiosity has significant effects on the life of its  
19 believers; these effects include the way people live, behave and work. Religion is a belief system  
20 which could make a significant impact on employee behavior and performance by providing a  
21 frame of reference which could guide decision making in organizations (Osman-Gani, Hashim,  
22 & Ismail, 2013). Despite the fact that religion has a significant impact on employee life (Day,  
23 2005; Hess, 2012; Riaz, Farrukh, Rehman, & Ishaque, 2016; Wu, Rafiq, & Chin, 2017), there  
24 exists a research gap linking the religiosity and knowledge sharing the behavior of employees in  
25 organizations. For this reason, this paper is an attempt to overcome this gap.  
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32 Before moving to postulate the hypothesis, it's imperative to define the concept of  
33 religiosity. Osman-Gani, Hashim and Ismail (2013) asserted that religiosity is the measure of  
34 belief of an individual in God as well as to a measure of participation in religious activities such  
35 as offering services, worshipping regularly and engaging in other religious activities. On the  
36 other hand, Valasek (2009) summarized ten concepts of religiosity that influence someone's  
37 behavior, which are as follow: "(1) Proselytizing, (2) Church attendance, (3) Amount of prayer,  
38 (4) Doctrine or dogma, (5) Authoritarian, (6) Self-righteousness, (7) Belief in the divine, (8)  
39 Ritualistic, (9) Integration, and (10) Scripture reading." People who follow a definite religious  
40 doctrine will display a particular set of behaviors, which are reflected in their personal, social as  
41 well as work life. Therefore, we can expect that religion will also affect the work behavior of an  
42 employee (Ntalianis & Darr, 2005), as it is a powerful source of individual values (Ghazzawi &  
43 Smith, 2009; Ghazzawi *et al.*, 2012).  
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52 In prior researches, the knowledge sharing success was found to be linked with behavior  
53 factors (Liao *et al.*, 2004; Calantone *et al.*, 2002; Kidwell *et al.*, 1997). The attitude towards  
54 knowledge sharing is derived from religious and social values. Thereupon, it is the need of the  
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hour to find the factors which effect the social values and knowledge sharing behavior so that a long term benefit for an organization may be yielded (Guzman & Wilson, 2005). Literature advocates that religiosity has a very significant impact on people's lives; this impact includes the way people behave, the way they live and work. Religiosity can make a major difference in employee attitude and behavior by providing a point of reference by which to guide decision making, especially in a more religious environment, like Pakistan. Despite all this, there is a gap in the literature and theory which links religiosity and knowledge sharing, especially in information communication technology (ICT) companies of Pakistan. Religion is a believe system which is woven into the work life of employees, and it serves as a principle for reacting and interpreting many organizational experiences including knowledge sharing. Therefore, on the basis of this discussion, we present our sixth research hypothesis as follows:

*Hypothesis 6: Religiosity is positively linked to knowledge sharing.*

### ***Emotional Intelligence and Knowledge Sharing***

Emotional intelligence has been a tinted area of research in the organizational behavior and management theory. Some definitions of emotional intelligence have been proposed, but the one proposed by P. Salovey & Mayer, (1990) has gained lots of popularity (Ansari & Malik, 2017). Their model of emotional intelligence focuses on the cognition-emotion linkages. Salovey and Mayer are the first to create this definition, they affirm that emotional intelligence is “the ability to control the one owns emotions and emotions of others, discriminate among them and use this information to guide thoughts and actions” (Salovey & Mayer, 1990), which later was modified to “the ability to perceive emotion, integrate emotion to facilitate thought, understand emotions and to regulate emotions to promote personal growth” (Peter Salovey & Mayer, 1990).

Gurbuz and Araci (2012) posited that empathy, self-motivation and self-awareness are the dimensions of emotional intelligence which help knowledge sharing. Some empirical studies have investigated several factors, like personality traits, organizational climate and culture, and motivation, that affect knowledge sharing (e.g., Lin, 2007; Ansari *et al.*, 2014; Olapegba *et al.*, 2013; Tohidinia & Mosakhani, 2010; Han & Anantatmula, 2007). Though these researchers have discussed many factors of knowledge sharing, there is a lack of studies which endeavoured to investigate the feeling and emotion based indicators of knowledge sharing in the workplace (Ansari & Malik, 2017).

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3 A study conducted by (Hooff, Schouten, & Simonovski, 2012) Hooff et al., (2012) found  
4 that empathy and pride, which are dimensions of emotional intelligence, have affected the  
5 knowledge sharing behavior and willingness. Likewise, Arakelian et al., (2013) found that  
6 relationship management, social awareness and self-awareness had a significant association with  
7 knowledge sharing. Acquisition of knowledge and sharing of knowledge mainly depend upon the  
8 individual personality. According to Mayer and Salovey (1997), the individuals who rank high  
9 on the emotional intelligence scale might get more exposure to internal experiences. Therefore,  
10 they are considered better in transmitting inner experiences. Moreover, Sharma (2007) stated that  
11 emotional intelligence is the ability of an individual to have empathy, transparency, positive  
12 mindset and ability to motivate and develop others. Accordingly, it is expected that emotionally  
13 intelligent people will be more engaged in social interaction; therefore, it is more likely that they  
14 will share knowledge more with co-workers.  
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24 In another related study, Goh and Lim (2014) have found that individuals who score high  
25 on emotional intelligence would actively take part in acquiring and knowledge sharing.  
26 Similarly, Obermayer-Kovács *et al.* (2015) and Tuan (2016) determined a positive relationship  
27 between emotional intelligence and knowledge sharing. However, there are very limited studies  
28 that investigated the impact of emotional intelligence on knowledge sharing. Therefore, it is vital  
29 to explore this area in the Pakistani context to further generalize the findings. Thus, from the  
30 above discussion, our final research hypothesis is postulated as follows:  
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36 *Hypothesis 7: Emotional intelligence is positively linked to knowledge sharing.*  
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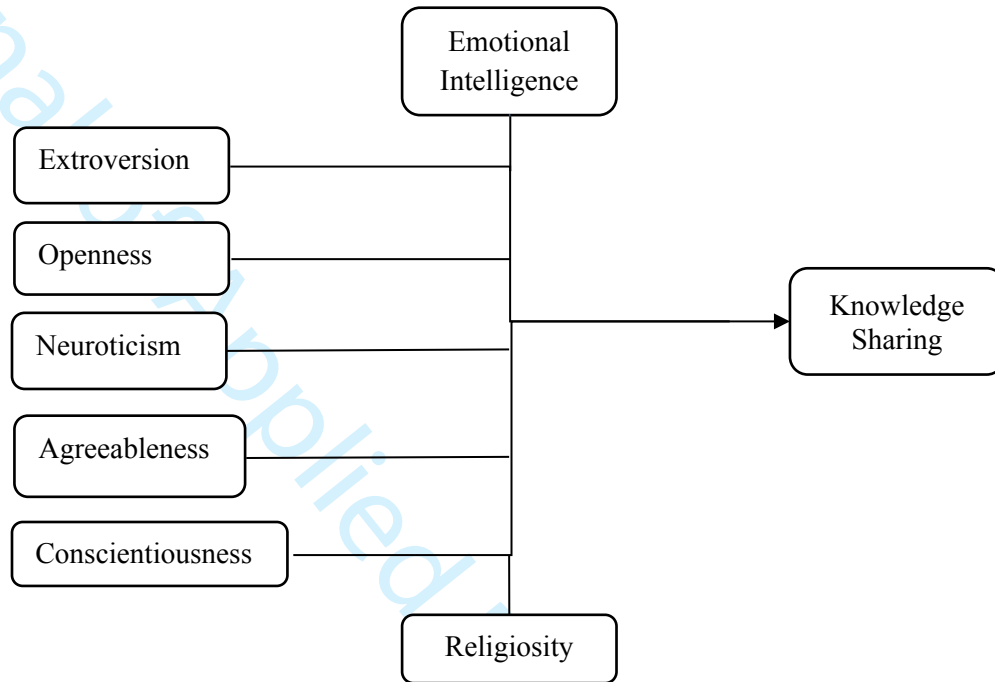


Figure 1: a Conceptualized model of the study

### 3. Method and Materials

#### *Participants and Data Collection Procedure*

The population of the study was academicians working in public sector universities located in three major cities of Pakistan, namely Faisalabad, Rawalpindi, and Islamabad. Six universities were selected to collect the data. Different departments, such as social sciences, engineering, arts and humanity, and computer sciences, were approached. To avoid common method bias, data collection was done in two stages. In the first stage, random questions regarding knowledge sharing behavior and personality traits were distributed, and after a time lag of one month, another questionnaire containing questions regarding religiosity and emotional intelligence were distributed. At the end of the data collection, a total of 370 completed survey questionnaires were received.

Table 1 presented the descriptive analysis results of the survey data. The analysis of the participants' characteristics revealed that the majority of the study sample was male (56.5%), as

Pakistan is a male-dominated society wherein the majority of employees are males (Khilji, 2003). Most participants were between 20-30 and 31-40 years of age, as anticipated since these are the working-age groups. A higher percentage of the sampled participants (57.9) had achieved their master degree. Further, the majority of the sample participants (35.6%) had work experience between 1 to 5 years.

Table 1: A demographic snapshot of the survey participants

Characteristic	Category	N	%
<i>Gender</i>	Male	225	60.8
	Female	145	39.2
	Total	370	100.0
<i>Age Group</i>	20-30 years	140	37.8
	31-40 years	116	31.4
	41-50 years	67	18.1
	51-60 years	38	10.3
	Over 60 years	9	2.4
	Total	370	100.0
<i>Education Level</i>	Bachelor	39	10.5
	Master	197	53.3
	PhD	125	33.8
	Postdoc	9	2.4
	Total	370	100.0
<i>Work Experience</i>	1-5 years	125	33.8
	6-10 years	86	23.2
	11-15 years	56	15.2
	16-20 years	46	12.4
	More than 20 years	57	15.4
	Total	370	100.0

### *Materials<sup>1</sup>*

#### *Religiosity*

Religious Orientation Scale (ROS) is the most cited scale of religiosity developed by Allport and Ross (1967). ROS is used in several studies related to organizational behavior and social sciences. However, this scale was originally developed to measure the religiosity of Christianity based in North America. Therefore, the limitation of ROS is, it may not be valid to measure the religiosity of Asian people, especially Muslims. Thus, in this study, we adopted a scale developed by (Mokhlis, 2009) because this scale had already been validated in Pakistan by Farrukh *et al.* (2016).

<sup>1</sup> Items of the survey questionnaire are given in the appendix.

### *The Personality Traits*

The five-factor model of personality traits instruments was used to measure the personality traits of the employees. The Big Five Inventory (BFI) (John *et al.*, 1991; John *et al.*, 2008) was developed to assess the Big Five personality domains of extroversion, agreeableness, conscientiousness, neuroticism, and openness. Respondents indicate their level of agreement with each item using a 5-point Likert scale. The BFI is one of the most cited personality measures.

### *Emotional Intelligence and Knowledge Sharing*

Wong and Law Emotional Intelligence Scale (Wong, Wong, & Law, 2007) scale was used to assess the emotional intelligence of the respondents. And a 5 items scale of knowledge sharing was adapted from (Bock, Lee, & Zmud, 2005).

## **4. Data Analysis**

Data analysis was done with the help of Partial Least Squares Structural Equation Modeling (PLS-SEM) by using SmartPLS software. Partial least square is a powerful second-generation multivariate data analysis technique. PLS-SEM can test measurement and structural model at the same time with minimum error variance (Hair *et al.*, 2016). This technique has become popular and has been used in many recent studies (Farrukh, Lee, & Shahzad, 2019; Shim, 2010). In PLS-SEM data analysis is carried out in two stages: in the first stage, the validity and reliability of the measurement model are assessed, and in the second stage, a structural model is assessed for the significance of path coefficients, productive relevance of the model and predictive power of the model. The following subsections elaborate the data analysis process in detail.

### *Evaluation of a Measurement Model*

The validity and reliability of a measurement model are assessed by investigating the convergent validity (CV), internal consistency and discriminant validity (Hair, Hult, Ringle, & Sarstedt, 2017). Internal consistency is measured by assessing composite reliability (CR). The threshold value of CR is 0.708. The CV was assessed with the help of factor loading (FL) and average variance extracted (AVE). The CV is the “extent to which a measure correlates positively with alternative measures of the same construct” (Hair *et al.*, 2017). An FL should be 0.708 or higher, and 0.70 is considered close enough to be acceptable (Hair *et al.*, 2017). However, indicators with

weaker factor loadings (i.e., 0.40 to 0.70) can be retained if other indicators possess high loadings, and the overall construct should explain at least 50% variance ( $AVE = 0.50$ ) (Hair et al., 2017). The AVE scores of all the constructs also exceeded the threshold value of 0.50, indicating adequate CV. Table 2 presents the factor loadings, CR and AVE scores.

Table 2: Quality criteria for the measurement model

Construct	Item	FL	AVE	CR	Cronbach's alpha
<i>Emotional Intelligence</i>	Emotional intelligence 1	0.871	0.6501	0.858	0.775
	Emotional intelligence 2	0.811			
	Emotional intelligence 3	0.712			
	Emotional intelligence 4	0.777			
	Emotional intelligence 5	0.871			
	Emotional intelligence 6	0.754			
	Emotional intelligence 7	0.765			
	Emotional intelligence 8	0.698			
	Emotional intelligence 9	0.812			
	Emotional intelligence 10	0.714			
	Emotional intelligence 11	0.788			
	Emotional intelligence 12	0.782			
<i>Religiosity</i>	Religiosity 1	0.887	0.6783	0.751	0.705
	Religiosity 2	0.876			
	Religiosity 3	0.775			
	Religiosity 4	0.773			
	Religiosity 5	0.789			
	Religiosity 6	0.798			
<i>Agreeableness</i>	Agreeableness 1	0.879	0.7025	0.744	0.795
	Agreeableness 2	0.843			
	Agreeableness 3	0.763			
	Agreeableness 4	0.697			
<i>Conscientiousness</i>	Conscientiousness 1	0.764	0.6976	0.814	0.865
	Conscientiousness 2	0.876			
	Conscientiousness 3	0.889			
	Conscientiousness 4	0.887			
	Conscientiousness 5	0.778			
<i>Neuroticism</i>	Neuroticism 4	0.789	0.686	0.882	0.834
	Neuroticism 2	0.762			
	Neuroticism 1	0.679			
	Neuroticism 3	0.898			
<i>Extroversion</i>	Extroversion 1	0.773	0.836	0.953	0.855
	Extroversion 2	0.876			

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3		Extroversion 3	0.879		
4		Extroversion 4	0.886		
5	<i>Openness</i>	Openness 1	0.778	0.6632	0.886
6		Openness 2	0.782		0.854
7		Openness 3	0.874		
8		Openness 4	0.784		
9	<i>Knowledge Sharing</i>	Knowledge sharing 1	0.886	0.699	0.878
10		Knowledge sharing 2	0.879		0.882
11		Knowledge sharing 3	0.887		
12		Knowledge sharing 4	0.876		
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Another criterion for checking the validity of the construct is discriminant validity “it is the extent to which a construct is truly distinct from other constructs by empirical standards” (Hair *et al.*, 2017). In this study, discriminant validity was checked with the help of Fornell and Larcker's (1981) criteria, which states that the square root of AVE value should be higher than the squared correlation with other constructs (Fornell & Larcker, 1981). Results in Table 3 show that the discriminant validity was achieved.

Table 3: Fornell Larcker criteria

	1	2	3	4	5	6	7	8
1. <i>Emotional Intelligence</i>	<b>0.806</b>							
2. <i>Knowledge Sharing</i>	0.331	<b>0.836</b>						
3. <i>Religiosity</i>	0.223	0.331	<b>0.823</b>					
4. <i>Agreeableness</i>	0.225	0.312	0.204	<b>0.838</b>				
5. <i>Consciousness</i>	0.345	0.346	0.402	0.230	<b>0.835</b>			
6. <i>Neuroticism</i>	0.412	-0.445	0.306	0.370	0.430	<b>0.828</b>		
7. <i>Extroversion</i>	0.354	-0.401	0.341	0.254	0.340	0.370	<b>0.914</b>	
8. <i>Openness</i>	0.365	0.402	0.321	0.313	0.270	0.420	0.347	<b>0.814</b>

*Note:* The diagonals represent the square root of the AVE, while the other entries represent the squared correlation.



### Structural Model Assessment

Before assessing the significance of path coefficients by bootstrapping, the structural model should be checked for any multicollinearity (Hair et al., 2017). *Multicollinearity* is a measure of the correlation between two formative variables which can cause a problem in model estimation and its significance (Hair et al., 2017). Multicollinearity levels are assessed by a variance inflation factor (VIF) and tolerance level. The tolerance level of 0.20 or lower and VIF value of equal to 5 or greater than 5 is problematic. In the current research, all the values of VIF and tolerance level are in the acceptable range (see Table 4).

### R-squared ( $R^2$ )

The multicollinearity check is followed by the evaluation of  $R^2$  values for endogenous factors. The  $R^2$  value is a percentage change in the endogenous variables caused by the exogenous variables. In this study, knowledge sharing is conceptualized as an endogenous while religiosity, the personality traits and emotional intelligence are conceptualized as exogenous variables. The  $R^2$  value depicts the predictive capability of the model. The  $R^2$  value for the endogenous construct is found as 0.806.

Table 4: Multicollinearity assessments in the structural model

Variable	Multicollinearity statistics	
	Tolerance level	VIF
<i>Extroversion</i>	.514	1.947
<i>Agreeableness</i>	.408	2.453
<i>Consciousness</i>	.499	2.004
<i>Neuroticism</i>	.579	1.728
<i>Openness</i>	.489	2.046
<i>Emotional Intelligence</i>	.421	1.732
<i>Religiosity</i>	.455	2.187

### Hypothesis Testing

After evaluating the  $R^2$  value, the significance of the path coefficients is assessed, and for that purpose, we used 5,000 resamplings as recommended by Hair et al. (2017). Table 5 and Figure 2 show the *t*-statistic values, which are above than the critical value of 1.96. Thus, all the research hypothesis were supported.

Table 5: Hypothesis Testing

	Beta	t-statistic	Decision
<i>Extroversion -&gt; Knowledge sharing</i>	0.279	3.304	Supported
<i>Neuroticism -&gt; Knowledge sharing</i>	-0.215	2.444	Supported
<i>Agreeableness -&gt; Knowledge sharing</i>	0.240	3.198	Supported
<i>Consciousness -&gt; Knowledge sharing</i>	0.244	2.379	Supported
<i>Openness -&gt; Knowledge sharing</i>	0.395	3.511	Supported
<i>Emotional intelligence -&gt; Knowledge sharing</i>	0.253	3.219	Supported
<i>Religiosity -&gt; Knowledge sharing</i>	0.235	2.648	Supported

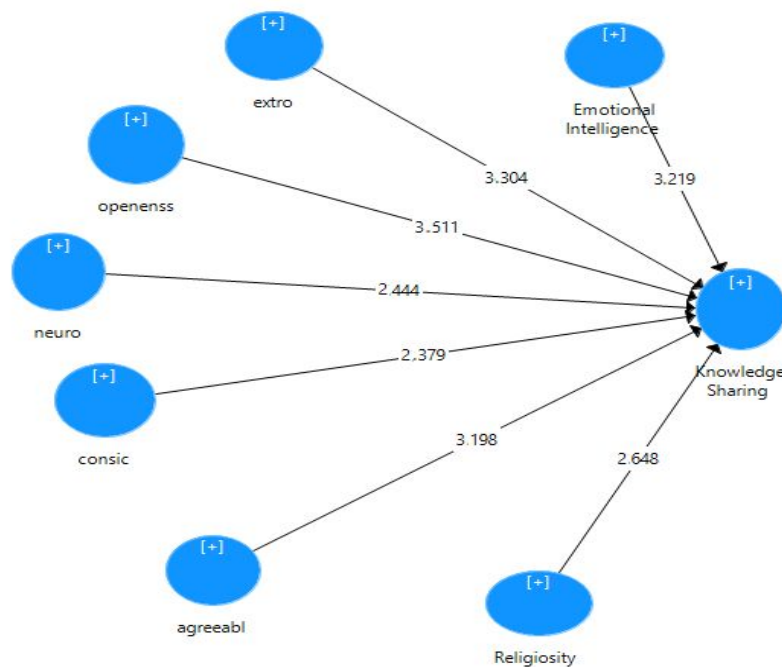


Figure 2: t-values of the path coefficients

**Effect Size**

Successively, the effect size ( $f^2$ ) was calculated to measure the contribution of religiosity, the personality traits and emotional intelligence to our endogenous variable, i.e., knowledge sharing, by using the following formula:

$$(R^2 \text{ included} - R^2 \text{ excluded}) / 1 - R^2 \text{ included} \dots \dots \dots (1)$$

The rule of thumb for  $f^2$  is that the values of 0.02, 0.15 & 0.35 are considered as weak, medium and large, respectively.

Table 6: Effect size of the study variables

Relationship	Effect size ( $f^2$ )
<i>Extroversion -&gt; Knowledge sharing</i>	0.38
<i>Neuroticism -&gt; Knowledge sharing</i>	0.15
<i>Agreeableness -&gt; Knowledge sharing</i>	0.14
<i>Consciousness -&gt; Knowledge sharing</i>	0.16
<i>Openness -&gt; Knowledge sharing</i>	0.38
<i>Emotional intelligence -&gt; Knowledge sharing</i>	0.23
<i>Religiosity -&gt; Knowledge sharing</i>	0.19

The results of  $f^2$  in Table 6 show that extroversion and openness have the largest effect size, while the rest of the factors have medium size effects on knowledge sharing.

## 5. Discussion

The study was focused on investigating the impact of individual characteristics on knowledge sharing in HEIs of Pakistan. The results of the current research showed that individual characteristics have a significant impact on knowledge sharing. In detail, this study endeavoured to test the six research hypotheses. The first hypothesis was concerned to investigate the association between the extroversion trait and knowledge sharing. The empirical analysis showed a positive impact of extroversion on knowledge sharing, which means the lecturers/teachers in HEIs having extrovert personality will be more likely to share knowledge. This finding is in line with prior studies (F. Agyemang & Boateng, 2016; Memon et al., 2016). The present research also supports the proposition that the characteristics of extrovert individual enforce them to share knowledge (Rahman, Mannan, Hossain, Zaman, & Hassan, 2018b). Thus, we conclude that individuals who score higher on this trait will be more willing to share knowledge.

The second research hypothesis was aimed to assess the link between neuroticism and knowledge sharing. The empirical findings of the study demonstrated a negative association between neuroticism and knowledge sharing; this is because of the temperamental issues of the individuals who are not emotionally stable. Therefore, we can say that individuals who are emotionally stable and have self-confidence will be more inclined to get engaged in knowledge sharing activities as compared to neurotic individuals. These findings are in line with past research (Anwar, 2017; Esmaeelinezhad & Afrazeh, 2018).

In the third research hypothesis, we assessed the connection between agreeableness and knowledge sharing. The results of structural equation modelling showed a positive association between agreeableness and knowledge sharing. This could be due to the characteristics of

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3 agreeable people, as agreeable individuals prefer to work with others (Liao *et al.*, 2004) and they  
4 always care about the relationship with others and try to be companionable pleasing (Organ &  
5 Ryan, 1995). People who score high on this trait are more helpful, sympathetic, kind-hearted and  
6 conflict-avoiding. Therefore, individuals who score more on agreeableness will be more likely to  
7 share knowledge as compared to those who score less on this trait, because knowledge sharing  
8 harness well in an environment which is dominated by trust and mutual benefits  
9 (Esmaeelinezhad & Afrazeh, 2018).

15 In the fourth research hypothesis, we analyzed the relationship between  
16 conscientiousness and knowledge sharing. The findings from our statistical analysis  
17 demonstrated a positive association between conscientiousness and knowledge sharing the  
18 intention of lecturers of HEIs in Pakistan, which is in line with (Gupta, 2008; Memon *et al.*,  
19 2016). However, our result contrasted with the findings of (F. Agyemang & Boateng, 2016), this  
20 could be due to the reason of characteristics possessed by the conscientious people, as mentioned  
21 in the introduction to the personality traits that conscientious people are hard-working,  
22 responsible, dutiful and sociable. Thus, we can conclude that university teachers who score  
23 higher on the conscientiousness trait will be more dutiful and will intend to share more  
24 knowledge as compared to their counterparts with lower scores.

32 The fifth hypothesis of this research focused on testing the link between openness to  
33 experience and knowledge sharing in HEIs of Pakistan. The empirical evidence revealed a  
34 positive association between these two variables. The finding is inconsistent with the results by  
35 (Pei-lee Teh *et al.*, 2011) because individuals with openness to experience trait are more open to  
36 learning and experiencing new things. Accordingly, we concluded that those teachers who are  
37 more open to experience would be more likely to share knowledge.

43 The sixth research hypothesis was linked to the association between religiosity and  
44 knowledge sharing, and our results showed a positive relationship between these two measures.  
45 Religion plays a vital role in shaping the behavior and attitude of a person. And behavior is the  
46 predictor of action, as the study was conducted in Pakistani context where 96% population is  
47 Muslim, and a similar percentage is present in the educational institutes as employees. Therefore  
48 the results are not astonishing. It is logical that an economy which is dominated by Muslims may  
49 support the knowledge sharing activities, as the foundation of Islam was laid on "Iqra" (read) and  
50 the Prophet Muhammad (Peace Be Upon Him, PBUH) has also laid great stress on knowledge  
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3 acquisition and dissemination, this could be found in many Ahadîth (saying of the Prophet  
4 Muhammad ﷺ). He said to His companions, “Learn the obligatory acts and the Qur’an and teach  
5 them to the people, for I am a mortal” (Tirmidhi 244). In another saying, He (PBUH) said to His  
6 companions acquire the knowledge and impart it to the people (Tirmidhi 279).

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10 In the final hypothesis of this study, we investigated the connection between emotional  
11 intelligence and knowledge sharing in Pakistani HEIs. Our data revealed a positive association  
12 between the two variables. Emotional intelligence perception is “social intelligence” by which  
13 the ability to understand and manage individuals and take sensible actions in human relations are  
14 signified (Thorndike, 1920). Therefore, it is logical and reasonable to expect knowledge sharing  
15 by emotionally intelligent individuals because they show concerns to others’ emotions.

## 21 22 **6. Research Contributions and Implications**

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24 The paper contributed to the body of knowledge by focusing on knowledge sharing among the  
25 university employees by using the dispositional factors (the personality traits, religiosity and  
26 emotional intelligence). Just a few prior studies have been conducted on the five-factor model of  
27 personality and knowledge sharing; however, to the best of the researchers’ knowledge, there is  
28 no study which empirically tested the association of religiosity and emotional intelligence with  
29 knowledge sharing, especially in the context of developing economies, such as Pakistan. Thus,  
30 our study added a unique contribution in the domain of knowledge management.

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36 As emotional intelligence is an essential part of human personality which cannot be  
37 easily changed and substituted (Ansari & Malik, 2017), for this reason, workforces must be  
38 asked to participate in structured development and training programs to develop their emotional  
39 intelligence. These programs should include courses that focus on developing the ability to feel  
40 about ones oneself and others and to manage them effectively. If employees have strong  
41 emotional intelligence, they are more likely to share knowledge among the members of the  
42 organization. In adding to it, firms should focus on activities designed to promote the  
43 “socialization” of employees to promote the exchange of knowledge. Besides, the findings of  
44 this study showed a negative association between neurotics and knowledge sharing behavior.  
45 Therefore, this research suggests that human resource development practitioners should come up  
46 with training and development programs to enhance the knowledge sharing the behavior of  
47 employees who are already working in universities. In addition to this, some financial rewards  
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3 system should also be incorporated to motivate neurotic employees to share their knowledge  
4 with colleagues and students.  
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## 7. Research Limitations and Future Directions

9 This study carries some limitations, and the first limitation is related the generalizability of the  
10 findings as our research solely focused on the university lectures; therefore, the findings of this  
11 paper might not be applicable to other industries. Therefore, we highly recommend that future  
12 studies should investigate other sectors of the economy as well. The second limitation is about  
13 the variables used in this study, as our work solely focused on the dispositional factors by  
14 ignoring many structural, environmental and organizational factors which limit the holistic view  
15 of knowledge sharing in universities; therefore, future research should be conducted by  
16 incorporating the structural, environmental and organizational factors. The final limitation is  
17 regarding the context of the study, as the research was conducted in Pakistani culture, which is  
18 inclined towards Islam, this contextual constraint has made the generalizability of the results  
19 limited, and thus it is strongly recommended that this study should be conducted in multi-  
20 religion society so that a holistic view of religiosity might be investigated.  
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## Appendix

### The Survey Questionnaire Items

#### *The Personality Traits*

##### *Extroversion*

- I see myself as someone who tends to be quiet.  
I see myself as someone who has an assertive personality.  
I see myself as someone who is sometimes shy, inhibited.  
I see myself as someone who is outgoing, sociable.

##### *Agreeableness*

- I see myself as someone who tends to find fault with others.  
I see myself as someone who starts quarrels with others.  
I see myself as someone who has a forgiving nature.  
I see myself as someone who likes to cooperate with others.

##### *Conscientiousness*

- I see myself as someone who does a thorough job.  
I see myself as someone who can be somewhat careless.  
I see myself as someone who tends to be lazy.  
I see myself as someone who perseveres until the task is finished.  
I see myself as someone who is easily distracted.

##### *Neuroticism*

- I see myself as someone who is depressed, blue.  
I see myself as someone who worries a lot.  
I see myself as someone who can be moody.  
I see myself as someone who gets nervous easily.

##### *Openness*

- I see myself as someone who has an active imagination.  
I see myself as someone who is inventive.  
I see myself as someone who values artistic, aesthetic experiences.  
I see myself as someone who is sophisticated in art, music, or literature.

#### *Religiosity*

- Religion is especially important to me because it answers many questions about the meaning of life.  
I spend time trying to grow in understanding of my faith.  
Religious beliefs influence all my dealings in life.  
It is important for me to spend periods of time in private religious thought and prayer.  
I enjoy taking part in the activities of my religious organization.  
I enjoy spending time with others of my religious affiliation.

#### *Emotional Intelligence Scale*

- I have a good sense of why I feel certain feelings most of the time.  
I have a good understanding of my own emotions.  
I really understand what I feel.  
I always know whether I am happy or not.  
I always know my friends' emotions from their behavior.

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3 I am a good observer of others' emotions.  
4 I am sensitive to the feelings and emotions of others.  
5 I have a good understanding of the emotions of the people around me.  
6 I always set goals for myself and then try my best to achieve them.  
7 I always tell myself I am a competent person.  
8 I am a self-motivating person.  
9 I would always encourage myself to try my best.  
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### 12 ***Knowledge Sharing***

13 I will share my work reports and official documents with members of my organization more  
14 frequently in the future.  
15 I will always provide my manuals, methodologies and models for members of my organization.  
16 I intend to share my experience or know-how from work with other organizational members  
17 more frequently in the future.  
18 I will always provide my know-where or know-whom at the request of other organizational  
19 members.  
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