

INNOVATIVE OPERATION STRATEGIES AND PERFORMANCE
OUTCOMES OF MALAYSIAN MANUFACTURING SMALL AND MEDIUM
ENTERPRISES

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TO MY FAMILY AND MY BELOVED DR.MONA KASHKULI

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ABSTRACT

Innovation in operations is important for all small and medium enterprises (SMEs) especially in developing economies. This study examined the direct and indirect relations between strategic orientation, current and future innovative operation strategies, environmental uncertainties and the performance of Malaysia SMEs. Drawing on Market Based View (MBV), Resource Based View (RBV) and Dynamic Capabilities View (DCV) theories, a theoretical model consisting of firm's strategic orientation, current innovative operation strategy, future innovative operation strategy, firm's market performance, firm's operational performance and environmental uncertainties was developed. Data were collected through a survey of 210 Malaysian manufacturing SMEs. A structural equation modeling (SEM) procedure was employed to test the hypotheses. The theoretical model was validated by empirical findings. This study found that strategic orientation positively influences a firm's innovation in current and related future operations. Thus, a clear strategic orientation aligned with innovative operation strategy is a pre-requisite for SMEs. It was also confirmed that innovation of current and future operations could affect the operational and market performance of the firm. Furthermore, under conditions of uncertainty, firms which emphasize innovation in their operations are more likely to achieve better performance and could outperform their rivals. Drawing upon these findings, this study offers several important theoretical and managerial implications and opens up new areas for future research.

ABSTRAK

Inovasi dalam operasi adalah penting bagi semua perusahaan kecil dan sederhana (SMEs) terutamanya di negara-negara membangun. Kajian ini melihat hubungan langsung dan tidak langsung antara orientasi strategik, strategi operasi inovatif semasa dan masa hadapan, serta ketidaktentuan persekitaran dengan prestasi SME di Malaysia. Berdasarkan teori-teori Pandangan Berasaskan Pasaran (MBV), Pandangan Berasaskan Sumber (RBV) dan Pandangan Keupayaan Dinamik (DCV), model teori yang mengandungi pembolehubah-pembolehubah orientasi strategik syarikat, strategi operasi inovatif semasa, strategi operasi inovatif masa hadapan syarikat, prestasi pasaran syarikat, prestasi operasi syarikat dan ketidaktentuan persekitaran telah dibina. Data dikumpul melalui soal selidik 210 syarikat SMEs pembuatan di Malaysia. Prosedur Model Persamaan Berstruktur (SEM) telah digunakan untuk menguji hipotesis. Model teori telah disahkan berdasarkan hasil dapatan empirikal. Kajian ini mendapati bahawa orientasi strategik memberikan kesan positif kepada inovasi syarikat dalam operasi semasa dan juga operasi berkaitan pada masa hadapan. Maka orientasi strategik yang jelas diselarikan dengan strategi operasi inovatif merupakan pra-syarat kepada SMEs. Juga disahkan bahawa inovasi operasi semasa dan masa hadapan boleh memberikan kesan kepada prestasi operasi dan pasaran syarikat. Di samping itu, dalam keadaan persekitaran yang tidak menentu, syarikat yang memberikan tumpuan kepada inovasi dalam operasi mereka adalah lebih berkemungkinan untuk mencapai prestasi lebih baik dan mampu mengatasi pesaing mereka. Berdasarkan hasil dapatan ini, kajian ini menawarkan beberapa implikasi penting terhadap teori dan pengurusan, serta membuka ruang baharu untuk kajian pada masa hadapan.

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LIST OF ABBREVIATIONS

AGFI	-	Adjusted Goodness of Fit Index
AIS	-	Accounting Information Systems
AMOS	-	Analysis of Moment Structure
AMS	-	Advanced Manufacturing Systems
APEC	-	Asia Pacific Economic Cooperation
BS	-	Business Strategy
CEO	-	Chief Executive Officer
CFA	-	Confirmatory Factor Analysis
CFI	-	Comparative Fit Index
CMB	-	Common Method Bias
CS	-	Corporate Strategy
DCs	-	Dynamic Capabilities
DCV	-	Dynamic Capability View
EFA	-	Exploratory Factor Analysis
ERP	-	Enterprise Resource Planning
EU	-	European Union
FMM	-	Federation of Malaysian Manufacturers
FP	-	Firm Performance
GDP	-	Gross Domestic Production
ICT	-	Information and Communication Technologies

IFC	-	International Finance Corporation
IMMC	-	Indian Machinery Manufacturing Companies
ISI	-	Institute for Scientific Information
MBA	-	Master of Business Administration
MBV	-	Market-Based View
MITI	-	Ministry of International Trade and Industry
ML	-	Maximum Likelihood
MS	-	Manufacturing Strategy
MSC	-	Multimedia Super Corridor
NSDC	-	National SME Development Council
OEE	-	Operational-Effectiveness-Efficiency
PEST	-	Political-Legal, Economic, Socio-Cultural, Technological
R&D	-	Research and Development
RBV	-	Resource-Based View
RMSEA	-	Root Mean Square Error Approximation
RQ	-	Research Question
SEM	-	Structural Equation Modeling
SME	-	Small and Medium size Enterprises
SMIDEC	-	Small and Medium Industries Development Corporation
SO	-	Strategic Orientation Of The Firm
SOM	-	Strategic Operation Management
SS	-	Six-Sigma
SWOT	-	Strength, Weakness, Threat And Opportunity
TQM	-	Total Quality Management
UK	-	United Kingdom

UNDP	-	United Nation Development Program
VIF	-	Variance Inflation Factor
VRIN	-	Valuable, Rare, Inimitable And Non-Substitutable
WBCSD	-	World Business Council for Sustainable Development
WOK	-	Web of Knowledge Database

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CHAPTER 1

INTRODUCTION

1.1 Background of the Research

To be an innovative organization is now a strategic imperative for all firms, especially in developing economies (Hitt et al., 2010; Talke et al., 2010). This issue has formed the central part of the available literature in the field of operation and strategic management and has gained attention of managers and scholars (Hitt et al., 2010).

The strategic management literature has increasingly focused on the concept of formulating innovative strategies (Talke, Salomo and Kock, 2011; Stock and Zacharias, 2011). This body of literature is primarily concerned with the frameworks and approaches, which boost the innovative power of firms and enable their managers to plan subsequent long term competitiveness (Terziovski, 2010).

Innovation can be incorporated into operation strategies in different ways. Recently, Talke et al. (2010) used the logic of exploration and exploitation of March (1991) and extended the view of strategy formulation accordingly in two forms of the current and the future strategies. Applying this conceptualization to the operations field implies that a firm can invest in activities that emphasize on innovation in its current operational activities through incremental innovations, or radical innovative activities in new strategic areas for future. Both initiatives would influence the innovativeness of the firm as well as its subsequent market success and competitiveness (Talke et al. 2010; Terziovski, 2010).

Incorporating innovation into the strategic activities is associated with innovative and proactive nature of the firms (Stock and Zacharias, 2011). Arguably, a key construct influencing these attributes is the strategic orientation (SO) of the firm (Talke et al., 2011). The SO refers to the logic that a firm pursues to place itself in and respond to environmental conditions (Plambeck and Weber, 2010). In fact, the SO is concerned with all the activities of a firm with the aim of gaining superior performance (Slater et al. 2006). It impacts the activities that managers plan in order to become innovative, proactive and risk-taking, or in general, to gain capacity for creating and protecting a competitive position in today's hypercompetitive environment (Plambeck and Weber, 2010).

Our review of the existing literature reveals that the past research has paid little attention to the link between the strategic orientation and the two types of innovative operation strategies. This link, however, is arguably significant due to the fact that strategic orientation determines how innovative a firm is and therefore influences the ability of the firm to incorporate different innovative options into its strategic behavior to achieve superior performance (Venkatraman, 1989). Our comprehensive search of the ISI Web of Knowledge database (WOK) shows that not only research on the relationship between operational strategy and strategic orientation is scant, but also Malaysia, as a developing economy with a growing manufacturing sector, has not received adequate attention. Indeed, according to the ISI Web of Knowledge, the only study about the strategic orientations of the Malaysian SMEs was conducted by Majid et al. (2009), in which the authors sought to explain the role of SO in entrepreneurial behavior of the technology-based SMEs in the multimedia super corridor (MSC).

This underlines the lack of sufficient knowledge about the way that the SO influences innovation in operation strategies of the Malaysian manufacturing SMEs to affect performance of the firm. Therefore, arguably this domain represents a significant research context. As such, given the lack of background knowledge about this interaction, this research seeks to advance both the theoretical and the practical understanding of this link. It, thus, aims at examining (1) the relationship between

the strategic orientation and the innovative operation strategies of manufacturing firms in Malaysia, and (2) how this link stimulates both the market and the operational performance of a firm.

Correspondingly, all the strategies of a firm seem to be influenced by its managers' perception of the external environment (Desarbo et al., 2005). Some studies within operation research have attempted to confirm this although with mixed results (Oosterhuis, Van Der Vaart and Molleman, 2011; Jusoh, 2010). Environmental uncertainty has been considered as an important contingency factor that moderates strategic behavior of the firm and its performance outcomes (Javalgi, Todd and Granot, 2011; JoseSanzo and Vazquez, 2011; Iyer, 2011). Therefore, our present research attempted to examine how environmental uncertainty impacts the link between the innovative operation strategies and performance of a firm. This implies that the environmental uncertainty is a moderating factor in the present research.

This research was designed around these concerns. Therefore, the remaining parts of this chapter will briefly discuss the key concepts of the research and shed light on the gaps in the research. Then, the research questions, the objectives and originality of the research will be explained. The chapter will be concluded by explaining the contributions, practical implications and organization of the thesis.

1.2 Problem Statement

Although being innovative is a key aspect of today manager's agenda, review of the literature shows that innovativeness is still a complex and multifaceted issue for managers (Tajeddini, 2011; Pérez-Luño, Wiklund and Cabrer, 2011). Recently, it has been argued that the notion of innovativeness is not clear with regards to the areas of operation (Pérez-Luño et al. 2011). Many executives seem not to have adequate knowledge of how to incorporate innovation into the operations strategies

of the firm and translate this action into desirable outcomes (Santa, Ferrer and Bretherton, 2009).

Therefore, there is a need to explain how an innovative firm aligns its operation strategies. This need is more emphasized by the study of Patrick et al. (2010), in which the authors argued that innovativeness represents a key dimension of wealth creation in business. Yet, the literature lacks enough empirical support for the strategic aspects of innovativeness. In this sense, although there is a theoretical must to align innovativeness with the operational strategy (Santa et al., 2009), the current body of literature still lacks enough support to show whether operational innovativeness impacts performance, and if it does, how and to what extent (Talke et al., 2010; Jiménez-Jiménez and Sanz-Valle, 2011). Therefore, it can be summarized that the current body of knowledge in operation and innovation fields still requires attention in the context of how operation embraces innovativeness. Consequently, we assume that this lack of knowledge makes both scholars and managers, to some extent, bewildered by the notion of innovative choice in planning their operation.

Moreover, in the context of innovativeness, the definition of the concept varies remarkably in the literature. For instance, in the study of impact of innovativeness on a firm's outcomes in markets, such as the market growth and the performance, there are diverse conceptions of innovativeness in extant literature (Rhee, Park and Lee, 2010, Radas and Božić, 2009 and Avlonitis, and Salavou, 2007). Therefore, it can be reasonably argued that the current body of literature illustrates a vague posture of innovativeness in the operation strategy (Peng, et al. 2011; Patel, 2011). This would arguably result in inconsistent findings about the performance of the firms in today's innovation-driven and competitive environment.

To address this issue, we have incorporated the notion of the firm's strategic orientation as an antecedent of innovative operation strategies. The literature suggests that a firm with a strategic orientation has more capacity to innovate; thus, can formulate and implement innovative choices more effectively than other firms (Talke et al. 2011; Spanjol et al. 2011). Some scholars (Porter, 1996; Kock &

Ellstrom, 2011; Terziovski, 2010) have highlighted the importance of new paths for strategic thinking, in which the operations strategy and the competitive strategy are to be aligned. This line of thinking is premised upon the notion that a strong alignment between the business strategies and the product market position of the firms as well as its operational activities warrant its competitiveness and enable it to protect its competitive position (Porter, 1996; Kock & Ellstrom, 2011). When executives recognize this alignment, they can leverage it as a strategic tool to help form strategic choices with respect to the innovative initiatives in both current and future relevant operations strategies.

Operations strategies, in general, have been mainly studied in large and multinational large firms with strategic capabilities to invest in new technologies (Talib et al. 2011; Lima et al. 2009). However, in the context of small firms and in particular in the developing economies, whose growth relies on these small manufacturers, such as Malaysia, the significance of developing competitive manufacturing SMEs is undeniable. Yet, it sadly has received little attention so far in the literature. The recent studies of Islam and Karim (2011), Jabar, Soosay & Santa (2011) and Chong et al. (2011) focused on this notion.

Manufacturing competitiveness in the SMEs requires innovative capabilities in various areas, such as quality, costs and flexibility (Alegre-Vidal et al. 2004; Das and Joshi, 2007; Talke et al. 2010). Developing these capabilities is challenging due to the resource limitations of small firms (Terziovski, 2010). These challenges cause executives to underplay the notion of innovative operations (Chong et al. 2011; Peng et al. 2011).

Review of the relevant literature suggests that there is still a lack of knowledge on how different choices of managers lead to different performance implications (Hambrick, 2007; Salomo et al., 2008; Talke et al. 2010). This issue is particularly critical for competitiveness of small manufacturing firms, whose strategies are directly formulated by few executives or their owners, funders or entrepreneurs (Baden et al. 2011; Gilmore et al. 2000). Furthermore, these choices in

the SMEs differ from those of the large firms due to less resources and harsher competitive pressures (Ebben and Johnson, 2005; Terziovski, 2010; Islam and Karim, 2011). Under these circumstances, the executives may choose to initiate innovative activities in their current portfolio of operation strategies or make the relevant innovative choices for future relevant operational activities (Talke et al. 2010). These two choices may have different performance outcomes for the firm in terms of operation and finance.

Body of the research in this field, in general, deserves more investigations (Terziovski, 2010; Talke et al. 2010). Furthermore, review of the relevant research in the context of Malaysian manufacturing firms reveals lack of evidence in this domain. Therefore, this inadequacy of knowledge offers an opportunity to provide new theoretically-grounded empirical insights into the operations-driven competitiveness of manufacturing SMEs

In order to gain a richer picture of this phenomenon, the environmental uncertainty as a moderating factor representing environmental contingencies was included in the model (Zhang et al. 2012; Wong et al. 2011). This contingency may offer more accurate explanations about the underlying mechanisms involved in the links between the strategic orientation, the innovative operation strategies (i.e. innovation in the current operational strategies or innovation in the future relevant operational strategies) and the two dimensions of firm performance (i.e. financial and operational performances).

In light of the above explanations, the central premise of this research is that the existing body of research on the operations strategy does not offer an integrative and conclusive framework for investigating relationships between the strategic orientation, the innovative operational strategies and the two dimensions of performance, particularly in the Asian context and most specifically in Malaysia.

The focus on the Malaysian manufacturing SMEs is significant for several reasons. First, due to the rising importance of the developing economies and limited

understanding of the differences between the developed and the developing markets, focus on Malaysia as a developing economy provides new insights into the generalizability and applicability of management science in different economies. Second, since Malaysia is an export-oriented economy and the competitiveness of its manufacturing firms is of paramount importance to its regional and international prosperity, examining the role of fit between the strategic orientation and various innovative operations strategy has important policy implications. Finally, an ongoing concern in the management literature is the applicability and the relevance of key management concepts in the non-western countries. By investigating strategic orientation, exploratory and exploitative innovations in the current and future relevant innovative operations strategies in a contingent structure, this study adds to this debate for the Malaysian context as a key economy in the Southeast Asia. Overall, the contextual importance of this study is highlighted by its focus on the Malaysian SMEs.

In summary, this study proposed and tested a novel model, in which implications of innovative strategic choices were examined in both the existing and the future relevant operations for the competitiveness of activities in the manufacturing SMEs. In particular, by focusing on a manufacturing-intensive economy, such as Malaysia, this research examined how these two domains of innovative operations strategies would contribute to the market and operational performance of small firms. Furthermore, to account for the determinants of a firm's variations in adopting these choices, the proposed model considered the strategic orientation of the firm as a key antecedent of innovative operation strategies and employed environmental uncertainty as an important contingency factor involved in these causal links. Thus, we assumed that our model will be able to offer a relatively complete understanding of the issue from the perspective of Malaysia.

1.3 Research Questions

In light of the research gap, the principal question addressed by this research was that whether the alignment between the strategic orientation of a firm and its exploratory (future relevant) and exploitative (current) innovative operations strategy under conditions of competitive uncertainty can provide new explanations for performance heterogeneity among the manufacturing firms. This question can be decomposed into six research questions and one practical question as follows:

RQ1: What is the relationship between firm's strategic orientation and its innovative operation strategies?

RQ2: What impact does the current innovative operation strategies have on the performance of SMEs?

RQ3: What impact does the future innovative operation strategies have on the performance of SMEs?

RQ4: How does strategic orientation of a firm influence its market performance?

RQ5: How does strategic orientation of a firm influence its operational performance?

RQ6: How does the environmental uncertainty influence the link between innovative operational strategies and the performance of a firm?

(PRQ): What are the managerial implications of this research for executives of the Malaysian manufacturing SMEs?

We believe that this study will particularly assist the Malaysian executives in making better decisions and obtaining the ability to drive more competitive SMEs. This is because Malaysia as a developing economy can benefit from the extensively innovative SMEs (UNDP, 2009). In light of these questions, a schematic model for the research is presented in Figure 1-1. The constructs, building blocks for this model

and the underlying theories will be described in Chapter 2. This model will be further explained in details in Chapter 3, where relevant hypotheses with respect to the research questions will be developed.

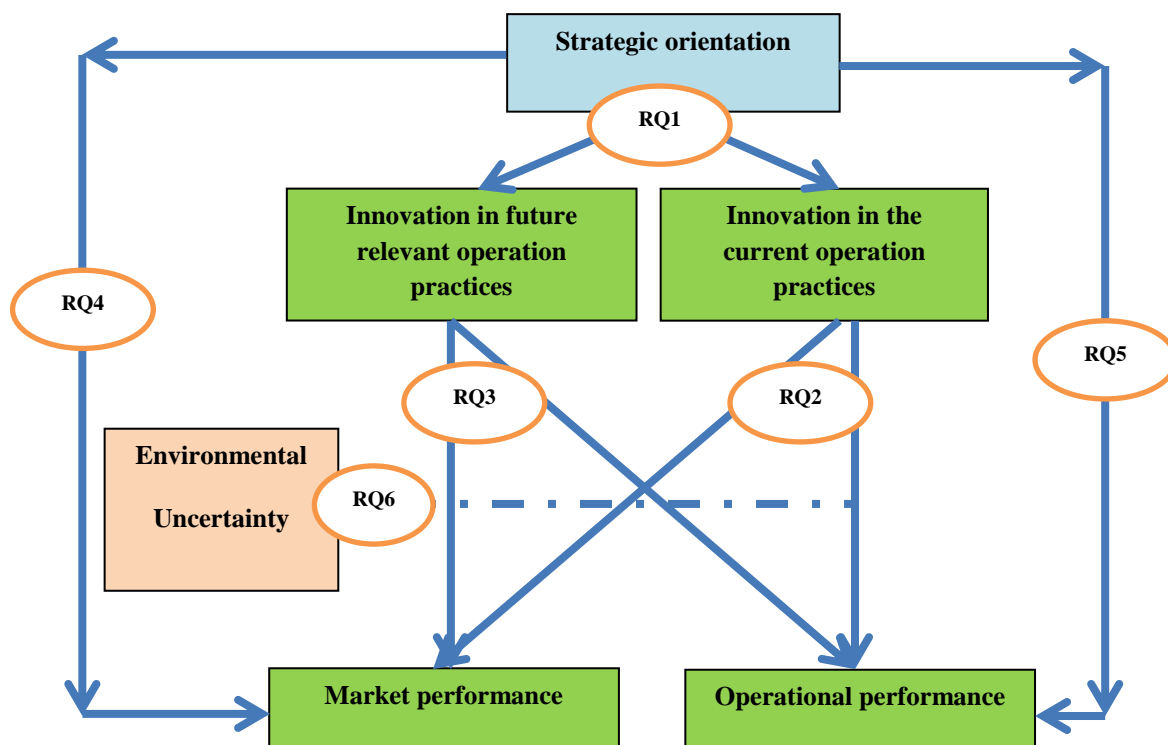


Figure 1.1 The Proposed Model of Research.

1.4 Research Objectives

On the basis of the aforementioned gaps in the current body of literature and the key research questions, the following research objectives were pursued in this study:

1. To provide a model that illustrates how innovative operation strategy contributes to the market and operational performance of manufacturing SMEs from a Malaysian perspective.
2. To explore and explain how strategic orientations of Malaysian manufacturing SMEs impact on their choice of innovative operational strategies.

3. To advance understanding of the role of environmental uncertainty in the outcomes of innovative operational strategies by providing theoretical and empirical insights from the Malaysian perspective.
4. To present a set of practical implications for executives of Malaysian manufacturing SMEs in order to serve as inputs in their operational innovation decision making.

1.5 Research Scope

The scope of this research is the strategic operation of manufacturing SMEs in Malaysia. This scope is situated within in the overlap between (1) the operation management, (2) the strategic management and (3) the small business and entrepreneurship literature. It, thus, could provide insights into these three areas.

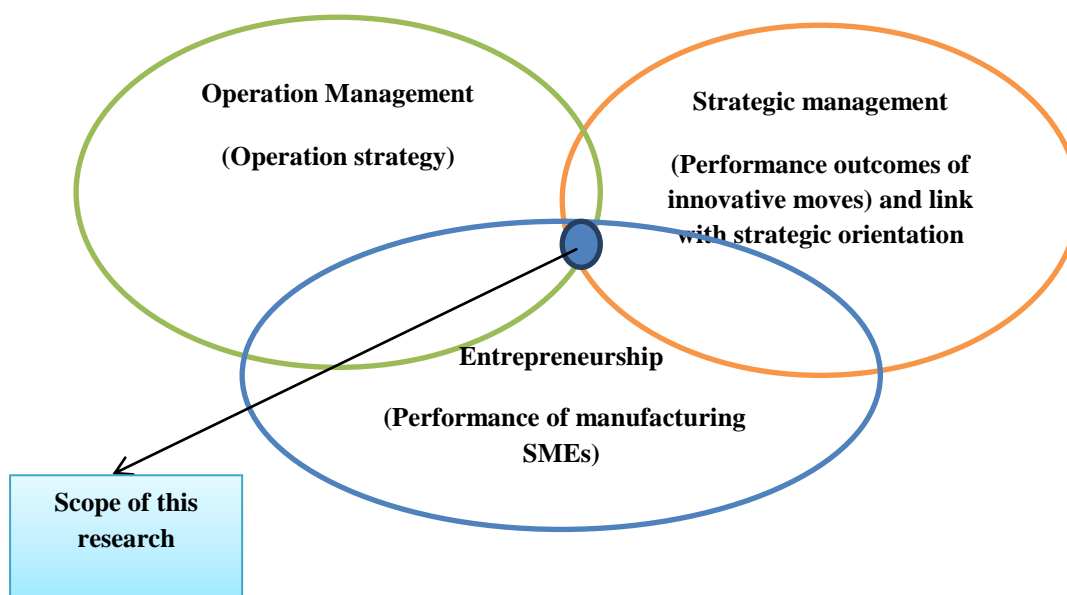


Figure 1.2 A Schematic View of the Scope of This Research.

The Malaysian manufacturing sector is a significant empirical context due to a number of reasons. First, the manufacturing sector in Malaysia is an important

sector, which contributes remarkably to the nations' economy (United Nation Development Program, 2007). Second, the Malaysian manufacturing sector has a great number of SMEs. According to the Small and Medium Industries Development Corporation (SMIDEC) of Malaysia there are more than 39,000 registered SMEs in the manufacturing sector. Third, the report published in 2007 by the SME info, the official authority in charge of the SMEs, showed that 96% of all the establishments in the manufacturing sector of Malaysia are SMEs, which collectively contribute 30.7% to the total manufacturing output. Consequently, the SMEs in the manufacturing sector are deemed to offer a rich empirical context.

1.6 Definitions

Brief definitions and descriptions of the key research constructs are as follows:

1. Strategic orientation of a firm refers to its overall strategic posture, which is composed of principles that jointly determine its strategic behaviour and position in the markets across different dimensions such as aggressiveness, analysis, futurity, innovation and risk-taking (Escribá-Esteve et al., 2009). The strategic orientation basically refers to the notion that a firm must be aligned with its business environment, and this alignment determines how it is oriented towards changes, opportunities and threats and how this orientation is reflected in its strategy implementation (Venkatraman, 1989; Thakkar et al., 2008; Spanjol et al., 2011).
2. Operations strategy is the collective set of actions that sets the direction of a firm in terms of speed of the production, quality of offerings, flexibility to respond to changes in demands and supply as well as overall costs of operations (Anderson et al., 1989).
3. Current innovative operation strategy emphasises on improvements (mostly small and incremental) in the existing portfolio of firm's costing, quality,

speed and flexibility; to improve the effectiveness and efficiency of the firm (March, 1991 and Talke et al., 2010). The improvements are carried out within the current resource structure and operational priorities of the firm (Salomo et al., 2008; Siguaw et al., 2006).

4. Future relevant innovative operation strategy emphasises on the plan for radical change in the activities that underpin the operation strategy (March, 1991 and Talke et al., 2010). The focus is also on developing new areas for firm's operations, changing the operation strategy and changing the structure of resource allocation (Salomo et al. 2008; Siguaw et al. 2006).
5. Operational performance is defined as the performance of a firm in terms of operational priorities relative to its competitors (Alegre-Vidal et al. 2004).
6. Market performance refers to the financial performance of a firm in terms of market share, sales and return on investments (Swink et al. 2005).
7. Environmental uncertainty is defined as the level of dynamism, complexity and uncertainty in the task environments as perceived by managers (Waldman et al. 2001).

1.7 Research Significance

The significance of this research is manifested in its contribution to the three domains of literature (operation management, strategic management and entrepreneurship) apart from innovation literature by examining the link between the strategic orientation, the innovative operation strategies, their subsequent operational and the market performance outcomes under environmental uncertainty.

Furthermore, we expand the current limited knowledge on how Malaysian manufacturing SMEs achieve a superior performance by aligning strategic orientation and innovative operation strategies. We expect that this would generate a number of potential outcomes for both of the theory and the practice as will be explained in the next section.

1.8 Outcomes of the Research

The results of this study provide new empirical insights into the less-explored alignment between the strategic orientation and the innovative operation strategies of the manufacturing SMEs and their performance. Two key groups of research stakeholders or target audience can benefit from this outcome.

First, researchers and scholars who are interested in competitiveness of the manufacturing SMEs can use the outcomes of this research in the future research. This research is perhaps the first of its kind to investigate a complex model about two types of innovative operation strategies and two subsequent performance outcomes with an antecedent and environmental contingency. Therefore, findings of this study may be applied to new contexts (other than Malaysia) to expand body of knowledge in this regard and also develop additive or supplementary models in order to complete these findings. These approaches would expand on the current body of knowledge about the innovative moves of manufacturing SMEs.

Second, executives of the manufacturing SMEs can benefit from the outcomes of this research. The managerial implications of this research, as illustrated in Chapter 5, can serve as inputs into the managerial decision making to assist executives in making more effective decisions regarding the innovations in operation and aligned with their strategies. Chapter 5 will discuss this issue in details.

1.9 Organization of the Thesis

This thesis is organized into five consecutive chapters, which allow a smooth flow of information from the formation of the research problem in Chapter 1 to the concluding section in Chapter 5.

Chapter 1 is the introduction. In this chapter, the background of the research is explained. Then, problem statement is presented. Next, the research questions,

objectives and scope are described. The significance of the research is also discussed in this chapter

Chapter 2 presents the critical review of the literature relevant to this study.

Chapter 3 is about the research methodology. The framework is described based on the theoretical findings. Hypotheses are developed and the sampling procedure, including the sampling scheme and sample size, are explained. The chapter will also elaborate on the questionnaire design. In addition, the research variables are discussed. Finally, the method of gathering primary data and proper statistical tool to analyze and interpret data are elaborated.

Chapter 4 discusses the results and analysis of the collected

In Chapter 5, the research study is concluded and the research findings, both empirical and theoretical, are explained. The research limitations are identified and worthwhile scopes for the further research are presented (Figure 1-3).

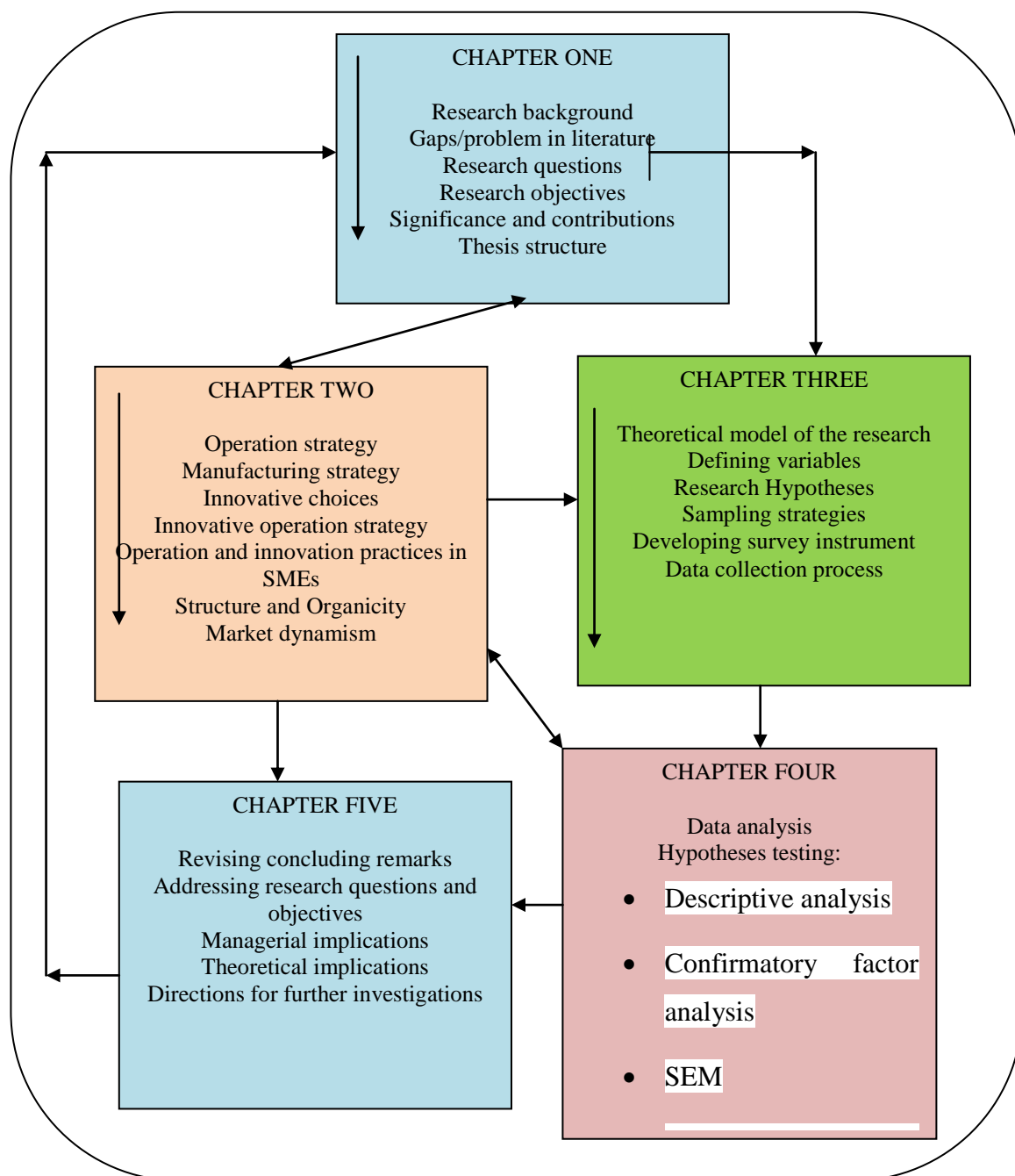


Figure 1.3 Organization of the Thesis

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