

Theory of planned behavior and knowledge sharing among nurses in patient computer management system: The role of distributive justice

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ABSTRACT

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This study examined the relationship between Theory of Planned Behavior and knowledge sharing among nurses in Patient Computer Management System. Consequently, it determined the moderating effect of distributive justice on the relationship between Theory Planned Behavior and knowledge sharing. A quantitative approach was employed in this study. The research was based on a correlational and cross-sectional study which involved a total of 336 nurses. Data was collected based on random sampling via self-administered questionnaires. Partial Least Squares (PLS) (Version 3.0) analysis was used to analyze the data. The study revealed that Theory of Plan Behavior components were significantly related to knowledge sharing. These components were also found to have a significant and positive influence on knowledge sharing. The study revealed that distributive justice had significantly moderated the relationship between two components of Theory Planned Behavior (attitude and subjective norm) and knowledge sharing.

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1. Introduction

The term ‘knowledge management and sharing’ has risen to prominence for the past couple of decades (Samad, 2010). Knowledge will become a vital resource rather than wealth generation, as more knowledge are being crafted and widely shared by many people. Resource-based View (RBV) theory postulated that knowledge is considered as the most vital resource in an organization (Barney, 2014). Knowledge plays a major role in helping to face current challenges encountered in organizations (Samad, 2013; Zheng et al., 2010). Seonghee and Boryung (2008) suggested that the effective management of knowledge is critically important for an organization. Accordingly, an organization should also adopt the concept of knowledge sharing to ensure its survival and sustainability (Shannak, 2012). Obeidat et al. (2015) asserted that knowledge sharing, which covers all range of knowledge is essential to any organizations. Ma et al. (2008) highlighted the importance of knowledge sharing and management which is deemed to influence the success of an organization.

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Within the knowledge management construct, knowledge sharing serves as the process to its functions (Nonaka & Takeuchi, 1995). In contrast, the notion of knowledge sharing strategies is important for the development of an individual and an organization (Alavi & Leidner, 1999; Earl, 2001). It is regarded as an important topic to debate as it is one of the key ingredients for organization success. Although extensive research within this topic has been carried out, it is hampered with the inconsistency of research findings and context of study. Further, the topic has been inadequately understood due to the nature of knowledge that needs to be shared. This is because the creation and storage of knowledge by individuals within the organization complicates sharing (Pei-Lee & Sun, 2012). However, these hurdles could be overcome if the individuals are willing to share and collaborate with members within their organization (Casimir et al., 2012). This suggests that the reluctance to share knowledge may lead to failure in garnering adequate and accurate information which will ultimately jeopardize the effectiveness and performance of the organization. An issue that has critically captured the interest of many researchers is the intention and willingness of members within an organization to share knowledge with others. Most of the studies on intention to knowledge sharing have focused only at organizational level, hence creating a research gap which offers a new area for further research. More importantly, various theories have been linked to knowledge sharing research, including Theory of Reason Action (TRA), Theory of Planned Behavior (TPB), Motivation Theory, Justice and Equity Theory, and Social Exchange Theory. This research however, is underpinned by the integration theory of TPB and Theory of Justice (TJ). Even though these theories have been applied in various management studies, the integration of these theories in nursing-related research has been lightly addressed. Thus this plausible research is timely to enrich the existing body of knowledge.

Additionally, researchers have highlighted that the long focus of research in knowledge sharing is to comprehend the core thrusts of its influence. Further, knowledge sharing hinges on its important influence to ensure it meets the organization's mission and vision. Accordingly, knowledge sharing has been addressed differently by various scholars, e.g. as intention or willingness for knowledge sharing (Holste & Fields, 2010) and how knowledge is being shared effectively (Samad, 2013). Preceding inconclusive research findings and discussions warrant a study to be carried to determine the extent of the Theory of Planned Behavior (TPB) components, including attitude, subjective norm, perceived subjective control, and distributive justice (a component of organizational justice) in enhancing knowledge sharing. Thus, this research determines the extent TPB would affect knowledge sharing among nurses who deal with Patient Computer Management System (PCMS) in the Malaysian healthcare system, particularly in public government hospitals. Nurses in Malaysia have contributed significantly towards the health and welfare of the society (World Health Organization, 2014), which implies the important role that they have played in the healthcare system of the country. Whereas most studies in the past have focused on knowledge sharing with different measures and setting, this study proposed knowledge sharing in terms of quality and quantity and in healthcare system, which is timely to be researched especially in the nursing setting. At present, there are limited studies that focus on quantity and quality of knowledge sharing as the criteria variable (Neurink, 2013), which warrants a future study to be carried out by using these indicators. Importantly, although organizational justice (OJ) construct has been applied in various management studies, the role of moderating factor of distributive justice aspect on the relationship between TPB and knowledge sharing has rarely been applied and insufficiently explored. Previous studies have widely examined the linear relationship between TPB and knowledge sharing. Scholars have argued the possibility of integrating the present model with a moderating variable such as distributive justice (Ibragimova et al., 2012). This provides an opportunity to introduce a more integrative model of knowledge sharing in future studies. Findings of this study would undeniably bridge the gaps in previous research findings and will add to the current body of knowledge. The authors are of the view that the novel outcomes from this study will help relevant stakeholders in the Malaysian healthcare system, particularly the public hospitals and the Ministry of Health to achieve superior performance that would ultimately contribute towards better Patient Computer Management System (PCMS) and improved quality of health service.

2. Literature Review

Health information technology systems such as electronic health record (EHR), clinical decision support systems (CDSS) and Patient Computer Management Systems (PCMS) are among vital organizational resources that influence the efficiency, effectiveness and performance of an organization (Montague et al., 2013). Accordingly, literature has revealed that even though computer systems contribute towards explicit benefits, clinicians including nurses have not fully utilized or accepted the use of computer systems and related technologies in their working environments. Montague et al. (2013) found that the minimum adoption of and resistance towards the usage of healthcare technologies are well documented. Under-utilized technologies are unfavorable as they involve huge amounts of investments. This situation is certainly undesired as it will affect organizational performance, which will worsen if the individuals fail to adopt and apply these technologies in their day-to-day dealings. Studies have indicated that the inability and unwillingness of clinicians, including nurses to use and share these healthcare facilities may result in diminished trust and support by patients and relevant hospital staff who also share the computer systems and related facilities (Buntin et al., 2011). This scenario may disrupt the overall performance of the patient-management system in hospitals. Hence, this study attempts to address these unanswered issues.

2.1 Knowledge Sharing

In general, the term ‘knowledge sharing’ refers to the communication of knowledge within a group of people. The group could be formal or informal, as long as the people who are involved in such groups engage with formal organizations or peers within the organizations. The main purpose of these groups is to apply the knowledge to improve the service and performance of organizations (Salisbury, 2003; Javadpour & Samiei, 2017). There are two types of knowledge sharing: (i) person-to-person knowledge sharing (close sharing) and (ii) open sharing (sharing from central repository systems). Knowledge sharing is important as it can portray a good reputation for the organizations towards the public. As a result, it is anticipated that the possibility of insufficient voluntary sharing would occur.

Theoretically, various school of thoughts have been referred to in discussing knowledge sharing, including those that highlight the constructs and predictors of knowledge sharing. The present study integrates Theory of Planned Behavior (TPB) and Theory of Justice (JT) in order to develop a framework of knowledge sharing among Malaysian nurses in Patient-Computer Management System (PCMS). In discussing technology-related knowledge sharing such as PCMS, many researchers have laid their premise of research based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model. This model is an enhancement of Technology Acceptance Model (TAM) by Davis et al. (1989). Knowledge sharing has been conceptualized from various perspectives. Bock et al. (2005) suggested measure of knowledge sharing based on quantity. It refers to the quantity or adequacy of information that members in organizations could secure. In other words, it focuses on getting enough volume of information. However, Chiu et al. (2006) defined the construct of knowledge sharing based on quality in terms of the extent of knowledge sharing within the department as timely, accurate, adequate, relevant, complete and useful.

2.2 Applicability of the TPB and Justice Theory

Generally, TPB denotes the link between belief and behaviors, which implies that behavior can be planned and is deliberative. The best function of TPB is the prediction of behavior, particularly in measuring the individual behavioral intention. Behavioral intention is conceptualized as an independent variable or a belief-based indicator that encompasses attitude, perceived behavioral control, and subjective norm components. It is assumed that the intention of an individual to exert certain behavior would increase if he or she possesses more favorable attitude and subjective norms, as well as higher perceived behavior control. Attitude reflects the evaluation of an individual towards engaging in a

specified behavior. This implies that a person who has positive attitude will likely to show the behavior in question (Ajzen, 2002). Subjective norms represent the beliefs of an individual on the perception of significant others on a given behavior. Furthermore, a person with positive subjective norm will be motivated to demonstrate certain behavior based on the perceived preferences of his or her significant referents (Ajzen, 2002). Perceived behavioral control is defined as the belief of an individual regarding the ease and difficulty in accomplishing a behavior or certain tasks (Ajzen, 2011).

Distributive justice was initially the main component of organizational justice as portrayed in theory of justice. It explains how compensation and rewards should be proportionally and fairly distributed among individuals especially in organizations (Greenberg, 2011; Samad, 2006). Procedural justice refers to the procedure in which the outcomes are distributed or allocated (Samad, 2006). It is assumed and expected the outcomes should be distributed fairly to members in organizations, Justice has been widely studied which surpassed across myriad of disciplines. The interest of scholars on organizational justice is due to its impact on organizational outcomes such as job satisfaction, organizational performance and commitment (Samad, 2006). The theory which was rooted from previous scholars such as Adams (1965) and George and Homans (1961) emphasizes the importance of fairness on the outcomes distribution such as compensation and rewards among individuals. Samad (2006) suggests that individuals will likely to portray happiness if their expected desires are fulfilled compared to their counterparts. Accordingly, individual will be motivated if they are treated fairly. Previous studies have simultaneously used both dimensions of justice namely procedural and distributive justice. Nevertheless, the moderating effect of the single dimension of distributive justice on the link between psychological knowledge ownership components of the individuals and knowledge sharing is still unclear and not well understood. Currently less empirical work was performed to address this issue particularly among nurses in PCMS. Furthermore previous literature have revealed that several factors such as reciprocal relationship, innovativeness, affiliation and fairness will influence knowledge sharing intention, organizational behavior and performance in organization (Samad, 2010, 2012). It was found that mutual reciprocity, strong fairness and sense of reciprocity determine or influence the time and effort for knowledge contribution and sharing (Wasko & Faraj, 2005). Preceding discussions pertaining to knowledge sharing, fairness, reciprocity is analogous to distributive justice. This study examined distributive justice on the relationship between TPB and knowledge sharing. The assumption is that the influence of TPB on knowledge sharing will be buffered with the existence of distributive justice.

2.3 Hypotheses Development

It is well documented that attitude influences intention, which ultimately predicts behavior (Ajzen, 2011). Samad (2006) discovered the strong relationship between attitude and intention. In the case of nurses in public hospitals in Malaysia, it is assumed that nurses who possess favorable attitude would ensure intention in knowledge sharing of PCMS. Meanwhile, unfavorable attitude among nurses tend to result in less or reluctance in knowledge sharing, which in turn leads to disruptions in delivery systems. This will ultimately affect the reputation of hospitals. Hence the study postulates the following hypothesis:

H1. Attitude positively influences knowledge sharing

Additionally, when an individual perceives that his or her task indicates an appropriate actions as manifested by norms and values in social setting they will be motivated to fulfil the task by performing within the socially desirable behavior will increase. This implies that if nurses performing tasks in PCMS are perceived as socially favorable by the public, it is likely that they will be more willing to share the knowledge among relevant members in the hospital. Conversely, if the nurses are deemed to perform their tasks unfavorably, it tends to lower their intention to share knowledge. Therefore, it is hypothesized that:

H2. Subjective norm positively influences knowledge sharing

Perceived behavioral control (PCB) of nurses in terms of the ease or difficulty in PCMS is the third predictor to knowledge sharing. Literature has documented that individuals would have little control on their act due to non-existent or inadequate support and resources which lead to lower intention behavior (such as knowledge sharing), even though there are positive attitude and supportive subjective norms related to the desired behavior (Han et al., 2010). As suggested by Samad (2006) the high level of self-actual guard or control on the behavior of a person would induce his or her willingness and intention to share, especially if the individual feels an opportunity would arise. Deriving on this premise, it is assumed that the intention of nurses to practice knowledge sharing in PCMS will increase, should they have enough control over their actions and decisions. In contrast, when the nurses have lack of control over their decisions and actions, their intention to engage with knowledge sharing in PCMS will be reduced. This study suggested that:

H3. Perceived behavioral control positively influences knowledge sharing

Previous discussions highlight TPB components as predictors to knowledge sharing. Although this linear relationship has been commonly studied, literature have suggested that the relationship between TPB components could be contingent with other factors, including moderating factors (Ajzen, 2002). Motivation theories and the underlying assumption that the decision of individuals to share or hoard knowledge are induced by motivational factors that relates for example to justice, fairness, and satisfaction. Thus, this study proposes distributive justice as the moderator factor. Ma et al. (2008) contended that distributive justice has the moderating impact on the relationship between psychological knowledge ownership components and knowledge sharing. In this vein, it is inferred that the inter-relationship of the attitude of nurses, subjective norms and perceived behavioral control, as well as intention to share knowledge will be improved if they are perceived as being fairly rewarded or compensated by their employers. Conversely, the nurses would not completely share their knowledge in PCMS if the distributive justice is violated. This suggests that the influence of TPB components on knowledge sharing is contingent upon distributive justice. Hence the following hypotheses was developed:

H4: Distributive justice moderates the relationship between attitude and knowledge sharing

H5: Distributive justice moderates the relationship between subjective norm and knowledge sharing

H6: Distributive justice moderates the relationship between perceived behavioral control and knowledge sharing.

3. Methodology

This study was carried out among nurses in selected public hospitals within the Klang Valley, Malaysia. These nurses were required to deal with patient-computer management system (PCMS) in the public hospitals. The list of nurses was obtained from the Malaysian Ministry of Health (MoH). The sample size was based on Sekaran and Bougie (2013) who suggested that 30 to 500 respondents are sufficient for most social science studies. A total of 336 (from the whole total of 500 respondents) usable of responses which was obtained based on random sampling were obtained through questionnaire administered by individual respondent. The response rate of the questionnaire was 67.2%. The survey questionnaire was divided into four sections. Section 1 contains questionnaire measuring the response of the target audiences on knowledge sharing based on two dimensions; quality and quantity. Four items in the questionnaires were adapted from Chiu et al. (2006), and were employed to measure the quality dimension. Three items of quantity dimension were adapted from (Uoro et al., 2007). Section 2 is represented by the Theory of Planned Behavior, which is based on three dimensions, namely perceived behavioral justice (3 items) adapted from Chennamaneni (2007), as well as attitude (3 items) and sub-

jective norms (2 items), both adapted from Bock et al. (2005). The questionnaires were sent to respondents to measure their willingness to collaborate and share their knowledge with relevant members in the selected hospitals. To measure distributive justice (4 items) in section 3, this study uses the scale adapted from Ibragimova et al. (2012). All items for measurement in this study were captured on the 7-point Likert scale, which ranges from 1 (very disagree) to 7 (very strong agreement). Profile of respondent is in Section 4. The study employed PLS version 3.0 to analyze the data and answer the hypotheses of study

4. Results

4.1 Respondents

From the total of 336 respondents, 98% of the respondents were females and the remaining 2% were males. In terms of age, 50.6% were below 40 years old, followed by 42.3% (41 to 50 years old) and 7.1% (> 50 years old). 85% of the respondents holds diploma in nursing and the remaining 15% have qualifications other than diploma in nursing. The majority of respondents (75%) have > 15 years of experience while 25% have < 15 years of experience.

4.2 Assessment of Measurement Model

Assessment of measurement model in this study was done through analysis of convergent and discriminant validity. The convergent validity was determined via analysis of factor loadings, average variance extracted (AVE), and the composite reliability (CR). The analysis found that the value of all the factor loadings in this study were higher than the recommended value of 0.50 as suggested by Hair Jr et al. (2016). Further, all of the AVE surpassed 0.50, and above the recommended value of 0.7 for CR (Bagozzi & Yi, 2012). The t-value of measurement items from the analysis has also shown an acceptable level of significance (1.96) indicating the measurement items are able to explain the constructs (Cohen, 1988). Discriminant validity was performed on all variables in this study. In interpreting the discriminant validity, to contrast against the intercorrelations, AVE was square rooted. According to (Chin, 2010) this is done to confirm the discriminant validity. The findings indicated that the AVE values (after square rooted) are higher than then the correlation values within the construct. It can be concluded that all values of convergent and discriminant validity in the study are acceptable for the measurement model.

4.3 Assessment of Structural Model

In order to examine the global validation, PLS analysis was employed. It is done based on a formula recommended by Cohen (1988) as follows:

$$GoF = \sqrt{AVE \times R^2}$$

This analysis is to secure the fit measure in line to the global fit measure. The values from the analysis (refer Fig. 1) are above 0.36 as recommended by Cohen (1988). Based on Wetzels et al. (2009) the values from the analysis indicate the model are acceptable. Table 1 and Fig. 1 depict the results for the hypotheses of the study. H1 examines the relationship between attitude (ATT) and knowledge sharing (KS). The results of hypothesis testing suggest that attitude has significant contribution or influence towards knowledge sharing ($\beta = 0.534$, $p < 0.05$). Additionally, (PBC) and subjective norm also play important roles in influencing knowledge sharing. The R^2 value of 0.549 indicates that 54.9% of the variance in knowledge sharing (KS) is explained by three constructs of attitude, perceived subjective control, and subjective norm. These results provided support for hypotheses H1, H2 and H3.

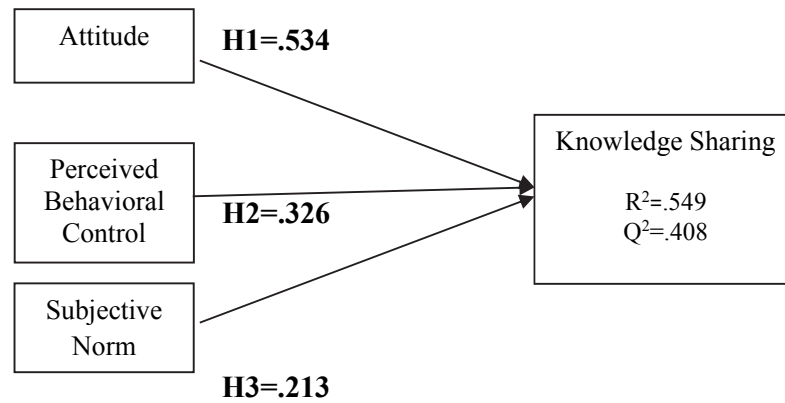


Fig. 1. Results of the Structural Model

Table 1
Path Coefficients and Testing of Hypothesis

Hypothesis	Relationship	Path Coefficient	T-value	Result
H1	ATT→KS	0.534***	10.154	Supported
H2	PBC →KS	0.326***	5.766	Supported
H3	SN → KS	0.213***	3.753	Supported

* PP<0.05

4.5 Moderation Effects of Distributive Justice

This study examined the moderation effects of distributive justice (DJ) on the relationship between Theory of Planned Behavior components attitude (ATT), perceived behavioral control (PBC) and subjective norm (SN) and knowledge sharing (KS). Thus, the moderation effects of distributive justice on the effects of attitude, PBC and subjective norm as independent variables on KS as dependent variable (DV) were examined. To confirm that a third variable has a moderation effect on the relationship between the independent variables and dependent variable, the nature of this relationship should be changed as the values of the moderating variable change. This is done by including an interaction effect in the model and checking the significance of the interaction. To ensure the moderating variable has a significant effect on the criterion variable, the effect of interaction term on the dependent variable (KS) should be significant. A structural model with interaction terms to examine the moderation effects of distributive justice (DJ) on knowledge sharing are portrayed in Fig. 2.

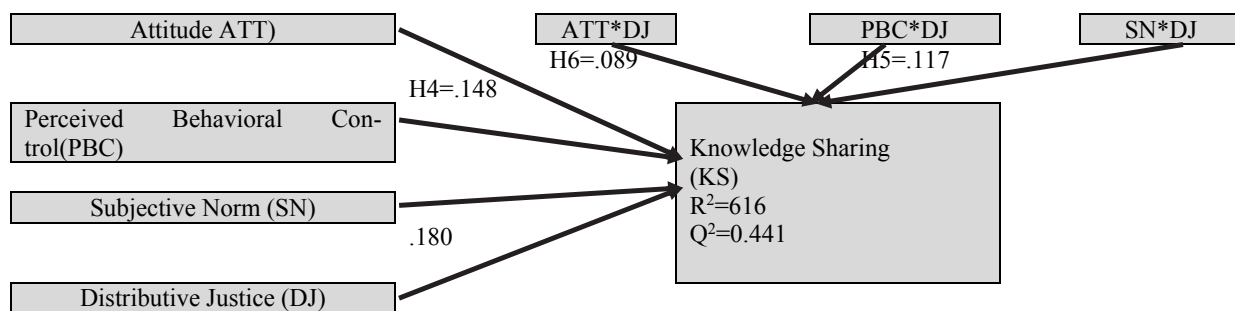


Fig. 2. Results of the Structural Model for Moderation Effects of Distributive Justice (DJ)

The R^2 value for knowledge sharing was 0.616, which is above the threshold of 0.36 as recommended by Cohen (1988). R^2 is also known as the coefficient of multiple determination for multiple regression which measures the closeness of the data are to the fitted regression line. Another structural model assessment criterion that is suggested by (Hair Jr et al., 2016) is predictive relevance, Q^2 . This criterion was used to assess how well the structural model could be predicted. The value for Q^2 for knowledge sharing in this study is 0.441, far greater than zero which refers to predictive relevance of the model,

as suggested by Chin (2010). Overall, the model in this study indicates acceptable fit and high predictive relevance. Further, the path coefficient was used to evaluate the contribution of each interaction term on the dependent variable. As shown in Table 2, the effect of distributive justice (DJ) interaction with attitude and subjective norm were statistically significant (0.05), with coefficient paths of 0.148 and 0.117 respectively. These results indicate that DJ has moderated the relationship between attitude and knowledge sharing, and between subjective norm and knowledge sharing. Thus, the hypothesis H4 and H5 were supported. Conversely, the effect of DJ interaction with PBC on knowledge sharing is statistically insignificant; Coefficient Path = 0.089 and p-value = 0.152. This result indicates that DJ could not moderate the relationship between PBC and knowledge sharing. Hence, hypothesis H6 was not supported.

Table 2
Moderation Effects of Distributive Justice (DJ)

Hypothesis	Interaction	Path coefficient	Std Error	T-value	P-value	Results
H4	ATT*DJ	0.148	0.046	3.369	0.001	Supported
H5	SN*DJ	0.117	0.042	3.753	0.006	Supported
H6	PBC*DJ	0.089	0.053	1.435	0.152	Not Supported

* P<0.05

5. Conclusion and Recommendation

The results from this study verify that knowledge sharing is considered a complex construct, and previous literature have highlighted that its elements may have distinct implications on management. Due to the intricacy of knowledge sharing component and dimension, inconclusive findings were obtained across countries and various working environments. This study also found that TPB (attitude, subjective norm and perceived behavioral control) is significantly related to knowledge sharing. The results support H1, H2 and H3 of the study, suggesting that knowledge sharing among nurses in PCMS will be better if it is enhanced by psychological and behavioral factors of attitude, subjective norm and perceived behavioral control. This is consistent with previous studies carried out locally and in Western settings (Goh & Sandhu, 2013; Jolae et al., 2014; Teh & Yong, 2011). Accordingly, moderation analysis are also in agreement with hypothesis H4 and H5, that distributive justice moderates the relationship between attitude and knowledge sharing, and between subjective norms and knowledge sharing. This suggests that the intention of nurses to share knowledge will depend on the perceived fairness and justice towards rewards distribution. However distributive justice did not moderate the relationship between perceived behavioral control and knowledge sharing. This finding is in tandem of previous study that there is no moderating effect of distributive justice on the relationship between perceived behavioral control and knowledge sharing (Wasko & Faraj, 2005). The results also imply that the existence of rewards in PCMS knowledge sharing activities among nurses may lead to their control on quantity and quality of knowledge to be shared based on perceived fairness and justice of the rewards that they receive. This suggests that the more control they have, the less likely they will collaborate in knowledge sharing. The moderating effects of distributive justice on the relationship between ATT and KS and between SN and KS provide support the importance role of justice in organization. This notion is in tandem with the study carried out by (Qianqian et al., 2011) who proposed organizational justice as the important moderator factor for individual behavior.

The findings of this study proved the robustness of TPB and TJ in explaining knowledge sharing among nurses. In addition, this study has extended the previous model that was based on a linear relationship between TPB and knowledge sharing. The results of the study highlighted several important insights that add to the body of knowledge in knowledge sharing literature particularly in a non-Western setting. However, there are also limitations in this study. Since this study was conducted in a cross-sectional approach, longitudinal study, experimental study and consideration of other predictors may provide further support for the study to ensure its generalizability.

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