

## A Planned Behavior-Based Investigation of Knowledge Sharing in Construction Industry

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**Abstract:** Knowledge sharing has been widely believed one of the vital elements that propel an organization's performance. However, the construction industry in Malaysia is currently suffering from the lack of knowledge sharing within organisations. Hence, this paper intends to investigate the key factors as well as their relationships that affect knowledge sharing in the industry. The theory of planned behaviour is adopted and a simplified model is proposed based upon. Data is collected by questionnaires. A series of statistical analysis reveals that employees' intention to share knowledge within construction companies is affected more by their attitude and perceived behavioural control. Accordingly, it is suggested that organizations provide ground reasons why knowledge sharing is important and should be adopted as a daily practice.

**Keywords:** Knowledge Sharing, Theory of Planned Behavior (TPB), Construction Industry

### 1. Introduction

In general, knowledge refers to the inputs such as skills, beliefs, values and expertise which are obtained by individuals either through personal experiences or from education itself (Oxford Dictionaries, 2011). Knowledge sharing can be regarded as the activity of exchanging what one knows with other people such as peers, kin, colleagues or any intended individuals. In today's business world, knowledge sharing sometimes is deemed to be one of the key indicators that determine how well an organisation performs. This may include the products that a company produces or even the quality of services provided to the customers other than the high technologies that the company possessed.

However, the construction industry in Malaysia is currently facing problems especially regarding the lack of knowledge sharing within organisations (Kamar and Annuar, 2009). There have been complaints made by customers on the quality of products or services provided by the construction companies which did not fulfil their expectations. For instance is the emergence of the crack lines on the wall of houses after some time the houses were built. This reflects the quality of the houses built were not at a satisfying state. The causes could be due to poor communication or the deficiency in sharing information between experienced and newly employed workers (Dan, 2006).

Other than that, it is believed that the employees as well as the construction organisations themselves are lacked of awareness about the importance to share knowledge (Kamar and Annuar, 2009). Moreover, according to Kamar and Annuar, the Malaysian government had published the Construction Industry Master Plan 2003-2010 (CIMP) with the hope to guide practitioners as well as to solve the current issues faced by the local construction industry. Anyhow, factors that influence employees in sharing their knowledge still remain vague because most of the researches which had

been conducted in the past focused more on the development of knowledge sharing culture. Moreover, the data collected were obtained from other industries instead of construction industry.

Therefore, this research is aimed at exploring the key factors that affect the intention to share knowledge and identifying the relationships of the factors that influence the intention to share knowledge among the employees. And the research findings shall be significant towards enhancing the knowledge of employees as well as the general public and also provides ground reasons why knowledge sharing in organisations is important and should be adopted as a daily practice.

## 2. Theoretical Base and Hypothesis Development

To investigate intention, the theory of planned behavior (TPB) is adopted as the theoretical base of this study. The formulation of the theory first took place in the year 1967 was revised in 1980s to include the Theory of Planned Behaviour (Johnson, 2004). This theory has been widely used by researchers to study the human behaviour through their actions.

So far, various models have been developed by researchers basing on the TPB but altered to suit their research purposes. According to Ajzen (1991), there are three main variables consisting of attitude, subjective norms and perceived behavioural control, and the dependent variable intention is the central factor of the theory because it shows how hard a person is willing to try and exerts the effort to perform a behaviour. Moreover, he also mentioned that in the situation involving the presence of non-motivational factors and resources such as time and money, that particular person is likely to control his own behaviour. In other words, a person who possesses both resources as well as the intention to perform a task, the chances of successfully performing the behaviour is therefore certain. Williamson (2009) proposed a similar model by modifying the three determinants to be beliefs, salient referents and perceived Behavioural control. He explained that beliefs link behaviour to certain outcomes, salient referent are individuals or people who influence the particular person in performing the behaviour, whereas perceived behavioural control is how the person view the level of difficulty or ease in performing the behaviour. He also stated that a person is more likely to perform a particular behaviour if the intension is high.

Other researches have further explored the relationships between the determinants and the Intention. Chen et al. (2009) discovered that the independent variable attitude shows a positive relationship towards knowledge sharing and the intention of performing such behaviour. Besides, Ramayah (2009) also found that there is a significant correlation between attitudes towards the intention to share knowledge. Apart from that, another research also stated that the continuance intention of sharing knowledge is actually determined by personal belief and attitude (He and Wei, 2010). From the research conducted on the knowledge sharing of physicians in hospitals, Ryu et al. (2003) discovered that the most influential factor on behavioural intention to share knowledge was subjective norm. And this statement was supported by Bock et al. (2005) stating that the subjective norm showed a significant influence on knowledge sharing. Furthermore, Aulawi et al. (2009) also reported the existence of positive relations between subjective norms and the intention to share knowledge. For the perceived behavioural control, Ramayah (2009) defined it as an individual's viewpoints on their capability to perform a specific behaviour. Even though this independent variable is considered the least factor affecting the intention to share knowledge, it is still an important variable in identifying the causes that leads to the intention of employees in sharing their

knowledge with their organizational members (Ryu et. al., 2003). Hence, three hypotheses under this research can be formulated as follows.

**H<sub>1</sub>:** *There is a positive relationship between attitude and the intention to share knowledge among employees in construction companies.*

**H<sub>2</sub>:** *There is a positive relationship between subjective norms and the intention to share knowledge among employees in construction companies.*

**H<sub>3</sub>:** *There is a positive relationship between perceived behavioural control and the intention to share knowledge among employees in construction companies.*

3. Model and Variables

Based on the theoretical base above, a simplified conceptual framework is developed to conduct the research. As depicted in Figure 1, the framework consists of three independent variables (IV) which are attitude, subjective norm, and perceived behavioural control and one dependent variable (DV) that is the intention of knowledge sharing. Besides, several demographic factors are enveloped into the model to explore any moderating effects.

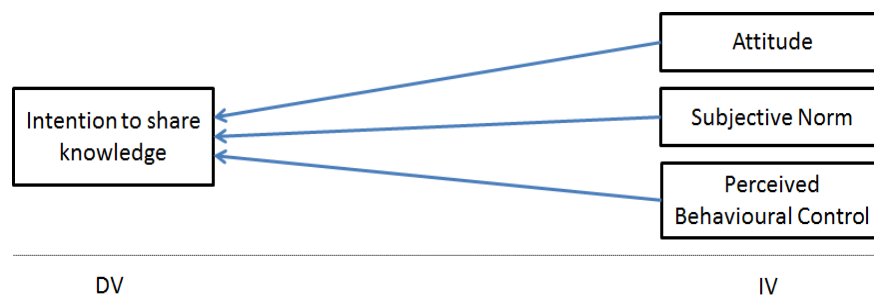


Figure 1 the Initial Conceptual Framework

Next, an index system is formulated covering the four variables. The items under each variable have been represented with its own code as shown in Table 1. It is adapted from the research of Ramayah (2009), with minor changes made to the statements to suit the conditions of the research.

Table 1 The Index System

Variables	Description	Code & Items
Attitude	My knowledge sharing with other organizational members is:	A1: Satisfactory. A2: A pleasant experience. A3: Important to me. A4: A good approach.
Subjective Norm	People who believe I should share knowledge with organizational members are:	SN1: My organization. SN2: My higher management (share knowledge within the department). SN3: My higher management (share knowledge with other departments). SN4: My manager. SN5: My colleagues.
Perceived Behavioral Control	The view of ease or difficulty in sharing knowledge with	PBC1: I can always share my knowledge. PBC2: I believe I have the control in sharing knowledge. PBC3: I could always share whenever I feel like to.

	organizational members:	PBC4: It is up to me to share or not. PBC5: I share my knowledge whenever I want.
Intention	How I intend to put knowledge sharing into practice in organization:	I1: I will share my work in the future. I2: I will try to provide useful documents. I3: I intend to share my experience more often. I4: I will always share my knowledge at members' requests. I5: I plan to share with a more effective approach.

#### 4. Data Collection

Evidence is collected mainly through questionnaire corresponding to the conceptual framework above, with five-Likert scale adopted. The population of the research is targeted at the employees who work in construction companies around the area of Kuantan, Pahang, Malaysia. 80 survey questionnaires were administered to the respondents directly. Till the due time, 67 responses were successfully collected. Meanwhile, out of 10 emails sent to companies, only 1 company replied. Hence, a total of 68 completed questionnaires were collected, representing 75.56% of response rate. The demographic characteristics of all the responding firms are shown in Table 2.

Table 2 Demographic characteristics of the Respondents (n=68)

Gender			Current Position		
Sub-item	Frequency	Valid (%)	Sub-item	Frequency	Valid (%)
Male	36	52.9	Top management	2	2.9
Female	32	41.7	Project Manager	8	11.8
Total :	68	100	Manager	8	11.8
Age			Consultant	3	4.4
Sub-item	Frequency	Valid (%)	Project Coordinator	2	2.9
20-29	16	23.5	Technician	14	20.6
30-39	20	29.4	others	31	45.6
40-49	17	25.0	total	68	100
50-59	15	22.1	Education Background		
Total:	68	100	Sub-item	Frequency	Valid (%)
Work Experience (years)			Master	5	7.4
Sub-item	Frequency	Valid (%)	Degree	21	30.9
0-9	25	36.8	Diploma	25	36.8
10-19	20	29.4	Secondary or lower	11	16.2
20-29	15	22.1	others	6	8.8
30-39	8	11.8	Total	68	100
Total:	68	100			

The demographic data in Table 1 shows that most of the respondents are male respondents who work in construction companies. Moreover, majority of the respondents fall in the age group of 30 – 39, yielding a percentage of 29.4. Other than that, most respondents have 0 – 9 years of work experience, yielding 36.8%. Furthermore, most respondents are from other departments and positions other than those provided in the statistic table. In addition, the highest percentage regarding the respondents' education background is diploma which yields 36.8%.

#### 5. Results and Discussion

##### 5.1 Mean Level of the Measurement

This section checks the mean level of each measurement as demonstrated in Table 3. Under the attitude variable, A3 has the highest mean yielding 3.87, followed by A2 and A4 both yielding 3.79 and lastly A1 with only 3.65. It suggests that most respondents agree to this statement which indicates that their knowledge sharing with other organisational members is important to them. Under the subjective norms variable, SN1 has the highest mean yielding 3.88, followed by SN3 with 3.84, SN4 with 3.74, SN2 with 3.69, and lastly SN5 with 3.66. It indicates that most respondents agree that it is their organisations that encourage them to share knowledge with other organisational members.

Table 3 Mean Level of Measurement

Attitude			Subjective Norm			Perceived Behavioral Control			Intention		
Items	Mean	Rank	Items	Mean	Rank	Items	Mean	Rank	Items	Mean	Rank
A1	3.65	3	SN1	3.88	1	PBC1	3.74	1	I1	3.50	5
A2	3.79	2	SN2	3.69	4	PBC2	3.62	2	I2	3.59	4
A3	3.87	1	SN3	3.84	2	PBC3	3.74	1	I3	3.84	1
A4	3.79	2	SN4	3.74	3	PBC4	3.54	3	I4	3.65	3
Overall Mean:			SN5	3.66	5	PBC5	3.47	4	I5	3.79	2
	3.7757			3.7618			3.6206			3.6735	

Under the perceived behavioural control variable, both PBC1 and PBC3 have the highest mean with each yielding 3.74, followed by PBC2 with 3.62, PBC4 with 3.54, and lastly PBC5 with 3.47. It can be concluded that majority of the respondents agree with the statements that they can always share their knowledge as well as they could share their knowledge whenever they feel like to. Finally, under the intention variable, I3 has the highest mean yielding 3.84, followed by I5 with 3.79, I4 with 3.65, I2 with 3.59, and lastly I1 with 3.50. It shows that the respondents intend to share their knowledge with other organisational members more often in the future.

## 5.2 Reliability of the Measurement

Cronbach's  $\alpha$  (alpha) was used to test the internal consistency or reliability of the system as it is widely believed to indirectly indicate the degree to which a set of items measures a single uni-dimensional latent index. Items with Cronbach's alpha value greater than 0.7, indicate that internal consistency is guaranteed for the measurement index.

Table 3 Reliability of independent and dependent variables

Variables	No. of Items	Cronbach's $\alpha$
Attitude	4	0.763
Subjective Norms	5	0.798
Perceived Behavioral Control	5	0.719
Intention	5	0.760

Table 3 shows that the variables used in this research are acceptable since the Cronbach's Alpha indicate values more than 0.70. The value range of the variables obtained is between 0.719 and 0.798. Variable with the highest Cronbach's Alpha value is Subjective Norms yielding 0.798, followed by Attitude (0.763), Intention (0.760), and Perceived Behavioural Control.

5.3 Pearson Correlation Analysis

The evaluation system is further tested using correlation analysis to identify whether there is association but no multicollinearity. Pearson's correlation coefficient (r) for continuous data ranges from -1 to +1. The more it nears to 0, the higher probability there is no association; while the more it nears to +1 or -1, the higher probability there is multicollinearity.

Table 4 Correlations between independent and dependent variables (n=68)

		Attitude	Subjective Norm	Perceived Behavioural Control	Intention
Attitude	Pearson Correlation	1	.525**	.397**	.450**
	Sig. (2-tailed)		.000	.000	.000
	N	68	68	68	68
Subjective Norms	Pearson Correlation		1	.606**	.451**
	Sig. (2-tailed)			.000	.000
	N		68	68	68
Perceived Behavioural Control	Pearson Correlation			1	.479**
	Sig. (2-tailed)				.000
	N			68	68

\*\* . Correlation is significant at the 0.01 level (1-tailed).

Table 4 shows that the dependent variable which is the intention is positively correlated with all independent variables at 1% significant level (0.01). Moreover, intention shows stronger correlation with perceived behavioural control (0.479), followed by subjective norms yielding 0.451 and attitude with 0.450.

5.4 Multiple Linear Regression Analysis

Regression analysis was conducted to test the relationship between DV and IV and to verify the proposed hypotheses. In Table 5, R square is 0.319, which means nearly 32% of variance of Intention is explained by the independent variables. DW is 1.88 around 2, which means the factors here hardly have autocorrelation or serial correlation. In ANOVA test, the F-value equals to 10.007 with Sig. value .000, which means under the significant level of 0.01, the testing result of the model is robust. From the derived coefficients, it can be seen that Attitude (.240), Subjective Norms (.126) and Perceived Behavioural Control (.288) are all positively related to Intention. However, only the relationship between subjective norms and intention is not significant as the p value obtained is higher than 0.05. Thus, only H1 and H3 are accepted. Moreover, the perceived behavioural control has a slightly greater impact on the intention of employees in sharing knowledge compared to attitude and subjective norms. Additionally, the Collinearity statistics VIF of all the independent variables are less than 5, thus, it can be prudently believed that there is no multicollinearity amongst the independent variables.

Table 5 Regression Results

Model Summary
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Model	R2	DW	ANOVA		F-value	Sig.	
1	.319	1.880			10.007	.000	
Coefficients							
Model	Unstd. Co.		Std. Co.	t	Sig.	Collinearity Statistics	
1	B	Std. E.	Beta			Tolerance	VIF
(Constant)	1.249	.445		2.805	.007		
Attitude	.240	.112	.262	2.147	.036	.714	1.400
Subjective Norms	.126	.131	.136	.966	.338	.536	1.864
PBC	.288	.128	.293	2.241	.029	.624	1.603

## 6. Conclusions

The main purpose of this research is to investigate the factors that influence the intention of employees to share knowledge in construction industry. Hence, to investigate intention, the model from the Theory of Planned Behaviour (TPB) is adopted. This research confirmed that employees' intention in sharing knowledge within construction companies is affected by their attitude and perceived behavioural control. The reason is because these two variables show a positive relationship with the intention variable, both achieving acceptable p value in the regression analysis. On the other hand, subjective norms does not affect employees' intention in sharing knowledge as its p value is larger than 0.05. However, in the Pearson Correlation Coefficient analysis, all three independent variables are correlated with the dependent variables. In this situation, it can be said that even though subjective norms is correlated with intention, it does not influence the intention variable directly.

Moreover, inferences which can also be made referring to the results obtained from the analysis are employees' will only share knowledge with their colleagues based on their personal attitude as well as how they perceived the control that they possess in sharing information. Knowledge can be shared with organisational members in the form of informational materials such as documents, charts, and reports. Besides, it can be deduced that majority of the employees in the construction companies share their knowledge with their colleagues based on the frequency yield analysis on the survey questionnaires.

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