CHAPTER 6

DISCUSSIONS, IMPLICATIONS, CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

This chapter, the discussions, conclusions, and formulated implications of the research from the studies of identifying and prioritizing critical success factors respectively is summarized followed by the implications for practitioners, and concludes with reliability of the research results. This chapter also contains the recommendations of the research, followed by the limitations of the studies of identifying and prioritizing critical success factors respectively, and concludes with possible directions for future research in the field.

6.1 Discussions

In this paper, we have investigated several aspects. First, we have determined the applicable critical success factors based on Thai experts' perspectives by a double-screening method as following: after reviewing literature on the success factors in upgrading, the initial screening for the potential success factors was the theoretical analysis of their characteristics from the RBV, RV, and INT. The second screening method was performed with the fuzzy Delphi method to achieve consensus among experts in the field on the critical success factors in the context of electronics industry in Thailand.

Second, we have proposed the hierarchical model for prioritization of all thirteen critical success factors in a multiple-theory framework and all five key indicators in the BSC framework. On the basis of the theories (RBV, RV, and INT), the model was developed encompassing dynamic capabilities framework which showed the relationships between the critical success factors and the key performance indicators, by which the dynamic capabilities mediate among them. The study contributes in terms of linking the research with the theories of RBV, RV, and INT as well as dynamic capabilities.

Third, to summarize, we have carried out sensitivity analysis of the effects of uncertainty by exchanging the weights of two performance indicators among themselves to ensure the robustness of results. Based on the results of the sensitivity analysis and the Spearman's rank correlation coefficient, it could be concluded that there was the robustness of the ranking results. After that, we have utilized the robust rankings to further develop implementations.

The priority ranking of critical success factors for functional upgrading in electronics industry, based on Thai experts' perspectives were provided in Table 5-1. However, different industries might have a different viewpoint about prioritization of critical success factors. It may also vary from country to country (Mathiyazhagan, Govindan, NooruHaq, & Geng, 2013). Therefore, our findings based on Thai experts' perspectives may differ from other countries.

6.2 Implications

Finally, some theoretical and managerial implications were derived based on the findings. We accomplished this by interpreting the results derived from the fuzzy AHP, and the analyzed critical success factors in the context of Thailand. The derived implications are as follows:

According to the findings in Table 5-1, from the RBV perspective, 'technological capabilities' are considered as the most important internal factor in the implementation of functional upgrading, followed by 'top management support'. It can imply that a functional upgrading requires comprehensive technological capabilities, including R&D, new product and process design, systems design, component selection, and post-production logistics, as well as sophisticated marketing techniques. To develop a firm's technological capabilities, firms need various activities to develop their technological capabilities. In this situation, top management has important roles in supporting the activities and developing a firm's technological capabilities during the functional upgrading process, by providing the necessary resources (such as human, technical, R&D lab and budgetary resources) and

providing early involvement for helping the various support firms in functional upgrading.

From the RV perspective, ‘networks’ are considered as the most important relational factor in functional upgrading implementation, followed by ‘strategic alliances’. It means that a functional upgrading requires networks of cooperating firms within the cluster and non-governmental and governmental organisations to achieve collective efficiency, penetrate and conquer markets, and overcome common problems. To develop local and regional supply networks, firms need to build a good relationship in networks by building trust between the partners (Morgan & Hunt, 1994). Long term cooperation e.g. long-term supply arrangements for exchanging resources for mutual benefits, is about building a relationship based on trust. Inter-firms’ linkages such as strategic alliances may allow firms to get to knowledge/technology transfer between the partners, or within the networks.

From the INT perspective, ‘government’s policies’ are considered as the most important institutional factor for functional upgrading, followed by ‘business associations’. Thus, to upgrade the firms’ current position within the electronics GVCs, Thai government needs to formulate and implement technology development strategies/policies aimed at supporting the functional upgrading from OEM to ODM and OBM, such as technology and innovation support, human resource development, financial means, and development of the necessary infrastructure (Hsu & Chiang, 2001; Shih, 1999). Moreover, business associations include federations (e.g. the Federation of Thai SME Association, the Federation of Thai Industries, Electrical, Electronics and Allied Industries Club), chambers of commerce, and trade and industrial groups need to play an important role in macroeconomic stabilize and reform, (horizontal and vertical) coordination, reducing information cost, setting standards, quality upgrading, and employee training, in order to improve the functional upgrading in Thailand as well.

From a dynamic capability viewpoint, the ‘sensing capability’ is viewed as the most (relative) significant dynamic capabilities, which enables functional upgrading through economic and value-added products meet market needs and accomplish a

firm's aims, in order to achieve competitive advantage. Helm and Gritsch (2014) suggest that, to improve the sensing capability of the firm, external networking is needed since it could be sources of information on market developments and thus increases a firm's sensing capability. This suggestion is consistent with our findings; networks are the most important success factor if we respect to just sensing capability.

Moreover, the research also contributes three main managerial implications. First, this study will help industry to identify, prioritize and evaluate critical factors for successful implementation of functional upgrading in the electronics GVC. OEM/ODM firms could regulate and utilize in their dynamic capability development activities and initiatives for managing the critical success factors in better and more effective and efficient ways. The obtained ranking priorities are helpful to establish their strategic plans and policies to develop the firms' capabilities required to move up the value chain. Second, the knowledge on the top priority of critical success factors of implementing functional upgrading will lead to better understanding and planning of the operational and strategic management in the future. In order to effectively and efficiently implement functional upgrading, this study enables managers, practitioners, and policy makers to use their limited resources to firstly focus on the most important factors for successful functional upgrading, and after achieving initial implementation success (or desired outcomes), their organizations will allow to further implementing other critical success factors by allocating more resources. Third, this study allows all parties concerned to realize their role in functional upgrading. The firms, industry, and government which had the important roles in internal, relational, and institutional factor categories respectively, should concentrate in managing the most important critical success factors in each category, through collaboration to create synergy between all parties for the success of functional upgrading in the electronics firms and industry.

6.3 Conclusions

We have identified and prioritized critical success factors for functional upgrading from OEM to ODM and OBM using fuzzy Delphi and fuzzy AHP approaches. In this

study, the fuzzy approach was exploited to deal with vagueness of the judgments in the decision-making process. Twenty potential success factors obtained from the literature were extracted from the three theoretical perspectives including RBV, RV and INT, as well as eleven performance indicators obtained from the literature were identified in the four perspectives of the BSC framework.

All of these critical success factors and key performance indicators were then validated through the fuzzy Delphi method. Afterwards based on the fuzzy Delphi method these critical success factors and key performance indicators were screened out and a total of thirteen applicable critical success factors and five performance indicators were determined – practical important for the electronic industry based on Thai experts' view. Based on these applicable critical success factors and key performance indicators, we have developed the critical success factor prioritization model that can be practically applied by OEM firms in Thailand. The model with grounded theory utilizes the dynamic capabilities as mediating factors in the relationship between critical success factors and functional upgrading performance.

The determined factors and were categorized into three groups: internal, relational, and institutional factors, and were further analyzed using the Calabrese et al.'s (2013) fuzzy AHP evaluation method. The rationale for selecting this method is to avoid possibly obtaining zero-weight elements in order to obtain the correct prioritization.

The findings of the fuzzy AHP which were mainly the priority rankings of the performance indicators, the dynamic capabilities, the factor categories, and the critical success factors were revealed as follows: 'Profits growth' was viewed as the most significant performance indicator, the 'sensing capability' was the most significant dynamic capabilities, the internal (RBV-based) factors were viewed as the most significant category of factors, while the three most significant critical success factors were 'technological capabilities', 'networks', and 'government's policies' respectively. According to the results of the sensitivity analysis by changing the weights of performance indicators, and the Spearman's rank correlation coefficient, it

could be concluded that there was the robustness of the ranking results. Finally, this paper provided implications for both practitioners and scholars.

The findings would not only lead to increase the chances for success of functional upgrading of OEM firms to become ODM and OBM, but also lead to supportive policy development to create sustainable competitive advantages for electronics firms and industry in the future.

6.4 Limitations of the Research

It should be noted that this study has been primarily concerned with the ranking results obtained by using fuzzy AHP method in order to deal with vagueness of the judgment, without a comparative analysis to investigate whether using fuzzy AHP can truly make a significant difference compared to traditional AHP. Therefore, a comparative analysis of fuzzy AHP and traditional AHP or even other (fuzzy-based) MCDM methods, in prioritization of critical success factors for functional upgrading will be further studied to choose the best effective approach to make consistent final ranking results and then lead to an effective decision.

6.5 Future Research Direction

There are two directions in which this research might be extended. First, replicating this research with a larger sample size including a variety of stakeholder types will be recommended. Second, as mentioned above, different industries/countries might have a different viewpoint about the rankings of critical success factors for functional upgrading. Therefore, a comparative study on rankings of critical success factors for functional upgrading between different industries will be needed to further explore their differences.