**THE ROLE OF HOST-COUNTRY CHARACTERISTICS ON SUBSIDIARY PERFORMANCE**

**Syed Ali Fazal1and Sazali Abdul Wahab1**

1University Malaysia Kelantan

Ema[il: fazalsyedali@gmail.com](mailto:fazalsyedali@gmail.com)

**Abstract-**Since the world has evolved as a Global Village, technological innovations has become crucially important for sustaining market competition and gaining competitive edge. Multinational Corporations (MNCs) mostly enjoying technologically advanced positions play vital role in disbursing technological knowledge throughout firms globally. Although numerous studies exist on technology transfer the majority of existing literature addresses the issues related to inter-firm transfer of technology only while the area related to intra-firm transfer of technology has been largely underexposed; study of which is believed to be ideal for fruitful exploration of profitability in technology transfer projects. Using data from MNCs in Malaysia the current study for the very first time would attempt to empirically find the effect of host-country characteristics on the performance of technology transferred by the MNCs and its subsequent influence on subsidiary performance. Findings of this study are expected to contribute both theoretically in the body of knowledge and also in terms of practical implication for policy makers and MNCs and hence enriching the existing literature simultaneously.

**Keywords:** Host-Country, Multinational Corporations, Subsidiary Performance, Technology Transfer.

**1. INTRODUCTION**

**1.1 Overview of the Study**

Technological innovations have become crucially important for sustaining market competition and gaining competitive edge. Multinational Corporations (MNCs) mostly enjoying technologically advanced positions play vital role in disbursing technological knowledge throughout firms globally (William, 2014). On the other hand for developing nations such as Malaysia technology transfer plays crucial role in the overall economic growth and development of the state (Abu Hassan et al., 2012). In such regards where international technology transfer is involved the effect of hereditary knowledge from parent company on the performance of foreign subsidiaries is vital important both for the MNC (Cui et al., 2006) and for the host country where the subsidiary is located. This study is in response to the fact that not enough research has been done on intra-firm transfer of technology by MNCs in Malaysian context among international literatures of management.

This current study is an effort to restore balance in literature by focusing on the effect of host- country characteristics on the performance of the technology transfer process in context of intra- company technology transfer by MNCs in Malaysia within the boundaries of Organizational Contingency Theory and Resource Based View where the effectiveness of the transfer process is

strongly related with the performance of technology transferred to the MNC subsidiaries which is in turn is expected to enhance the performance of the technology receiving unit.

**1.2 The Problem Statement**

Articulating a clear and concise description of the issues that would be addressed in the study is the basis of any research. Although being complicated to define the problem statement of the current study, in general it could be described as the gap between expected and actual technological performance in Malaysia and the unenthusiastic approach of MNCs to transfer key technologies in this country that could be addressed in this study.

Malaysia has been ranked 12th position by the IMD World Competitiveness Scoreboard 2014 in overall performance out of 60 economies in contrast to previous year’s 15th position (IMD World Competitiveness Rankings, 2014). The report seemed to be complimenting Malaysia’s claims to be a fully developed nation by 2020. But according to the World Economic Forum (WEF, 2014) Malaysia is still behind other developed nations like Singapore and Korea in terms of technical performance. According to the Malaysian International Chamber of Commerce and Industry Malaysia is 19 years behind South Korea in terms of productivity (MICCI, 2014). Malaysia Productivity and Investment Climate Survey Report (PICS) also contended that lower levels of capacity of the firms in Malaysia are linked to the lower technical performance by Malaysia (World Bank, 2009). Additionally previous studies found that MNCs are unenthusiastic to share key technological knowledge to Malaysia (Zaidah et al., 2007).

So Malaysia’s claim to be developed a nation by 2020 and the aforesaid facts logically create a gap in expected verses actually results. In other words clearly a problem exists that seeks attention. By means of this study it is proposed that the mentioned gap can be minimized and the issue can be addressed by means of maximizing technology transfer as we attempt to expose the relationship between host-country characteristics and technology transfer supported by logic and numerous existing literature (Example: Sazali el al., 2009).

**1.3 Objectives of the Present Study**

The general objective of this study is to empirically examine the effects of host country characteristics on the performance of technology transferred and on subsidiary performance. The specific objectives of the study include the following:

I. Examining the relationships between host-country characteristics and their dimensions with performance of intra-firm technology transfer.

II. Investigating the associations involving host-country characteristics and their dimensions with subsidiary performance.

III. Assessing the relationships linking performance of intra-firm technology transfer and receiving unit’s performance and its dimensions.

**2. Review of Literature**

**2.1 Technology Transfer**

The technology transfer process may be as simple as shifting codified information from one organization to another or may be complex because of the fact that the ability to understand and use information varies. According to Farizah (2012) technology transfer is process consisting three basis stages, specifically, planning or strategy building followed by negotiation and implementation which would result in successful transfer of technology and not just exchanging information between parties. According to Rahimi et al. (2013) technology transfer is a substitute method for developing and adopting technology from others while Chiranjibi, N. (2005) considered technology transfer as diffusion of information, synchronizing technology with the needs and creatively adapting innovations for novel uses. According to Minbaeva et al. (2003) Technology Transfer is a process that initiates when the technology receiving unit begins utilizing the transferred technology. The key element in technology transfer is not the actual knowledge, but instead it’s the extent of receiver’s potential to utilize the new knowledge in their own operations. Technology transfer is a vital factor that not only affects cross-country income in the long run, but also supports economic growth and union of countries for mutual benefits (Nune, H., 2012).

Al-Abed et al. (2014) recognised technology transfer as an extensive and complicated process mutually for the sender and the receiver of technology whereby the recipient must be the able to utilize, reproduce, improvise and, re-sell the innovation at the end of the process. The complex process of technology transfer is more specialized and complicated in contrast to transferring general goods because we can only label the delivery as successful when the technology transferred is utilized and adds value to the receiver’s competencies (Teasley et al., 2005). Summarized based on literature we put forward the operational definition of Technology transfer for the purpose of the current study as an extensive and complicated process between autonomous entities where both sender and receiver of new technology exists mutually whereby the process is complete and effective only if the recipient is able to utilize, reproduce, improvise, re-sell and add value to its competencies by means of the innovation at the end of the process (Minbaeva et al, 2003; Russel & Richard, 2005; Al-Abed el al, 2014).

**2.2 MNC and Technology Transfer**

MNCs are established not only as major manufacturers of technology but also as channel for bulk transferring technology. Transfer of technology by multination organizations are considered as intra-firm transfer in nature because the property rights are not shared with any external party. Nune, H. (2012) stated that MNCs can transmit its technology to foreign associates in both tangible and intangible forms. Royalties and license fees paid to MNCs can be termed as evidence for the intangible technologies transferred whereas exported goods for further processing from the MNCs can be established as proof of tangible technologies.

Gunnar (1996) attributed MNCs for the creation and attribution of intangible assets like technological knowledge, managerial know-how, marketing expertise, and patents and brand

development and therefore considered them major players in international technology diffusion. According to Gunter and Philipp (2014) MNCs are very dynamic in making innovative technologies accessible both by purchasing spin-offs or employing them as service providers. On the contrary of the stated Irogbe (2013) argued that unchecked operations of the MNCs globally destabilizes the sovereignty of underdeveloped nations by exploiting their natural and human resources and do not support in the transfer of technology as other studies claim.

**2.3 The process of Technology Transfer in Multinational Corporation**

MNC are responsible to transfer innovative knowledge to various interrelated units, departments or subsidiaries (Minbaeva et al., 2003). Almeida, Song and Grant (2003) defined technology transfer within the MNC as a process of creating, transferring, application and subsequently developing through combinations of transferred knowledge along with the receivers’ existing knowledge. According to Jordaan (2013) MNCs mainly transfer technologies to most developing and developed countries by means of foreign direct investment mechanism. Gunnar (1996) on the other hand stated that a firm may either export technology embodied goods, or licence the technology to foreign firms or it may set up a foreign affiliate to manufacture the goods locally in order to exploit its technological assets in foreign market. Firms availing the third option become a multinational enterprise. Although a firm may use more than one channel to take advantage in foreign lands but intra-firm technology transfers remains favourite in case of most advanced technologies to avoid leakage to competitors in foreign countries.

According to Rogers (1995) innovations are diffused through two different channels in an MNC, namely centralized and decentralized channels of diffusion. In centralized channel the technology is created by dedicated R&D experts and transferred by a central administration who dictates as to how much technology would be transferred and to whom; whereas in case of decentralized diffusion technology is created by non-experts for their own usage which comes from their on-job learning through a trial and error method and is dispersed. In regards to intra- firm technology transfer by multinational issues such as motivation deficiency; insufficient absorbing capability; inadequate retaining ability of beneficiaries; formal systems and structures; less frequent individual interactions, strenuous relationship between the transfer partners (Szulanski, 1996) along with the size of MNC, its country of origin (Sazali et al., 2009) , the age of the subsidiary (Foss and Pedersen, 2002), the location of the subsidiary and the cooperative or competitive relationship between subsidiaries (Dan Li et al., 2007) play important roles in terms of technology transfer performance.

**2.4 Effect of Host Country Characteristics on Technology Transfer**

Host country variables affecting Technology Transfer are easy to identify but difficult to refer since sufficient information is not available about them. The first and foremost variables on the issue to be discussed would be the education and technical training, labour skills and learning capability traits of the host country. According to Teece (1977) and Behrman and Wallender (1976), higher education and skill levels of human resources translate into lower transfer costs, shorter adsorption time and higher imports of technology. According to Kokko (1992) the other

set of host country characteristics affecting technology transfer would be development-related traits. Next in line would be adaptation costs traits of the host country. Findlay (1978) expressed that expensive wages and scarcity of human capital pushes MNCs towards developing economies where labour supply is abundant and cheaper to avail. Next to be focused would be the different technology transfer requirements imposed by the host country. Forcing MNCs to hire local labour, making their technologies available to local entrepreneurs, restricting imports, requiring them to avail suppliers locally are some of the impositions of the host country that affect the MNC’s profit maximizing behaviour thus depressing the amount of technology transfer (Kokko, 1992).

Preference of local products and MNC products can be called examples of other host-country traits affecting technology transfer. Burenstam Linder (1961) mentioned average income as one of the other determinants. Koko (1992) on the other hand mentioned domestic investment and competition as characteristics of the host country affecting revenue of affiliates (indirectly technology transfer). Other related characteristics of host country include Production or Manufacturing capacity (Nune H., 2012; Berry, 2014), host country market size (Gunnar, 1996), GDP and fixed entry costs (Hayakawa et al., 2010) the laws, rules and regulations, systems and policies, customs, traditions and norms of the host country (Chesbrough, 1999), Intellectual Property Rights (William, 2014 & Bilir, 2014), FDI supportive environment (Shujiro et al.,

2006), tax policies and tax credits (James, R., 1994; Maskus, 2004), economical and technological advancements (Cantwell, 1998), technology policies technology licensing payments , capital market restrictions, R&D expenditures (Maskus, 2004) and domestic competition (Sinani and Meyer, 2004).

**2.5 Performance of Technology Transfer**

Waroonkun (2007) defined Technology transfer performance as the outcome achieved for local counterparts by means of implementing technology transfer projects with foreign affiliates. From an organizational perspective Jian and Li-Hua (2006) stated that the ability of a firm to achieve goals or objectives is an indication of technology transfer performance and success. According to Rose et al., (2009) technology transfer performance includes the ability to learn, acquire, absorb and utilize innovative external technologies and knowledge embedded in product materials, physical assets, processes and production, and management capabilities and not limited to just possessing the ability to operate, maintain or repair the machineries in the production level.

According to previous scholars Technology Transfer Performance is based on four stages (Bradley et al., 1995; Narayanan and Lai, 1993; and Santikarn, 1981). The first step initiates when the transferred technology is used by the recipient and hence the process can be stated as transferred. In the second stage the local workforce should be enabled to grasp the technology, which means utilizing the transferred technology skilfully. The third concept specifies that technology can be considered as transferred only when it gets dispersed among the different units of the recipient by means of dynamic distribution actions. And finally the fourth stage indicates that when the workers are capable to adapt the transferred technology to accommodate the requirements of their business environment, technology transfer can be said to be successful.

**2.6 Subsidiary Performance and Technology Transfer**

According to Birkinshaw et al. (2005) multinational subsidiaries can be conceptualized as semi- autonomous entities with entrepreneurial potential, within a complex competitive arena, consisting of internal environment of other subsidiaries, internal customers and suppliers, and an external environment consisting of customers, suppliers and competitors. Each subsidiary retains inimitable and distinctive characteristics of network linkages and therefore is differentially exposed to innovative ideas, opportunities and knowledge (McEvily & Zaheer, 1999). The main interest of MNCs has always revolved around technology transfer from developed countries to the emerging markets (Tihanya & Roath, 2002) and Subsidiaries rationally are believed to be safest mode of transferring knowledge in order to void risk of leakage by competitors thereby making the performance of the MNCs’ subsidiaries in host countries vitally important. According to Kogut & Zander (1993) performance of an entity is observed as compiled competencies obtained by organizations. They further extended that MNCs constantly need to create and transfer knowledge from headquarters to subsidiaries and vice versa in order to gain and maintain competitive advantage. This is why studies on subsidiary performance have been standing out as the main focus of technology transfer literature (Chung, 2001; Chen, 1996; Lin,

2003; Cui *et al*., 2006).

Although the concept of performance is dependent of more than one variable certain scholars have acclaimed knowledge transfer to be vital for subsidiary performance (Delios & Beamish,

2001; Gong, 2003a; Tan & Mahoney, 2006) while several previous studies have related performance more directly to the capability to absorb innovative knowledge from the environment by means of specific inter and intra organizational relationship networks (Andersson et al., 2002). According to Gong (2003a) and Hebert et al. (2005) subsidiaries are expected to achieve enhanced performance if they are able to transfer and utilize the technological knowledge base of their parent firm successfully. In a more recent study (Chang Y., et al., 2012) also agreed technology transfer influencing subsidiary performance but conditioned that for knowledge transfer to have stronger and lasting effect on subsidiary performance, the knowledge received must be infused as an integral part of the subsidiary's routines guiding its operations.

**2.7 Technology Transfer: Malaysian Overview**

Malaysia, as a rapidly growing economy is believed to be much more involved in technology transfer especially in regards to the adoption of new emerging technologies. In recent observations it is noticed that the issue involving technology transfer in Malaysia has been the talk of the town in almost every technological conference taking place locally by both public and private stakeholders.Lim (2000) confirmed that, as Malaysia is aware that time and expenses does not allow it the opportunity to develop and produce all the technology required; therefore, Malaysia has opts for importing technology which is inexpensive and relatively faster gears of accelerating the utilization of science and technology. In terms of Asian developing countries like Malaysia, China, Myanmar, Sri Lanka, Thailand, Ghana, etc, who are experiencing speedy development International Technology Transfer continues to play as a key catalyst for economic growth (Abu Hassan & Muhammad Asim, 2012). Moreover, according to Siti Aisha et al.,

(2009) the areas of technology transfer and knowledge management contribute significantly to the productivity and organizational effectiveness as well as economic development that influences nations like Malaysia to concern deeply for managing knowledge and adopting new technology as determining factors for the technology transfer processes.

Malaysia’s aim to leverage its existing strengths and resources for enhancing its competitiveness and flexibility to accomplish global excellence is reflected in its Third Industrial Master Plan

2006-2020. The Tenth Malaysian Plan 2011-2015 has also stressed on the importance of supporting innovation-led growth, developing a first-world talent base in terms of human assets, and application of high technology in fields of biotechnology, nanotechnology, high-end engineering, green technology and Technology Parks by acquisitions and utilizations through Government established bodies like the Malaysian Technology Development Corporation and Malaysian Venture Capital (The Tenth Malaysian Plan, 2010).

The Malaysian approach seem to be synchronized with the Second National Science and Technology Policy that opted for increased investments in research and development, increase indigenous technology producing capability, establishing new major research and technology development institutions, building long-term relationships for technology transfer and training between university and industry, financing support for technology development and techno- entrepreneurship in collaboration with Malaysian Technology Venture Association, establishing Malaysian Technology Credit Guarantee Scheme, enhancing management of technology intelligence and information system and development of innovative technology-based companies involved in the endorsement and marketing of technological innovations (The Second National Science and Technology Policy, Ministry of Science, Technology and Innovation). Simultaneously the Ministry of International Trade and Industry (MITI) has also been actively playing its role in enhancing technological capabilities of Malaysia by focusing on promoting investments in high technology and knowledge-based industries. It thus contributes towards Malaysia’s efforts in creating a high income economy which would be knowledge-driven, high technology industry-based, industrially knowledge-intensive and higher in value, and Research and Development active, falling in line with the objectives of the New Economic Model (NEM) in order to transform Malaysia into a high income nation by 2020 (The Malaysia International Trade and Industry Report, 2013).

On the contrary to the facts above, studies do exist that found technology absorbing capabilities of Malaysia as inadequate. According to Zaidah et al. (2007) the MNCs are unenthusiastic to share key technological knowledge to Malaysia. Additionally, Suhaimi and Yusof (2006) pointed out that Malaysia was not able to produce technology indigenously. Studies like Jegathesan et al. (1997) and Lall (2002) recommended that the Malaysian workforce were not able to infuse and carry out complicated repairs because of inadequate academic knowledge that does not allow the local human assets to conduct operations independently. Narayan and Wah (1993) and Zainal (2004), indicated Malaysians are still stuck at lower levels of technological exercises. In a separate study Burhanuddin et al., (2009) pointed out inadequate capital investment and managerial skills, inaccurate information or data, insufficient skilled workforce, limited capability for managing technology and acquiring knowledge, difficult access to industrial

experts, and limited human resource to perform R&D task as reasons that constrain adopting new technology by SMEs in Malaysia.

**2.8 Multinational Companies and Related Policies in Malaysia**

For Malaysia, Foreign Direct Investment (FDI) specifically MNCs has always been a foremost factor in developing the industrial sector (Halim, 2000) and the employment trend of its citizens. According to World Investment Report, 2014, Malaysia is ranked 19th among the world’s 21 attractive countries for foreign investments and 15th out of 17 countries for prospective host economies (2014-2016). It is one of the largest FDI recipients in the ASEAN amounting to $12

Billion. According to another report by the Ministry of International Trade and Industry (MITI) it is stated that Malaysia hosts 400 MNCs (MITI, 2012). Intel’s design centre for microprocessor for its hand held equipments, Motorola’s R&D centre in Malaysia, world's largest producer of thin-film disks Komag USA (M), Matsushita R&D centre for air-conditioners, are few of the many MNCs in Malaysia (FMM Directory, 2014, Bursa Malaysia).

Foreign Investments like the MNCs are screened by the MIDA (Malaysian Industrial Development Authority) to ensure that the FDI is consistent with the strategic and social policies of Malaysia. Exceptions like establishing Representative Office for foreign banks do require Central Bank (Bank Negara) approvals as well. Acquisitions, of assets, mergers, or take-overs on the other hand (of such Multinationals) are overseen by the FIC (Foreign Investment Committee) in Malaysia. Multinational Companies have the option of either setting up a representative office, or registering an office branch, or setting up a Joint Venture with a local entity, or grant patent or franchising licences to local affiliates in order to start business in Malaysia.

**3. Theoretical Perspective and Conceptual Framework**

The current issue attempts to establish the effect of the host-country characteristics on the degree of technology transferred by MNCs to their subsidiaries in Malaysia and its relationship with subsidiary performance. To do justice considering the internal environment of the firm and its traits are just not enough, the external environment in which the firm operates, the host country, its traits, its policies regarding the operations of the firm and protecting the interest of businesses need to be scrutinized thoroughly. This impels to follow a theory that can accommodate the different dimensions of the current endeavour.

Considering the above the present study is based on the Organizational Contingency Theory that can be deployed to illuminated the dependency and relationship between internal environments of the subsidiaries with the external environment of the host country where it operates. According to a recent study (Boyd et al., 2012) the development of contingency hypotheses is fundamental to strategic management and it is an approach prominently used by researchers of strategic management in areas considering internal and external environments which is the case in the current study as well. According to Russel & Richard (2005) Contingency theory hypothesizes that organizations and their external environment are interdependent and

organizations are expected to perform optimum when they are in alignment with the contextual environment. Therefore connecting logically the issue related to the relationship between host country characteristics and the degree of technology transferred effecting subsidiary performance is governed by the Organizational Contingency Theory to serve the purpose of this study.

On the other hand the issue on how transferred technologies forms competitive advantage is completely an issue that could be posed by the RBV (Lin, 2003). The main focus of the RBV perspective is to demonstrate the capability of organizations to develop and achieve competitive advantage from replicable knowledge and resources and as derived from the RBV, knowledge is the major source that leads to build up competitive advantage (Barney, 1991). Based on the RBV perspective, it can also be deduced that technology transfers improve knowledge, working practices locally and technology adaption capabilities, which in turn contributes to the performance of the subsidiary (Lin, 2003; Barney, 1991).

**3.1 Conceptual Framework**

The conceptual framework has been adapted from existing related literature to suit the context of current study.

**Host-Country Characteristics**

 Market Dynamism

 Competitive Intensity

 National Cultural Distance

**Performance of Technology**

**Transfer**

 Improved Knowledge

 Improved Working Practices

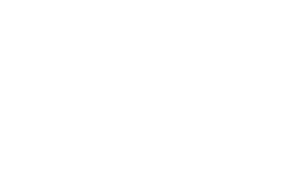
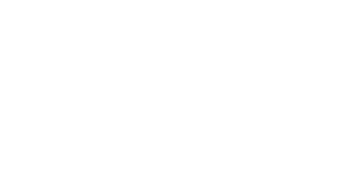
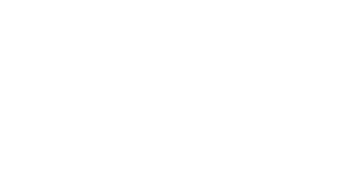
 Long-Term Adoption

**Subsidiary Performance**

 Sales Volume

 Profitability

 Market Share



**3.2 Variables and Measures**

***3.2.1 Dependent Variable*: Performance of Technology Transfer**

The current study adapts a multi-dimensional approach for measuring this variable (Gilbert & Cordey-Hayes, 1996; Gold et al., 2001; Waroonkun 2007; Al-Abed et al., 2014). Based on the Resource Based View the current endeavour defines technology transfer performance as the outcome gained from the process of technology transfer in terms of three dimensions: (1) Improved knowledge in terms of management techniques, technology, business management, Technology Transfer implementation, (2) Improved working practices in terms of resources allocation, knowledge integration, transformation and applications, and (3) Long-term adoption of transferred technology in terms of adopting new approaches in management, methods, advanced technologies, and innovative skills.

Table 1: Measuring Technology Transfer Performance

|  |
| --- |
| 1. Knowledge on management techniques and tools is improved. |
| 2. Knowledge on relevant industry related technology is improved. |
| 3. Knowledge on relevant industry related business management is improved. |
| 4. Knowledge on implementing Technology Transfer is improved. |
| 5. The subsidiary ensures an appropriate allocation of resources. |
| 6. The subsidiary can successfully integrate the existing knowledge with new information and  knowledge acquired. |
| 7. The subsidiary is more effective in transforming existing information into new knowledge. |
| 8. The subsidiary can successfully exploit internal and external knowledge into concrete applications. |
| 9. The subsidiary adopts new approaches in management. |
| 10. The subsidiary adopts more advanced technologies. |
| 11. The subsidiary adopt new approaches in relevant industry related methods |
| 12. The subsidiary adopts new transferred skills. |

Adapted from Al-Abed et al. (2014); Pavlou (2004); Waroonkun (2007)

**3.2.2 Dependent Variable: Subsidiary Performance**

Subsidiary Performance is considered as the Dependent variable of the framework as previous studies upheld that knowledge acquirement has a positive impact on human-resource, general, and business related performances (Lyles and Salk, 1996). Subsidiary Performance would be measured by asking respondents to report on the subsidiary’s performance against industry norms and also against the parent firm’s expectation with respect to sales volume, profitability, and market share based on Taggart (1999), Andersson, Forsgren & Holm (2002), and Colakoglu

& Caligiuri (2008).

Table 2: Measuring Subsidiary Performance

1. How does the Parent Company judge this subsidiary’s sales volume?

2. How does the Parent Company judge this subsidiary’s market share?

3. How does the Parent Company judge this subsidiary’s profitability?

Adapted from Taggart (1999), Andersson, Forsgren & Holm (2002), and Colakoglu & Caligiuri (2008)

**3.2.3 Independent Variable: Market Dynamism**

Market dynamism was conceptualized as encompassing environmental demands and business practices. Market dynamism was measured via a two-item, seven points, Likert-type scale derived from Cui et al. (2006) and Jap (1999). The two items assessed the extant to which (1) the

host-country environment demands on the subsidiary are constantly changing and (2) the business practices in the respective industry that are constantly changing.

Table 3: Measuring Market Dynamism

1. The environment of the host-country demands on our subsidiary is constantly changing.

2. The business practices in our industry are constantly changing.

Adapted from Cui et al. (2006) and Jap (1999)

**3.2.4 Independent Variable: Competitive Intensity**

Competitive intensity was conceptualized as the level of competition in the market of the host- country. Following Cui et al. (2006); Grewal & Tansihaj (2001) and Jaworski and Kohli (1993), a four item, seven point Likert-type scale assessed the extent of competition present in the host- country in terms of (1) general competition, (2) promotional wars, (3) price competition, and (4) new competitive moves.

Table 3: Measuring Competitive Intensity

|  |
| --- |
| 1. The level of competition in this industry is high in the host-country. |
| 2. This industry has many promotional wars. |
| 3. Price competition in this industry in great. |
| 4. There are many new moves by our competitors in the industry. |

Adapted from Cui et al. (2006); Grewal & Tansihaj (2001) and Jaworski and Kohli (1993)

**3.2.5 Independent Variable: National Cultural Distance**

National cultural distance was conceptualized as the underlying differences in national cultures between a home and a host country. Following Simonin (1999), national cultural distance was measured with two items: (1) the national culture of parent company greatly differs from the host-country, and (2) language difference is a major obstacle in communication with the parent company.

Table 3: Measuring National Cultural Distance

1. The national culture of our parent company greatly differs from ours.

2. The Language difference is a major obstacle in communication with the parent company.

Adapted from Simonin (1999)

**3.3 Research Hypotheses**

The hypotheses of the current study are as follows:

**Hypothesis 1:** *There is a significant relationship between Host-Country Characteristics and*

*Performance of Intra-Firm Technology Transfer.*

**Hypothesis 2*:*** *There is significant relationship between host-country characteristics and subsidiary performance.*

**Hypothesis 3:** *There is significant relationship between performance of Intra-Firm technology transfer and receiving unit’s performance.*

**4. RESEARCH METHODOLOGY**

**4.1 Research Methods to be used**

This study would be a cross-sectional quantitative one. The population frame would include the entire Multinational Companies registered in Malaysia (as at 1st January 2015). The sample size would be determined using GPOWER analysis. The sampling type would be Census Sampling and the unit of analysis would be Organizations. Self administered Questionnaires based on subjective measure of the variables would be used as the instrument of research. The data collection method would be structured mail survey and data would be collected from both primary and secondary sources. Exploratory Data Analysis would be conducted to meet the preliminary assumptions of normality, homogeneity and linearity.

**4.2 Respondents and Sample Size**

The respondents for this study would be managers working with the different subsidiaries of Multinational Companies registered in Malaysia (as of 1st January 2015). The population would include multitude of top business, financial and marketing managers of multinational corporations in Malaysia from different industries to increase the overall generalization of this study. The sample size would be determined by GPower Analysis by considering total number of registered Multinational Companies found through databases of Bursa Malaysia and FMM (Federation of Malaysian Manufacturer) Directory of Malaysian Industries 2014 that can be considered the most official and authentic sources of information regarding foreign investments in Malaysia.

**4.3 Research Questionnaire**

The main research for this study would be conducted using a Questionnaire. The questionnaire for the survey would be based on previously tested and validated scales borrowed and adapted from existing literature. A Ten-point Likert Scale Questionnaire would be adapted to serve the purpose of this study. According to Cooper, Schindler and Sun (2006) a Likert scale is a summated rating scale constructed out of phrases that display either a positive or undesirable approach towards the object of interest and increasing the number of scale leads to increased reliability of the measure accordingly. Except for degree of technology transfer all other variables would be measured using ten-point Likert Scale (1 = strongly disagree to 10 = strongly

agree). For the degree of technology transfer, the variable would be measured using ten-point

Likert Scale (1 = very low transfer to 10 = substantial transfer).

**4.4 Data Collection Procedure**

Data would be collected by structured mail survey. Both Primary and Secondary Data would be used to achieve the objectives of the study. The self-administered questionnaires would be mailed to the MNC Subsidiaries in Malaysia as listed with the Bursa Malaysia and FMM Directory, 2014 with a cover letter. If the response rate is not encouraging the respondents would be followed-up by means of phone calls, e-mails, reminders letters and personal visits seeking cooperation from the respondents for the survey. In Malaysian perspective a response rate of

15% to 25% might be acceptable and appropriate (Rozhan, Rohayu and Rasidah, 2001).

**4.5 Statistical Analyses**

In order to validate the data and the study Exploratory Data Analysis would be carried out to meet the preliminary assumptions of normality, homogeneity of variance, and linearity. The reliability would be tested by Cronbach Alpha. Pearson correlation analysis and multiple models of linear regression would be used to test the significant relationships between dependent and independent variables. Tests of Normality, Linearity, and validity would be adopted multi-scale items from established scales developed by experts in related fields.

**5. Conclusion and Expected Contributions**

Converting technology into competitive advantage is an art developing nations need to master. However, for Malaysia there is still much to be achieved and not much of time left in order to adopt technological advancements and acquire fully developed and industrialized status by 2020 in the light of globalisations. Quality research can be translated as a process whereby significant research questions are transformed into answers that contribute to the existing theory. Studies need to provide an extension of an existing theory or a refinement of it. This study would attempt to study the effect of host-country characteristics in Malaysian Context for the very first time as no empirical research on intra-firm technology transfer examining the relationship between the characteristics of host-country and technology transfer performance and subsidiary performance in a single model was found. Thus, this study would contribute by filling the literature gap by examining empirically the relationship between host-country characteristics and performance of intra-firm technology transfer and between the performance of intra-firm technology transfer and subsidiary performance within the frame of Organizational Contingency Theory and Resource Based View.

Findings of this study are expected to contribute theoretically in the body of knowledge by refining the scope of the theory by considering the effect of host-country variable on technology transfer performance and subsidiary performance. Simultaneously in terms of practical implications the study would benefit Malaysian policy makers in enhancing or restructuring

existing policies and formulating new policies in order to attract further technology transfer from MNCs and at an organizational level the MNCs (both existing and prospectus) in Malaysia can use the finding for technology transfer related decision making. Lastly the study is expected to enrich the existing intra-firm technology transfer literature in Malaysian context. For increasing generalization the current study would focus on Multinational Companies from all sectors in Malaysia.

**References**

Abu Hassan Abu Bakar & Muhammad Asim Tufail. (2012). Transforming Capability of Indigenous Contractors through Technology Transfer: A Malaysia Experience. *World Applied Sciences Journal,* 16 (10): 1450-1461

Almeida, P., Song, J., & Grant, R. M. (2002). Are firms superior to alliances and markets? An empirical test of cross-border knowledge building. *Organization Science*, 13, 147-161.

Ari Kokko. (1992). Foreign Direct Investment, Host Country Characteristics, and Spillovers. A Dissertation for the Doctor's Degree in Philosophy, Stoekholm School of Economics.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1),

99-120

Behrman & H. Walender. (1976). Transfers of Manufacturing Technology within Multinational

Enterprises. Cambridge: Bal1inger Publishing Co.

Berry, Heather. (2014). Global Integration and Innovation: Multicountry Knowledge Generation within

MNCs. *Strategic Management Journal* 35, no. 6 (June): 869–890.

Bilir, L. Kamran. (2014). Patent Laws, Product Lifecycle Lengths, and Multinational Activity. *American*

*Economic Review* 104, no. 7 (July): 1979–2013.

Bradley, A., McErlean, S., & Kirke, A. (1995). Technology transfer in the Northern Ireland food processing sector. *British Food Journal, 97*(10), 32-35.

Brian K. Boyd, Katalin Takacs Haynes, Michael A. Hitt, Donald D. Bergh and David J. Ketchen, Jr. (2012). Contingency Hypotheses in Strategic Management Research: Use, Disuse, or Misuse? *Journal of Management,* Vol. 38 No. 1, 278-313.

Burenstam Linder, S. (1961), *An Essay on Trade and Transformation.* Uppsala; Almqvist & Wicksell. Cantwell, J. and Bellak, C. (1998), How Important is Foreign Direct Investment?. Oxford Bulletin of

Economics and Statistics, 60: 99–106. doi: 10.1111/1468-0084.00088

Chang, Y., Gong, Y., & Peng, M., W. (2012). Expatriate Knowledge Transfer, Subsidiary Absorptive

Capacity and Subsidiary Performance. *Academy of Management Journal,* Vol, 55, No, 4, 927-

948, http://dx.doi,oig/10,5465/am¡,2010,0985.

Chen E, K, Y (1996). Transnational Corporations and technology transfer to developing countries. In UNCTAD, Transnational corporations and world development (pp. 181-214). London, UK: Thomas Business Press.

Chesbrough, H., W. (1999). The organizational impact of technological change: A comparative theory national institutional factors. *Industrial and Corporate Change*, 8: 447-495.

Chiranjibi, N. (2005). Technology Transfer in SMEs: Problems and Issues in the Context of Nepal. http:

//[www.unescap.org/tid/publication/ind](http://www.unescap.org/tid/publication/indpub)pub 2306\_chap3 .pdf.

Chung, W. (2001). Identifying Technology Transfer in Foreign Direct Investment: Influence of Industry

Conditions and Investing Firm Motives. *Journal of International Business Studies*, 32(2), p. 211-

229.

Cui, A.S, Griffith, D.A., Casvugil, S.T. & Dabic, M. (2006).The Influence of Market and Cultural Environmental Factors on Technology Transfer between Foreign MNCs and Local Subsidiaries: A Croatian Illustration. *Journal of World Business*, 41, p. 100-111.

Dan Li, Manuel Portugal Ferreira, & Fernando Serra. (2007). Technology transfer within MNEs: An investigation of inter-subsidiary competition and cooperation. *GlobADVANTAGE,* Working Paper Nº 1/2007.

Delios, A., & Beamish, P. W. (2001). Survival and profitability: The roles of experience and intangible assets in foreign subsidiary performance. *Academy of Management*

Findlay, R. (1978), "Some Aspects of Technology Transfer and Direct Foreign Investment." *American*

*Economic Review,* Vol. 68, 275-279.

Foss, N. & Pedersen, T. (2002). Transferring knowledge in MNCs: the roles of sources of subsidiary knowledge and organizational context. *Journal of International Management*, 8: 49-67.

Gilbert, M., & Cordey-Hayes, M. (1996). Understanding the process of knowledge transfer to achieve successful technological innovation. *Technovation*, 16(6), 301-312

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: an organizational capabilities perspective. *Journal of Management Information Systems, 18*(1), 185-214.

Gong, Y. (2003a). Subsidiary staffing in multinational enterprises: Agency, resources, and performance

*Academy of Management Journal,* 46: 728-739.

Grewal, R., & Tansihaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *Journal of Marketing*, 65(2): 67–80.

Gunnar Fors (1996). R&D and Technology Transfer by Multinational Enterprises. A Dissertation for the

Doctor's Degree in Philosophy, Stockholm School of Economics.

Gunter Festel & Philipp Rittershaus. (2014). Fostering technology transfer in industrial biotechnology by academic spin-offs in Europe. *Journal of Commercial Biotechnology*, 20(2), 5–10. doi:

10.5912/jcb631

Hayakawa K., & Lee H.,& Park D. (2010). The Role of Home and Host Country Characteristics in FDI: Firm-Level Evidence from Japan, Korea, and Taiwan. IDE Discussion Paper No. 267.

Hebert, L., Very, P., & Beamish, P. W. (2005). Expatriation as a bridge over troubled water: A

knowledge-based perspective applied to cross-border acquisitions. *Organization Studies,* 26:

1455-1476.

Jacob A. Jordaan. (2013). Firm heterogeneity and technology transfers to local suppliers: Disentangling the effects of foreign ownership, technology gap and absorptive capacity. *The Journal of International Trade & Economic Development*, Vol. 22, No. 1, 71–93.

James, R., Hines (1994). Taxes, Technology Transfer, and the R&D activities of Multinational Firms.

Working Paper Series, Working Paper No. 4932. NBER.

Jap, S. (1999). Pie-Expansion efforts: Collaboration processes in buyer-seller relationships. *Journal of*

*Marketing Research*, 36(4): 461–475.

Jaworski, B.,& Kohli, A. (1993). Market orientation: Antecedents and consequences. *Journal of*

*Marketing*, 57(3): 53–70.

Jegathesan, J., Gunasekaran, A. and Muthaly, S. (1997). Technology development and transfer: Experiences from Malaysia. *International Journal of Technology Management,* 13(2): 196-214.

Jian, P. & Li-Hua, R. (2006). The Appropriateness and Effectiveness of Tacit Knowledge Transfer in E- Business Companies: Empirical Evidence From China.

Julian Birkinshaw, Neil Hood, & Stephen Young. (2005). Subsidiary entrepreneurship, internal and external competitive forces, and subsidiary performance. *International Business Review*, 14 (2005) 227–248.

Kema Irogbe. (2013). Global Political Economy and the Power of Multinational Corporations. *Journal of*

*Third World Studies*, Vol. XXX, No. 2.

Kogut, B,. & Zander. U (1993). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24(4): 625-646

Lall, S. (2002). *FDI and development. Research issues in the emerging context.* In B. Bora (Ed.), Foreign

Direct Investment. Research Issues (pp. 325-345). London: Routledge.

Laszlo Tihanya & Anthony S. Roath (2002), Technology Transfer and Institutional Development in

Central and Eastern Europe, *Journal of World Business*, 37 (2002) 188-198

Lim Chee Peng (2000). Regulating the Transfer of Technology: An Analysis of Malaysia’s Experience, University of Malaya, Malaysia

Lin, B. W. (2003). Technology transfer as technological learning: A source of competitive advantage for firms with limited R&D resources. *R&D Management*, 33(3), 327-341.

Lyles, M. A. & Salk, J.E. (1996). Knowledge Acquisition from Foreign Parents in International Joint

Ventures: An Empirical Examination in the Hungarian. *Journal of International Business Studies*,

29(2), p. 154-74.

M.A. Burhanuddin, Fahmi Arif, V. Azizah (2009). Barriers and Challenges for Technology Transfer in Malaysian Small and Medium Industries. International Conference on Information Management and Engineering. DOI 10.1109/ICIME.2009.39

Maskus, K.E. (2004). Encouraging international technology transfer, *UNCTAD ICTSD*, Issue Paper No.

7, Geneva, Switzerland.

McEvily B, Zaheer A. (1999). Bridging ties: a source of firm heterogeneity in competitive capabilities.

*Strategic Management Journal,* 20(12): 1133–1156.

Minbaeva Dana, Torben Pedersen, Ingmar Bjorkman, Carl F. Fey, & Hyeon Jeong Park. (2003). MNC Knowledge Transfer, Subsidiary Absorptive Capacity, and HRM. *Journal of International Business Studies*, Vol. 34, No. 6, Decade Award Issue: Foreword from the Editor-in-Chief (Nov.,

2003), pp. 586-599

Mohammed S. Al-Abed, Zainal A. Ahmad & Muhammad A. Adnan (2014). Technology Transfer Performance and Competitive Advantage: Evidence from Yemen. *Asian Social Science Journal*; Vol. 10, No. 3

Narayan, S. and Lai, Y. W. (1993). Human resource constraints on technology transfer: An empirical analysis of the electronics and electrical sector in Penang, Malaysia. *The Singapore Economic Review,* 38(2): 155-165.

Narayanan, S., & Lai, Y. (1993). Human resource constraints on technology transfer: An empirical analysis of the electronics and electrical sector in Penang, Malaysia. *The Singapore Economic Review, 38*(2), 155-165.

Nune H. (2012). Technology Gap and International Knowledge Transfer: New Evidence from the

Operations of Multinational Corporations. Job Market Paper

Rahimi A., Norlena H., Che Sobry A., Shahimi M., & Faisal Z. (2013). Relationship between Social Capital and Technology Transfer Performance: A Study on Companies in Technology Park, *Journal of Southeast Asian Research*, Vol. 2013 (2013), Article ID 116724, DOI:

10.5171/2013.116724

Rogers, E. M. (1995). Diffusion of innovations. New York: Free Press.

Rose, R. C. et al., (2009). A Review on the Effects of Inter-Firm Technology Transfer Characteristics and

Degree of Technology Transfer. *European Journal of Social Sciences*, Vol. 8, No. 2, Pp. 297-309.

Rozhan, O., Rahayu & Rashidah. (2001). Great Expectation: CEO’s Perception of the Performance Gap of the HRM functions in the Malaysian Manufacturing Sector. *Personnel Review*, 30 (1), 1& 2, p.

61-80.

S. Colakoglu & P. Caligiuri. (2008). Cultural distance, expatriate staffing and subsidiary performance: The case of US subsidiaries of multinational corporations. *The International Journal of Human Resource Management,* Vol. 19, No. 2, February 2008, 223–239.

Santikarn, M. (1981). *Technology transfer: A case study*. Singapore: Singapore University Press.

Sazali, W. A., Haslinda, A., & Raduan, C. R. (2009). A holistic model of the inter-firm technology transfer based on integrated perspective of knowledge-based view and organizational learning. *The Journal of International Social Research*, 2(9), 408-422.

Shujiro Urata, Toshiyuki Matsuura, Yuhong Wei, (2006). International Intrafirm Transfer of Management

Technology by Japanese Multinational Corporations. RIETI Discussion Paper Series 06-E-006

Simonin, B. L. (1999). Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic*

*Management Journal*, 20(7): 595–623

Sinani, E. & Meyer, K. E. (2004). Spillovers of Technology Transfer from FDI: The Case of Estonia.

*Journal of Comparative Economics*, 32, p. 445-466.

Siti Aisha B. M. H., Ahmad B. Othman, & Shariman B. M., (2009). Investigation of Knowledge Management and Technology Absorption Attributes towards Technology Transfer Success in Automotive Industry. National Conference on Postgraduate Research (NCON-PGR) 2009.

Song, J., Almeida, P., & Wu, G. (2003). Learning-by-hiring: When is mobility more likely to facilitate inter-firm knowledge transfer? *Management Science****,*** 49: 351-365.

Suhaimi, M.S. and Yusof Ismail. (2006). The search for indigenous technology within Malaysia economic policies. *Journal of Technology Management and Entrepreneurship,* 5(2): 71-87.

Szulanski, G., (1996). Exploring internal stickiness: impediments to the transfer of best practice within the firm. *Strategic Management Journal* 17, 27–43.

Taggart, J.H. (1999). MNC Subsidiary Performance, Risk, and Corporate Expectations. *International*

*Business Review*, 8, 233–255.

Tan, D., & Mahoney, J. T. 2006. Why a multinational firm chooses expatriates: Integrating resource- based, agency, and transaction costs perspectives. *Journal of Management Studies,* 43: 457-484.

Teasley, Russel & Robinson, Richard. (2005). Understanding technology transfer effectiveness in Japanese organizations: a test of contingency theory. *Academy of Strategic Management Journal*, Volume: 4.

Teece, D. J. (1977). Technology Transfer by MNCs: The resource cost of transferring technology know- how. *Economic Journal*, 87 (June): 242-261

Ulf Andersson, Mats Forsgren & Ulf Holm. (2002). The Strategic Impact of External Networks: Subsidiary Performance and Competence Development in the Multinational Corporation. *Strategic Management Journal, 23: 979–996 (2002)*

UNCTAD. (2014). The World Investment Report 2014, Investing in the SDGs: An Action Plan, New

York: United Nations.

Waroonkun, T. (2007). Modelling international technology transfer in Thai construction projects

(Unpublished doctoral Thesis). Griffith University, Australia

William J. Zeile. (2014). Multinational Enterprises and International Technology Transfer. *Research*

*Spotlight*, September 2014

Zaidah, M., Md. Zabid, A. R. & Murali, S. (2007). Strategic roles of foreign multinational subsidiaries in

Malaysia. *International Journal of Management and Decision Making,* 8(2/3/4): 268-289

Zainal, A.S. (2004). Technology transfer and the roles of firm-host government coordination: An empirical analysis based on Japanese-affiliated manufacturing firms in Malaysia. *Paper presented at the IAMOT 2004, Washington D.C.,* 3-7 April.