Determinant Factors for Knowledge Sharing in Facilities Management of Private Finance Initiative Procurement

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***Abstract*— In the current state of Private Finance Initiative (PFI) procurement, there are numerous problems and issues stressed out by some scholars. The case is more complicated and critical once the PFI procurement come to Facilities Management (FM) phase. By means of accepting the contribution of Knowledge Sharing (KS) towards organizational performance, a cross sectional study design was conducted. This research aims are to identify the determinant factors towards knowledge sharing in facilities management of private finance initiative procurement. A set of questionnaires was developed based on numerous constructs gained from previous studies. A total of 50 set web-based self-administrative questionnaire were distributed amongst FM and PFI procurement experts. However, only 39 sets were answered and completed. The data then analyses using SPSS Statistics – Version 21. The finding suggested the conceptual framework for this research consists of five determinant factors as independent variables working culture, staff attitude, motivation to share, nature of knowledge to share, and opportunities to share. Meanwhile, knowledge sharing benefits towards performance management as dependent variables.**

***Keywords*—** *knowledge sharing, facilities management, private finance initiative, procurement, conceptual framework*

1. Introduction

One of the most valuable assets of an organization is the existing knowledge that available to every staff member within the team. Previous studies show that knowledge sharing (KS) has a positive impact towards improvement organizational performance [1]–[4].

This knowledge is the property of the organization as long as the staff is in the organization [5]–[7]. Staff who leave the organization go along with the knowledge and experiences that has been acquired for years in the organization. Hence, the appropriate encouragement to maintain such knowledge are very important in remaining the organization's continuity [8]–[10].

In this study, focus on benefits of KS was given to Private Finance Initiative procurement during facilities management stage. At this stage, the operation and maintenance of premises under this new procurement scheme is very important and complicated.

The method is to identify the factors that can influence organizations member to share their knowledge. Thus, the main aims of this paper are to identify the determinants factor for knowledge sharing in PFI procurement at facilities management phase.

2. Literature Review

2.1 Working culture

Generally, working culture is the thought that creates philosophies and ethics within the organization. This growth typically comprises of beliefs, thought processes, values and gained from the attitude of employees [11]–[13]. Based on previous research, there are numerous characteristics that can contributes in developing good working culture within the organization members.

Among the characteristics are to be fairness with others [14]–[16], put creativity at acceptable level [17]–[19], aware to the corporate vision and mission [20]–[22], promoting and accepting diversity [23], [24], improving social ties with others [25]–[27], the influence of overall team characteristics [28]–[30], and innovation culture within the organization [17], [23], [31].

2.2 Staff attitude

Individual characteristics is very important to ensure that they are take part in improving the organization performance. An attitude is defined as psychological state of mind, the probability dimension, a belief can change independently [32]–[34].

In every organization, staffs can have either a positive or negative attitude. This attitude will influence on specific work activities, services delivery, groups or management. For instance, staff with negative attitudes typically less concentration to day-to-day activities[35], [36].

In this study, the characteristics of Staff Attitude are as to be openness mindset [37], [38], feel enjoy to helping others [39]–[41], voluntary mentoring new staff [42], senses of responsibility to organization [43], [44], being proactive [45], [46], and loyalty to the organization management [47].

2.3 Motivation to share

Basically, motivation is the principal that drive people's actions, desires and needs. Thus, motivation also plays an important role in influencing individual to share knowledge to others. This study explores that motivation to share has numbers of characteristics.

The characteristics are such as rewards and recognition to the employees [48], [49], sense of belonging and trust among employees [50], [51], providing training and development for the staffs [52], [53], reciprocity of knowledge , management support and job satisfaction [54], [55].

2.4 Nature of knowledge to share

The significant point of thought is the nature of knowledge itself. This philosophy also known as epistemology where the justification of the nature and human knowledge [56], [57], [77]. This phenomenon has been ascertaining from the earliest times. In this study, the main concentration on nature of knowledge is the availability and accessibility of the knowledge. Before someone has intention to share their knowledge there are some characteristics to be considered. Among the characteristics are value of the knowledge [54], either it is tacit and explicit knowledge [58], access and benchmarking to the knowledge, and quality of the knowledge [59], [60].

2.5 Opportunities to share

In order to share the knowledge, there must be opportunities that can acknowledged the process. Therefore, opportunities to share also plays an important role in sharing existing knowledge. In this study, the characteristics of opportunities to share are such as recognizing knowledge as power [54] [61], technology and infrastructure are well established [62], [63], allocation of specific time, knowledge self-efficacy among organization members [64], [65], system quality and communication skills [66], [67], [78], [79].

3. Methodology

The main objective of this study is to identify the determinant factors for knowledge sharing in Facilities Management (FM) of Private Finance Initiative procurement. The main data from questionnaire survey using web-based self-administrative then analysed using statistical analysis software (SPSS Statistics – Version 21). All results from the data are explained below.

3.1 Results

The main objective of the study is to identify the determinant factors for knowledge sharing in Facilities Management of Private Finance Initiative procurement. The results on the analysis for the research objective were explained below.

3.2 Respondents' Profile

In order to achieve the research objective, respondents are selected based on their experiences and expertise's in FM and PFI procurement. They were identified and invited to take part in this study. The frequency descriptive analysis was carried out to obtain demographic profile of the respondents who answered the questionnaire.

The demographic data consists of several categories such as gender, age, academic qualification and position of the respondent in the organisation. A total of 50 questionnaires were distributed via web-based self-administrative questionnaire. Out of 50 questionnaires distributed, only 39 sets were replied and completed. Details of the total number of data acquisition and returned questionnaire is shown in Table 1.

Table 1. Overall data acquisition for factor analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Questionnaire distributed	50	100.0	100.0	100.0
	Questionnaire not answered	11	22.0	22.0	22.0
	Questionnaire answered	39	78.0	78.0	78.0
	Total questionnaire analysed	39	78.0	78.0	78.0

The respondents' demographic data is described in this section. A detailed overview of the demographic profiles of the respondents is

presented in Table 2. Based on the sample collected through the distribution of questionnaires, male respondents slightly out number female respondents, total numbers of 56.4 percent as against 43.6 percent, respectively.

Most of the respondents are from the age group of 41 to 50 years old (48.7%) and 31 to 40 years old (41%), and minimal respondents within the range of 51 to 60 years old group (10.3 %).

Table 2 Demographic Profiles of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	*Male*	*22*	*56.4*	*56.4*	*56.4*
	Female	*17*	*43.6*	*43.6*	*100.0*
	Total	*39*	*100.0*	*100.0*	
Age	*31 – 40 years old*	*16*	*41.0*	*41.0*	*41.0*
	41 – 50 years old	*19*	*48.7*	*48.7*	*89.7*
	51 – 60 years old	*4*	*10.3*	*10.3*	
	Total	*39*	*100.0*	*100.0*	*100.0*
Qualification	*Bachelor's Degree*	*16*	*41.0*	*41.0*	*41.0*
	Master	*12*	*30.8*	*30.8*	*71.8*
	PhD	*11*	*28.2*	*28.2*	*100.0*
	Total	*39*	*100.0*	*100.0*	
Position	*Facilities Management Practitioners'*	*20*	*51.3*	*51.3*	*51.3*
	Academician	*19*	*48.7*	*48.7*	*100.0*
	Total	*39*	*100.0*	*100.0*	

The majority of the respondents have Bachelor Degree with 16 respondents (41.0%), followed by master's degree with 12 respondents (30.8%) and PhD with 11 respondents (22.8%) as their highest educational qualification. In terms of position in organization, the questionnaires were answered by respondents from facilities management practitioners' and academicians who has expertise in facilities management and private finance initiative projects.

From the results, this questionnaire was answered by facilities management practitioners with a total of 20 respondents (51.3%). This was followed by academicians with 19 respondents (48.7%). The academicians have been selected based on their experience's and expertise's in the facilities management and private finance initiative projects.

3.3 Reliability Test

In data analysis Cronbach's Alpha reliability test was conducted to determine the reliability of the responses for each respondent answers the questionnaire. The closer the coefficient to the Cronbach alpha of 1.0, the higher the reliability of these items measure the same concept. Generally, the reliability under 0.6 is weak, 0.7 is reasonable to accept and value exceeds 0.8 is considered good [68] [69]).

Table 3 Cronbach's alpha value of variables

	Variables	Number of items	Cronbach's Alpha Value
IV	Working Culture (WC)	*7*	*0.819*
IV	Nature of Knowledge (NK)	*6*	*0.857*
IV	Opportunities (OP)	*7*	*0.880*
IV	Motivation (MV)	*8*	*0.854*
IV	Staff Attitude (SA)	*6*	*0.839*
DV	Knowledge Sharing (KS)	*8*	*0.945*

In this study, Cronbach's Alpha reliability value of 0.8 has been set as the benchmarks which have high reliability. The results of the reliability test are shown in Table 3. The analysis shows that all the independent variables towards knowledge sharing in FM of PFI projects are highly reliable which exceed a predetermined value of 8.0. These results show that the instrument used to obtain research data has high reliability and acceptable because such values indicate that the internal relationship between each determinants factor were highly interconnected.

3.4 Validity Test

The purpose of conducting validity test is to examine whether the questions in the questionnaire are tapping into the right concept [69]. There are two main issues to consider in deciding whether a particular data set of a sample is appropriate for factor analysis which is sample size and the strength of the relationship among the items or variables [70].

The sample size for this analysis is 50 with 5 main factors or variables. According to [68], sample size 50 cases is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1,000 or more is excellent. But, as a rule of thumb a minimum of 10 observations per variable is necessary to avoid computational difficulties.

There are suggestion on how to execute factor analysis with small sample size [71]. The procedures are as follows:

i) Repeat the method until minimum KMO is over 0.60.
ii) Check the communality of each variable. Drop the variables that has the smallest communality, until the communalities of all variables are above 0.60.
iii) Check the mean value of all communalities to ensure that the mean value is over 0.07. If not, repeat step (ii).
iv) Use Kaiser strategy (dropping all components with eigenvalues under 1.0) and Scree plot to determine the number of factors.

v) Set the loading size cut-off value as 0.60 and drop the factors that has less than 3 variables.

Finally, with principal component analysis, there are 5 factors with 22 variables for independent variables and 1 factor with 5 variables for dependent variables. Therefore, 50 samples with 5 factors or variables is enough for small sample size.

Hence, the data set for this sample is acceptable for factor analysis. The details analysis in factor analysis are discussed below.

3.5 Preliminary Analysis

In preliminary analysis of factor analysis, there are two statistical measures were performed which is the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of Sphericity.

The minimum value for good factor analysis 0.60 for the KMO and Bartlett's test of Sphericity should be significant ($p< 0.05$) in order for the factor analysis to be considered appropriate [72]. In this section, two factor analyses were carried out separately for the independent variables and the dependent variables.

3.5.1 Independent Variables

The results of the KMO and Bartlett's Test for independent variable are demonstrated in Table 4. The KMO value is 0.631, exceeding the minimum value of 0.60 [73] and Bartlett's Test of Sphericity is statistically significant ($p<0.00$), so the data is suitable for a factor analysis [74][75].

Table 4 KMO and Bartlett's Test for independent variables

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*.631*
Bartlett's Test of Sphericity	Approx. Chi-Square	*751.714*
	df	*231*
	Sig.	*.000*

The next analysis is to examine the anti-image correlation matrix. It is important to examine the diagonal elements of the anti-image correlation matrix where the values should be above 0.50 [76]. From Table 5 below, only items with values greater than 0.50 is maintained.

3.5.2 Dependent Variables

The results of the KMO and Bartlett's Test for dependent variable are demonstrated in Table 6. The KMO value is 0.877, exceeding the minimum value of 0.60 [73] and Bartlett's Test of Sphericity reached statistically significant ($p<0.00$), so the data is suitable for a factor analysis [74] [75].

Table 5 Anti-image summary for independent variables

Anti-image Matrices			
Anti-image Correlation			
WC1	Fairness	.589[a]	.603[a]
WC2	Creativity	.557[a]	.604[a]
WC3	Corporate Vision	.610[a]	.614[a]
WC4	Diversity	.643[a]	.693[a]
WC5	Social Ties	.359[a]	.591[a]
WC6	Team Characteristics	.190[a]	-
WC7	Innovation	.444[a]	-
NK1	Value of Knowledge	.567[a]	.575[a]
NK2	Tacit Knowledge	.673[a]	.529[a]
NK3	Explicit Knowledge	.595[a]	.573[a]
NK4	Access to Knowledge	.543[a]	.563[a]
NK5	Benchmarking	.362[a]	-
NK6	Quality of Information	.139[a]	-
OP1	Knowledge as Power	.595[a]	.702[a]
OP2	Technology	.528[a]	.652[a]
OP3	Time	.524[a]	.588[a]
OP4	Infrastructure	.732[a]	.788[a]
OP5	Knowledge Self-efficacy	.724[a]	.715[a]
OP6	System Quality	.207[a]	-
OP7	Communication	.208[a]	-
MV1	Rewards	.508[a]	.560[a]
MV2	Recognition	.560[a]	.721[a]
MV3	Sense of Belonging	.576[a]	.578[a]
MV4	Training & Development	.601[a]	.668[a]
MV5	Reciprocity	.273[a]	-
MV6	Trust	.271[a]	-
MV7	Management Support	.370[a]	-
MV8	Job Satisfactions	.162[a]	-
SA1	Openness	.571[a]	.591[a]
SA2	Enjoy Helping Others	.570[a]	.688[a]
SA3	Mentoring	.562[a]	.638[a]
SA4	Responsibility	.575[a]	.615[a]
SA5	Proactive	.310[a]	-
SA6	Loyalty	.121[a]	-

a. Measures of Sampling Adequacy (MSA)

Table 6 KMO and Bartlett's Test for dependent variables

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*.877*
Bartlett's Test of Sphericity	Approx. Chi-Square	*296.155*
	df	*10*
	Sig.	*.000*

The next analysis is to examine the anti-image correlation matrix. It is important to examine the diagonal elements of the anti-image correlation matrix where the values should be above 0.50 [76]. From Table 7 below, only items with values greater than 0.50 is maintained.

Table 7 Anti-image summary for dependent variables

Anti-image Matrices			
Anti-image Correlation			
KS1	Defects Management	.579[a]	.870[a]
KS2	Auditing Operational	.574[a]	.942[a]
KS3	Value for Money	.700[a]	.881[a]
KS4	Key Performance Indicator	.725[a]	.927[a]
KS5	Payment Mechanism	.590[a]	.796[a]
KS6	Staff Transfer	.395[a]	-
KS7	Contract Documents	.456[a]	-
KS8	Staff Competency	.444[a]	-

a. Measures of Sampling Adequacy (MSA)

3.6 Factors Extraction

After preliminary analysis process is done, the analysis continues with factors extraction. This stage starts with communalities. A communality of 1.000 in "Initial" column means that all the variance in the model is explained by the factors [74].

While in the "Extraction" column, when the communality is higher than 0.50, this indicates that the variable has a lot in common with the other variables taken as a group. Only items with more than 0.50 value maintained from this analysis.

3.6.1 Independent Variables

The next analysis is to examine the communalities for independent variables. In summary, only items with extraction values greater than 0.50 is maintained. The lowest extraction value for independent variables is 0.633 and the highest is 0.930. The extractions detail shown in Table 8.

Meanwhile, Table 9 shows the eigenvalues of total variance explained for independent variables. According to [75] and [74], the eigenvalues which are greater than 1.0 is maintained. For this analysis, five factors can be extracted which are factor 1 = 8.446; factor 2 = 3.990; factor 3 = 2.037; factor 4 = 1.363 and factor 5 = 1.272.

The other factor which is less than 1.000 is removed. The total variance explained by the five factors solution is 77.770% which is considered high. The percentage of variance explained must be at least 60% of the total variance.

Table 8 Communalities for independent variables

Variables		Initial	Extraction
WC1	Fairness	1.000	.735
WC2	Creativity	1.000	.633
WC3	Corporate Vision	1.000	.775
WC4	Diversity	1.000	.726
WC5	Social Ties	1.000	.662
NK1	Value of Knowledge	1.000	.852
NK2	Tacit Knowledge	1.000	.810
NK3	Explicit Knowledge	1.000	.825
NK4	Access to Knowledge	1.000	.858
OP1	Knowledge as Power	1.000	.858
OP2	Technology	1.000	.765
OP3	Time	1.000	.645
OP4	Infrastructure	1.000	.660
OP5	Knowledge Self-efficacy	1.000	.718
MV1	Rewards	1.000	.930
MV2	Recognition	1.000	.787
MV3	Sense of Belonging	1.000	.884
MV4	Training & Development	1.000	.783
SA1	Openness	1.000	.915
SA2	Enjoy Helping Others	1.000	.809
SA3	Mentoring	1.000	.730
SA4	Responsibility	1.000	.749

Extraction Method: Principal Component Analysis.

Table 9 Total Variance Explained for independent variables

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Comp.	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %
1	8.446	38.392	38.392	8.446	38.392	38.392	4.342	19.738	19.738
2	3.990	18.138	56.530	3.990	18.138	56.530	3.321	15.097	34.835
3	2.037	9.261	65.791	2.037	9.261	65.791	3.223	14.650	49.485
4	1.363	6.197	71.988	1.363	6.197	71.988	3.220	14.636	64.122
5	1.272	5.782	77.770	1.272	5.782	77.770	3.003	13.648	77.770
21	.030	.135	99.928						
22	.016	.072	100.000						

Extraction Method: Principal Component Analysis.

3.6.2 Dependent Variables

The next analysis is to examine the communalities for dependent variables. In summary, only items with extraction values greater than 0.50 is maintained. The lowest extraction value for dependent variables is 0.821 and the highest is 0.972. The extractions detail shown in Table 10 below.

Table 10 Communalities for dependent variables

Variables		Initial	Extraction
KS1	Defect Management	*1.000*	*.904*
KS2	Auditing Operational	*1.000*	*.821*
KS3	Value for Money	*1.000*	*.936*
KS4	Key Performance Indicator	*1.000*	*.918*
KS5	Payment Mechanism	*1.000*	*.972*

Extraction Method: Principal Component Analysis.

Table 11 shows the eigenvalues of total variance explained for dependent variables. The eigenvalues which are greater than 1.0 is maintained. Only one factors extracted which are factor 1 with total eigenvalues is 4.551. The other factor which is less than 1.000 is removed. The total variance explained by this factors solution is 91.012% which is considered high.

Table 11 Total Variance Explained for dependent variables

Comp.	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %
1	4.551	91.012	91.012	4.551	91.012	91.012
2	.223	4.458	95.469			
3	.134	2.685	98.154			
4	.066	1.313	99.467			
5	.027	.533	100.000			
Extraction Method: Principal Component Analysis.						

3.7 Factors Rotation

A significant factor loading must be 0.40 and above [76] [74]. Therefore, factor loadings which are less than 0.40 is removed. Table 12 below shows there are five group could explain 77.770% for independent variables in this analysis. This percentage is sufficient as the recommended value for social science research [76]. The total of 22 items was grouped together into five determinant factors.

Group one consists of five items namely (i) fairness; (ii) creativity; (iii) corporate vision; (iv) diversity; and (v) social ties. All these five determinant factors have been grouped together into one group factor which is "Working Culture" with the eigenvalue 8.446 and total variance of 38.392%.

Group two consists of four determinant factors namely (i) openness; (ii) enjoy helping others; (iii) mentoring; and (iv) responsibility. All these four determinant factors have been grouped together into one group factor which is "Staff Attitude" with the eigenvalue 3.990 and total variance of 18.138%.

Table 3 Rotated Component Matrix[a] for independent variables

	Component				
	1	2	3	4	5
Fairness	*.802*				
Creativity	*.771*				
Corporate Vision	*.749*				
Diversity	*.739*				
Social Ties	*.732*				
Openness		*.911*			
Enjoy Helping Others		*.796*			
Mentoring		*.787*			
Responsibility		*.748*			
Rewards			*.934*		
Recognition			*.846*		
Sense of Belonging			*.765*		
Training & Development			*.618*		
Value of Knowledge				*.875*	
Tacit Knowledge				*.844*	
Explicit Knowledge				*.830*	
Access to Knowledge				*.780*	
Knowledge as Power					*.834*
Technology					*.728*
Time					*.534*
Infrastructure					*.443*
Knowledge Self-efficacy					*.631*
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 6 iterations.					

Group three consists of four determinant factors namely (i) rewards; (ii) recognition; (iii) sense of belonging; and (iv) training and development. All these four determinant factors have been grouped together into one group factor which is "Motivation to Share" with the eigenvalue 2.037 and total variance of 9.261%.

Group four consists of four determinant factors namely (i) value of knowledge; (ii) tacit knowledge; (iii) explicit knowledge; and (iv) access to knowledge. All these four determinant factors have been grouped together into one group factor which is "Nature of Knowledge to Share" with the eigenvalue 1.363 and total variance of 6.197%.

Group five consists of five determinant factors namely (i) knowledge as power; (ii) technology; (iii) time; (iv) infrastructure; and (v) knowledge self-efficacy. All these five determinant factors have been grouped together into one group factor which is "Opportunities to Share" with the

eigenvalue 1.272 and total variance of 5.782%.

4 Discussion

In conclusion, the group factor of determinant factors for knowledge sharing in Facilities Management of Private Finance Initiative procurement are summarised as follows: -

i. Working Culture (WC) – Hypothesis 1: There is a significant relationship between determinant factor of "Working Culture" towards knowledge sharing in Facilities Management of Higher Learning Institution under Private Finance Initiative projects.

ii. Staff Attitude (SA) – Hypothesis 2: There is a significant relationship between determinant factor of "Staff Attitude" towards knowledge sharing in Facilities Management of Higher Learning Institution under Private Finance Initiative projects.

iii. Motivation to Share (MV) – Hypothesis 3: There is a significant relationship between determinant factor of "Motivation to Share" towards knowledge sharing in Facilities Management of Higher Learning Institution under Private Finance Initiative projects.

iv. Nature of Knowledge to Share (NK) – Hypothesis 4: There is a significant relationship between determinant factor of "Nature of Knowledge to Share" towards knowledge sharing in Facilities Management of Higher Learning Institution under Private Finance Initiative projects.

v. Opportunities to Share (OP) – Hypothesis 5: There is a significant relationship between determinant factor of "Opportunities to Share" towards knowledge sharing in Facilities Management of Higher Learning Institution under Private Finance Initiative projects.

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References

[1] S. Wang and R. A. Noe, "Knowledge sharing: A review and directions for future research," *Hum. Resour. Manag. Rev.*, vol. 20, no. 2, pp. 115–131, 2010.

[2] Z. Wang and N. Wang, "Knowledge sharing, innovation and firm performance," *Expert Syst. Appl.*, vol. 39, no. 10, pp. 8899–8908, Aug. 2012.

[3] Z. Wang, P. N. Sharma, and J. Cao, "From knowledge sharing to firm performance: A predictive model comparison," *J. Bus. Res.*, vol. 69, no. 10, pp. 4650–4658, 2016.

[4] W. Ben Arfi, L. Hikkerova, and J.-M. Sahut, "External knowledge sources, green innovation and performance," *Technol. Forecast. Soc. Change*, vol. 129, pp. 210–220, 2018.

[5] J. S. Brown and P. Duguid, "Knowledge and Organization: A Social-Practice Perspective," *Organ. Sci.*, vol. 12, no. 2, pp. 198–213, Apr. 2001.

[6] M. Earl, "Knowledge Management Strategies: Toward a Taxonomy," *J. Manag. Inf. Syst.*, vol. 18, no. 1, pp. 215–233, May 2001.

[7] I. Nonaka and G. von Krogh, "Perspective—Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory," *Organ. Sci.*, vol. 20, no. 3, pp. 635–652, Jun. 2009.

[8] M. M. Crossan, H. W. Lane, and R. E. White, "An Organizational Learning Framework: From Intuition to Institution," *Acad. Manag. Rev.*, vol. 24, no. 3, pp. 522–537, Jul. 1999.

[9] D. J. Cohen and L. Prusak, "In good company," *Ubiquity*, vol. 2001, no. January, p. 3–es, Jan. 2001.

[10] Q. N. Huy, "Emotional Balancing of Organizational Continuity and Radical Change: The Contribution of Middle Managers," *Adm. Sci. Q.*, vol. 47, no. 1, p. 31, Mar. 2002.

[11] A. M. Pettigrew, "On Studying Organizational Cultures," *Adm. Sci. Q.*, vol. 24, no. 4, p. 570, Dec. 1979.

[12] G. Hofstede, "The Cultural Relativity of Organizational Practices and Theories," *J. Int. Bus. Stud.*, vol. 14, no. 2, pp. 75–89, Jun. 1983.

[13] E. H. Schein, *Organizational culture and leadership*. Jossey-Bass, 2010.

[14] K. Williamson and K. J. Williams, "Organisational justice, trust and perceptions of fairness in the implementation of agenda for change," *Radiography*, vol. 17, no. 1, pp. 61–66, Feb. 2011.

[15] M. Sholihin, R. Pike, M. Mangena, and J. Li, "Goal-setting participation and goal commitment: Examining the mediating roles of procedural fairness and interpersonal trust in a UK financial services organisation," *Br. Account. Rev.*, vol. 43,

no. 2, pp. 135–146, Jun. 2011.
[16] J. Connell, N. Ferres, and T. Travaglione, "Engendering trust in manager- subordinate relationships," *Pers. Rev.*, vol. 32, no. 5, pp. 569–587, Oct. 2003.
[17] E. C. Martins and F. Terblanche, "Building organisational culture that stimulates creativity and innovation," *Eur. J. Innov. Manag.*, vol. 6, no. 1, pp. 64–74, Mar. 2003.
[18] T. Bendell, "A review and comparison of six sigma and the lean organisations," *TQM Mag.*, vol. 18, no. 3, pp. 255–262, May 2006.
[19] T. C. DiLiello and J. D. Houghton, "Maximizing organizational leadership capacity for the future," *J. Manag. Psychol.*, vol. 21, no. 4, pp. 319–337, Jun. 2006.
[20] J. C. Collins and J. I. Porras, "Organizational Vision and Visionary Organizations," *Calif. Manage. Rev.*, vol. 34, no. 1, pp. 30–52, Oct. 1991.
[21] C. B. M. van Riel and J. M. T. Balmer, "Corporate identity: the concept, its measurement and management," *Eur. J. Mark.*, vol. 31, no. 5/6, pp. 340–355, Jun. 1997.
[22] J. Jovanovic, "Management Of The Organization Based On Balanced Scorecards," 2011.
[23] G. Silverberg, G. Dosi, and L. Orsenigo, "Innovation, Diversity and Diffusion: A Self-Organisation Model," *Econ. J.*, vol. 98, no. 393, p. 1032, Dec. 1988.
[24] M. Janssens and C. Steyaert, "Theories of Diversity within Organisation Studies: Debates and Future Trajectories," *SSRN Electron. J.*, Jan. 2003.
[25] J.-K. Wang, M. Ashleigh, and E. Meyer, "Knowledge sharing and team trustworthiness: it's all about social ties!," *Knowl. Manag. Res. Pract.*, vol. 4, no. 3, pp. 175–186, Aug. 2006.
[26] D. Chambers, *New Social Ties*. London: Palgrave Macmillan UK, 2006.
[27] A. Fliaster and J. Spiess, "Knowledge Mobilization through Social Ties: The Cost-Benefit Analysis," *Schmalenbach Bus. Rev.*, vol. 60, no. 1, pp. 99–117, Jan. 2008.
[28] P. T. Ng, *Human systems management.*, vol. 23, no. 2. North-Holland, 1980.
[29] D. Tranfield, S. Smith, M. Foster, S. Wilson, and Ivor Parry, "Strategies for managing the teamworking agenda: Developing a methodology for team-based organisation," *Int. J. Prod. Econ.*, vol. 65, no. 1, pp. 33–42, Apr. 2000.
[30] R. Yeo, "From individual to team learning: practical perspectives on the learning organisation," *Team Perform. Manag. An Int. J.*, vol. 8, no. 7/8, pp. 157–170, Dec. 2002.
[31] B. Nooteboom, "Innovation, learning and industrial organisation," *Cambridge J. Econ.*, vol. 23, no. 2, pp. 127–150, Mar. 1999.
[32] M. Fishbein and B. H. Raven, "The AB Scales," *Hum. Relations*, vol. 15, no. 1, pp. 35–44, Feb. 1962.
[33] A. H. Eagly and S. Chaiken, "The Advantages of an Inclusive Definition of Attitude," *Soc. Cogn.*, vol. 25, no. 5, pp. 582–602, Oct. 2007.
[34] D. Davidson, "Knowing One's Own Mind," in *The American Philosophical Association Centennial Series*, 2013, pp. 389–409.
[35] M. Vakola and I. Nikolaou, "Attitudes towards organizational change," *Empl. Relations*, vol. 27, no. 2, pp. 160–174, Apr. 2005.
[36] C. A. Ross And E. M. Goldner, "Stigma, negative attitudes and discrimination towards mental illness within the nursing profession: a review of the literature," *J. Psychiatr. Ment. Health Nurs.*, vol. 16, no. 6, pp. 558–567, Aug. 2009.
[37] J. S. P. Story and J. E. Barbuto, "Global Mindset: A Construct Clarification and Framework," *J. Leadersh. Organ. Stud.*, vol. 18, no. 3, pp. 377–384, Aug. 2011.
[38] O. Levy, S. Beechler, S. Taylor, and N. A. Boyacigiller, "What we talk about when we talk about 'global mindset': Managerial cognition in multinational corporations," *J. Int. Bus. Stud.*, vol. 38, no. 2, pp. 231–258, Mar. 2007.
[39] H.-F. Lin, "Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions," *J. Inf. Sci.*, vol. 33, no. 2, pp. 135–149, Apr. 2007.
[40] M. M. Wasko and S. Faraj, "Why Should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice," *MIS Q.*, vol. 29, no. 1, p. 35, 2005.
[41] B. E. Wright and S. K. Pandey, "Public Service Motivation and the Assumption of Person—Organization Fit," *Adm. Soc.*, vol. 40, no. 5, pp. 502–521, Sep. 2008.
[42] R.-H. Weng, C.-Y. Huang, W.-C. Tsai, L.-Y. Chang, S.-E. Lin, and M.-Y. Lee, "Exploring the impact of mentoring functions on job satisfaction and organizational commitment of new staff nurses," *BMC Health Serv. Res.*, vol. 10, no. 1, p. 240, Dec. 2010.
[43] S. Gilman, "The Quest for Responsibility: Accountability and Citizenship in Complex Organizations," *Adm. Theory Prax.*, vol. 21, no. 2, pp. 233–235, Jun. 1999.
[44] L. Lindkvist and S. Llewellyn, "Accountability, responsibility and organization," *Scand. J. Manag.*, vol. 19, no. 2, pp. 251–273, Jun. 2003.
[45] K. Strauss, M. A. Griffin, and A. E. Rafferty, "Proactivity Directed Toward the Team and Organization: The Role of Leadership, Commitment and Role-breadth Self-efficacy," *Br. J. Manag.*, vol. 20, no. 3, pp. 279–291, Sep. 2009.
[46] S. K. Parker, U. K. Bindl, and K. Strauss, "Making Things Happen: A Model of Proactive Motivation," *J. Manage.*, vol. 36, no. 4, pp. 827–856, Jul. 2010.
[47] B. Schrag, "The Moral Significance of Employee Loyalty," *Bus. Ethics Q.*, vol. 11, no. 1, p. 41, Jan. 2001.
[48] S. Iqbal and I. Salman, "Employees' perceptions of human resource management practices and knowledge sharing behaviour," Massey University, 2015.
[49] H. A. Kasim, "Antecedents of Knowledge Sharing Behavior – Analyzing the Influence of Performance Expectancy and User's Attitude www.globalbizresearch.org," *Int. J. Recent Adv. Organ. Behav. Decis. Sci. An Online Int. Res. J.*, vol. 1, no. 3, pp. 2311–3197, 2015.
[50] H. T. Keh and Y. Xie, "Corporate reputation and customer behavioral intentions: The roles of trust, identification and commitment," *Ind. Mark. Manag.*, vol. 38, no. 7, pp. 732–742, Oct. 2009.
[51] L. Zhao, Y. Lu, B. Wang, P. Y. K. Chau, and L.

Zhang, "Cultivating the sense of belonging and motivating user participation in virtual communities: A social capital perspective," *Int. J. Inf. Manage.*, vol. 32, no. 6, pp. 574–588, Dec. 2012.

[52] T. M. Scott and C. M. Nelson, "Functional Behavioral Assessment: Implications for Training and Staff Development," *Behav. Disord.*, vol. 24, no. 3, pp. 249–252, May 1999.

[53] J. Shen and R. Darby, "Training and management development in Chinese multinational enterprises," *Empl. Relations*, vol. 28, no. 4, pp. 342–362, Jul. 2006.

[54] M. Ipe, "Knowledge Sharing in Organizations: A Conceptual Framework," *Hum. Resour. Dev. Rev.*, vol. 2, no. 4, pp. 337–359, Dec. 2003.

[55] A. Tamjidyamcholo, M. S. Bin Baba, H. Tamjid, and R. Gholipour, "Information security – Professional perceptions of knowledge-sharing intention under self-efficacy, trust, reciprocity, and shared-language," *Comput. Educ.*, vol. 68, pp. 223–232, Oct. 2013.

[56] R. Audi, *Epistemology*. Routledge, 2010.

[57] J. A. Hughes, W. W. Sharrock, and W. W. Sharrock, *The Philosophy of Social Research*. Routledge, 2016.

[58] I. Nonaka and H. Takeuchi, *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, 1995.

[59] S. Omar Sharifuddin bin Syed- Ikhsan and F. Rowland, "Benchmarking knowledge management in a public organisation in Malaysia," *Benchmarking An Int. J.*, vol. 11, no. 3, pp. 238–266, Jun. 2004.

[60] R. Maier and T. Hadrich, "Knowledge Management Systems," in *Encyclopedia of Knowledge Management*, IGI Global, 2006, pp. 442–450.

[61] S. A. Marglin, "Knowledge and Power," in *Firms, Organization and Labour*, London: Palgrave Macmillan UK, 1984, pp. 146–164.

[62] R. Neches *et al.*, "Enabling Technology for Knowledge Sharing," *AI Mag.*, vol. 12, no. 3, pp. 36–36, Sep. 1991.

[63] R. R. A. Issa and J. Haddad, "Perceptions of the impacts of organizational culture and information technology on knowledge sharing in construction," *Constr. Innov.*, vol. 8, no. 3, pp. 182–201, Jul. 2008.

[64] I. Nonaka, R. Toyama, and A. Nagata, "A firm as a knowledge-creating entity: a new perspective on the theory of the firm," *Ind. Corp. Chang.*, vol. 9, no. 1, pp. 1–20, Mar. 2000.

[65] M.-H. Hsu, T. L. Ju, C.-H. Yen, and C.-M. Chang, "Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations," *Int. J. Hum. Comput. Stud.*, vol. 65, no. 2, pp. 153–169, Feb. 2007.

[66] E. F. Cabrera and A. Cabrera, "Fostering knowledge sharing through people management practices," *Int. J. Hum. Resour. Manag.*, vol. 16, no. 5, pp. 720–735, May 2005.

[67] R. E. de Vries, A. Bakker-Pieper, and W. Oostenveld, "Leadership = Communication? The Relations of Leaders' Communication Styles with Leadership Styles, Knowledge Sharing and Leadership Outcomes," *J. Bus. Psychol.*, vol. 25, no. 3, pp. 367–380, Sep. 2010.

[68] A. L. Comrey and H. B. Lee, *A first course in factor analysis*, 2nd ed. Lawrence Erlbaum Associates, Inc., 1992.

[69] R. Y. Cavana, B. L. Delahaye, and U. Sekaran, *Applied Business research: Qualitative and Quantitative Methods | QUT ePrints*. 2001.

[70] Julie Pallant, *Spss Survival Manual*, Version 10. Philadelphia: Open University Press, 2001.

[71] Z. Nathan, "The Minimum Sample Size in Factor Analysis - Nathan Zhao - Wiki of Encorelab Toronto," 2009. [Online]. Available: https://www.encorewiki.org/display/~nzhao/The+Minimum+Sample+Size+in+Factor+Analysis. [Accessed: 22-May-2018].

[72] J. Pallant, *SPSS survival manual—A step by step guide to data analysis using SPSS for windows*, 3rd ed. Maidenhead: Open University Press., 2007.

[73] H. F. Kaiser and J. Rice, "Little Jiffy, Mark Iv," *Educ. Psychol. Meas.*, vol. 34, no. 1, pp. 111–117, Apr. 1974.

[74] M. S. Bartlett, "A Note on the Multiplying Factors for Various χ2 Approximations," *Journal of the Royal Statistical Society. Series B (Methodological)*, vol. 16. Wiley Royal Statistical Society, pp. 296–298, 1954.

[75] L. S. Meyers, G. Gamst, and A. J. Guarino, *Applied multivariate research : design and interpretation*. SAGE, 2013.

[76] J. Hair, "Multivariate Data Analysis," *Fac. Publ.*, Feb. 2009.

[77] M. F. Omar, A. T. Nursal, M. N. M. Nawi, A. T. Haron, K. C. Goh: A Preliminary Requirement of Decision Support System for Building Information Modelling Software Selection, *Malaysia Construction Research Journal (MCRJ)*, Vol. 15(2):11-28, 2014.

[78] M.N.M. Nawi, W.N. Osman, A.I. Che-Ani, Key Factors for Integrated Project Team Delivery: A Proposed Study in IBS Malaysian Construction Projects, *Advances in Environmental Biology*, 8(5) 1868-1872, 2014.

[79] M.N.M. Nawi, S.M.F.W.S. Jalaluddin, F. Zulhumadi, J.A. Ibrahim & F. Baharum. A Strategy for Improving Construction Projects Sustainability through Value Management Approach, *International Journal of Applied Engineering Research 9*(24), 28377–28385, 2014.