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EFFECTS OF PERCEPTION OF COLLABORATIVE TECHNOLOGIES ON KNOWLEDGE CREATION AND SOCIALISATION AMONG PSYCHIATRIC NURSES IN SOUTHWEST NIGERIA

*Oluyemi Folorunso **AYANBODE[1] &** Williams Ezinwa **NWAGWU[2]***
Neuropsychiatric Hospital, Aro, Abeokuta, Nigeria; Department of Information Science, University of South Africa, Pretoria, South Africa[1]; University of South Africa, Pretoria, South Africa, University of Ibadan, Ibadan, Nigeria[2].
57639884@mylife.unisa.ac.za[1];willieezi@yahoo.com[2]

Abstract

Purpose *-The study examined the effect of collaborative technologies (CTs) perception on knowledge creation and the mediating role of socialisation in the relationship.*

Design/methodology/approach *–A survey research design was adopted and data was collected from nurses at two psychiatric hospitals in southwest, Nigeria through self-administered questionnaires. A total of 202 copies of questionnaire were analysed using SPSS version 22 and SPSS AMOS version 23.*

Findings *–The study model has explained and established relationship between CTs perception (CTs user's friendliness, CTs task fit and CTs versatility) and knowledge creation, and that socialisation(mentoring, coaching and apprenticeship) was a powerful mediator in the relationship.*

Implications *- Practically, the three-factor model will provide a framework to investigate the mediating effects of externalisation, internalisation and combination in the relationship between CTs perception and knowledge creation. The study suggested that organisations could increase positive perceptions of CTs among their staff through continuous ICTs training programme, motivated mentoring, coaching and apprenticeship. Though the study focused only on nurses in two psychiatric hospitals in Southwest Nigeria, further research could be conducted using samples from other psychiatric hospitals in Nigeria, due to difference in hospital organisational culture, structures and infrastructures that can influence employees' CTs perception and knowledge creation initiatives.*

Originality/Value *– in the context of psychiatric hospitals, this study is the first that examined the effect of collaborative technologies (CTs) perception on knowledge creation and the mediating role of socialisation in the relationship.*

Paper type: *Empirical research*

Keywords*: Technological factors, collaborative technologies perception, socialisation, knowledge creation.*

Introduction

Knowledge management (KM) encompasses human resource management and good information technology and information system management (Davenport & Prusak, 1998). Klasson (1999) observed that in most instances, technology-enabled knowledge management solutions employ content technologies that enhance the capture and management of explicit information and collaboration to enable individuals and communities to create, share and socialise in order to meet specific business objectives. Utilising information technologies for collaborative purposes effectively enables knowledge management, because they facilitate the collaborative processes and the wide distribution of knowledge for capture and re-application (Perrott, 2007).The capacity of collaboration technologies (CT) to combine all knowledge management activities and processes allows for the dynamic creation, capture, and sharing of all types of knowledge in the organisation.Notwithstanding, studies have shown that technological factors such as CTs perception, CTs affordability and CTs Skills have significant effect on KM(Lin & Huang, 2008; El Said, 2015; Saleh & Burgess, 2009; Orlikowski, 2000).

Technological factor such as CTs perception is associated with users' way of thinking about or capacity to understand the ease of use, usefulness, media richness and technology sophistication(Ruhi and Al-Mohsen, 2015).It has dictated people's choice of CTs used for information and knowledge creation and sharing. Severalresearches have also shown that CTs perception either facilitates or inhibits the use of such CTs for knowledge creation among people. Thus, CTs perception could have positive or negative effect on creation of ideas, initiatives, innovations and new insights. For instance, it has been observed that nurses use CTs to create knowledge during daily clinical operations, but the effect of their perception of CTs on knowledge creation has not been properly documented. Yet, effective mentoring, coaching and apprenticeship among the nurses may also have mediating effect onthe relationship between CTs perception and knowledge creation. Consequently, the study sought to investigate the effect of CTs perception on knowledge creation among psychiatric nurses and the mediating role of socialisation in the relationship.

Research Objective

The primary aim was to examine the effect of CTs perception on knowledge creation and the mediating roles of socialisation in the relationship.

Literature Review

Knowledge creation

Knowledge creation is a product of generation, while both are products of acquisition. Mavodza and Ngulube (2012) opined that knowledge generation comprises the exploitation of existing knowledge to create new knowledge, as well as finding new knowledge through interacting and collaborating with other individuals or systems. This process therefore involves the acquisition of knowledge, if it is to be successful.Nemani (2010) noted that organisations acquire knowledge both externally and internally. They acquire information from external sources through: best practices and benchmarking information from other organisations, attending conferences, hiring consultants, monitoring economic, social and technological trends, collecting data from customers, competitors and resources, hiring new staff, working with other organisations, building alliances, forming joint ventures, and establishing knowledge links with business partners. At the same time, organisations acquire knowledge internally by accessing the knowledge of its employees, learning from experiences and implementing continuous process improvements.

Smith (2001) said knowledge-creating concepts begin as data. According to Business dictionary (2016) knowledge creation is the formation of new ideas through interactions between explicit and tacit knowledge in individual human minds. As defined by Nonaka (1991) it consists of socialisation (tacit to tacit), externalisation (tacit to explicit), combination (explicit to explicit), and internalisation (explicit to tacit). These are four basic processes for creating knowledge in organisations (Nonaka, 1991). These involve the conversion of knowledge from one type to the other:

From tacit to tacit - learning by observation, imitation and practical experience, and by socialisation, learning through mentoring, apprenticeship and social network with peers.

From tacit to explicit - by externalisation, the unspoken is expressed and captured into explicit form. This may be through: group discussions, generation of ideas and innovations and using their contents to create new tangible knowledge.

From explicit to explicit - by combination process, separate pieces of explicit knowledge are articulated into new explicit knowledge.

From explicit to tacit- by internalisation, this involves person's making of sense from explicit knowledge by correctly interpreting and understanding it. Tacit knowledge only becomes part of a person’s knowledge when it is articulated and internalised.

As noted by Nonaka (1991), and Nonaka and Takeuchi (1995), the SECI and *ba* models play an invaluable role in the discovery of new knowledge through interactions and collaborations with other individual systems and

in the generation of new knowledge. According to Nonaka and Toyama (2007) the essentiality of Ba is the contexts and the meanings that are shared and created through interactions that exist at a specific time and in a specific space, rather than a space itself. Ba also refers to the relationships of those who are at the specific time and the specific space (Nonaka & Toyama, 2007). Knowledge is created by individual, group of individuals and organisation to meet specific goals. The knowledge creation process is not a static one, but a spiraling process with dynamic interactions occurring at different levels; as both tacit and explicit knowledge are held by individuals, groups, organisations, and inter-organisational domain(Baskerville & Dulipovici, 2006).

Technologies use contextin knowledge management

Technology use context within which a particular type is adopted and use influence either positively or negatively, the KM practices involved in by an individual and organisation. One has to recognise that computer technology is a facilitator of KM, or a tool to assist individuals and groups in acquiring organisational knowledge(Nemani, 2010). When the context of use of such technology is to ensure prohibition, access to knowledge stored in or transmitted in such medium becomes difficult. When the context of use is to facilitate distribution of knowledge, acquisition, sharing and transfer practices are encouraged and achieved easily. Paroutis and Al Saleh (2009) stated that knowledge management literature has identified a wide range of factors that influence knowledge sharing behaviour, which are summarised into the following three categories: technological factors, organisational or environmental factors, and individual or personal factors. They identify employees' willingness to use and/or contribute their knowledge to Web 2.0 platforms as key determinant of knowledge sharing. Associated factors were also identified and categorised into four: history, outcome expectations, perceived organisational or management support and trust. User's friendliness and the availability of the technologies in use, determine the user's willingness to use and involvement in KM practices. The effectiveness and convenience of using existing tools also adversely affect the willingness to adopt particular collaborative technologies (Paroutis & Al Saleh, 2009).

Operational skills of the users, their knowledge about the technologies or tools, and the benefits to be derived from using them, influence knowledge creation, sharing, transfer and retention. If the context of use of technologies is to network, such will positively influence KM processes. Knowledge management processes and activities are usually based on electronic networkability, including the internet, intranet, and extranet (Nemani, 2010).

Technology perception

The users' perception of technology' robustness, user friendliness (Davis, 1989) and the task fit (Lin & Huang, 2008; El Said, 2015) usually affect the adoption and use of such technology. A positive perception of technology spurs their use for KM. The major findings from the study done by Ruhi and Al-Mohsen(2015) validated the role of technology perceptions including: ease of use, usefulness, media richness and technology sophistication in improving the use of enterprise 2.0 technologies in the workplace, and that the use of these technologies, have a positive effect on the knowledge management environment of the organisation. El Said (2015:1) found that the use or non- use of technology is determined by reliability, accessibility, and ease of use, as confirmed by 84% of the participants. Such characteristics of the technology have high impact on the users' perceived usefulness of the system, as well as productivity and efficiencies in the workplace.

Conceptual model

In the conceptual model as shown in fig 1, knowledge creation is a dependent or endogenous variable, while CTs perception is an independent or exogenous variables and socialisation is a mediating variable. Knowledge creation is carried out through processes of socialisation, externalisation, combination and internalisation, Knowledge creation is enabled through the use of CTs. CTs perception affects the use of CTs. These variables are inter-related. The relationships are indicated by connecting

lines as shown in figure 1. The lines with an arrow in one direction indicate hypothesised direct relationship among the variables. Such arrows originate at the causal variable and point to the variable that is caused. The lines with an arrow in two directions indicate correlational relationship among the variables. To every endogenous variable, residual term which is depicted with a circle having 'e' standing for error is added.

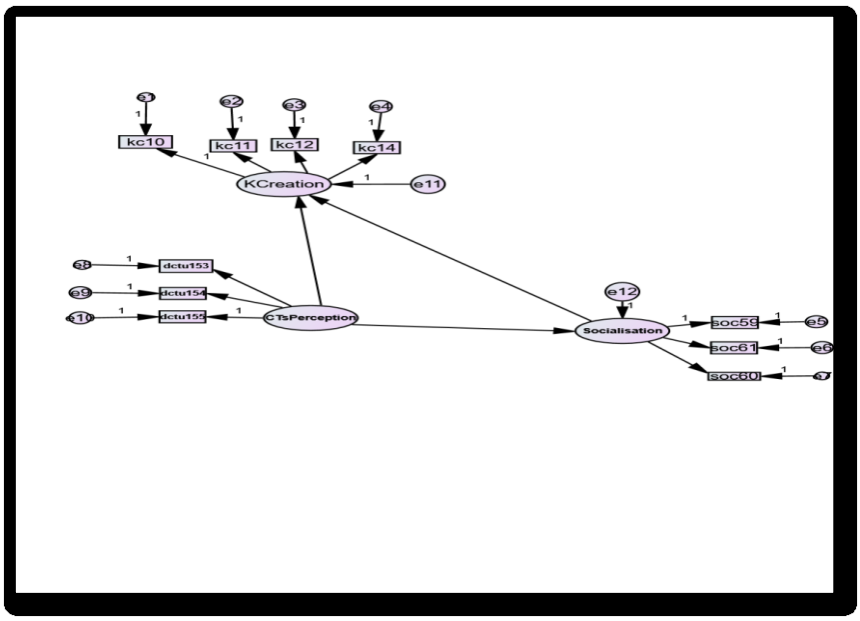

Figure 1: Conceptual model

Conceptualisation and propositions

Knowledge creation is the exploitation of existing knowledge to generate new knowledge (Mavodza & Ngulube, 2012). Nonaka and Takeuchi (1995) identified socialisation, internalisation, externalisation and combination (SECI) as the interaction modes that initiate and facilitate the processes of creating organisational knowledge and sharing for reuse. Hence, socialisation has effect on knowledge creation. Thus we proposed that:

H_3.Socialisation has direct effect on knowledge creation

CTs foster the processes and practices of KM (Koohang, Harman & Britz, 2008; Kennedy, Mighell & Kennedy, 2010) and CTs perception is one of the determinants of use of technologies (Paroutis & Al Saleh, 2009; El Said, 2015). Ruhi and Al-Mohsen(2015) confirmed that technologies perceptions including: ease of use, usefulness, media richness and technology sophistication determine its use and that the use of these technologies have a direct effect on the knowledge management environment of the organisation. It is believed that CTs perception has effect on knowledge creation. Hence, we proposed that:

H_1. CTs perception has direct effect on knowledge creation.

H_2.CTs perception has direct effect on socialisation

It is believed that CTs perception will have effect on socialisation and knowledge creation. Also, socialisation may mediate the relationship between CTs perception and knowledge creation. Thus, we propose that:

H_4. Socialisation mediates the relationship between CTs perception and knowledge creation.

Methodology

Research design

The study adopted a sample survey research design because the subjects are large and also widely spread in the institutions.

Sampling for the study

Two federal psychiatric hospitals in the southwest geo- political zone in Nigeria were purposively selected, on account of ease of

access and a random sample of 369 nurses was selected for the study.

Instrument

A structured questionnaire developed by the researchers was used to collect data. A five-point Likert scale was used to measure the variables: strongly agree (SA=5), agree (A=4), undecided (U=3), disagree (D=2) and strongly disagree (SD=1). The structured questionnaire contained questions on the demographic characteristics of the nurses, knowledge creation practices and CTs perception. The questionnaire for this study was pre-tested on ten respondents (medical & para-medical professionals) from Community Mental Health Hospital Oke Ilewo Abeokuta in order to refine it. Reliability analysis function, using SPSS 22 was done. The internal consistency of the questionnaire was investigated. The overall Cronbach's alpha value for the whole questionnaire was 0.94 which was above 0.70 recommended.The 369 copies of questionnaire were self- administered. They were distributed and received by the researchers. The questionnaire was administered to nursesin their work environments within October to December 2017.

Data analysis

Quantitative analysis was done using both descriptive and inferential statistics and SPSS 22 and AMOS 23 were used respectively in the analysis. Before the data analysis with SPSS 22 and AMOS 23, data was prepared in terms of coding and labelling to fit the computer software. Coding of the data is usually conducted before data collection. In the study, responses to the questionnaire were collected with pre-coded questions.

For the purpose of inferential statistics, the questionnaire items for measurement model were coded and labelled as shown in Appendix1. Factors (composite measures) employed in CFA were first extracted using principal factor analysis and regression analysis was used to determine the strength of association among the variables. The hypotheses were tested at0.05%level of significance

Data reduction using principal component analysis

Kaiser-Meyer-Olkin measure of sampling adequacy test accounted for 77.0%, higher than the 60% threshold (Hair et al. 2010:111). Bartlett's test was also significant χ^2 = 595.456, df = 45, p = 0.000, indicating that the items were appropriate factors based on the variances.

Factor loadings

Ten items loaded on three extracted factors (constructs). All the items loadings were >0.50, ranging from 0.708 to 0.851.The three factors have satisfactory total variance of 65.3% with their eigenvalues ranged from 1.37 to 3.42. Hence, all five constructs have satisfactory convergent validity.Items of same constructs loaded highly on their constructs in comparison to their loadings on other constructs. This confirms the discriminant validity.

Results

Out of 369 copies of the questionnaire that were distributed, 202 were correctly completed and returned, representing a response rate of 54.7%. This is consistent with the opinion of Rubin and Bellamy (2012) that 50% is an acceptable response rate, particularly in an unsolicited survey. The 54.7% response rate was due to the busy work schedule of the participants, which made some of them unable to have the time to fill the questionnaire.

Demographic characteristics of the respondents

Of the 202 responses, 75 (37.1%) were from Federal Neuropsychiatric Hospital Yaba Lagos and 127 (62.9%) were from Neuropsychiatric Hospital Aro Abeokuta. Just 54(26.7%) of the respondents were males while more than half, 148(73.3%) were females. This indicates that the ratio of participation of the females to that of males was 2:1. The result also reveals that there were more female nurses than male. Just below one third, 61(30.2%) of the respondents were between the ages of 30- 39 years and 75(37.1%) of them were between ages of 40-49 years. Forty (19.8%) of nurses were below 30 years, 25(12.4%) were between the ages of 50-59 years and only a smallest proportion, one

(0.5%) of the nurses were above 59 years. The mean age of all the respondents was 36.94 years

Furthermore, the distribution of the qualification of respondents shows that above half, 103(51.0%) of the respondents had RPN, and 83(41.1%) of them had B.Sc. A small proportion 11(5.4%) of them had M Sc, and the least 1(0.5%) had PhD. Based on years of working experience, below one third, 60 (29.7%) of the nurses, had between 6-10 years of working experience, followed by 51 (25.2%) that had between 0-5 years of working experience, 47(23.3%) of them had between 11-15 years of working experience, 21(10.4%) of them had 16-20 years of working experience, 16(7.9%) of nurses had 21-25 years of working experience, three (1.5%) of them had between 26-30 years of working experience, and four (2.0%) of them had 31-35 years of working experience.The mean years of working experience is 10.58 years.

Measurement model assessment

Figure 2 presents the result of Pooled CFA. The model consists ofthree constructs (i) knowledge creation (ii) CTs perception, and (iii) socialisation

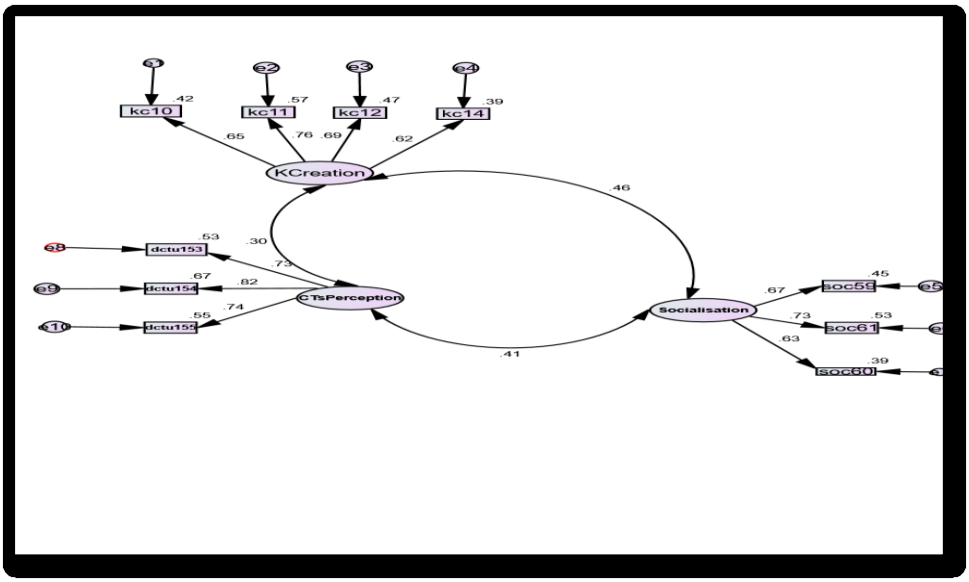

Figure 2 Pooled CFA: Measurement model assessment

Figure 2 showspooled CFA illustrates the factor loading for all items and the correlation between the latent constructs.

Model fit Indices:

P=0.095,χ2=42.838,d.f.=32,X^2/df=1.339, GFI=0.960, AGFI=0.931, RMSEA=0.041(0.00-0.071), TLI=0.973, CFI=0.981, RMR=0.032;SRMR=0.042, PNFI=0.661

Based on Kline's(2005) recommendation that model chi-square, RMSEA, 90% confidence interval for RMSEA, CFI, and SRMR be reported and that "RMSEA ≤ 0.05 indicates close approximate fit, values between 0.05 and 0.08 suggest reasonable error of approximation, and RMSEA ≥ 0.10 suggests poor fit" (Kline, 2005). CFI "greater than roughly 0.90 may indicate reasonably good fit of the researcher's model" and SRMR values "less than 0.10 are generally considered favourable" (Kline, 2005). The model fit indices:**χ2=42.838, df=32, RMSEA=0.041(0.00-0.071),CFI=0.981 and SRMR=0.042** for the measurement model as indicate above show that the model approximately fits the observed data and is therefore valid and acceptable for structural modeling. All the constructs in the current study have acceptable reliability and validity.

Table 1: Construct reliability and validity

Constructs	No of Items/components	Composite reliability(CR)	Croncbach's Alpha	Average Variance Extract
CTs Perception	3	0.811	0.806	0.590
Knowledge Creation	4	0.776	0.772	0.465
Socialisation	3	0.718	0.716	0.460

Construct reliability: A value of 0.70 or higher for Cronbach's alpha and estimate of CR= 0.70 or higher recommended by Fornell and Larcker (1981) indicate that construct is reliable and that there is adequate internal consistency. All the constructs in the table 1 meet that standard. Thus, the reliability of the construct is accepted as adequate.

Convergent validity: According to Hair et al., (2010) and Kline (2011), standardised factor loadings > 0.50 indicate convergent validity. All the unobserved or manifest variables in the study have standardised factor loadings of > 0.50. Thus they are significant indicators of the constructs and satisfy convergent validity.

Discriminant validity: To establish discriminant validity, the procedure recommended by Fornell and Larcker (1981)was used. In the method, discriminant validity is achieved if average variance extracted (AVE) is higher than maximum shared squared variance (MSV).

Table 2: Discriminant validity test based on CFA correlations, MSV

Correlations	r	r^2/MSV	AVE	Discriminant validity
CTsper <--> socialisation	0.407	0.166	0.590	Acceptable
Kc<--> socialisation	0.456	0.208	0.465	Acceptable
Kc <--> CTsper	0.299	0.089	0.590	Acceptable

Key: r=correlation, MSV= Maximum Shared squared Variance, Kc= knowledge creation, CTsper= CTs perception

From table 2, it is very clear that all the constructs show discriminant validity, because their MSV or ASV is lower than their AVE. Hence, the discriminant validity of measurement model is satisfactory.

Assessment of the structural model (Research model)

Figure 3 illustrates the relationships among the variables based on hypotheses. These causal relationships were confirmed through inferential statistics using structural equation modeling.

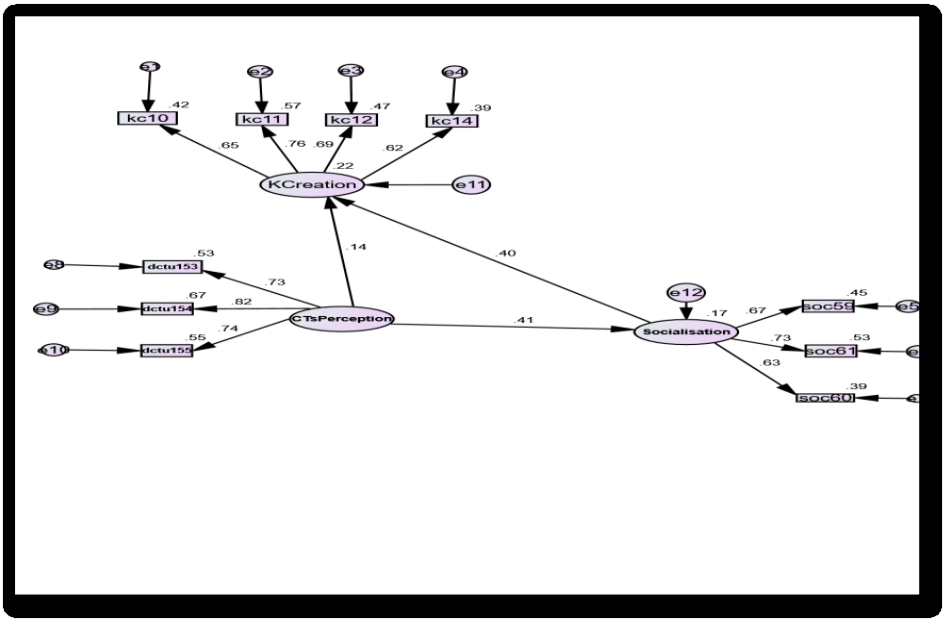

Figure 3: Structural Model

Model fit Indices: *P=0.095,χ2=42.838,df=32,X^2/df=1.339,GFI=0.960,AGFI=0.931, RMSEA=0.041(0.00-0.071), TLI=0.973, CFI=0.981, RMR=0.032;SRMR=0.042, PNFI=0.661*

Table 3: Model Fit Indices (Research model)

Model	P	χ2	TLI	CFI	RMSEA	SRMR
Null model	0.000	604 997	0.000	0.000	0.249 (0.231- 0.267)	
Research model	0.095	**42.838**	0.973	**0.981**	**0.04*1(0.00-0.071)***	**0.042**
Recommended value			>0.90	>0.90	< 0.10	< 0.10

χ^2= chi-square; TLI = Tucker Lewis Index; CFI= Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardised Root Mean Square Residual

Based on Kline's (2005) recommendation, the model fit indices: **χ2 = 42.838, df = 32, RMSEA = 0.041 (0.00-0.071)**, **CFI = 0.981 and SRMR = 0.042** for the research model presented in table 3 show that the model approximately fits the observed data.Based on Table 3, the final research model (RMSEA = 0.041) is better than the null model(RMSEA = 0.249).

Hypothesis testing

Hypothesis 1: *CTs perception has direct effect on knowledge creation.*

In line with what was proposed, CTs perception has direct effect on knowledge creation (*β*= 0.325; *P*< 0.01) and multiple $R^2$of 0.106. This suggests that 10.6% of variance in knowledge creation was accounted for by CTs perception. Likewise, it could be noted from the Table 4 that the analysis of variance for the regression produced critical-ratio of 3.508, which was higher than 1.96 recommended and significant at 0.05 level. This indicates that the effect of CTs perception on knowledge creation was significant and that other factors not thought of in the model may answer for the remaining difference. Thus, hypothesis1 was accepted.

Table 4: Hypothesis testing result

H	IV	DV	Estimates			R^2	Remark
			Beta	C.R	P		
H_1	*CTs perception*	*knowledge creation*	0.325	3.508	0.000	0.106	accepted
H_2	*CTs perception*	*socialisation*	0.423	4.239	0.000	0.179	accepted
H_3	*socialisation*	*knowledge creation*	0.401	3.530	0.000	0.161	accepted

Key: IV= Independent variable; DV= Dependent variable; Beta= standardised regression weight; C.R= Critical Ratio, P= level of acceptance, R^2= variance

As shown in figure 3, the explained variance in knowledge creation is 22.4%, R^2= 0.224.

Hypothesis2*: CTs perception has direct effect on socialisation.*

According to what was proposed, there was a significant direct relationship between CTs perceptionand socialisation (*β*= 0.423; *P*< 0.01)and multiple R^2 of 0.179. This suggests that 17.9% of variance in socialisation was accounted for by CTs perception. This means thatCTs perception has positive effect on socialisation.Thus, hypothesis 2 was accepted.

Hypothesis3*: Socialisation has direct effect on knowledge creation.*

Just as predicted, socialisation has direct effect on knowledge creation(*β*= 0.401; *P*< 0.01) and multiple R^2 of 0.161. This suggests that 16.1% of variance in knowledge creation was accounted for by socialisation. This means that socialisation has positive effect on knowledge creation. Thus, hypothesis 3 wasaccepted.

Hypothesis4: *Socialisation mediates the relationship between CTs perception and knowledge creation.*

Once socialisation entered the relationship between CTs perception and knowledge creation, the direct effect on knowledge creation decreased from (*β*= 0.325;*P*< 0.01) to (*β*= 0.136; *p* =0.158) as shown in figure 3. The drop indicates that there is mediating effect of socialisation. However, the mediation is full because the direct effect is not significant (*β*= 0.136;*p*=0.158). Therefore, in line with what we predicted, socialisation mediated the relationship between CTs perception and

knowledge creation.Thus, hypothesis 4was accepted.

Discussion

Demographic characteristics of the respondents were accessed to provide relevant information about the respondents who participated in the study. The mean of age of all was2.44. Majority (87.1%) of the respondents were below age 50 years. Similarly, in the study done by Asemahagn (2014) in hospital settings in Ethiopia, majority of the respondents were aged 50 years and below. There were more female nurses in the study than male nurses. It confirms that nursing profession is dominated by females. The mean of years of working experience was 10.58. Majority (88.6%) of the respondents had below 21 years of working experience. This suggests that an appreciable proportion of the nurses in the hospital have quite valuable experiences. Psychiatric hospitals should maximize the output of nurses' professional experiences by providing necessary reward incentives as deemed fit.

The findings from SEM analysis show that all research the hypotheses were accepted. The aim of the paper was first to identify the relationship between CTs perception and knowledge creation, and then the mediating role of socialisation in the relationship. The study provides further empirical assessment to assumed significant direct relationship between these variables

The study has established that there is direct relationship between the independent variable- CTs perception and dependent variable knowledge creation. This means that CTs user's friendliness, CTs task fit and CTs versatility impacted on knowledge creation, significantly. Thus, CTs perception has direct effect on knowledge creation. This is similar to the findings of Jarvenpaa and Staples (2000), who found that CTs characteristics have direct effect on information sharing. Therefore, it is important that nurses have positive perception of available collaborative technologies so that they may be motivated to use them for creation of new ideas, insights and innovations for the advancement of mental healthcare. Hospital management should build organisational culture and technological infrastructures to promote the right perception and use of CTs for knowledge creation.

In the study however, when socialisation was entered into the model, this resulted to a decrease in direct effect of CTs perception on knowledge creation(β= 0.325;P< 0.01) to non-significant (β=0.136;p =0.158). This indicates fullmediating effect of socialisation on the relationship between CTs perception and knowledge creation. The finding suggests that coaching, apprenticeship and mentoring are crucial to fostering the effect of CTs perception on knowledge creation.Socialisation entails sharing knowledge through face-to-face and social interactions. Hence, nurses must regularly engage in coaching, apprenticeship and mentoring through which they can develop positive perception and use of CTs

Findings have revealed a significant relationship between the independent variable- CTs perception and dependent variable socialisation. This indicates that CTs user's friendliness, CTs task fit and CTs versatility impacted significantly on socialisation. It can be concluded that CTs perception has a direct effect on the socialisation (coaching, apprenticeship and mentoring).The finding also suggests that nurses' CTs perception has influence on their tacit knowledge sharing processes. This implies that to effectively support the process of socialisation for knowledge creation, nurses must have positive disposition towards the use of CTs as enablers of knowledge management processes. CTs perception can be regarded as technological factor that is associated with knowledge management processes and practices. This is consistent with the submissions of Paroutis and Al Saleh (2009); Nemani (2010), who noted that technological factors influence knowledge processes and activities.

Quantitative findings have shown that there is a significant relationship between the independent variable socialisation and dependent variable knowledge creation. This indicates that socialisation (the sharing of tacit knowledge through coaching, apprenticeship and mentoring)facilitated knowledge creation among nurses in psychiatric hospitals in Southwest Nigeria.The finding also suggests that

the creation of new knowledge is tacit knowledge sharing dependent. Nonaka and Takeuchi (1995) confirmed that socialisation is the main process of creating tacit knowledge from tacit knowledge. Socialisation includes: reaching a mutual understanding through the sharing of mental models, brainstorming to generate new ideas, apprenticeship or mentoring interactions.This corroborates the findings of Popadiuk and Choo (2006), who found that socialisation and externalisation are two main processes that enable creation and sharing of tacit knowledge and have a significant effect on creating of new knowledge. Samarah, Paul, and Tadisina(2007) noted that knowledge management processes are related to knowledge creation and sharing. Similarly, Anand, Ward and Tatikonda(2010) found that socialisation, externalisation, combination, and internalisation significantly impacted knowledge creation.

Implications

Practically, hospitals as knowledge-based organisations can use our results to reengineer their efforts on knowledge management activities that will have very significant impact on increasing the creation of new clinical knowledge. Our findings clearly point to the role that the perception of CTs plays in their use for knowledge creation and the intervening effect of mentoring, coaching and apprenticeship in this regard. Organisations could increase positive perceptions of CTs among their staff through continuous ICTs training programme, motivated mentoring, coaching and apprenticeship. Incentives and recognition should be given to staff for creating knowledge and using CTs in this regard. Effective management of these variables can foster greater creation clinical knowledge via CTs, a vital measure in the value addition to organisational knowledge creation and learning.

Theoretically, our study builds on knowledge creation researches and technology perception researches. We have demonstrated that individual'sCTs perception (CTs user's friendliness, CTs task fit and CTs versatility) influence the use of CTs for knowledge creation activities. As regards the use CTs for KM, seeing value in the knowledge creation through the CTs, and having positive view of CTs, are crucial to more usage, and knowledge creation. Collaborative technologies perceived user's friendliness (ease of use), collaborative technologies perceived task fit and adaptability to diverse uses determine the choice of collaborative technologies used in creating knowledge. Our model should be useful for future research efforts in similar or different contextual settings.

Conclusion

The model has explained and established relationships between CTs perception (CTs user's friendliness, CTs task fit and CTs versatility) and knowledge creation, and the mediating effect of socialisation. Practically, the three-factor model will provide a framework to investigate the mediating effects of externalisation, internalisation and combination in the relationship between CTs perception and knowledge creation.The study concludes that nurses should harness the benefit of effective socialisation (the sharing of tacit knowledge through coaching, apprenticeship and mentoring) as it has crucial intervening effect on the relationship between nurses' CTs perception and knowledge creation in psychiatric hospitals. Psychiatric hospital management should encourage effective coaching, apprenticeship and mentoring among its employees. Nurses must have positive perception of CTs to effectively support the processes of socialisation(the sharing of tacit knowledge through coaching, apprenticeship and mentoring) for knowledge creation.

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Appendix 1: Coding and labeling of research data

Codes	Items
	Knowledge creation
kc10	I create new skill that is uniquely human-experience dependent
kc11	I am involved in preparing written documentation such as training manuals,
kc12	I am involved in preparing written documentation such as good work practices.
kc14	I am involved in communicating external knowledge within the hospital
	CTs Perception
dctu153	Collaborative technologies' perceived user's friendliness(ease of use) determines the choice of collaborative technologies used in creating knowledge
dctu154	Collaborative technologies' perceived task fit(adaptability for diverse uses) determines the choice of collaborative technologies used in creating knowledge
dctu155	Collaborative technologies' perceived versatility(ability to do many things) determines the choice of the ones used in retaining knowledge
	socialisation
Soc59	Special skills are passed on from senior and experienced colleagues to junior/ new colleagues through intensive training
Soc60	Special skills are passed on from senior and experienced colleagues to junior/ new colleagues through mentorship
Soc61	Special skills are passed on from senior and experienced colleagues to junior/ new colleagues through learning by practical experience

Key: kc= knowledge creation, dctu= CTs perception, soc= socialisation.