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Gender and Discipline Differences in Knowledge Sharing Intention among Sudanese Tertiary Students: Structural Equation Modeling

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Abstract

This study investigates the factors that affect the knowledge-sharing intention at tertiary level. A survey was conducted with 166 knowledge-sharing students of Sudan University of Science and Technology (SUST) – Khartoum city. The result showed significant relationship between ICT use and knowledge sharing intention. Whereas, the study did not show significant relationship between attitudes and knowledge sharing intention as well as significant relationship between attitude and ICT use was not found. However, the model did not cross age and discipline.

Keywords: knowledge sharing, tertiary students, discipline, intention.

1. INTRODUCTION

Knowledge sharing is a process of the conversion of knowledge form tacit to tacit, tacit to explicit, explicit to explicit and explicit to tacit (Nonaka & Takeuchi, 1995). KS tools can be defined as those mediums that help the students to share knowledge among them by resolving time, cost and distance barriers. Traditional knowledge sharing is the act of sharing knowledge that is done through direct personal contact, closely related to a face-to-face setting (Riege, 2005). Technology has the potential to widen the range of a communication act. Bartol and

Srivastava (2002) proposed four mechanisms for knowledge sharing. To promote knowledge sharing these factors can be categorized into three levels: the individual level, the organizational level, and the technology level (Riege, 2005; Yang & Wu, 2008, Ghulam, et al, 2017).

Moreover, trust is defined as the degree to which that a team member believes his/her partners work well with each other Anderson and Narus (1990). They added that the increased level of trust leads to a higher level of knowledge sharing. While, Al Saifi (2014) believes that a concept of trust is much debated, with no agreement on its definition other than that it is complicated and multifaceted

Pertaining to the concept of self-efficacy Bandura (1986), defines it as people's judgment of their capabilities to organize and execute courses of action required to perform or self-efficacy as person's capability to perform a behavior or a task. It shows that human behavior is influenced by personal behavioral and environmental factors Bandura (1977).

Nevertheless, it has been observed that there is less seminars and training on knowledge sharing in order to highlight students in tertiary levels and build interactive and enrich knowledge environment. May be that refer some students are reluctant to share knowledge due to lack of awareness and mistrust on others (Ul Hag & Haque 2018). Some students do not want to share their thoughts and expertise with others and lack of understanding of the benefits of sharing knowledge whereby, some others like sharing their knowledge and experience (McLure et al, 2000, Agrawal et al, 2017).

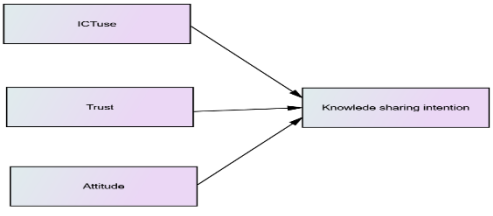

Figure 1:Conceptual model adapted from (Ul hag & Haque 2018)

Purpose of the Study

Linkage between trust, attitude, ICT and knowledge sharing intention become important because that reflect students how they perceive and how they act in the context of knowledge sharing, and these factors show reflection and feedback of users in a specific situation and environment. Therefore, the main purpose of the present study is to investigate influence of ICT use, attitude and trust on knowledge sharing intention in context of college environment. The hypotheses of this study are as follows:

H1: There is positive relationship between ICT use and Knowledge sharing intention.

This hypothesis has been supported by some previous research studies for instance (Ghulam, 2017), (Balubaid 2013), (Kaba, et.al, 2019), (Singporn et al. 2019), (Lawrence, 2019) and (Ul haq and Haque 2018). ICT use is highly significant with knowledge sharing. Whereas, study of (Ghulam, et.al (2017), (Kaba.et.al (2019) (Taghipour, 2015), (Pornwipha.et.al 2019), Lawrence. (2019), (Syed, et.al 2016) and Balubaid.: (2013), showed negative relationship between sharing knowledge and ICT use in academic environment and organizations.

H2: There is positive relationship between trust use and Knowledge Sharing intention.

The hypothesis between attitudes and knowledge sharing had been shown positive and negative results in the previous studies for example Roland et al (2014), (Khesal, and Zohoori (2013), (Rutten, et al 2016) and (Muhammad, et al 2018) showed a negative relationship between trust and knowledge sharing attitude. Conversely, study of (Isika ,et .al. 2012) , (Chedid, et .al. 2019), (Chaudhry, 2005), and (He, 2009) showed that relationship between trust, and ICT use are the key factors in order to boost knowledge sharing amongst users.

H3: There is positive relationship between attitude and Knowledge Sharing intention.

This hypothesis is supported by these studies for instance (Isfahani, et.al 2013), (Ishrat and Rahaman 2019), (Luturmas and Indarti 2016) have been conducted in different disciplines and organizations but have shown that students or employees' attitude positively related to

knowledge sharing. Nevertheless, a study of (Kwok and Cao 2005) had shown negative relationship between attitude towards knowledge sharing.

H4: There is positive relationship between discipline and Knowledge Sharing intention.
These studies (Ragsdell, **2**013) and (Cheng, et al. 2014) have found out that academic discipline is related to knowledge sharing intention.

H5: There is positive relationship between gender and Knowledge Sharing intention.
There are some studies have found out that positive relationship between gender and knowledge sharing intention while others have shown negative relationship for instance study of (Boatteng, et.al . 2015), (Ma, et.al .2011), (Ma and Yuen (2011), (Wendy and Chan 2015), (Tan and Tang 2015), (Boaten , et .al 2015) the results emphasized relationship between gender specifically in different originations was positive for instance study of (Wendy and Chan 2009) and (Ismail and Yusof 2009). Thus, these studies emphasized that gender is a good predictor of sharing knowledge in different discipline and originations.

2. RESEARCH METHOD

2.1 Participants and procedure

A survey was conducted with 166 students at Sudan University of Science and Technology *(SUST)* Khartoum city - Sudan. The respondents were 57.8% female and 42.2% were male. Discipline (human sciences 27.1%, applied science 72.9%). Students were invited from different disciplines to answer the e-questionnaire. An email was attached to the students who fulfilled the research requirements such as undergraduate students. The email provided with instructions that directed the participants for instance confidentially statement. To validate the hypotheses of the present study a path analysis was employed. This technique facilitates an exploration of causal relations among the represented constructs of the model and direct and indirect effects. To evaluate the fitness of the model, SPSS Version 25 and Amos Version 24 were employed to analyze the data.

2.2 Instrumentation

The 28-items (trust, ICT use, Attitude) of the instrument adopted from (Mallasi & Ainan, 2015). While, intention variable includes 4 items was adopted from (Castaneda, et.al 2016). The instrument was translated into Arabic language. The instrument utilizes a 5-point Likert scale SD= 1 to SA= Exploratory factor analysis was used. So, convergent and discriminant validity were conducted table 1.

Table 1: Summary of constructs

constructs	Items	Factor loading	CR	AVE
Attitude(att)	Att9	**.802**	**.92**	**.71**
	Att9	**.786**		
	Att7	**.750**		
	Att6	**.725**		
	Att5	**.720**		
	Att4	**.718**		
	Att3	**.711**		
	Att2	**.701**		
ICT use (ICT)				
	Ict9	**.618**	**.55**	**.70**
	Ict5	**.601**		
	Ict4	**.644**		
	Ict3	**.645**		
Intention(Int)				
	Int4	**.815**	**.84**	**.72**
	Int3	**756**		
	Int2	**.638**		

2.3 Convergent Validity

The convergent validity (CV) of two e-questionnaires of the present study were carried out based on Fornell and Larcker (1981), CV loading > 0.7 , CR > 0.7 and AVE should be > 0.5. These requirements are presented and illustrated in the table (2).

2.4 Discriminant Validity

The discriminant validity of this model evaluated based on Fornell and Larcker (1981), square root of the (AVE) values were carried out for each dimension separately. In addition, to assess discriminant validity for factor should compare the square roots of average variance extracted (AVE) for each factor with connections between that construct and all other constructs.

Table 2: Discriminant Validity

Construct	att	ICT	Int
Att	.84	.83	
ICT	.44	03	.85
Int	.41	.06	.20

Note: Diagonals represent the average variance extracted, whereas the other matrix entries represent the square correlations.

3. DATA ANALYSIS AND RESULTS

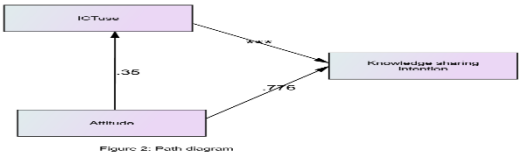

Figure 2: Path diagram

3.1 Path Analysis

Path analysis facilitated the identification of a set of meaningful relationships with low and high correlation sizes. The highest effect existed between ICT use on knowledge sharing intention (P value =0<0.05), followed by attitude and knowledge sharing intention (P value =0.77) and ICT use on attitude (P value =0.35), as shown in figure (2).

3.2 Discussions

In the current study, a model involving the influence of these variables (ICT use, attitude, trust) on knowledge sharing intention at Sudan University of Science and Technology *(SUST)* was tested. The present study contributes to a deeper understanding of knowledge sharing in this context in tertiary level. The strongest significant relationship was found in this study specifically between ICT use and knowledge sharing intention < 0.05 = ***.This means that students who have high IT self-efficacy enable interact effectively with others and share their own ideas in order to benefit their colleagues. In contrast, the result found that there was no significant relationship between attitude and knowledge sharing >0.776 so students who have negative attitudes towards information and lack of feedback rarely or difficult share

knowledge. Also the study had shown that there was no significant relationship between attitude and ICT use > 0.359. Therefore, regarding to trust variable had not displayed in the analysis because did not satisfy requirements of confirmatory factors analysis. Thus, a strong link between students attitudes, trust and ICT use and knowledge sharing intention depend on users believe and culture. The study confirms at Sudan University of Science and Technology *(SUST)* had shown a relationship between ICT use and knowledge sharing intention, which has been found and supported by these studies (Ghulam, 2017 ; Balubaid, 2013; Kaba et el, 2019; Singporn et al, 2019; Lawrence, 2019; Ul haq & Haque 2018; Ghulam, et. al. 2017; Kaba et al., 2019 ; Balubaid, 2013; Taghipour, 2015; Pornwipha et al, 2019; Lawrence 2019 and Syed et al, 2016).

The result showed that there wasn't a significant relationship between attitude knowledge sharing >0.776. This finding was supported by these studies (Kwok & Cao, 2005; Isfahani et al, 2013; Shrat & Rahaman, 2019; Uturmas and Indarti, 2016). The result also had shown that there wasn't a significant relationship between attitudes and ICT use > 0.359. This finding was supported by these studies (Alzaidiyeen, et.al 2010, Kluever et.al 1994, Huang, 2003 and Alzaidiyeen, et al 2008). This negative relationship between attitudes and ICT use revealed that users are less likely to contribute effectively to the utilization of sharing knowledge for educational purposes or various educational tasks.

These results supported by self-efficacy theory Bandura (1977, 1986) for instance if a student he/she has positive ICT, attitude and trust can share Knowledge effectively and simply, may he or she does not share knowledge in practice with others based on his/her culture background. So, high level of ICT use increases interaction with colleagues and increases effect of Knowledge Sharing vice versa. In summary, the relationship between ICT use and Knowledge sharing intention is stronger and positive whereas, the relationship between attitude and Knowledge Sharing was negative, also the relationship between ICT use and attitude was negative.

4. LIMITATIONS AND RECOMMENDATIONS

The present study was conducted among tertiary students at Sudan University of Science and Technology *(SUST)* - Khartoum in 7th Feb, 2020, the limitations of the study were: The participants who responded to e-questionnaire in the public and private colleges in Khartoum city only. In addition, the present study tested only two exogenous factors of the model (attitude and ICT use) whereby the third exogenous variable which was trust did not display in the final analysis because it showed low statistical fit. Therefore, the findings might not be generalized for tertiary students in knowledge sharing intention because that was restricted in the public and private colleges in Khartoum city. The study showed low responses from the participants and even over all responses were 166 students. Further research studies need to consider in depth qualitative studies and in-depth interviews to investigate the level of ICT use, attitudes by students and lecturers. Studies can also carry out in the future knowledge sharing networking in different disciplines and organizations. Researchers should be concerned with students' self- efficacy in different discipline as well as, trust and attitudes.

5. CONCLUSION

Knowledge sharing intention is used in different organizations and disciplines. The present study tested the relationship between trust, attitude and ITC use and knowledge sharing intention among tertiary students at Sudan University of Science and Technology *(SUST)* and beside that tested gender and discipline differences to ensure the model crosses these variables. The present study showed that three exogenous variables namely**:** ICT use and attitude were related to knowledge sharing, while trust variable was excluded because it didn't satisfy requirements of Structural Equation Modelling. However, the model did not cross gender and discipline in the present study**.** The result showed that there was positive relationship between ICT use and knowledge sharing intention while, there was no positive relationship between attitudes and knowledge sharing intention and also there was no relationship between attitudes and ICT use.

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