

FRAMEWORK FOR EFFECTIVE CROSS-BORDER KNOWLEDGE TRANSFER – A STUDY BASED ON MALAYSIAN MSC STATUS CORPORATIONS

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Abstract- Cross-border knowledge transfer brings complexity due to its multifaceted nature of the boundaries, cultures and processes involved. However, the current understanding of what contributes to successful cross-border knowledge transfer is still fragmented. The factors that affect the performance and process of cross-border knowledge transfer will be determined and presented in this paper. Quantitative approach has been adopted in this study. The findings of this study show that knowledge characteristics, context characteristics and network characteristics have positive significant relationship with cross-border knowledge transfer.

I. INTRODUCTION

The study of knowledge transfer has arisen as one of the most extensive areas of research (Tuan, 2012; Liao & Yu, 2012; Paulin & Suneson, 2012; Martín-de-Castro & Montoro-Sánchez, 2013; Sankowska, 2013). Multiple theoretical lenses, such as organisational learning theory (Argote et al., 2000; Argote & Miron-Spektor, 2011), network theory (Tsai, 2001; Reagans & McEvily, 2003), social exchange theory (Watson & Hewett, 2006; Tao et al., 2013), and etc., have been used to examine issues related to knowledge transfer. Knowledge transfer can be defined as a process through which an entity (individual, group or a whole organisation) is learning indirectly from the experience of another entity (Argote & Miron-Spektor, 2011). In prior literature, knowledge transfer has been recognised as an essential driver of performance and innovation (Tsai, 2001; Cavusgil, Calantone, & Zhao, 2003; Weidenfeld et al., 2010; Adams & Comber, 2013). However, knowledge transfer is costly, time consuming, and uncertain in its outcome (Kogut & Zander). Moreover, the process of knowledge transfer will become even more sophisticated when it comes across global boundaries.

Knowledge transfer between boundaries brings complexity due to its multifaceted nature of the boundaries, cultures and processes involved. The current understanding of what contributes to successful cross-border knowledge transfer is still fragmented. Hence, an integrated framework is critical to provide a mutual understanding on this area. The purpose of this research is to propose a comprehensive model for effective cross-border knowledge transfer in Malaysian MSC status corporations. This is in line with the aim of Digital Malaysia for driving innovation to advance the country

towards a developed economy by 2020. Effective international knowledge spillovers are therefore beneficial and critical to Malaysia for achieving the goal. Relevant literature of knowledge transfer, success factors of knowledge transfer, and innovation will be presented in the following section. This paper will also present the methodology for this study and report the findings of the empirical test. This paper will be ended with discussions and future research directions.

II. LITERATURE REVIEW

A. Knowledge Transfer (KT)

Joshi et al. (2007) defined knowledge transfer as a process that passes the knowledge from an individual, a group, or an organisation to another. According to Weidenfeld et al. (2010), knowledge transfer is crucial not only for an organisation to achieve competitiveness but also innovation. Besides that, the organisations with knowledge transfer implementation tend to be more productive and more sustainable than organisations that are less adept at knowledge transfer (Argote et al., 2000). Based on prior research, knowledge transfer can be divided into several levels, including individual level (Empson, 2001; Chua & Pan, 2006; Duan et al., 2010), intra-organisational level (Schlegelmilch & Chini, 2003; Becker & Knudsen, 2006; Van Wijk, Jansen, & Lyles, 2008; Mu, Tang, & MacLachlan, 2010), inter-organisational level (Li, 2005; Chen et al., 2006; Easterby-Smith, Lyles, & Tsang, 2008) and trans-national organisational level (Miesing, Kriger, & Slough, 2007; Duan, Nie, & Coakes, 2010). According to Hocking et al. (2007), knowledge transfer process can be centralised through knowledge access and communication.

B. Recipient characteristics

Goh (2002) cited that lack of motivation, absorptive capacity, and retentive capacity of a recipient can result in poor knowledge transfer. Besides that, learning attitude and personal interest can also be key factors affecting knowledge transfer (Li, Diao, & Xiang, 2009). Furthermore, Li and Hsieh (2009) suggested recipients' knowledge transfer satisfaction is a critical factor that may affect the success or failure of knowledge transfer. Authors explained that the recipients with higher levels of satisfaction will experience less pressure and resistance during the acquisition and use of knowledge.

Pérez-Nordtvedt et al. (2008) ascertained the importance of a foreign source in recipient's cross-border knowledge transfer.

H1: There is a relationship between recipient characteristics and knowledge transfer.

Source characteristics

The efficiency and effectiveness of the knowledge transfer can be affected by the knowledge senders' disseminative capacity (Mu et al., 2010). Teacher is one of the examples of knowledge sender who play a very important role in the process of knowledge transfer in academic institution (Li, Diao, & Xiang, 2009). The characteristics of the knowledge sender, such as knowledge amount, ability to express, mode of thinking, and affinity, can also influence the quality and quantity of knowledge transferred to the knowledge recipient.

H2: There is a relationship between source characteristics and knowledge transfer.

Knowledge characteristics

Knowledge can be categorised into two types: tacit knowledge and explicit knowledge (Nonaka, 1994). Tacit knowledge is difficult to formalise and communicate to others (Goh, 2002). Basically, it is more complex, existing in the mental models and expertise gained over time and through personal insights. In order to transfer the tacit knowledge successfully, tacit knowledge needs to be transformed into explicit knowledge, it needs a large effort and long time to achieve (Kang, Rhee, & Kang, 2010). On the other hand, explicit knowledge can be defined as the knowledge that is transmittable in formal, systematic language (Smith, 2001). Explicit knowledge is reusable and readily communicated and shared through print, electronic methods, and the like. The most common type of knowledge transfer is explicit to explicit, which could be imitated and implemented easily by the recipient (Weidenfeld, Williams, & Butler, 2010). Furthermore, Li and Hsieh (2009) found that knowledge stickiness, or the inability or unwillingness to transfer knowledge, is the major barrier of knowledge transfer between a headquarter and its subsidiaries.

H3: There is a relationship between knowledge characteristics and knowledge transfer.

Context characteristics

Knowledge transfer is contextually bound as where and how the interaction takes place will affect the process of transferring the knowledge (Duan, Nie, & Coakes, 2010). Li, Diao, & Xiang (2009) categorised context characteristics into small environment and big environment. Context characteristics can also be divided into domestic or international (Pérez-Nordtvedt et al., 2008). Furthermore, Brachos et al. (2007) cited that context characteristics such as trust, motivation, top management support, and learning orientation are important for effective knowledge transfer. According to Kostova (1999), knowledge transfer can be affected by social context, organisational context, and relational context. The social context can be defined as the institutional distance between the countries of the sender and the recipient, while the organisational context is the

organisational culture of the recipient unit, and the relational context is about the relationships between the sender and the recipient.

H4: There is a relationship between context characteristics and knowledge transfer.

Network characteristics

Reagans and McEvily (2003) conducted a research to examine how informal networks affect knowledge transfer. Authors found that the knowledge is easier to be transferred in a strong tie (e.g. close friends) compared to in a weak tie (e.g. acquaintances). Furthermore, according to Whittaker, Burns, and Van Beveren (2003), social networks can be a useful strategy for acquiring knowledge as well as for exchanging information that may be integrated with existing knowledge. Rhodes et al. (2008) cited that social networks play an essential role in transferring knowledge, particularly tacit knowledge. Moreover, Pérez-Nordtvedt et al. (2008) found that networks provide organisations with access of knowledge, resources, markets, or technologies.

H5: There is a relationship between network characteristics and knowledge transfer.

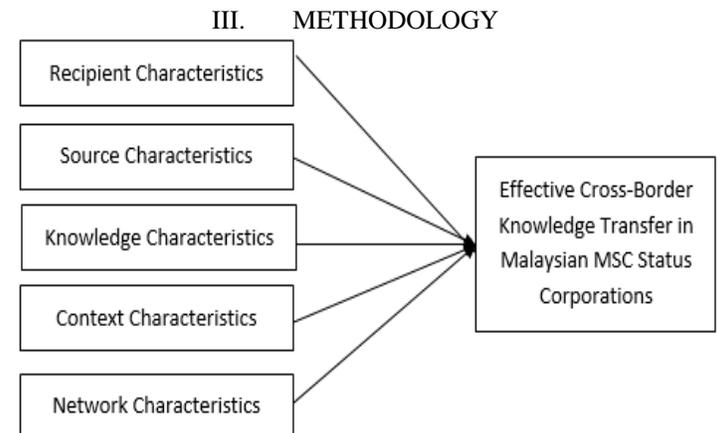


Figure 1. Research Framework

This study intends to examine the influences of recipient characteristics, source characteristics, knowledge characteristics, context characteristics, and network characteristic on cross-border knowledge transfer. Figure 1 is the proposed framework. This study takes the perspective of organisation as unit of analysis. Quantitative approach is adopted in this study. At the stage of data collection, a survey was designed and distributed to a sample of 300 respondents. However, only 100 survey forms were collected from the respondents. The 5 independent constructs (recipient, source, knowledge, context, and network) and 1 dependent variable (knowledge transfer were assessed using Likert Five-point interval scales. The respondents are expected to express their level of agreement or disagreement to each given question on a scale of 1 to 5 (i.e. 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, and 5 = strongly agree).

The targeted respondents of this research are all MSC status corporations in Malaysia that involve in any business/industry with international affiliation/activities. MDeC (Multimedia Development Corporation) which directs and oversees Malaysia's National ICT (Information & Communication Technology) initiative had been approached to assist in selecting the 300 MSC status corporations (purposive sampling). Representative from senior management (one representative from one corporation) who has direct involvement in international activities was requested to answer the questionnaire. Consistent with Pérez-Nordtvedt et al. (2008) and Simonin (1999), in this study, respondents from Malaysian MSC status corporations are treated as recipients and their international business affiliates (IBA) as sources. IBA, in this study, refer to organisations located outside Malaysia with which the recipient firm has a relationship. The affiliates could be both external entities (foreign suppliers, customers, alliance partners) and internally connected entities (foreign subsidiaries).

Statistical Package for the Social Sciences (SPSS) statistical software version 17 was used to analyse the survey data. This research applied multiple regression analysis and correlation analysis to examine the relationships between variables.

IV. FINDINGS

The frequency analysis on the demographic backgrounds of the respondents (representatives of MSC status corporations) can be seen in Table 1. The result shows that the number of male respondents (50%) is equal to female respondents (50%) and majority of the respondents are 21 to 30 year old (53%), followed by 31 to 40 year old (32%). Besides that, the number of respondents who are practicing knowledge transfer with their external entities, such as foreign customers, suppliers, and strategic alliance partners, (53%) is slightly more than those who are practicing knowledge transfer with their internally connected entities, such as foreign subsidiaries (47%). Furthermore, thirty-four percent of the respondents involve in knowledge transfer frequently. In addition, majority of the respondents come from corporations which have established for more than 10 years (57%) with 100 to 200 employees (30%).

Table 1: The respondents' profile

Variable	Frequency	Percentage
Sex		
Male	50	50%
Female	50	50%
Age		
<21	2	2%
21 – 30	53	53%
31 – 40	32	32%
41 – 50	9	9%
51 – 60	3	3%
>61	1	1%
Types of IBA Relationship		
Inter-organisational relationship	53	53%
Intra-organisational relationship	47	47%
Years of Company Establishment		
<5	15	15%
5 – 10	28	28%
>10	57	57%
How Frequent Do You Involve in Knowledge Transfer?		
Very infrequent	8	8%
Infrequent	26	26%
Neutral	52	52%
Frequent	13	13%
Very frequent	1	1%
Number of Employees in the Organisation		
<100	23	23%
100 – 200	30	30%
201 – 300	22	22%
301 – 400	10	10%
401 – 500	2	2%
>500	13	13%

Table 2 shows the correlations between the variables in the proposed framework. The p-value of recipient characteristics, source characteristics, knowledge characteristics, context characteristics, and network characteristics are < 0.05, hence they are significantly correlated with knowledge transfer.

Table 2: Correlations

		transfer	receiver	sender	knowledge	context	network
Pearson Correlation	transfer	1.000	.207	.420	.485	.479	.365
	recipient	.207	1.000	.316	.164	.519	.307
	source	.420	.316	1.000	.440	.548	.179
	knowledge	.485	.164	.440	1.000	.358	.278
	context	.479	.519	.548	.358	1.000	.308
	network	.365	.307	.179	.278	.308	1.000
p-value	transfer	.	.019	.000	.000	.000	.000
	recipient	.019	.	.001	.051	.000	.001
	source	.000	.001	.	.000	.000	.037
	knowledge	.000	.051	.000	.	.000	.003
	context	.000	.000	.000	.000	.	.001
	network	.000	.001	.037	.003	.001	.
N	transfer	100	100	100	100	100	100
	recipient	100	100	100	100	100	100
	source	100	100	100	100	100	100
	knowledge	100	100	100	100	100	100
	context	100	100	100	100	100	100
	network	100	100	100	100	100	100

The model summary table (Table 3) shows that R^2 is 0.386, meaning that 38.6% of the variance in knowledge transfer can be predicted from recipient characteristics, source characteristics, knowledge characteristics, context characteristics, and network characteristics.

Table 3: Model Summary

Model	R	R Square
1	.621 ^a	.386

The ANOVA table (Table 4) shows that $F = 11.813$ and the p-value for the F-test is <0.001 , implying a significant relationship between the knowledge transfer and a set of independent variables (recipient characteristics, source characteristics, knowledge characteristics, context characteristics, and network characteristics).

Table 4: ANOVA

Model	Sum of Squares	df	Mean Square	F	p-value
Regression	10.235	5	2.047	11.813	.000
Residual	16.289	94	.173		
Total	26.524	99			

According to multiple linear regression table (Table 5), it can be seen that only knowledge characteristics, context characteristics, and network characteristics are significantly contributing to knowledge transfer, p-value < 0.05 . Thus, H3, H4, and H5 are supported in this study. Besides that, the mean for all the five variables are above the mid-point of 3 in the five-point scale employed in this study. Among these five variables, knowledge characteristics (mean=3.23) is the variable with the highest mean, followed by network characteristics (mean=3.18), context characteristics (mean=3.17), recipient characteristics (mean=3.12) and source characteristics (mean=3.09).

Table 5: Multiple Linear Regression

Model	Unstandardised Coefficients		Standardised Coefficients	t	p-value	Mean
	B	Std. Error	Beta			
(Constant)	-.162	.479		-.339	.736	
recipient	-.103	.105	-.095	-.979	.330	3.12
source	.147	.118	.127	1.249	.215	3.09
knowledge	.416	.137	.283	3.038	.003	3.23
context	.313	.117	.294	2.683	.009	3.17
network	.252	.110	.202	2.288	.024	3.18

V. DISCUSSION

This study focuses mainly on the factors that affect the effectiveness of cross-border knowledge transfer. The following discussion is based on the findings of this study.

Based on the findings, there is a positive relationship between knowledge characteristics and knowledge transfer, which is in line with the findings by Chen (2004) and Simonin (1999). According to the authors, the transferability of knowledge across boundaries can be affected by the characteristics of the knowledge being transferred. These findings show that explicit knowledge is easier to be transmitted than tacit knowledge as the explicit knowledge is the knowledge that has been codified. On the other hand, tacit knowledge is difficult to acquire and transfer as it is very context and history dependent (Hamel, 1991; Badaracco, 1991). Therefore, more efforts and times are needed to transfer the tacit knowledge from their alliance partners.

Besides that, the performance of knowledge transfer can also be affected by the context characteristics. The results show that the context characteristics such as trust, motivation to transfer knowledge, learning orientation have positive effects on the performance of knowledge transfer. The stronger the motivation to transfer knowledge, the better the performance of knowledge transfer can be achieved.

Furthermore, there is also a positive relationship between network characteristics and knowledge transfer. The stronger the network, the easier the knowledge can be transferred. With a strong network, both tacit and explicit knowledge can be transferred easily (Reagans & McEvily, 2003). The strong relationship network makes information transmission high and creates good conditions for exploitative learning (Reagans & McEvily, 2003).

Surprisingly, there is no significant relationship between knowledge transfer and recipient characteristics and knowledge transfer and source characteristics. This could be due to the both knowledge source and recipient does not required to work together face-to-face for their cross-border knowledge transfer. In the advance of communication tool, both knowledge sources and recipients can applications such as email or teleconference to transfer the knowledge, this has undermined the influence of source characteristics and recipient characteristics on cross-border knowledge transfer.

VI. RECOMMENDATIONS

This study benefits Malaysian MSC status corporations in implementing cross-border knowledge transfer by providing the following suggestions to the MSC status corporations.

First, in order to transfer knowledge across boundaries effectively, MSC status corporations could develop a trust relationship with their alliance partners. Also, the context characteristics such as top management support, culture of the recipient unit and learning orientation are needed to develop when conducting cross-border knowledge transfer.

Second, MSC status corporations should build a strong network, such as joint venture, with their alliance partner in order to improve the performance of knowledge transfer so that the process of transferring knowledge, especially tacit knowledge, will become easier.

Third, based on the findings, the easier the knowledge can be interpreted and understood, the more effective the knowledge transfer can be achieved. Therefore, all knowledge in Malaysian MSC status corporations need to be codified, if possible, to ease the process of transferring knowledge.

VII. CONCLUSION

In conclusion, this study proposed a research framework for examining the factors that affecting cross-border knowledge transfer in Malaysian MSC status corporations. The proposed research framework consists of five independent variables (recipient characteristics, source characteristics knowledge characteristics, context characteristics, and network characteristics) and one dependent variable (cross-border knowledge transfer). However, this study found that only three independent variables, which are knowledge characteristics, context characteristics, and network characteristics, have significant positive relationship with cross-border knowledge transfer; while, the recipient characteristics and source characteristics has no significant relationship with cross-border knowledge transfer. The findings of this study can be used to propose policy that can enhance the effectiveness of cross-border knowledge transfer in Malaysia. In future research, factors such as media characteristics, organisational characteristics, and etc. could be examined and integrated as part of the research framework.

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