

# **Chapter Seven- Discussion, Conclusion, Limitations, and Avenues for Future Research**

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## **7.1 Introduction**

Eight independent variables (leadership and business strategy, employee competence, information and organizational intelligence, culture and climate, organizational structure, processes, systems and standards, market and customer orientation, creativity and idea management, and management of technology) which collectively form a firm's innovation capability in view of their related theories and approaches (organizational capability, resource-based view, dynamic capability, and innovation capability) were presented, and discussed in previous chapters. Fourteen independent factors which underlie independent variables of innovation capability were extracted, and together with independent variables were tested in multiple regression procedure. As a result, the Best Innovation Model, BIM, which best predicts firm's innovation performance was built and discussed. In this chapter the aim is first to discuss the key results of this study in view of the related literature in Section 7.2; and then to draw conclusions based on this discussion (Section 7.3). Later, Sections 7.4 and 7.5 touch upon the theoretical and practical contributions of this research and Section 7.6 presents the Limitations of the present study. Section 7.7 closes this thesis by providing several avenues for future research and painting the road ahead.

## 7.2 Discussion of Key Results

There are three key results which can be uniquely attributed to this study and discussed in light of the related literature. First and foremost, to discover the key drivers of innovation in Malaysia, this study did not only examine or replicate the conceptual models built by other researchers such as Tidd et al. (2005), Lawson and Samson (2001), Terziovski and Samson (2007), etc, but also it made an attempt to discover and extract new context-dependent factors which underlie the independent variables existing in the innovation literature. As a result of this, fourteen factors were determined. These are *Strategic Human Resource Management, Leadership and Strategy, Technology Management, External Networking, First-Mover Advantage, Work Place Learning, Competitor Analysis, Customer Focus, Supplier Intelligence, Internal Networking, Business Reengineering, Research and Development, Employee Performance Appraisal, and Industry Experience.*

Secondly, eight IVs chosen from the literature and fourteen factors discovered as a result FA, were entered the regression procedure for rigorous statistical analysis. As a result of MR, the Best Innovation Model comprising five IVs and two factors were built. BIM includes Internal Networking, Market and Customer Orientation, Culture and Climate, Employee Competence, Leadership and Strategy, Information and Organizational Intelligence, and External Networking which best predict the dependent variable of this study which is Innovation Performance. All seven IVs and factors collectively and significantly explain 50.8 per cent of the variance in innovation performance. This percentage is a very acceptable result particularly if this percentage is compared with other similar studies. As a case in point, the model produced by Terziovski and Samson (2007) was only able to explain only 42 per cent of the variance in innovation performance. This

may be due to the fact that the data analysis part of this study was given an undivided and meticulous attention to produce the results to the best of researcher's ability.

The next key result of this study is the order and significance of the contributing variables and factors. This is expressed in the following equation.

$$\text{Innovation Performance (DV)} = -5.829 - 0.404 \text{ F10} + 0.394 \text{ IV5} + 0.263 \text{ IV4} + \\ 0.228 \text{ IV2} - 0.218 \text{ IV1} + 0.240 \text{ IV3} + 0.201 \text{ F4} + \epsilon$$

This equation shows the key drivers of innovation within firms in Malaysia in order of their significance. This means that the first and the most influential driver of innovation which predicts innovation performance within firms in Malaysia is *Internal Networking* (F10). Two main variables or items which have the determining high loadings under this factor are: 'We have eliminated barriers between departments; our organization learns about new products and processes through hired skilled employees'. This may lead to the interpretation that in Malaysia, innovation is mainly driven from inside of the firm caused by inter-departmental networking and highly skilled employees.

The second most important driver of innovation in Malaysia is *Market and Customer Orientation* (IV5). Market driven innovation is not a new concept. Slater and Narver (1995) state that "market-driven business is well positioned to anticipate the developing needs of customers and to respond to them through the addition of innovative products and services (p.67)". They further mention that this ability gives the market-driven business an advantage in the speed and effectiveness of its response to opportunities and threats. Thus, a market orientation is inherently a learning orientation (1995, p. 67)". Obviously, responding to the

opportunities in the market and filling up the need gaps require market and customer orientation capability which is a dynamic innovation capability.

The third driver of innovation in Malaysia is *Culture and Climate* (IV4). In fact, “in the absence of a supportive culture, creativity and innovation are like seedlings planted in arid, rocky soil. They won’t germinate and grow without it (Luecke, 2009, p. 212).” Undoubtedly, the social environment has been found to be capable of influencing the level of creative behavior (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Therefore, an appropriate culture and climate which promote innovation is a necessity. Organizational values, culture of accepting failure, TQM embedded in organizational culture, culture of meritocracy, reward system, and the fit between employees’ culture and the organizational culture are among the most critical ingredients of a culture which promotes innovation.

The fourth factor which has a significant impact on innovation performance in the context of Malaysia is *Employee Competence* (IV2). After all, it is employee as a human being which innovates and not machines; making employee the lifeblood of any organization. Therefore, it is important to look at these resources as capital and invest in their development and well-being. The resource-based view of the firm (RBV) conceptualizes the enterprise as a “bundle of unique resources” (Penrose, 1959). Therefore, the growth of the firm is both facilitated and limited by management search for the best usage of available resources (Penrose, 1959). These include tangible and intangible, human and nonhuman resources that are possessed or controlled by the firm and that permit it to devise and apply value-enhancing strategies (Barney, 1991; Wernerfelt, 1984). Therefore, creative, knowledgeable, satisfied, and multi-task oriented employees possessed by a firm

can be used to formulate and implement a firm's competitive strategies. These employees are all inherently valuable resources of a firm and they should be dearly valued.

The fifth key driver of innovation is *Leadership and Strategy* (IV1). Perhaps, the very key variable which is identically and significantly shared between this study and the one conducted by Terziovski and Samson (2007) is Leadership and Strategy. In line with the results of this study, Terziovski and Samson (2007) found that "Committed Leadership and a highly developed innovation strategy that is underpinned by a 'first to market' philosophy of new products and services (p. 372)" is a key driver of innovation.

Indubitably, "the link between vision, strategy and innovation is important to effective innovation management (Lawson & Samson, 2001, p.389." In fact, it is the firm's strategy which determines the configuration of resources, products, processes and systems that firms adopt to deal with the uncertainty existing in their environment (Lawson & Samson, 2001), i.e. addressing the changing environment in a dynamic fashion. As a matter of fact, successful innovation is strategy based and it requires a clear articulation of the strategy within the firm (Tidd et al., 2005). Common or shared vision is a critical step in institutionalizing innovation without which a strategy for innovation, interest and attention become too dispersed (Lawson & Samson, 2001).

The sixth driver of innovation is *Information and Organizational Intelligence* (IV3). Organizational intelligence is primarily about learning from customers and learning about competitors (Lawson & Samson, 2001, p. 391). It is "the capability to process, interpret, encode, manipulate and access information in a purposeful, goal-directed manner, so it can increase its adaptive potential in the environment in which it operates (Glynn, 1996, p. 1088)". Burgelman and Maidique (1988) posit that for a successful innovation

management, it is of critical importance to understand both competitors and markets. Therefore, this innovation capability demands the firm to routinely gather information about business environment, clients, competitors, suppliers through market research studies, tracking the competitor tactics, trade magazines and government publications, and formal as well as informal networks with other organizations.

The seventh and the last key driver of innovation in Malaysia is *External Networking* (F4). This driver is very similar to *Information and Organizational Intelligence* with only one difference which is its main emphasis on the concept- *external*. This driver makes the least significant contribution to explaining innovation performance in Malaysia despite its high importance noted in the innovation literature.

External networking turns the spotlight on the extent a firm establishes networks with other organizations. According to Tidd et al. (2001, p. 161), effective linkages outside the organization are very important in order to identify, resource and implement innovations. In fact, this can be best expressed by as excerpt from Chesbrough's book of open innovation. In his book he mentions "just because your research team comes up with a better mousetrap does not mean that your sales team is the best way to sell that mousetrap (2006, p. 58)". Further he states that "your team may be distracted by selling earlier successful innovations you have made, while some other organization may be hungry to exploit your discovery in some other interesting way (p. 58)". This is exactly the notion of open innovation which means "valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well (Chesbrough, 2006, p. 43)." From this it can be inferred that open innovation puts equal emphasis on both internal and external paths to market. Based on our sample, this factor does not play a dominant role

in driving innovation. This can be interpreted in light of the fact that 59 per cent of the respondents in this study are Chinese Managers. As Chinese culture is dominated by mistrust it might be the case that these firms are not willing to get engaged in open innovation. This can also be supported with the first and the most significant driver of innovation in Malaysia which is *Internal Networking* as opposed to *External Networking*. As the sample size of this study is rather small, firm conclusions cannot be made at this point, yet this cannot lead to ignoring the high value of open innovation as it is commonsense to believe that the ocean of knowledge is not limited to just a handful experts, skilled employees, engineers, R&D departments and firms. Therefore, much of this knowledge and abundance of new ideas should be sought elsewhere, beyond the walls of your organization. This highlights the demise of knowledge monopolies and seclusion of ideas.

### **7.3 Conclusion**

Having discussed the key results of this study, it therefore, can be concluded that the best or the key drivers of innovation in Malaysia are: Internal Networking, Market and Customer Orientation, Culture and Climate, Employee Competence, Leadership and Strategy, Information and Organizational Intelligence, External Networking. Therefore, for Malaysia heading towards its ultimate vision known as “Vision 2020” to become a fully developed country, coupled with their attempts to cause an exodus towards an innovation-lead economy where knowledge and ‘know-how’ become the main drivers for economic growth, it is necessary to build an innovation model where all innovation capabilities are present and at play collectively, like a team of players, making strides towards achieving continuous innovation and productivity growth with significant technological advancement. This view,

however, cannot be impossible as it is already in line with the goal of new economic policy of Malaysia which attempts at transforming Malaysia to a developed and competitive economy whose people enjoy a high quality of life and a high level of income resulting from growth that is both inclusive and sustainable. NEM has already addressed the importance of innovation in theory; however, they should also put their will in practice. As the old Chinese proverb says, every long march starts with the first step!

#### **7.4 Contribution to Research**

This body of research has made several important contributions to the innovation research. Innovation management is an under-researched field in Malaysia. This has been also highlighted by National Economic Advisory Council (2010)- “The weak track record of domestic innovation in Malaysia is reflected by the comparatively low number of researchers (p. 52)”. In the same fashion, “the number of scientific and technical articles published in internationally recognized journals by Malaysians is also well below comparable countries (NEAC, 2010, p.52).” Therefore, this study provides a better understanding of the strategic importance of innovation capabilities of Malaysian firms which impact their innovation performance.

Secondly, up to now, to the best of researcher’s knowledge, no other research has been conducted in the context of Malaysia exploring the key drivers of innovation. Therefore, the results of this study enrich the innovation literature in Malaysia to a certain extent.

Thirdly, this research can be used as an example for those researchers who intend to pursue innovation research, in particular in Malaysia. They can employ the BIM derived in this study and improve on it.



## **7.5 Contribution to Practice**

The *practical contributions* of this study are beneficial to government and the policy-makers who wish to improve Malaysian firms' innovation performance, and their competitiveness which lead to Malaysia's economic progress. This is basically in line with the ambitions of the National Economic Advisory Council (NEAC) which was inaugurated with a specific mandate to formulate a New Economic Model (NEM) to drive Malaysia's transformation into an advanced nation by 2020. In fact, "the lack of researchers [or research] and R&D results in a lack of innovation in the industrial and export sectors in which an unrelenting search for higher value added products and processes, and the capacity for their commercialization are essential to global competitiveness (NEAC, 2010, p.52)." This is supported by a World Bank survey of manufacturing which indicates that Malaysian firms are less involved in developing innovative processes compared to those similar countries (NEAC, 2010). Moreover, surveys conducted in 2002 and 2007 indicate that "Malaysian firms prefer to undertake less sophisticated activities, such as upgrading existing product lines or machinery and equipment.

In addition, Malaysia's innovation efforts (from 2002 to 2007), indeed experienced an overall decline (NEAC, 2010, p.52). As mentioned in the NEM, "the focus for [Malaysian] government in the future should be on developing a supportive environment for innovation and risk-taking and providing firms the opportunities to develop higher valued products for new markets (NEAC, 2010, p.104)." Therefore, the results of this study will help the Malaysian government and policy makers to learn about the key drivers of innovation in Malaysia and better understand those key innovation factors which are not

present at the present situation. As a result, they will be able to develop remedial action plans to make significant strides towards a better future for Malaysia.

## **7.6 Limitations of the Study**

It is important to discuss the limitations of any study in order to help the readers assess the reliability, validity and generalizability of the findings properly. In addition, limitations highlight the barriers of and weaknesses to the research which may be eliminated or obviated by future researchers who may wish to investigate the same topic and improve on it.

This study has three main limitations. First of and foremost, the sample size of this study is rather small. Therefore, the results should not be strongly generalized. However, it should be mentioned that the target respondents of this kind of studies are solely from top management level. This brings the feasibility of collecting a large sample such as two to three hundred under question. This can be support by the past research conducted in the same field in the context of Malaysia which has revealed a very low response rate. As an illustration, for NSI-4 conducted over the period of two years 2004-2006 or [even more] covering 2002-2004, the Malaysian government research body was able to collect only 486 responses from 4000 firms in the population representing the response rate of only 12.5 per cent. Therefore, consideration of the peculiarities of the geography under investigation explains a lot about the small sample size of this study.

Secondly, extreme shortage of the secondary data in form of top innovation articles from ISI journals on innovation in Malaysia was a very strong limitation which affected the literature review part of this study. What could be found on past innovation research

conducted in Malaysia was limited mainly to either outdated government reports or non-scientific, open-source articles. Therefore, the bulk of the literature represents the generic literature on innovation from top international management journals. This weakness; however, can be viewed as a window of opportunity for future research to be done.

Lastly, it is the non-research oriented culture of Malaysian society which does not view university or academic research as a road towards societal welfare.

## **7.7 Avenues for Future Research**

This research also opens new avenues to future research. First and foremost, other variables such as firm size (small high-tech firms, SMEs, large firms), ownership type (Government Linked Companies, Family Businesses, etc.), and firm age can be investigated as intervening variables which impact the relationship between innovation capability and innovation performance.

Secondly, other researchers may wish to replicate this study employing a larger sample size and discover if the same results appear. Moreover, succeeding researchers can cross-check and validate the findings of this study by replicating it in other neighboring, developing economies such as Thailand, Taiwan, Indonesia, Vietnam, etc.

Another research possibility is that researchers can employ the framework of this study to examine the relationships between firm's innovation capability and its innovation performance while focusing on other industries and business sectors.

Last but not least, enthusiastic researchers can explore the possibility of extending the framework of this study by relating innovation performance to firm performance in the market.