# Social capital, attitude, expectations and quality of knowledge sharing in Jordanian knowledge stations

# Amin A. Shaqrah\*

Faculty of Economics and Administrative Sciences, Alzaytoonah University of Jordan, MIS Dept. P.O. Box 130, Amman 11733, Jordan E-mail: Amsh\_10@yahoo.com \*Corresponding author

# Adel Al-Hhashem

Faculty of Business, Al-Balqa' Applied University, MIS Dept. P.O. Box 130, Amman 11733, Jordan E-mail:Adelalhashem@yahoo.com

# Raed Algirem

Faculty of Economics and Administrative Sciences, Alzaytoonah University of Jordan, MIS Dept. P. O. Box 130, Amman 11733, Jordan E-mail:qirem@hotmail.com

**Abstract**: This study argues that the structural, relational, and cognitive dimensions of social capital in organisational knowledge sharing. These dimensions increase knowledge sharing; attitude and expectations about knowledge sharing, and quality of knowledge sharing. Our proposed model is tested on a sample of 141 employees and researchers within knowledge stations at Jordan, and then examined their relationships using structural equation modelling. We find that social interaction ties, trust, norm of reciprocity and attitude and expectations about knowledge sharing significantly contributed to knowledge sharing quality-directly and indirectly- but only shared language and vision was insignificant contributed to quality of knowledge sharing.

Keywords: knowledge sharing; social capital; structural equation modelling; Jordan.

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**Biographical notes**: Amin A. Shaqrah is currently an Assistant Professor of Management Information Systems at Alzaytoonah University of Jordan. He holds a PhD in MIS from the University of Banking and Financial Sciences, and received MA in MIS from Amman Arab University for Graduate Studies. He is affiliated with a number of international professional societies on KM, e-business, and a member of editorial review boards for a number of

international journals. His research interests are mainly knowledge sharing and transfer, organisational knowledge theory, knowledge culture, CRM value strategies, data mining techniques, innovative work environment, human and social implications of enterprise systems (ERP, CRM, and SCM). His work appears in number international journals and conferences.

Adel Al-Hhashem holds a PhD in MIS from the University of Banking and Financial Sciences. He is the Head of Management and Financial Department and an Instructor in Management Information Systems at Albalqa Applied University, Karak University College, Jordan. His principal research interests include strategic alignment maturity, organisational learning and memory. He is currently investigating how to implement social network to improve organisational learning. He has published conference and journal papers in strategic alignment, business transformation and knowledge management.

Raed Alqirem holds a PhD in MIS from the University of Sunderland. He is the Head of MIS Department at Alzaytoonah University of Jordan. His research interests are mainly system dynamic, system modelling, and DSS.

#### 1 Introduction

The main objective of knowledge management is to turn individual knowledge into organisational knowledge. It is a recent phenomenon that knowledge sharing gains its popularity and importance in public sector (Zhang et al., 2006). A firm can be considered to be a social community creating, sharing and transferring explicit and tacit knowledge. Knowledge sharing as a subset of knowledge management has been given high priority and expressively stated in organisation's information policy. The motive is to improve the quality of service delivery (Thomas, 2005). For a non-profit organisation like government agency, knowledge sharing represents ways to increase continuous performance, and is thought to improve citizen and employees satisfaction (Pan and Scarbrough, 1998) knowledge sharing involves communication and exchange of knowhow, is concerned with a sophisticated socialisation procedure in which social activities and cooperation have to be emphasised (Stallkamp and Hanke, 2003), also involves a set of behaviours that aid the exchange of acquired knowledge. Tacit knowledge requires a favourable learning environment and efficient sharing approaches to encourage knowledge participants' own initiative or responsiveness, to eliminate communicating gaps, to accelerate knowledge dissemination, and to increase overall competitiveness as well as innovativeness (Saxenian and Hsu, 2002).

Nahapiet and Ghoshal (1998) presented social capital as an integrative framework for understanding the creation and sharing of knowledge in organisations. They discussed that organisations have unique advantages for creating knowledge over more open settings such as markets because organisations provide an institutional environment conducive to the development of social capital. They suggested that the combination and exchange of knowledge is facilitated when there are structural links or connections between individuals (structural dimension), individuals have the cognitive capability to understand and apply the knowledge (cognitive dimension), and their relationships have strong, positive characteristics (relational dimension). Each of these forms of social capital establishes an aspect of the social structure and facilitates the combination and exchange of knowledge between individuals within that structure. Social capital theory according to Nahapiet and Ghoshal (1998) emphasised on relationships, networks, and information flows for understanding and analysing sharing knowledge between employees. Hence, this is the motivation for this study.

The objectives of our study were thus to

- 1 study how to quantify social capital
- 2 develop a theoretical framework to confirm that social capital factors had a significant impact on knowledge sharing.

Our theoretical framework therefore examined the influence of the role played by social capital factors of organisational members that influence on personal attitudes behaviours after that on quality of knowledge sharing. This paper is organised as follows. First, we discuss the conceptual foundation of our study. Second, based on this theoretical background, we propose a model that specifies the dimensions of social capital- social interaction, trust, norm of reciprocity, and shared language and goals – as antecedents to sharing knowledge. Subsequently, we describe the research method and present our findings. Finally, the paper concludes with a discussion of the results and implications for management and future research.

#### 2 Theory and hypotheses

Tsai and Ghoshal (1998) argued the impact of social capital on the internal functioning of firms, focusing on the extent to which social capital facilitates a firm's ability to create value through innovations. We employ Nahapiet and Ghoshal's (1998) conceptualisation of social capital, where three dimensions are argued to facilitate the combination and exchange of resources within firms. The first dimension is structural, which emphasises the importance of the location of an actor's contacts in a social of interactions ties. This dimension is articulated in this study in terms of the degree of open communication facilitated by social network ties, which enables employees to combine or share knowledge (Wasko and Faraj, 2005). The second dimension is relational, and is conceptualised here in terms of a trusting norm of reciprocity, which is a key relationship asset, as it is capable of increasing cooperation and support among service employees (Putnam, 1995). The third dimension is reflected here in the concept of shared language and vision, which represents the shared values that facilitate individual and group actions (Wasko and Faraj, 2000).

The link social capital open the scope of knowledge flow through direct or indirect open mindedness, norm of reciprocal, shared language and vision, identification, trust, and social interaction ties are more likely to create a consistent shared context which can reduce scruples about opportunism behaviours, thereby, are willing to exchange resources and knowledge and benefit organisational learning as well as knowledge exchange (Rousseau et al., 1998; Alder and Keok, 2000). Table 1 shows some of the research in social capital literature used the three dimensions of Nahapiet and Ghoshal's model.

Researcher(s)	Structural dimension	Relational dimension	Cognitive dimension
Nahapiet and Ghoshal (1998)	Network ties, network configurations, appropriable organisation	Trust, norms, obligations and expectations, identification	Shared codes and language, shared narratives
Tsai and Ghoshal (1998)	Social interaction	Trust and trustworthiness	Shared vision
Huysman and De Wit (2004)	Network ties, network configurations, appropriable organisation	Mutual trust, norms, obligations and identification	Shared codes and language, shared narratives
Lang (2004)	Bounded solidarity	Generalised trust, reciprocity	Value introjections
Wasko and Faraj (2005)	Centrality	Commitment, reciprocity	Self-rated expertise, tenure in the field
Chiu et al. (2006)	Social interaction ties	Trust, identification, norm of reciprocity	Shared language, shared vision
McElroy et al. (2006)	Networks	Trust, norms, beliefs, rules	N/A
Chow and Chan (2008)	Network configuration	Social trust	Shared goals
Rhodes et al. (2008)	Network connection	Relationship strength, relation quality, common norms	Shared values
Hoofman and Huysman (2009)	Network ties	Trust, social identification	Shared language
Factors considered in our study	Social interaction	Trust, norm of reciprocity	Shared language and vision

#### Table 1 Some of the research in social capital literature that based on the three dimensions

Following Nahapiet and Ghoshal's theoretical model, we define social capital in terms of three distinct dimensions: structural, relational, and cognitive. The most antecedent factor of the structural dimension is social interaction ties between members, and the most antecedent factors of the relational dimension is trust and norm of reciprocity. Also the most antecedent factor of the cognitive dimension is shared language and vision. According to knowledge sharing contributors' 'attitude and expectations' and 'quality of knowledge sharing' outcomes are important in clarifying knowledge sharing.

# 2.1 Social interaction ties

Nahapiet and Ghoshal (1998) discussed that network ties influence both access to parties for combining and exchanging knowledge and anticipation of value through such exchange. Wasko and Faraj (2005) imagine social interaction similar to a conversation that occurs through the posting of messages. Posting and responding to messages creates a social tie between individuals. Therefore, a social tie or structural link is created when one person responds to another's posting. How many such ties any one individual creates

determines his or her centrality in the network, which leads us to the following hypothesis:

- H1a Social interaction ties are associated with the attitude and expectations about knowledge sharing.
- H1b Social interaction ties are associated with the quality of knowledge sharing.

#### 2.2 Trust

Trust is a key aspect of relational capital and facilitator of collective action (Coleman, 1990). In general, trust develops when a history of favourable past interactions leads to expectations about positive future interactions (Wasko and Faraj, 2005). Trust is a complex phenomenon, and several dimensions of trust operating at multiple levels of analysis exist in organisational settings (McKnight et al., 1998; Tsai and Ghoshal, 1998). Trust has been studied in a variety of settings, and results indicate that trust in others' ability, benevolence, and integrity is related to the desire to give and receive information (Ridings et al., 2002) and improved performance in distributed groups (Jarvenpaa, 1998). Nahapiet and Ghoshal (1998) noted that trust can exhibit greater openness to the potential for value creation through knowledge exchange and combination. This leads to the following hypothesis:

- H2a Trust is associated with the attitude and expectations about knowledge sharing.
- H2b Trust is associated with the quality of knowledge sharing.

## 2.3 Norm of reciprocity

A basic norm of reciprocity is a sense of mutual indebtedness, so that individuals usually reciprocate the benefits they receive from others, ensuring ongoing supportive exchanges. Prior research indicates that knowledge sharing is facilitated by a strong sense of reciprocity along with a strong sense of fairness (Wasko and Faraj, 2000). Thus, when there is a strong norm of reciprocity in the collective, individuals trust that their knowledge contribution efforts will be reciprocated, thereby motivate individual efforts and ensuring ongoing contribution. This leads to the following hypothesis:

- H3a Norm of reciprocity is associated with the attitude and expectations about knowledge sharing.
- H3b Norm of reciprocity is associated with the quality of knowledge sharing.

#### 2.4 Shared language and vision

Nahapiet and Ghoshal (1998) summarised the exchange of knowledge requires at least some level of shared understanding between parties, such as a shared language and vocabulary. Language is the means by which individuals engage in communication. It provides a frame of reference for interpreting the environment and its mastery is typically indicated by an individual's level of expertise. Individuals must also understand the context in which their knowledge is relevant (Orr, 1996). Warkso and Faraj (2005) concluded that cognitive capital consists of both individual expertise, and mastery of the

language within the practice, as well as experience with applying the expertise. This leads to the following hypothesis:

- H4a Shared language and vision is associated with the attitude and expectations about knowledge sharing.
- H4b Shared language and vision is associated with the quality of knowledge sharing.

#### 2.5 Attitude and expectations about knowledge sharing

Personal attitudes toward a behaviour are a significant factor of intention to engage in that behaviour or not. Fishbein and Ajzen (1975) concluded the more favourable the attitude of an individual toward a behaviour, the stronger will be the intention of the individual to engage in the behaviour; also concluded the stronger intention of the individual to engage in a behaviour, the more likely the individual will be to perform it. Chow and Chan (2008) determined behavioural intention to share knowledge by a person's attitude toward knowledge sharing. Outcome expectations refer to an individual's belief that task accomplishment leads to a possible outcome. Personal outcome expectations refer to the knowledge contributor's judgement of likely consequences that his or her knowledge sharing behaviour will produce to him or herself (Chiu et al., 2006). This leads to the following hypothesis:

H5 Attitude and expectations about knowledge sharing associated with the quality of knowledge sharing.

#### 2.6 Quality of knowledge sharing

We used quality of knowledge sharing in our research as an indicator of productivity that an organisation can gain through knowledge sharing. We consider four characteristics quality of knowledge sharing: ease of understanding, accuracy, reliability, and timeliness. The above hypotheses are summarised in Figure 1.



Figure 1 The theoretical model

# **3** Case study: knowledge stations, Jordan<sup>1</sup>

The Hashemite Kingdom of Jordan has taken the IT lead in the Middle East. An initiative to ensure that every Jordanian has access to information and communications technology has begun; significantly, these efforts are targeted towards those communities who, under ordinary circumstances, would not be able to experience ICT easily. These marginalised populations are those such as women, the under-privileged and under-served, children, labourers, farmers, and the illiterate. The majority of these communities reside in the rural and remote areas of Jordan, where access to ICT is difficult to obtain. The initiative of establishing information technology and community service centres (renamed later knowledge stations) was launched in 2001. This initiative is intended to implement IT in local communities in remote areas in preparation for the e-government process. The national information technology center (NITC) was mandated with the execution of the project after it conducted a study on the best practice in selecting the sites for the knowledge stations in the different governorates and local communities. These KSs effectively dual as community centres, thus serving two primary roles; first, as training centres in information technology and social programmes, and second, as walk-in centres providing services such as internet, fax machine usage and photocopiers. However, the role of the KSs is beginning to expand, underscoring the relevance of community-based activities that aid in the sustainability of the centres, and of the populations around them. Since its inception, the various knowledge stations have trained a total of (85,634) people, [55.2% females, and 44.8% males], on basic computer literacy and other various advanced courses on how to utilise ICT towards enhancing their businesses, attaining health care information, participating in e-government, acquiring novel leadership and entrepreneurship qualities, and general awareness of the various social issues such as gender discrimination and child development.

An additional (84,000) people have used the Stations' walk-in services that include internet access, fax machines, photocopiers and various multimedia services. Researcher adopted a survey method for data collection and examined the model using smart PLS software.

#### 4 Method

#### 4.1 Measurement development

Researchers developed measurement items by adopting measures that had been validated in prior studies, modifying them to fit our context of research. For measuring the three factors of social capital we used the works of Chow and Chan (2008) as a base of our questionnaire -after modification and translation to Arabic- the questions wherever it was necessary. For measuring the two factors of knowledge sharing we used the works of Ismail and Yusof (2010) as a base of our questionnaire -after modification and translation to Arabic-the questions wherever it was necessary. Responses were measured using five-Likert scales with strongly disagree (1) and strongly agree (5).

#### 4.2 Data collection

We select 72 knowledge stations 'KS' works especially in the middle region as a purposive sample, the total number of KS in Jordan were 183 KS. We collect the data by means of questionnaire, we send out 200 questionnaires to these employees. Some questionnaires are administered in one-on-one interview formats, while others are distributed to the designated respondents. Most of the employees' works on these stations are researcher with BS and MS degree which works in their field of study; and the natures of the works in these stations are compatible with the concept of knowledge sharing. After eliminating the questionnaires with which the data are incomplete or missing, the total effective sample size is reduced to 141, which satisfies the recommendation made by literature. The questionnaire contained the constructs to be measured for quantitative analysis, along with five demographic questions (gender, age, education, knowledge station experience, and job function). Table 2 illustrated the demographic of the respondents.

Items	Percent %	
Gender		
Male	97%	
Female	3%	
Age		
21–25	55%	
26–30	22%	
31–35	14%	
36–40	4%	
41–45	3%	
46 above	2%	
Education		
Secondary schools	14%	
College	20%	
BSc	65%	
Msc	1%	
PhD	0%	
KS experience		
Under three years	66%	
Above three years	34%	
Job function		
Researcher	9%	
Technician	9%	
Manager	72%	
Others	10%	

 Table 2
 Demographics of the respondents

Most of respondents were males; female represents only 3%. Around 77% were at least 30 years old. The BSc holders of respondents had 65%, 1% had Master degree, 20% had diploma, and 14% had secondary schools. About 66% had at least three years of KS-use experience. About 9% of the respondents were researcher and technician, whereas the majority 72% was station manager.

# 5 Analysis and results

We chose partial least squares (PLS) structural equation analysis to test the hypotheses. PLS is a structural equation modelling technique that simultaneously assesses the reliability and validity of the measures of theoretical constructs and estimates the relationships among these constructs (Wold, 1982). PLS can be used to analyse measurement and structural models with multi item constructs, including direct, indirect, and interaction effects, and is widely used in IS research (Ahuja et al., 2003). PLS requires a sample size consisting of ten times the number of predictors, using either the indicators of the most complex formative construct or the largest number of antecedent constructs leading to an endogenous construct, whichever is greater. Although the measurement and structural parameters are estimated together, a PLS model is analysed and interpreted in two stages: the assessment of the reliability and validity of the measurement model, and the assessment of the structural model.

#### 5.1 Measurement model

The first step in PLS is to assess the convergent validity of the constructs by examining the average variance extracted (AVE). The AVE attempts to measure the amount of variance that a latent variable component captures from its indicators relative to the amount due to measurement error. AVE values should be greater than the generally recognised .50 cut-off, indicating that the majority of the variance is accounted for by the construct. In PLS, the internal consistency of a given block of indicators can be calculated using the composite reliability (ICR) developed by Werts et al. (1973). Acceptable values of an ICR for perceptual measures should exceed .70 (Fornell and Larcker, 1981) and should be interpreted like a Cronbach's coefficient. All ICR and AVE values meet the recommended threshold values. Table 3 summarised the measurement model results. Discriminant validity indicates the extent to which a given construct is different from other constructs. The measures of the constructs should be distinct and the indicators should load on the appropriate construct. One criterion for adequate discriminant validity is that the construct should share more variance with its measures than with other constructs in the model. To evaluate discriminant validity, the AVE may be compared with the square of the correlations among the latent variables (Chin, 1998). All AVEs are greater than the off-diagonal elements in the corresponding rows and columns, demonstrating discriminant validity. A second way to evaluate convergent and discriminant validity is to examine the factor loadings of each indicator. Each indicator should load higher on the construct of interest than on any other factor (Chin, 1998). Factor loadings, alpha test, standard deviation, and mean for the multi-item measures were calculated and are presented in Appendix A. Inspection of loadings and ICR

confirms that the observed indicators demonstrate adequate discriminant and convergent validity.

Construct	ICR	SIT	Т	NR	SLV	AEKS	QKS
SIT	0.82	1					
Т	0.75	0.17	1				
NR	0.78	0.66	0.53	1			
SLV	0.83	-0.24	0.33	0.54	1		
AEKS	0.85	0.15	-0.01	0.35	0.43	1	
QKS	0.82	0.02	0.11	0.42	0.41	0.39	1

 Table 3
 ICR and correlation between variables

Notes: All correlations are significant at p < 0.01.

#### 5.2 Hypotheses and model testing

The theoretical model and hypothesised relationships were estimated using 200 iterations of the bootstrapping technique in PLS Graph 3 (Chin and Frye, 1996). The explanatory power of the structural model is evaluated by looking at the  $R^2$  value in the final dependent construct. Because we measure knowledge sharing in two ways, we presented two sets of results, one for each dependent variable. We first presented results for attitude and expectations about knowledge sharing. Next, we presented results for quality of knowledge sharing. To examine the specific hypotheses, we assessed the t-statistics for the standardised path coefficients based on a two-tail test with a significance level of .05 (see Table 3). Figure 2 presented the results of the PLS analysis used to test the theoretical model.

The  $R^2$  for attitude and expectations knowledge sharing 'AEKS' was 0.31. We proposed direct links between SIT (H1a), T (H2a), NR (H3a), SLV (H4a) and AEKS. Only the path between social interaction ties, norm of reciprocity, trust and attitude and expectations about knowledge sharing was positive and significant (path = 0.21, 0.23, 0.19); T test (T = 2.75, 1.67, 4.29) sequentially (see Table 3), trust seems to be the most significant predictor on the attitude and expectations knowledge sharing, followed by social interaction and norms. This finding is of help to the KS managers in formulating a new policy to encourage the sharing of knowledge among employees in all its stations. Trust and building the appropriate social interaction and norms of reciprocity are suitable for the endeavour amongst its employees; this finding is also consistent with (Tsai and Ghoshal, 1998; Chiu et al., 2006; Chow and Chan, 2008; Hoofman and Huysman, 2009). Contrary to expectations, the path between shared language and vision and attitude and expectations about knowledge sharing insignificance (path = 0.01); T test (0.24) sequentially (see Table 3). Shared language and vision can lead to a better awareness of people. By a better awareness of other's behaviour about knowledge sharing, people have a clearer feeling about their attitude and expectations about knowledge sharing.



Figure 2 Testing the theoretical model (see online version for colours)

**Table 4**Summary of path coefficient and significant level

Hypothesis		Attitude and expectations about knowledge sharing			Quality of knowledge sharing		
		T- statistics	Path coefficient	Support for H?	T- statistics	Path coefficient	Support for H?
H1	Social interaction ties (SIT)	2.75 **	0.21	Yes	2.12*	0.26	Yes
H2	Trust (T)	1.67*	0.23	Yes	1.14	0.15	No
H3	Norm of reciprocity (NR)	4.29***	0.19	Yes	7.07***	0.08	No
H4	Shared language and vision (SLV)	0.24*	0.01	No	0.00	-0.16	No
H5	Attitude and expectations about knowledge sharing (AEKS)	N/A	N/A	N/A	2.84**	0.31	Yes

Notes: \*p < .05, \*\* p < .01, \*\*\* p < .001

On the other side, the  $R^2$  for the quality of knowledge sharing 'QKS' was 0.45. We proposed direct links between SIT (H1b), T (H2b), NR (H3b), SLV (H4b), AEKS (H5), and quality of knowledge sharing. The path for SIT and AEKS was significant (path = 0.26, 0.31); T test (2.12, 2.84) sequentially (see Table 4); this finding is also consistent with (Nahapiet and Ghoshal, 1998; Chow and Chan, 2008; Hoofman and Huysman, 2009). Contrary to expectations, hypotheses T (H2b), NR (H3b), SLV (H4b) results have no significant link between them and quality of knowledge sharing.

#### 6 Conclusions and further study

Our study was one of the empirical evidence about the influence of a structural, relational, and cognitive dimension of social capital on employees' intention to share knowledge and the quality of knowledge that shared in organisation. It offers insights to practitioners on the value of social capital and reasons why people are or are not willing to engage in knowledge sharing within an organisation. We also found that social interaction ties is the most critical factor in knowledge sharing, by having a strong effect on both attitude and expectations, and quality of knowledge. Since it is more convenient for organisations to reinforce shared language and vision, it can be a proper policy to invest in cognitive dimension's factors of social capital.

Though this study has achieved its goal, but it is also not without limitation. First, the scope of the study was restricted to only one region 'middle Jordan', Therefore, generalising the findings to others regions 'north and south' can be questioned. Second, the study relies merely on quantitative approach. It is suggested that for future study qualitative approach by means of open ended interview is to be adopted to yield information not obtainable for questionnaires. Third, this study only concentrates on knowledge sharing quality rather than form the quantity aspect. It is useful to combine knowledge sharing form both the quality and quantity aspects in order to obtain the benefits of the practice in maximum. Finally, we focus only four social capital factors in our model; other social capital factors mentioned in the literature may also affect outcomes. Future research should extend its scope to others social capital factors.

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# Notes

1 Adapted from Knowledge Stations, available at http://www.ks.gov.jo/index\_expand\_EN.htm (accessed on 26 August 2010).

Constructs	Items	Statistics
Social interaction ties	In general, I have a very good relationship with my organisational members (factor loadings = $0.86$ ).	Alpha = 0.82, Mean = 3.59,
(SIT)	In general, I am very close to my organisational members (factor loadings = $0.89$ ).	S.D = .68
	I always hold a lengthy discussion with my organisational members (factor loadings = $0.80$ ).	
	Social interaction increases the information that I own in an accumulative (factor loadings = $0.84$ ).	
Trust (T)	I know my organisational members will always try and help me out if I get into difficulties (factor loadings = $0.75$ ).	Alpha = 0.75, Mean = 3.70, S.D = .71
	I can always trust my organisational members to lend me a hand if I need it (factor loadings = $0.73$ ).	
	I can always rely on my organisational members to make my job easier (factor loadings = $0.76$ ).	
	The existence of trust between me and the others increase knowledge sharing that I own (factor loadings = $0.71$ ).	
Norm of reciprocity (NR)	There are habits of routine organisation that helps in sharing information and knowledge (factor loadings = $0.69$ ).	Alpha = 0.78, Mean = 3.44, S.D = .66
	No mechanisms of action for the organisation that helps in sharing information and knowledge (factor loadings = $0.74$ ).	
	My colleagues always think that I should share my knowledge with other members in the organisation (factor loadings = $0.71$ ).	
	Use of information technology has become part of routine work (factor loadings $= 0.67$ ).	

# Appendix A Survey items

Constructs	Items	<b>Statistics</b>	
Shared language and vision (SLV)	English is an impediment to me on the station to the system (factor loadings = $0.66$ ).	Alpha = 0.83, Mean = 3.70,	
	There are available guide to help me in how to use the station system (factor loadings = $0.60$ ).	S.D = .72	
	My organisational members and I always share the same ambitions and vision at work (factor loadings = $0.62$ ).		
Attitude and expectations about knowledge sharing (AEKS)	Sharing of my knowledge with organisational members is always beneficial (factor loadings = $0.82$ ).	Alpha = 0.85, Mean = 3.71,	
	Sharing of my knowledge with organisational members is always an enjoyable experience (factor loadings = $0.86$ ).	S.D = .73	
	Sharing of my knowledge with organisational members is always valuable to me (factor loadings = $0.88$ ).		
	Sharing of my knowledge with organisational members is always a wise move (factor loadings = $0.90$ ).		
Quality of knowledge sharing (QKS)	I'm working on a system that is easy to use (factor loadings = $0.91$ ).	Alpha = 0.82, Mean = 3.68,	
	Knowledge that I share with my colleagues in my work is accurate (factor loadings = $0.88$ ).	S.D = .71	
	I am relying on the system of the station (factor loadings $= 0.88$ ).		
	Use of my work station complements the right time (factor loadings = $0.85$ ).		

Appendix A Survey items (continued)