Knowledge Transfer Capability among Technology-based Firms in Malaysian Technology Parks

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ABSTRACT

Knowledge transfer capability (KTC) is essential for technology-based firms (TBFs) to remain survive and competitive. KTC is determined by knowledge stocks (KS), social network (SN), and firm's environment (FE). The KTC factors enable TBFs to be innovative with new products and services to the market. The study used personal interviews with 12 informants from TBFs located at several Malaysian technology parks. The results showed that Malaysian TBFs confirmed that their KTC is highly influenced by KS and SN, but not so much of FE. Future research suggests case study method for more details.

Keywords
Knowledge Transfer, Capability Building, Technology-based Firms

1.0 INTRODUCTION

The introduction of new products and services is essential to sustain a firm's performance and survival (Lu, Mao & Wang, 2010; Littunen & Niittykangas, 2010). With the new products and services, firms can offer both existing market and new markets and meet the demands of the new market (Kirkeby, S. & Christensen, 2010).

The assessment of knowledge transfer capability starts with the existing knowledge and capability to transfer (Lu, Mao & Wang, 2010). The capability exists in knowledge stocks that held by the managers and workers collectively. They access the knowledge through 'social networks,' which is influenced by their organizational 'environments.' Thereby, knowledge transfer capability of a firm refers to the firm's members' (the managers and knowledge workers) ability to receive, exchange, and combine knowledge to create new knowledge (Kianto & Waajakoski, 2010; Manning, 2010).

2.0 LITERATURE REVIEW

Knowledge has been recognised as important substance in the economy. It is useful when it allows knowledge transfer among various participants in the economy (Mokyr, 2009). Indeed, knowledge transfer capability is important to enable quick processing of new knowledge, which can make firms innovative and capable of producing new products and services (Guan, Yam, Mok, & Ma, 2006). The main outcome of knowledge transfer is innovation. It is part of the knowledge management process in which knowledge is intensively created, acquired, interpreted, retained, and transferred within and outside of a firm (Goh, 2002; Ikhsan & Rowland, 2004). The new knowledge that a firm produced can help the firm to improve its performance by purposefully modifying behaviour based on new knowledge (Garvin & Gray, 1997).

2.1 Knowledge

In general, knowledge has explicit and tacit dimensions. Explicit knowledge can be articulated in the form of text, tables and diagrams, but not the tacit (Nonaka, 1995). The capability to transfer tacit knowledge can make a firm more superior that its competitors.

Nonaka and Takeuchi (1995) argued that the dual dimensions of knowledge contributed to the unique capability of a firm. Cohen and Levinthal (1990) suggested firms to possess reasonable absorptive capacity to enable them to have a workable knowledge transfer process. Szulanski (1996) suggested firms to identify tacit and explicit dimensions of knowledge for knowledge transfer activities. If firms are unable to do so, Hofstede (1991) argued that they will unable to have knowledge transfer process done. Thus, this makes the ability to create and transfer knowledge is essential for the success and survival of firms (Kogut & Zander, 1992; Nonaka & Takeuchi, 1995).

Based on the above discussion, there are three factors contributed to knowledge transfer capability. Firstly, the knowledge stocks held by individuals in a firm. Secondly, the social networks facilitate knowledge flow and transfer among members of a firm and other stakeholders. Finally, the routines and processes of a firm in which knowledge flows and transfers occur.

2.2 Knowledge Stock (KS)

Knowledge stock refers to the codified knowledge that is warehoused in the knowledge respiratory of firms. They can include manual, blueprint, recorded knowledge, abilities, and skills that are contributed by all the members of firms. The people are acquired from formal education and job experience. Therefore, the levels of education, the number of years in job, and the diversity of knowledge they held are essential to reflect the stocks of knowledge of a firm (Dierickx & Cool, 1989).

Knowledge held by members of a firm is implicit in their experience. The nature of knowledge they held is often tacit and deeply embedded with them (Nonaka, 1995). In contrast, members of a firm with little experience often have limited knowledge. Accordingly, they are unable to make significant impact the stocks of knowledge of an organization.

2.2.1 Job Experience

The managers and knowledge workers carried knowledge from formal education and also job experience in making decisions in their respective firms. The more years they spent at the firms, the more knowledge they are accumulated and held with them (Grant & Gregory, 1997). Likewise, inexperience managers and knowledge workers have limited knowledge and ability to transfer knowledge.

2.2.2 Education

Knowledge acquired from formal education cannot be used instantly. The better the formal education one received, the better one can form perception and to provide more accurate prediction (Bantel & Jackson, 1989). This is because in formal education one was exposed to a set of trials and errors to improve cognitive processing and problem solving ability can be more receptive to new ideas and changes (Boeker, 1997).

2.2.3 Diversity of Knowledge Stocks

Apart from the knowledge stocks, diversity of knowledge allow individuals to have better cognitive ability and critical with the existing knowledge and ideas (Osterloh & Frey, 2000). Managers and knowledge workers need to ensure the existing and the new knowledge can work productively (Nemeth, 1992). The diversity knowledge stocks allow people to be creative and innovative when they participate in knowledge transfer activities (Tushman & O'Reilly, 1997).

2.3 Social Networks (SN)

Knowledge flows and transfers through communication process among knowledge workers or a community of experts (Boland & Tenkasi, 1995). Knowledge transfers not only through formal network, but also via informal network. Since knowledge is tacit and deeply embedded with the individuals, knowledge worker can share and transfer knowledge through social network even when payoffs are uncertain (Nahapiet & Ghoshal, 1998).

Social networks are essential to knowledge transfer process because members in the network are informed about the existence, location, and significance of knowledge contained in a network and provide an important conduit for the flow and transfer of knowledge (Cavusgil, Calantone, & Zhao, 2003). Social networks can be determined by (a) number of direct contacts, (b) scope of different contacts, and (c) strength/value of each contact.

2.3.1 Direct Contacts

The number of direct contacts signifies individuals' set of social relations – the number of people individuals directly connected (Burt, 1982). The more the number of direct contacts individuals have, the more likely that these individuals to acquire more unique knowledge available for transferring. Thus, the greater the number of direct contacts a firm's managers and knowledge workers have, the more likely the firm to have positive impact for its knowledge transfer capability.

2.3.2 Scope of Contacts

The scope of networks is also important because it defined the types of contacts connected to managers and knowledge workers (Wasserman & Faust, 1994). The narrower the scope of networks, the more limited types of knowledge can be drawn upon. Thus, the scope of networks of managers and knowledge workers in a firm can give positive impact to the firm's knowledge transfer capability.

2.3.3 Strength of Contacts

The strength or value in each network is also essential to indicate the nature of a relational contact. This aspect can be observed in terms of closeness, duration and frequency of networks. Naturally, the managers and knowledge workers will trust more with whom they have strong network. Further, individuals will be more willing to share and transfer knowledge with whom they know the best and they can gain more benefits reciprocally (Krackhardt, 1992). Thus, the stronger the networks of the managers and the knowledge workers, the more impact it gives to the firm's knowledge transfer capability.

2.4 Firms' Environment (FE)

Firm's environment is important because it provides the space for employees and stakeholders. The embedded knowledge and procedural information captured in a firm's environment is important because it gives a strategic expression to the employees of how works are to be executed and prioritized (Schneider, 2000). The environment also provides the collective attitudes and beliefs of employees under the manner in which they perform their daily tasks. Basically, there are two aspects of a firm's environment: firstly, to what extent a firm encourages risk taking or risk adverse. Secondly, to what extent a firm emphasizes teamwork versus individual work approach (O'Reilly, Chatman, & Caldwell, 1991).

2.4.1 Risk Taking Environment

Knowledge transfer process occurs voluntarily rather than the use of force. Indeed, to have knowledge transfer process to occur, members of a firm must be willing to share and transfer knowledge even without attractive rewards. In fact, new knowledge has yet proven its successfulness. If a firm encourages its members to try with new ideas at the workplace, the firm is actually encourages risk taking. Conversely, if a firm emphasizes rules and procedures, the members will refrain from participating in the knowledge transfer process (Weick & Westley, 1996). Needless to say, a risk taking environment can give significant impact to the firm's knowledge transfer capability.

2.4.2 Teamwork Environment

Knowledge transfer process in a firm is not only needs risk taking environment, but also requires positive behaviour to encourage members of the firm to share and transfer knowledge. Knowledge transfer process favours on teamwork environment. This approach allows openness and teamwork among firm's members to share information without reservations (Starbuck, 1992).

Under teamwork environment, it promotes creativity among the members (Tushman & O'Reilly, 1997). Therefore, a firm needs to encourage teamwork environment as opposed to individualism so that it can give positive impact to a firm's knowledge transfer capability.

Based on the above discussion, the research model for this study can be illustrated in Figure 1.

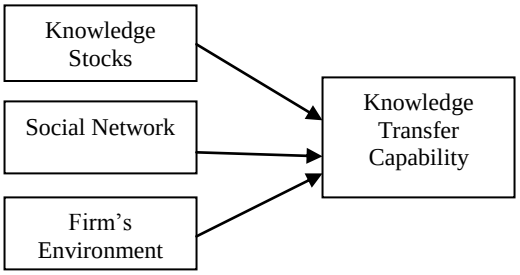

Figure 1: Research model

3.0 METHODOLOGY

This study examined the influence of knowledge stocks, social network and firm's environment on knowledge transfer capability of technology-based firms in Malaysian technology parks. The research question is in what ways knowledge stocks, social network and firm's environment influence TBFs' knowledge transfer capability?

The study contacted 50 technology-based firms (TBFs) that registered as tenants at three technology parks, namely Technology Park Malaysia, Cyberjaya Technology Park and Kulim High Technology Park. However, the study managed to interview 12 TBFs only. The interview used note taking and the typed written notes were then verified by the interviewees. The study used content analysis on the interview notes. This method is reasonable to enrich the understanding in the underlying context (Patton, 1990; Wainwright, 1997).

4.0 FINDINGS AND DISCUSSION

The research question of this study asked in what ways knowledge stocks, social network and firm's environment influence TBFs' knowledge transfer capability The main findings demonstrated that knowledge stock, social network and firm's environment strongly influenced knowledge transfer capability. Firstly, knowledge stocks influence knowledge transfer capability among TBFs. All interviewees agreed that knowledge stocks can be obtained through individual employees' job experience via the tenure in the industry. Likewise, some employers measured employees' knowledge stocks via formal education as face value indicator for the amount of knowledge acquired. Needless to say, both indicators are essential to measure the explicit knowledge stocks of their employees.

The pressure to compete in the dynamic market has motivated some TBFs to operate inside technology parks to make their firms knowledge productive. In the meantime, TBFs cannot hope for higher expectations where most of TBFs used trading approach.

Secondly, social networks also influence knowledge transfer capability among TBFs. Both formal and informal social networks have been identified by interviewees as important reservoir for knowledge transfer capability. The establishment of mutual and diverse relationships with other TBFs allows greater knowledge sharing and transfer.

The frequency of contact with internal and external contact was also essential to indicate knowledge transfer capability. Too much communicate with internal people is not helpful because knowledge is circulated among the same people. Conversely, too much communication with external can expose the firm's strengths and weaknesses to its competitors.

Thirdly, the nature of firm's environment also influences knowledge transfer capability among TBFs. A firm that encourages risk taking environment will likely to have people to be willing to share and acquire knowledge elsewhere for the sake of the firm. Conversely, too much control may encourage people to be secretive and kept to them every new idea they discovered. In addition, the mode of work that emphasized individualism will be unlikely to have knowledge transfer to occur.

5.0 CONCLUSION

The main contribution of the study is on resource-based organizational development to sustain competitive advantage of Malaysian technology-based firms' through knowledge transfer capability. This capability is influenced by three factors, namely knowledge stocks, social networks and firm's environment.

In terms of practical implications, firms' decision makers and government policy makers should collaborate in ensuring ICT firms are able to

create, maintain and sustain their knowledge transfer capability. Thus, this study would recommend the national capacity building policy to include knowledge transfer capability.

The main limitation of this study is the sample size. The future study should use case study method to improve the richness and robustness of the results. The first option is to solicit the views of peers of the already interviewed informants. In this way, the study could verify the perceptual similarity or otherwise among the peers. Second option is to record the views of a cross section of informants. This approach will exhibit the views of a diversity of informants. Convergent results will strengthen, whereas divergent outcome weaken shared perceptions. Third option would be to interview policy makers and other interest groups in order to find out in what ways TBF firms can improve their knowledge transfer capability.

In conclusion, Malaysia's TBF firms were not well equipped with knowledge transfer capability due to the concern on profit making instead of knowledge creation, which is the most pertinent ability for TBF firms to remain performed and survived in the dynamic and competitive environment.

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