CHAPTER 1

INTRODUCTION

1.1 Rationale for the Study

The electronics industry is one of the largest manufacturing sectors in Thailand and it is mostly export-oriented (Tippayawong, Tiwaratreewit, & Sopadang, 2015). In Thailand's context, the firms in such industry are mainly original equipment manufacturing (OEM) firms and they are as the low cost and labor intensive manufacturers. In the current era of intense competition, price and cost competitiveness may not be enough for them to sustain their competitiveness anymore. In this regard, in the context of global value chains (GVCs), moving upward along the GVCs, from OEM to ODM original design manufacturing (ODM) and then to OBM original brand manufacturing (OBM) is identified as an important strategy for businesses to enhance their competitiveness (Manzakoğlu & Er, 2018; van Assche, 2017).

To survive and gain a competitive advantage in today's global competitive market, most of OEMs which lie in low end of the global value chain (GVC) (Hobday, 1995) have to think about moving upward along the GVCs and transform/upgrade their operations to become ODM and OBM (Eng & Spickett-Jones, 2009; van Assche, 2017) which will not only provide the benefits of higher prices and margins, and greater customer awareness to the firm's products and brands, but also improve customer loyalty. In other words, moving from OEM to ODM and OBM by focusing on higher value added activities in GVCs such as design, branding and distribution or logistics (Sun, 2011), or so-called a 'functional upgrading' in the GVC literature, is considered as the acquisition of a set of necessary new capabilities/competencies that will allow firms to move into higher value-added (i.e. better remunerated, higher margin) activities.

Though, many firms from emerging economies attempt to upgrade their functional capabilities to become ODM and OBM by participating in GVCs, in

upgrading strategies from low value added activities to high value added activities. However, many firms have failed during the functional upgrading (Chen, Wei, Hu, & Muralidharan, 2016; Manzakoğlu & Er, 2018). This upgrading is not an easy intra-firm task, as it requires the cooperation with other parties including governments and industries for the successful development of this upgrading trajectory. Moreover, in moving upward along the GVCs, many firms require different capabilities. Since the 1990s, many studies in the U.S., Chinese mainland, Chinese Taiwan, and Korea (e.g. Chen, 2010; Yuan, Chiu, Kao, & Lin, 2009; Chen, Shen, & Chiu, 2007; Hsu, Chen, & Jen, 2008; Humphrey & Schmitz, 2000; Kim, 1997) have identified factors influencing a firm's success in upgrading focusing on developing higher value added capabilities. But in many emerging countries including Thailand, especially their priorities, the issue of identification of critical success factors for upgrading has hardly been studied.

Thus, not only to ensure the success of functional upgrading, a careful and comprehensive analysis of the factors that contribute to the success of this upgrading must be taken, but also to be able to focus collective efforts on the most significant factors, a prioritization of critical success factors needs to be made explicit.

Regarding complex prioritization problems, the multi-criteria decision making (MCDM) techniques can provide a logical framework to analyze such problems (Roy, 1996; Svahnberg, Wohlin, Lundberg, & Mattsson, 2002). Analytic hierarchy process (AHP) is one of the MCDM techniques, which can be applied to critical success factor prioritization which based on subjective judgment.

However, to handle uncertainty, subjectivity and vagueness of human judgment in decision-making, the fuzzy analytical hierarchy process (Fuzzy AHP) integrated fuzzy set theory and AHP has been employed (Hsu & Chen, 2007; Hsu, Lee, & Kreng, 2010). An integrated AHP with fuzzy set theory can handle subjectivity in the human decision making process (Mardani, Jusoh, Bagheri, & Kazemilari, 2015; Somsuk & Laosirihongthong, 2016; Zaim, Sevkli, & Tarim, 2003). Moreover, such integrated approach is also able to reflect a human vague thinking/knowledge (Bozdag, Kahraman, & Ruan, 2003). Similarly, an integration of traditional Delphi method with fuzzy theory (fuzzy Delphi method) takes vague

concepts involved, and this helps to gather opinions reached to a consensus in only one round of survey in order to ensure that the analysis has been performed in a careful way (Kabir & Sumi, 2012; Mardani et al., 2015).

Therefore, this study applies a fuzzy group decision-making approach e.g. fuzzy Delphi and fuzzy AHP, based on the experts' subjective judgments to identify and prioritize the critical success factors in order to include the vagueness associated with experts in the decision making process (Duran & Aguilo, 2008; Huang, Chu, & Chiang, 2008).

Besides, the complexity of a prioritization problem needs the integration of different theories to develop the comprehensive prioritization framework and model (Coates & McDermott, 2002). In this study, the analysis of critical success factors draws upon insights from resource-based, relational, and institutional perspectives. These theories are used not just to identify the theoretical factors affecting the success of functional upgrading, but these theories and the dynamic capability view are also used to develop an analytical (theoretical) framework and a hierarchical model to find the most significant factors of functional upgrading process.

Hence, this study explores the applicable critical success factors for functional upgrading in the electronics industry, one major export sector in Thailand, using comprehensive literature reviews and viewing them through the theoretical lenses of the resource-based, relational and institutional perspectives, and the fuzzy Delphi-based group decision-making approach which leads to consensus of expert opinion. The analysis of the critical success factors in a process of functional upgrading, upgrading trajectory in GVCs from OEM to ODM/OBM, is based on the fuzzy AHP-based group decision making according to the views of Thai experts. After that a sensitivity analysis by changing the weights of criteria is performed to evaluate the robustness of ranking obtained through the fuzzy AHP. Finally, based on the findings, this paper provides some important implications for both practitioners and researchers to enable more effective strategic decision making on support for developing the upgrading strategies, and to develop more effective policy for promoting the success of functional upgrading to achieve competitiveness of Thailand's electronics firms, as well as strengthen their position in the global market.

1.2 Objectives

1.2.1 To identify the critical success factors for functional upgrading in the electronic industry with respect to specific internal and relational resources and institutional factors.

1.2.2 To identify the key performance indicators or success criteria for functional upgrading in the electronic industry.

1.2.3 To develop a theoretical framework and a hierarchical decision making model for ranking the critical success factors with regard to dynamic capability development.

1.2.4 To determine the relative weights of critical success factors and criteria.

1.2.5 To evaluate the robustness of the ranking obtained.

1.2.6 To develop the important implications for both practitioners and researchers.

1.3 Overall Research Methodology

To illustrate the methodology and conduct a systematic analysis, a proposed research framework in this study can be summarized and presented as the following three phases (as shown in Figure 1-1):

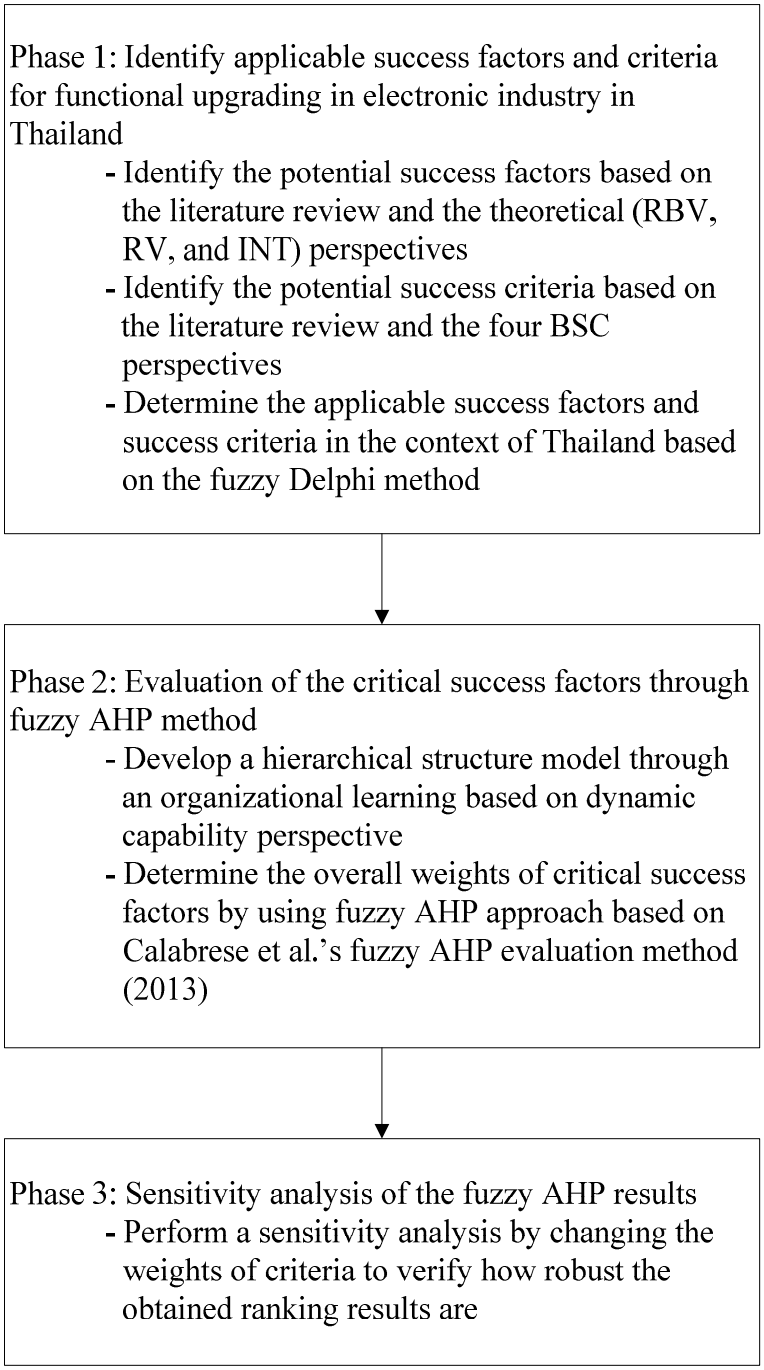

Figure 1-1 The overall research methodology

1.4 Scope of Research

The scope of the research can be summarized as follows:

1.4.1 The area of this study will be confined to the electronics industry in Thailand.

1.4.2 The critical success factors considered will be internal and relational resources and external environmental factors.

1.4.3 The upgrading trajectory will be transitioning from OEM to ODM and then to OBM.

1.4.4 The main specific capabilities including design, new product development, marketing and branding will be considered.

1.5 Expected Benefits

The expected benefits can be classified into two major categories;

1.5.1 Benefits to the academic

1.5.1.1 It may enable the global electronics value chain scholars, especially in Thailand, to realize the role of a unique bundle of resources of the firm and the inter-firm resources and routines as internal and external success factors respectively and to realize the external environmental factors as institutional success factors.

1.5.1.2 It may enable the scholars to realize and utilize the institutional theory and the RBV and RV theories in developing theoretical framework and an AHP-based model for prioritizing the critical success factors through functional upgrading.

1.5.1.3 The proposed theoretical model may be adapted to other industries in similar environmental contexts.

1.5.2 Benefits to the country

1.5.2.1 It may enable manufacturers to be in a stronger position to improve their global competitiveness with a deeper understanding of the required necessary resources and specific capabilities for successful functional upgrade.

1.5.2.2 It may enable policy makers to better guide the potential new entrants and provide relevant government aids by directing support to develop suitable capabilities (e.g. technological, design, and marketing capabilities) to promote transitioning from OEM to ODM, and then OBM.

1.5.2.3 It may enable both practitioners and policy makers to develop an improvement strategy for resource provision and capability development, to increase efficiency in the resource allocation decisions, and to develop effective policy in promoting the success of functional upgrading to gain competitive advantage of Thailand's electronics firms.

1.5.2.4 It may enable manufacturers to efficiently develop their capabilities that will allow them to move into higher value-added activities in the global value chain.

1.5.2.5 The research suggests the policy mechanisms to encourage upgrading according to the capabilities of export-oriented firms and their position within global value networks.

1.5.2.6 The successful functional upgrading can boost 'export capacity' and 'gross domestic product (GDP)'.

1.6 Structure of the Remainder of the Report

The remainder of this report is organized as follows.

Chapter 2 Literature review and background

This chapter presents a review of functional upgrading & electronics industry in Thailand, success criteria and the Balanced Scorecard, a multiple-theory framework for critical success factor analysis. The organizational theories include the resource-based view, the relational view, the institutional theory, and dynamic capabilities for functional upgrading. A review of existing related literature in Chapter 2 was performed to support the study undertaken in this research.

Chapter 3 Research methodology

This chapter elaborates the research design and methodology employed in this study. It also presents justification of the use of research methods in which the methods are used. The details of data collection and analysis are described.

Chapter 4 Identification of critical success factors and criteria for functional upgrading using fuzzy Delphi

This chapter presents the literature review on success factors and criteria for functional upgrading through the lenses of the organizational theories including the RBV of the firm, the relational view, and the institutional theory. The fuzzy Delphi methodology which is applied to identify the potential success factors and criteria is presented.

Chapter 5 Prioritization of critical success factors and criteria for functional upgrading using fuzzy AHP, and sensitivity analysis

This chapter presents an application of the fuzzy AHP model to prioritize the critical success factors and criteria for functional upgrading, and also presents the hierarchical model for prioritizing the factors, which is linked to the RBV of the firm, the relational view, and the institutional theory based on the fuzzy AHP approach. The dynamic capabilities as an intermediating the relationship between a firm's performance and the success factors as well as a sensitivity analysis are presented.

Chapter 6 Discussions, implications, conclusions, limitations and future research

The final chapter summarizes the major conclusion of the research from the studies of identifying and prioritizing critical success factors respectively 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.

Concluding Remark

This chapter illustrated the background and rational of the study, the research gap and the research objectives. The methodology of the research was briefly described. The objectives and contribution of this research and its scope, and limitations were presented. The structure of the research was also outlined.