



The University of
Nottingham

UNITED KINGDOM • CHINA • MALAYSIA

Yu, Wantao (2011) Operations strategy, business environment, operations resources and performance: an empirical study of retail firms in China. PhD thesis, University of Nottingham.

Access from the University of Nottingham repository:

<http://eprints.nottingham.ac.uk/14191/1/546558.pdf>

Copyright and reuse:

The Nottingham ePrints service makes this work by researchers of the University of Nottingham available open access under the following conditions.

This article is made available under the University of Nottingham End User licence and may be reused according to the conditions of the licence. For more details see:

http://eprints.nottingham.ac.uk/end_user_agreement.pdf

A note on versions:

The version presented here may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher's version. Please see the repository url above for details on accessing the published version and note that access may require a subscription.

For more information, please contact eprints@nottingham.ac.uk



The University of
Nottingham

**Operations Strategy, Business Environment, Operations
Resources and Performance: An empirical study of retail
firms in China**

By Wantao Yu, BA, MSc

Thesis submitted to the University of Nottingham for the degree of
Doctor of Philosophy

April 2011

ABSTRACT

This research investigates the links between operations strategy, business environment, operations resources and business performance of retail firms in China. A framework integrating operations strategy with business environment and operations resources was developed based on existing literature. A triangulation strategy that combines quantitative (questionnaire survey) and qualitative (case studies) methods was employed. The framework was tested using survey data from 106 retail firms in China. Multivariate statistical analysis was primarily used as the quantitative method to analyse the questionnaire data. In addition, qualitative studies were performed using five case studies of retail firms in China. The interview data were examined using both within- and cross-case analysis methods.

The framework proposed in this research was supported by both quantitative and qualitative analyses. Strong relationships between business environmental factors (such as business cost, competitive hostility, and environmental dynamism), operations strategy, and performance were observed. This research further found that operations resources (such as retail technology applications, human resources, and relationships with customers and suppliers) played an important role in helping retailers develop effective operations strategies and improve performance.

This research contributes to the understanding of operations strategy on two fronts. On a theoretical front, this research fills a gap in the existing literature: 1) by examining integrated operations strategy using the resource-based and market-driven views; and 2) by focusing on the service (retail) sector in China. On a practical front, this research provides managerial implications that can help retail firms develop their operations strategies to compete in a competitive and dynamic market.

RESEARCH PUBLICATIONS

The following are the publications this thesis is based on.

Journal Articles

1. Yu, W. and Ramanathan, R. (2010), "Effects of firm characteristics on the link between business environment and operations strategy: Evidence from China's retail sector", *International Journal of Services and Operations Management* (**Forthcoming**).
2. Yu, W. and Ramanathan, R. (2009), "An assessment of operational efficiency of retail firms in China", *Journal of Retailing and Consumer Services*, Vol. 16 No. 2, pp. 109-122.

Conferences

3. Yu, W. and Ramanathan, R. (2010), "Linkages among business relationships, operations strategy and performance in China's retail sector", at 2010 Annual Meeting of the Academy of Management, Montréal, Canada, 6th-10th August (**Full paper presented**)
4. Yu, W. and Ramanathan, R. (2010), "Business environment, employee competencies and operations strategy: An empirical study of retail firms in China", 17th International Annual EurOMA Conference, Porto, Portugal. 6th-9th June (**Full paper presented**).
5. Yu, W. and Ramanathan, R. (2009), "The effects of business environment on operations strategy: an empirical study of retail firms in China", at BAM Conference 2009, Brighton, UK, 15th-17th September (**Full paper presented**).

6. Yu, W. and Ramanathan, R. (2009), "Developing a conceptual model of the impacts of business environment and firm resources on operations strategy and performance", at POMS 20th Annual Conference, Orlando, USA, 1st-4th May.
7. Yu, W. and Ramanathan, R. (2008), "Performance assessment of retail firms in the People's Republic of China", at OR50 Annual Conference, the University of York, UK, 9th-11th September.

Working Papers (original submission or revision under review)

8. Yu, W. and Ramanathan, R. (2010), "Effects of business environment on operations strategy: A field study of a multinational retailer in China", *International Journal of Retail and Distribution Management (Revised version under review)*.
9. Yu, W. and Ramanathan, R. (2009), "Business environment and performance: Assessing the mediating role of operations strategy", *Journal of Operations Management (Under review)*.
10. Yu, W. and Ramanathan, R. (2009), "The effects of operations resources on operations strategy in China's retail sector: Resource-based and stakeholder perspectives", *International Journal of Operations and Production Management (Under review)*.
11. Yu, W. and Ramanathan, R. (2009), "Business environment, employee competencies and operations strategy: An empirical study of retail firms in China", *Production and Operations Management (Under review)*.
12. Yu, W. and Ramanathan, R. (2009), "Linkages among business relationships, operations strategy and performance in China's retail sector: A stakeholder perspective", *International Journal of Physical Distribution & Logistics Management (Under review)*.

13. Yu, W. and Ramanathan, R. (2009), "Performance management of Chinese retail firms: Impact of human resources, IT and operations strategy", *International Journal of Productivity and Performance Management* (Under review).

Other Publications

14. Nath, P., Ramanathan, R. and Yu, W. (2010), "Retail performance: the role of marketing, operations, and environmental capabilities", at EMAC 2010 Conference, Copenhagen Business School, Copenhagen, Denmark, 1st-4th June (Full paper presented).
15. Tan, K.T., Tse, Y.K. and Yu, W. (2009), "A plug and play interactive games for classroom teaching", at SAGSET 39th Annual Conference, Leeds Metropolitan University, Leeds, UK, 22nd-24th July (Full paper presented).
16. Yu, W. and Ramanathan, R. (2009), "Effects of business environment on operations strategy: An empirical study of retail firms in China", Working Paper, Nottingham University Business School, also available at SSRN: <http://ssrn.com/abstract=1393333>.
17. Yu, W. and Ramanathan, R. (2008), "An assessment of operational efficiencies in the UK retail sector", *International Journal of Retail and Distribution Management*, Vol. 36 No. 11, pp. 861-882 (Outstanding Paper Award Winner at the Literati Network Awards for Excellence 2009).
18. Yu, W. and Ramanathan, R. (2007), "An assessment of operational efficiencies in the UK retail sector", in the proceedings of the Logistics Research Network Annual Conference, LRN2007, the University of Hull, UK, September (A sponsored place by CILT (UK) to attend the conference) (Full paper presented).

Honors and Awards

1. **Outstanding Paper Award Winner** at the Literati Network Awards for Excellence 2009
(“An assessment of operational efficiencies in the UK retail sector” published in
International Journal of Retail and Distribution Management)
2. **A sponsored place (£600)** by the Chartered Institute of Logistics and Transport (UK) to
attend LRN Conference and PhD Workshop 2007

Referee for Articles Submitted to the Journal

International Journal of Retail and Distribution Management

Journal of Marketing Management

To My Mother and Father

For Everything

To My Two Sisters and Their Families

For Their Loving Support

ACKNOWLEDGEMENTS

I wish to express my sincere and immense appreciation to my supervisor, Dr. Ramakrishnan Ramanathan, for his invaluable help, advice, encouragement, patience and financial support throughout the pursuit of this research. He has given me valuable supervision in my research. I would also like to thank my supervisor, Dr. Kim Hua Tan, for his help in questionnaire design and case studies. My sincere thanks and deep appreciation in shaping my research career go to my two supervisors, Dr Ramakrishnan Ramanathan and Dr. Kim Hua Tan. Knowing them will always mean a lot to me.

I also would like to thank those who have contributed to my interviews and questionnaires, without whose participation and support this research would have been impossible. Many thanks go to everyone who has helped me in various ways with support and assistance along my journey.

I also owe my gratitude to my parents and my two sisters, who have supported me with their love and encouragement.

Finally, I express my thanks to God for showing me inner peace and for all of His blessings.

TABLE OF CONTENTS

ABSTRACT	II
RESEARCH PUBLICATIONS	III
ACKNOWLEDGEMENTS	VIII
TABLE OF CONTENTS.....	IX
LIST OF TABLES	XIV
LIST OF FIGURES.....	XV
CHAPTER ONE: INTRODUCTION.....	1
1.1. Background of this research	1
1.2. Research motivation.....	3
1.3. Research objectives and questions	6
1.4. Research approach	7
1.5. Research contributions	8
1.6. Thesis structure	10
1.7. Summary	12
CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK.....	13
2.1. China's retail market	13
2.1.1. The history of China's retail sector	13
2.1.2. The growth of China's retail market.....	15
2.1.3. The economic and retail environment in China.....	18
2.1.3.1. Retail operations in China.....	20
2.1.3.2. Evolution of retail shopping patterns in China.....	22
2.2. Theories for linking operations strategy with operational factors	25
2.2.1. The market-driven view.....	29
2.2.2. The resource-based view	29
2.3. Theoretical underpinnings and the framework	30
2.3.1. The contingency theory: operations strategy and business environment.....	32
2.3.2. The resource-based view (RBV): operations strategy and operations resources (human resource and IT applications).....	33

2.3.3.	The resource dependence and stakeholder theories: operations strategy and operations resources (business relationships with principal stakeholders)	35
2.4.	Service operations	38
2.4.1.	Service versus manufacturing operations	38
2.4.2.	Service operations management	40
2.4.3.	Retail operations	43
2.5.	Operations strategy	47
2.5.1.	Cost.....	52
2.5.2.	Quality	54
2.5.3.	Delivery performance	56
2.5.4.	Flexibility	57
2.6.	Business environment	59
2.6.1.	Dimensions of business environment	59
2.6.1.1.	Environmental hostility	62
2.6.1.2.	Environmental dynamism	63
2.6.2.	Business environment and operations strategy	65
2.7.	Operations resources	73
2.7.1.	Main operations resources	73
2.7.1.1.	Human resources	75
2.7.1.2.	Information technology	79
2.7.1.3.	Business relationships	83
2.7.2.	Operations resources and operations strategy	90
2.8.	Business performance	92
2.8.1.	Business performance	92
2.8.2.	Business performance and operations strategy	93
2.9.	Summary	95
 CHAPTER THREE: SUB-FRAMEWORKS AND HYPOTHESES DEVELOPMENT		97
3.1.	Hypotheses development for sub-framework one	100
3.1.1.	Business environment and operations strategy	100
3.1.2.	Operations strategy and business performance	103
3.2.	Hypotheses development for sub-framework two	108
3.2.1.	Human resources and operations strategy	108
3.2.2.	IT applications and operations strategy	111
3.2.3.	Operations strategy and business performance	113
3.3.	Hypotheses development for sub-framework three	117
3.3.1.	Relationship with customers and operations strategy	117
3.3.2.	Relationship with suppliers and operations strategy	119
3.3.3.	Competitor analysis and operations strategy	120
3.3.4.	Relationship with the government and operations strategy	122
3.3.5.	Operations strategy and business performance.....	124
3.4.	Summary	124
 CHAPTER FOUR: METHODOLOGY		126

4.1. Methodology: triangulation.....	127
4.2. Qualitative Method and Case Study.....	128
4.2.1. Qualitative study.....	128
4.2.2. Interview guide.....	130
4.2.3. Case selection.....	131
4.2.4. Data collection.....	133
4.2.5. Data analysis.....	137
4.3. Quantitative Method and Questionnaire Survey.....	140
4.3.1. Sample.....	140
4.3.2. Questionnaire survey.....	140
4.3.3. Measurements and variables.....	145
4.3.3.1. Measures for operations strategy.....	145
4.3.3.2. Measures for business environment.....	147
4.3.3.2.1. Environmental hostility.....	147
4.3.3.2.2. Environmental dynamism.....	148
4.3.3.3. Measures for operations resources.....	149
4.3.3.3.1. Human resources.....	150
4.3.3.3.2. Information Technology (IT) applications.....	150
4.3.3.3.3. Business relationships.....	151
4.3.3.4. Measures for business performance.....	152
4.3.4. Analysis method: Structure Equation Modelling (SEM).....	154
4.4. Summary.....	155

CHAPTER FIVE: RESULTS OF QUESTIONNAIRE DATA ANALYSIS 157

5.1. Preliminary analyses of sub-framework one.....	158
5.1.1. Principal Component analysis (PCA) of sub-framework one.....	158
5.1.2. Confirmatory Factor Analysis (CFA) of sub-framework one.....	162
5.2. Structural Equation Modelling (SEM) of sub-framework one.....	164
5.3. Preliminary analyses of sub-framework two.....	166
5.3.1. Principal Component Analysis (PCA) of sub-framework two.....	166
5.3.2. Confirmatory Factor Analysis (CFA) of sub-framework two.....	169
5.4. Structural Equation Modelling (SEM) of sub-framework two.....	170
5.5. Preliminary analyses of sub-framework three.....	172
5.5.1. Principal Component Analysis (PCA) of sub-framework three.....	172
5.5.2. Confirmatory Factor Analysis (CFA) of sub-framework three.....	175
5.6. Structural Equation Modelling (SEM) of sub-framework three.....	177
5.7. Summary.....	179

CHAPTER SIX: RESULTS OF CASE STUDIES 181

6.1. Within-case analysis.....	181
6.1.1. Case 1: A-Mart.....	182
6.1.2. Case 2: B-Mart.....	185
6.1.3. Case 3: C-Mart.....	188

6.1.4.	Case 4: D-Mart	192
6.1.5.	Case 5: E-Mart.....	196
6.2.	Cross-case analysis	199
6.2.1.	Business environment facing retail firms in China's retail market.....	199
6.2.1.1.	The cost of doing business in China.....	202
6.2.1.2.	Labour availability	203
6.2.1.3.	Competitive hostility.....	204
6.2.1.4.	Environmental dynamism	208
6.2.2.	Operations resources (human resources, IT applications and business relationships).....	209
6.2.2.1.	Human resources of case companies.....	213
6.2.2.2.	IT applications in case companies.....	220
6.2.2.3.	Business relationships development in case companies.....	223
6.2.2.3.1.	Relationship with customer.....	223
6.2.2.3.2.	Relationship with supplier.....	225
6.2.2.3.3.	Relationship with competitor	228
6.2.2.3.4.	Relationship with government	230
6.3.	Summary	233
CHAPTER SEVEN: DISCUSSION AND CONCLUSIONS		235
7.1.	Empirical support for sub-framework one	235
7.1.1.	Business environment and operations strategy	236
7.1.2.	Operations strategy and performance	239
7.2.	Empirical support for sub-framework two	241
7.2.1.	Human resources and operations strategy	241
7.2.2.	IT applications and operations strategy	243
7.2.3.	Operations strategy and performance	245
7.3.	Empirical support for sub-framework three	246
7.3.1.	Business relationships and operations strategy.....	246
7.3.2.	Operations strategy and performance	250
7.4.	Empirical support for overall framework using interview data	256
7.5.	Conclusions from quantitative and qualitative studies	270
7.6.	Contributions of the research	273
7.6.1.	Theoretical contributions.....	274
7.6.2.	Practical contributions	276
7.7.	Limitations and suggestions for future research	279
REFERENCES.....		285
APPENDICES		326
Appendix 1: An Assessment of Operational Efficiency of Retail Firms in China.....		326
Appendix 2: Effects of Firm Characteristics on the Link between Business Environment and Operations Strategy: Evidence from China's Retail Sector		341

Appendix 3-a: Interview Guide in English	377
Appendix 3-b: Interview Guide in Chinese	379
Appendix 4: Profiles of Case Companies.....	381
Appendix 5-a: Questionnaire in English.....	385
Appendix 5-b: Questionnaire in Chinese.....	389

LIST OF TABLES

Table 2.1: The economic and retail environment in China	19
Table 2.2: Service operations content variables in the literature	42
Table 2.3: Competitive priorities of operations strategy in previous studies	51
Table 2.4: Environmental hostility, environmental dynamism, and their theoretical domains	61
Table 2.5: Summary of previous studies linking business environment and operations strategy	67
Table 2.6: Representative studies on the relationship between strategy and human resource.....	79
Table 2.7: Representative studies on the relationship between information technology and strategy	83
Table 2.8: Representative studies on the relationship between business relationships and strategy	88
Table 4.1: Timescale for case study	130
Table 4.2: Profiles of case companies.....	133
Table 4.3: Details of interviewees	135
Table 4.4: Constructs and operationalization	138
Table 4.5: Timescale for questionnaire survey.....	141
Table 4.6: Respondent profile.....	143
Table 4.7: Respondent characteristics	144
Table 4.8: Measures for operations strategy	146
Table 4.9: Measures for business environment.....	148
Table 4.10: Measures for operations resources.....	149
Table 4.11: Measures for business performance.....	153
Table 5.1: Factor loadings of business environment, operations strategy and business performance (PCA) for sub-framework one.....	158
Table 5.2: Correlation matrix for sub-framework one.....	161
Table 5.3: Summary of fit statistics for sub-framework one	163
Table 5.4: Factor loadings of human resources, IT applications, operations strategy and business performance (PCA) for sub-framework two	167
Table 5.5: Correlation matrix for sub-framework two	168
Table 5.6: Summary of fit statistics for sub-framework two	169
Table 5.7: Factor loadings of business relationships, operations strategy, and performance (PCA) of sub-framework three.....	173
Table 5.8: Correlation matrix for sub-framework three.....	175
Table 5.9: Summary of fit statistics for sub-framework three.....	176
Table 6.1: A-Mart: business environment, operations resources, operations strategy and performance.....	183
Table 6.2: B-Mart: business environment, operations resources, operations strategy and performance.....	186
Table 6.3: C-Mart: business environment, operations resources, operations strategy and performance.....	189
Table 6.4: D-Mart: business environment, operations resources, operations strategy and performance.....	193
Table 6.5: E-Mart: business environment, operations resources, operations strategy and performance.....	197
Table 6.6: Summary of cross-case pattern (business environment) and empirical evidence.....	200
Table 6.7: Summary of cross-case pattern (operations resources) and empirical evidence.....	210
Table 7.1: Operations strategies developed by case companies and empirical evidence.....	252

LIST OF FIGURES

Figure 1.1: Research approach.....	8
Figure 1.2: Thesis structure	12
Figure 2.1: The market-driven and the resource-based views of operations strategy.....	28
Figure 2.2: A framework linking business environment, operations resources, operations strategy, and business performance	31
Figure 2.3: The first sub-framework linking business environment, operations strategy and business performance.....	33
Figure 2.4: The second sub-framework linking operations resources (human resource and IT applications), operations strategy and business performance.....	35
Figure 2.5: The third sub-framework linking operations resources (business relationships with principal stakeholders), operations strategy and business performance	38
Figure 2.6: The five Ss of retail operations (worked example)	46
Figure 3.1: A sub-framework linking business environment, operations strategy and performance.....	99
Figure 3.2: A sub-framework linking human resources, IT applications, operations strategy and performance.....	105
Figure 3.3: A sub-framework linking business relationships, operations strategy and performance	115
Figure 5.1: Path model of business environment, operations strategy and performance (sub-framework one)	165
Figure 5.2: Path model of human resources, IT applications, operations strategy and performance (sub-framework two).....	171
Figure 5.3: Path model of business relationships, operations strategy and performance (sub-framework three).....	178
Figure 7.1: Business environment, operations resources, operations strategy and performance: evidence from case study	255

CHAPTER ONE: INTRODUCTION

This chapter aims to describe the background and motivation for this research. The objective, methodology, and main contributions of this research are also reported in this chapter. Finally, the thesis structure is presented.

1.1. Background of this research

The nature of operations strategy can be initially clarified in its generic form (Lowson, 2003). Slack and Lewis (2008) defined operations strategy as “the total pattern of decisions which shape the long-term capabilities of any type of operation and their contribution to overall strategy, through the reconciliation of market requirements and operations resources”. This concept emphasizes the intersections between what is required by the market and how the operation tries to achieve this through its strategic decision-making choices (Slack et al., 2010). Lowson (2003) further highlighted that the decision-making process involved in composing an operations strategy reflects both the resource-based and the market-driven views of strategy. Many researchers also stated that operations strategy focuses on developing specific capabilities called “competitive priorities”. There is a broad agreement that competitive priorities can be generally expressed in terms of cost, quality, delivery performance (speed and reliability), and flexibility (Hayes and Wheelwright, 1984; Roth and van der Velde, 1991; Ward et al., 1998).

Over the past decades, operations strategy and its development have received a lot of attention in the literature. It is argued that an operations strategy is a vital ingredient for the success of many retailers (Lowson, 2005). However, in today’s retail environment the risks associated with strategic errors are significant (Dawson, 2003). Today’s business environment is

highly dynamic, and firms are forced to constantly adapt to the fast-changing circumstances (Lowson, 2003). The dynamic and global competitive forces have created a need for revolution in operations strategies to help firms employ strategic operations resources that enable innovative designs, production of high quality goods/services, and speedy responses to changes in the marketplace (Paiva et al., 2008). Due to the interrelationships among the firm's operations unit, its divisions and other functions, and its marketing activities and competitors, firms must develop operations strategy that are suited to the external environment in which they operate, and employ operations resources in ways that support these strategies (Skinner, 1969; Hay and Wheelwright, 1984; Fine and Hax, 1985; Slack and Lewis, 2008; Lowson, 2003).

Environment is a multidimensional concept comprised of factors relating to the economic, socio-cultural, technological, demographic and political-legal issues (Heizer and Render, 1993). The environment consists of a large number of non-controllable variables which pose both threats and opportunities for companies in pursuit of their objectives (Sanderson and Luffman, 1988). Scholars have long viewed the environment as an important source of organizational contingencies (Thompson, 1967). The contingency theory suggests that business environment influences organizational strategy (Porter, 1980; Kim and Lim, 1988). Enterprises' operations systems and environments, characterized by their complexity and dynamics, are challenging operations strategic management models (Pinheiro de Lima et al., 2009). A few previous studies have found evidence for a relationship between business environmental factors and operations strategy. For example, building on the work of Swamidass and Newell (1987), Ward et al. (1995) identified strong relationships between environmental hostility and dynamism and operations strategy. In recent years, some scholars have conducted similar studies in developing countries

such as Ghana (Amoako-Gyampah and Boye, 2001) and the United Arab Emirates (Badri et al., 2000) to identify the business environmental factors that influence operations strategy.

The term “resource” is used in a very broad sense by theorists. A resource is a basic element that a company controls in order to best organize its processes (Lowson, 2003). The resource and capability-based perspectives of strategy have also been applied to issues of production and operations management (Bates and Flynn, 1995; Schroeder et al., 2002). The Resource-Based View (RBV) provides research in operations strategy a more fine-grained understanding of how competitive advantage is provided through the resources generated by operations (St. John et al., 2001; Paiva et al., 2008). Zahra and Das (1993) also stated that the resource-based perspective offers an innovative approach to thinking about and developing an operations strategy. In addition, the stakeholder theory requires a company to take into account its relationship with specific stakeholder groups as it sets corporate direction and formulates its strategies. The effective operations strategy which any company might pursue can be shaped by identifying its stakeholders (Slack et al., 2006). Some empirical studies (e.g. Youndt et al., 1996; Kathuria and Igbaria, 1997; Voss, 2003; Wright and McMahan, 1992) examined the important roles of operations resources (such as human resources, information technology applications, and customer and supplier relationships development) on operations strategy and performance.

1.2. Research motivation

As mentioned above, Slack and Lewis (2008) developed a theoretical framework of operations strategy which suggests that operations strategy can be formulated through the coordination of market requirements with operations resources. However, a review of the literature shows that

there are few published empirical studies (see e.g. Thun, 2008) attempting to test Slack and Lewis's model.

Although a few studies have investigated the impacts of business environment on operations strategy (e.g. Swamidass and Newell, 1987; Ward et al., 1995; Amoako-Gyampah and Boye, 2001), and the links between specific operations resources (such as human resources and supplier relationships) and competitive priorities (e.g. Youndt et al., 1996; Voss, 2003), very few have tried to examine all those linkages in a systematic and empirical manner. Empirical studies simultaneously examining both resource-based and market-driven operations strategies have not received significant attention from operations management researchers.

Moreover, most previous studies concentrated on operations strategy and involved samples drawn from multiple manufacturing industries. Since service industries play an increasingly important role in the overall economy, for years there have been some calls for an in-depth study of the state of affairs of service operations research, to enhance strategic thinking in services. Many authors (e.g. Adam and Swamidass, 1989; Chase and Apte, 2007; Kellogg and Nie, 1995; Bitran and Lojo, 1993; Roth and Menor, 2003; Johnston, 2005; Smith et al., 2007) suggested that operations management researchers should focus more on service firms in order to elucidate the specific problems posed by the unique characteristics of services. Furthermore, within the service sector, the economically important and socially significant retail sector has been neglected (Gamble, 2006).

In addition, numerous research studies on operations strategy have been conducted on manufacturing firms in the USA and in other developed Western countries. Few, however, have paid much attention to the retail industry, particularly in emerging economies such as China. The increased competition brought by market and economic reforms requires that companies in

emerging economies not only have to develop effective operations strategies but they also need to understand how those strategies influence performance (Amoako-Gyampah and Acquah, 2008). Some scholars and researchers (e.g. Prasad et al., 2001; Jiang et al., 2007) called for more studies examining how the governmental regulations, flexibility, quality, and supplier relations influence strategic decisions on operations in some developing countries (such as China). Jiang et al. (2007), for example, highlighted that China brings new research issues and opportunities to the academic world, especially in the field of Production and Operations Management (POM). China-related POM research provides many opportunities for researchers to apply, extend, and challenge existing POM theories and frameworks. However, a review of the literature reveals that relatively little is known about retail operations in China; most previous studies on China's retail market focused on areas such as foreign investment, risks and opportunities (Liu, 2007; Wong and Yu, 2003); country of origin (Chaney and Gamble, 2008); and foreign retailers' international activities and the development of coastal regions (Liu, 2007). In particular, few studies have examined how retail managers in China develop operations strategies to survive in a complex and dynamic marketplace. Although a few studies have examined the operating practices in China's manufacturing industries (e.g. Yeung et al., 2009; Zhao et al., 2006; Flynn et al., 2007; Flynn et al., 2010; Pyke et al., 2000; Pyke et al., 2002), there are no such studies of the service sector.

This research will address the important gaps discussed above. In response to the above suggestions, particularly drawing upon the resource-based view and market-driven view, this research develops an integrative and systematic framework for investigating the links between operations strategy, business environment, operations resources, and performance in China's retail sector.

1.3. Research objectives and questions

To address the important gaps discussed in Section 1.2, this study aims to examine the links between business environment, operations resources, operations strategy, and business performance. This research is confined to retail firms in China. Essentially, two issues are addressed. Firstly, it is investigated whether there is a linkage between operations strategy, business environment and performance. Secondly, the linkage between operations strategy, operations resources and performance is explored. The specific linkages between operations strategy choices (cost, quality, flexibility and delivery performance), business environmental factors (business cost, labour availability, competitive hostility, and environmental hostility), operations resources (human resources, IT applications and business relationships with customers, suppliers, competitors and government) and business performance (self-reported changes in market share, sales growth, profits growth and return on investment) are identified.

The main question of this research is:

- *How are operations strategy, business environment, operations resources, and business performance interlinked in the Chinese retail sector?*

For a detailed study of this main question, it is divided into the following segments:

1. What are the relationships among operations strategy (cost, quality, flexibility and delivery performance), business environmental factors (business costs, labour availability, competitive hostility and environmental dynamism) and business performance?
2. What are the relationships among operations strategy (cost, quality, flexibility and delivery performance), operations resources (human resources, IT applications and

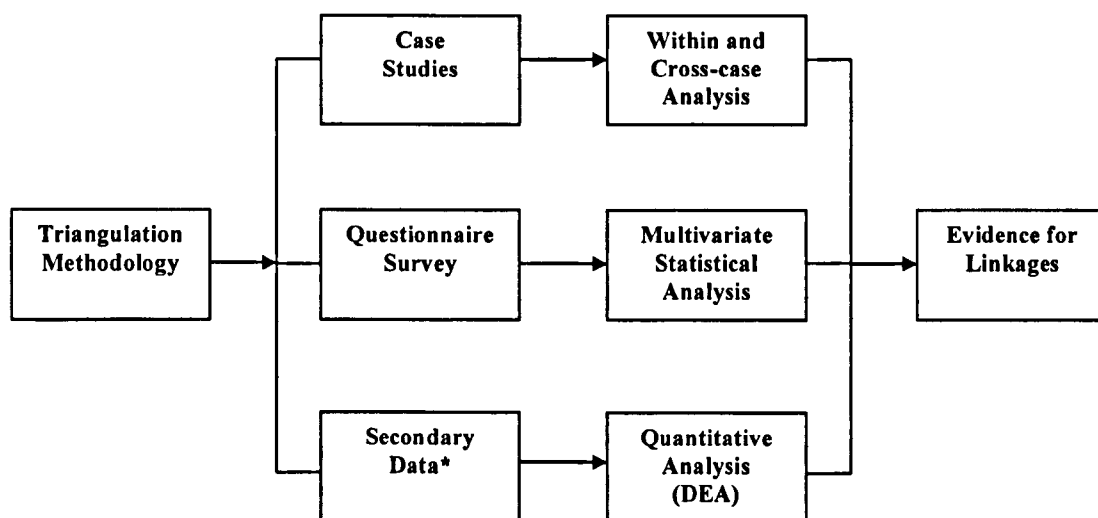
business relationships with customers, suppliers, competitors and government) and business performance?

3. Operating in a highly dynamic and hostile environment, how can a firm develop operations strategy and improve business performance building on their operations resources development?

1.4. Research approach

For the purposes of this research, a triangulation strategy that combines both quantitative (secondary data and questionnaire survey) and qualitative (case study) methods is used. The three sub-frameworks are developed and tested to investigate the links among operations strategy, business environment, operations resources and performance using questionnaire survey. On the other hand, the links are identified among the five retail firms in China using in-depth interviews. The research approach in this research is presented in Figure 1.1.

Figure 1.1: Research approach¹



1.5. Research contributions

This research endeavours to make an original contribution to the existing body of knowledge in the area of operations strategy by exploring the links among operations strategy, business environment, operations resources and business performance in the Chinese retail firms. In particular, this study will contribute to the operations strategy field by investigating the importance of managing the roles of both “market environment” and “operations resources”.

This study investigates the roles that business environment and operations resources play in developing retailer’s operations strategy and improving company performance, and how retail managers develop operations strategy to survive in today’s dynamic and competitive marketplace in China. Moreover, the research will contribute to operations strategy literature by exploring in one empirical study the relationships between business environmental characteristics (i.e. business cost, labour availability, competitive hostility and environmental

¹A paper based on the results of secondary data analysis using Data Envelopment Analysis (DEA) has been published in the *Journal of Retailing and Consumer Services*. The paper is reported in Appendix 1.

dynamism), operations strategy and performance, and the impacts of operations resources (i.e. human resources, IT applications and business relationships with principal stakeholders) on operations strategy and performance outcomes. Accordingly, this study will present an empirical analysis of these relationships.

The contributions of this research will be useful for both academia and practitioners. From the academic perspective, this study aspires to fill a gap in the literature by examining the nature of operations strategy using “resource-based view” and “market-driven view”. This study may be the first research to test Slack and Lewis’s (2008) theoretical framework, which suggests that operations strategy integrates market requirements and operations resources, among retail firms in an emerging economy, China. To establish the validation of the framework, this study uses Structural Equation Modelling (SEM) to analyse questionnaire survey data, and within- and cross-case analysis to analyse interview data. This study will therefore add knowledge and research to the operations strategy literature, either conceptually or methodologically. On the other hand, from the industry practitioner’s point view, this research will be valuable for retail managers to develop operations strategy in the firms they work for. The managerial implications obtained from this study could provide useful and practical guidelines for retail managers to understand the nature of operations strategy on the basis of business environment and operations resources.

In summary, this research is likely to be of interest not only to individual retail companies in China, in order to help their managers develop appropriate operations strategies, but also to researchers wishing to extend the knowledge base of operations strategy. The results obtained in the research could also provide valuable insights for companies in other developing countries that have economic conditions similar to those of China.

1.6. Thesis structure

This thesis is structured into eight chapters. The thesis structure is presented in Figure 1.2. The first is this introductory chapter, wherein the background and motivation of this research has been defined, research objectives and questions have been developed, and the contributions of this study to theory and practice have been explained.

The following chapter provides a review of the relevant literature, establishing the theoretical foundations of this study. It begins by developing an overall framework linking operations strategy, business environmental factors, operations resources, and business performance. The chapter then continues to review and discuss the main components of the framework in more detail, including operations strategy choices (cost, quality, flexibility and delivery performance), business environmental factors (environmental hostility and dynamism), operations resources (human resources, IT applications and business relationships with customers, suppliers, competitors and government), and business performance.

Chapter 3 describes the development of the research hypotheses development. To test the overall framework presented in Chapter 2, three sub-frameworks are developed in this chapter. The first sub-framework links operations strategy, business environment and business performance; the second focuses on the relationships among operations strategy, operations resources (human resources and IT applications) and business performance; the last investigates the linkages among operations strategy, operations resources (business relationships) and performance. In accordance with these three sub-frameworks, a number of hypotheses are proposed.

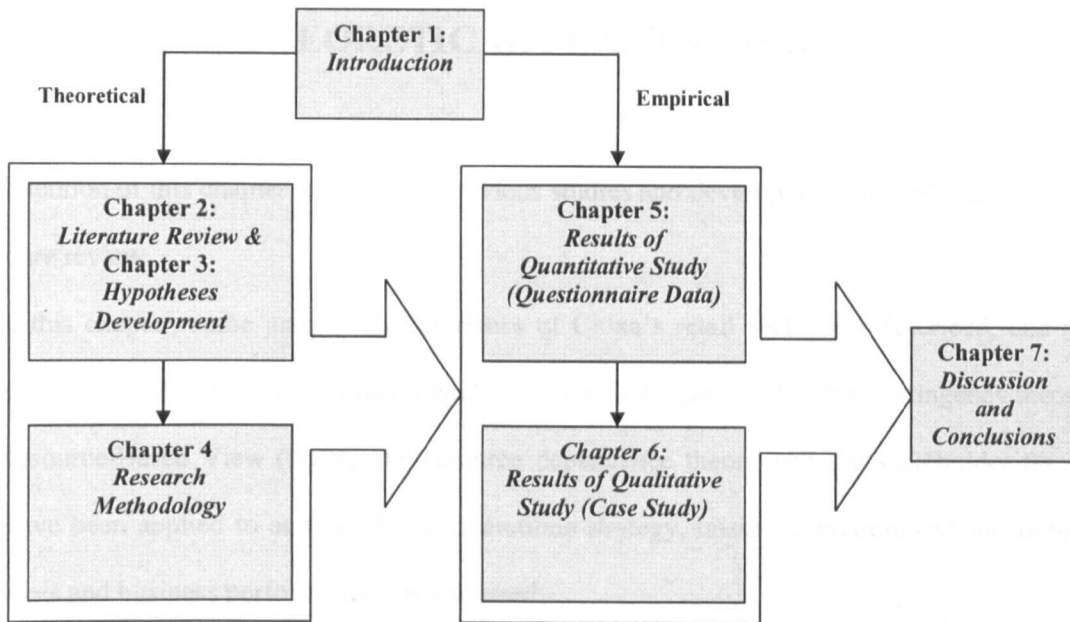
Chapter 4 describes various aspects of the research methodology applied in this research. For the purpose of this research, both quantitative and qualitative methodologies are used to analyse the collected primary data. Firstly, this chapter describes the questionnaire survey design, and measures for (1) operations strategy (cost, quality, flexibility and delivery performance); (2) business environmental dynamism and hostility; (3) operations resources (human resources, IT applications and business relationships with customers, suppliers, competitors and government); and (4) self-reported performance. Secondly, the chapter presents the qualitative study design, including the definition of the research question, selection of cases, data collection and analysis.

Chapter 5 outlines the results of quantitative study (questionnaire data analysis). The three path analytic sub-frameworks are tested using questionnaire survey data. The results of Principal Component Analysis (PCA), Confirmatory Factor Analysis (CFA) and Structure Equation Modelling (SEM) for the three sub-frameworks are reported. The relevant hypotheses are tested.

Chapter 6 provides the main findings of the qualitative study (within-case and cross-cases analysis of the interview data). Interviews were conducted in five retail firms in China. This chapter first outlines the results of every retail firm's operations in China, then reports the current business environment of China's retail market within which retailers operate, operations resources (human resources, IT applications and business relationships) that firms developed, and operations strategies adopted by the five retailers.

Chapter 7 discusses the main findings obtained from the three sub-frameworks using the quantitative studies, and proposes a number of observations based on qualitative case analyses. It also discusses the contributions and the implications of the research findings from the perspectives of theory, practice, and methodology. The limitations of the study and directions for future research are also considered.

Figure 1.2: Thesis structure



1.7. Summary

This chapter has presented the background and motivation for this research. It has also provided the objectives, methodology approach, and main contributions of this research, and the thesis structure. The next chapter reviews previous studies and provides the conceptual foundations of the theoretical framework.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The intention of this chapter is to review previous studies and develop a framework based on the literature review.

In this chapter, some unique characteristics of China's retail sector are described, and the relevant theories that are used in this research are presented. Specifically, the contingency theory, the Resource-Based View (RBV), the resource dependence theory and the stakeholder theory that have been applied to analyze firms' operations strategy, business environment, operations resources and business performance are discussed.

2.1. China's retail market

China's retail market provides a particularly interesting setting for this research. The following sections report in more detail some unique characteristics of China's retail sector.

2.1.1. The history of China's retail sector

To obtain a good understanding of China's retail market, it is necessary to briefly view its history. The economic reform, transformation of centrally planned economies into market economies, has been underway for more than two decades in China (Yuen and Shan, 2003; Hingley et al., 2009). Before 1979, China was a shortage economy constructed by a *fenpei* system characterized by central planning and political and administrative allocation. Consumer goods were produced as commodities by state-owned units, distributed through a central distribution system, and the

price was controlled by the central government (Luk, 1998). Because demand exceeded supply to a large degree, retailers and manufacturers had virtually no competition. Obviously, market orientation did not have a role to play in the planned economy (Sternquist et al., 2010). China, like other communist countries, previously operated a totally planned economy, in which the production and distribution of commodities were controlled by the central planning bureaus, the Ministries of Commerce and of Materials (Lavigne, 1995). In the 1970s, most marketing and distribution channels remained state owned, and wholesaling or retailing existed merely for distribution (CCFA, 2009). Because the aim of a distribution system in a planned economy is to provide goods where people need them, China engaged in limited investments in product development and innovation; product ranges were limited, and life cycles were much longer than they would be in a market-based economy (Dawson et al., 2003). Little incentive existed to design products to meet consumers' needs, and the concept of customer service hardly existed (CCFA, 2009; Mofcom, 2009).

During the 1980s, the Chinese government began introducing market competition, in order to convert from a centrally planned economy to a market economy (Wing, 1996). A dual distribution system was formed, under which manufacturers could produce at their discretion according to the market needs, and sell products to state-owned stores at market prices after fulfilling the production contract placed by the government (Luk, 1998; CCFA, 2009). As a result, the undersupply situation was gradually eliminated. Furthermore, competition over product quality and efficient distribution prompted changes in the retail sector (Sternquist, 2007).

The past two decades (from the early 1990s) have seen enormous growth in China's retail sector, facilitated by the transition to a market economy, deregulation and direct foreign investment (Wong and Dean, 2009). From the traditional supply-driven system to an increasingly

demand-driven one, retailing in China is moving toward an open-market (Wing, 1996), and Chinese retailers are becoming more market-driven. The opening of China's retail market to foreign investors by the central government in 1992 was of particular significance, providing the impetus for retail development and access to more than a billion consumers (Wong and Yu, 2002). The retail sector in China was dramatically transformed, especially after foreign investment in retailing in the form of Joint Ventures (JVs) was approved by the Chinese government (Sternquist et al., 2010). The arrival of foreign retailers provided a major impetus of the modernization of the retail system in China (Gale and Reardon, 2004).

Currently, retailing in China is moving towards modernization and economic transitions, and involves different types of ownership and format selling a great variety of consumer products under intense competition (CCFA, 2009). Despite dramatic changes, China's retailers are still affected by the legacy of the command economy (Dawson et al., 2003; CCFA, 2009).

2.1.2. The growth of China's retail market

A staggering transformation of retail systems is occurring in Asia. One of the most significant engines of this transformation is China. Headline statistics tell a dramatic story: China's 2008 Gross Domestic Product (GDP) growth rate was roughly 9% – the greatest rate of growth of any of the top ten retail markets in the world – and forecast growth for 2009 was about 7% (Euromonitor, 2009; Uncles, 2010). To appreciate the exceptional scale of this growth it should be noted that all other top 10 retail markets – USA, Japan, Germany, UK, France, Italy, Russia, Spain, and Canada – were forecast to experience GDP declines in 2009 (Uncles, 2010).

Currently, China's service industry officially includes business on retail sales, food and drink, tourism, finance, insurance, and real estate management (CCFA, 2009; Mofcom, 2009). Since

the end of the 1970s, China's service industry has seen continuous expansion with the rapidly growing economy. It has become a major focus and an important driving force for China's economy and a major solution to the serious unemployment issue. Firstly, the value of the service industry has increased in China over the past 27 years, from US\$11.5 billion in 1978 to US\$1.37 trillion in 2007 (the latter value was up 11.4 percent on 2006) (Mofcom, 2007). Its average growth rate stood at 10%, higher than the average GDP growth rate during the same period. The service industry's added value accounted for 42.1 percent of GDP in 2004, up from 21.4 percent in 1979. The Chinese government has placed great importance on the leading role of the service industry in economic growth. According to China's 11th Five-Year Plan (2006-2010), by 2020 the service industry will account for more than 50 percent of GDP instead of the current one-third (CCFA, 2009). Secondly, China's service industry, which is more labour-intensive than its manufacturing industry, has become a main channel to attract social employment. According to the National Bureau of Statistics of China (NBS) (2007), the expansion of the service industry over the past two decades had played an important role in increasing employment. It created employment for 210 million people in 2002, compared to 48.9 million in 1978. The net increase of employment placements in the service industry is twice that of the manufacturing industry (NBS, 2007).

As one of the main service industries in China, the retail industry has been experiencing unprecedented development. The total retail sales of consumer goods have been growing in recent years. According to the statistics of Mofcom (2007), the total retail sales of consumer goods in China reached US\$1.27 trillion in 2007, with a 16.8 percent increase against the previous year. As per the statistics from the China Chain Store and Franchise Association (CCFA), there are currently a large number of retail firms and more than 15 million retail

networks all over China. The sales turnover of the top 100 retailers (both local and foreign) in 2007 increased 21 percent to US\$143.3 billion, accounting for 11.23 percent of total sales of consumer goods (CCFA, 2008).

Many Chinese retailers have shown significant growth in recent years (Liu, 2007). A number of leading domestic giants have established dominating sales records and a national brand name. For example, with shares of the retail market of 1 and 0.8% respectively, Gome Electrical Appliances and Suning Appliances are the two largest players in the rapidly growing electronics and appliance specialist retail sector, giving them local strength and a platform for geographical expansion across the nation. Gome Appliance topped CCFA's (2008) list with sales at US\$14.6 billion. It was followed by the Shanghai Brilliance and Suning Appliances, with US\$12.4 billion and US\$12.23 billion in sales, respectively. Next on the list were CR Vanguard and Dashang (CCFA, 2008). Some of these retail firms will be examined in our study. On the other hand, more and more foreign retailers are looking for opportunities to expand their business in China. By the end of 2004, the government of China had approved 302 foreign investment firms with 3909 chain stores. By the end of 2005, at least 35 of the global top 50 retailers had already developed a foothold in China, including Wal-Mart, Carrefour, Ahold, Makro, Tesco, and Metro (KPMG, 2005). There are 15 foreign retail firms in CCFA's (2008) list, including Wal-Mart and Carrefour, whose combined sales rose 28 percent to US\$26.1 billion in 2007. These 15 key retailers generated sales of US\$27 billion, with 3,956 stores, accounting for 18 percent of the total sales generated by the top 100 retailers.

2.1.3. The economic and retail environment in China

As mentioned above, China's retail sector has been experiencing unprecedented development during the transformation process from a centrally-planned to a market economy. However, the high levels of economic development have generated pressures from a wide variety of factors, including rising business costs, increasing consumer awareness, the unpredictability of customer preferences, and developments in information and communication technologies (Sternquist et al., 2010; Lo et al., 2001; Hingley et al., 2009; Mofcom, 2009; CCFA, 2009). Some of the unique aspects of the Chinese retail market are summarised in Table 2.1.

Table 2.1: The economic and retail environment in China

Aspects	Chinese retail market
Huge market potential	The vast size of the country (22 provinces) and its huge population (over 1.3 billion people).
Economic output	The economy of China was deemed the second largest in the world after that of the US, with a GDP of US\$8.8 trillion in 2009, when measured on the purchasing power parity (PPP) basis (Mofcom, 2009).
Total retail sales	The total retail sales of consumer goods in China reached US\$1.27 trillion in 2007, with a 16.8 percent increase against the previous year (Mofcom, 2007).
Retail networks	According to CCFA (2008), there are a large number of retail firms and more than 15 million retail networks all over China. The sales turnover of the top 100 retailers (both local and foreign) in 2007 increased 21 percent to US\$143.3 billion, accounting for 11.23 percent of total sales of consumer goods (CCFA, 2008).
Labour availability	Shortage of skilled labour, high employee turnover rate (Gamble, 2006; Cayla and Eckhardt, 2007; Wang, 2008)
Chinese and multinational retailers in China	Many Chinese retailers have shown significant growth in recent years. A number of leading domestic giants have established dominating sales records and a national brand name. By the end of 2005, at least 35 of the global top 50 retailers had already developed a foothold in China. There are 15 foreign retail firms in CCFA's (2008) list; these 15 key retailers generated sales of US\$27 billion with 3,956 stores, accounting for 18 percent of the total sales generated by the top 100 retailers.
Shopping habits and lifestyle of Chinese consumers	The shopping habits and lifestyle of Chinese consumers are very different from those in Western countries. Despite some diversity, Chinese consumers display several common characteristics: price sensitivity, desire for convenience and quality, and a long-term orientation that encourages savings (Hingley et al., 2009; CCFA, 2009).
Government's roles on retail operations	China's retail sector is unique in that it is still operating under strong government intervention, with a high degree of government intervention within the retail sector (Wong and Yu, 2003).
More demanding quality standards	Chinese consumers, even those with lower incomes, remain conscious of food quality, particularly its freshness (Hingley et al., 2009; Ramaseshan et al., 2006).
Low customer loyalty	Consumers in China, particularly in the small- and medium-sized cities, are very price sensitive. Patronage is more impulse-driven than pre-planned. It is therefore difficult to cultivate patronage loyalty (Hingley et al., 2009; CCFA, 2009).
Chinese consumers' taste and preference changes	The shopping preference of Chinese consumers has gradually evolved from physical satisfaction to psychological satisfaction (Chan and Lin, 1992; Li, 1997; CCFA, 2009).
Increasingly keen competition	Competition between local and foreign-based retailers likely will grow stronger in the future (Hingley et al., 2009)

2.1.3.1. Retail operations in China

China is a huge market. As the world's second-largest economy, China's purchasing power ranks second only to the USA (Mofcom, 2009); it could overtake the USA as early as 2020 (IGD, 2005a). As noted above, the rapid economic growth has helped create a large, affluent, middle-class (those with a yearly income between RMB 60,000 yuan and 500,000 yuan (NBS, 2009)) Chinese consumer segment. In addition, with its open-door policy and commitment to the WTO, China offers an enormous consumer market with huge potential. The Chinese Academy of Social Sciences (CASS) reported that the middle class constituted approximately one-fifth of the total population in 2003, but that this number should double by the year 2020 (CCFA, 2009). Rapid economic growth has also steadily increased consumer spending. The country's compound annual growth rate in luxury goods and key consumer markets exceeds 10 percent, double the rate for those products in the UK (A.T. Kearney, 2005).

In order to have a "quick" share of the booming retailing business, many participants have rushed into the retailing scene over the last two decades (even though some of them were not well-equipped with the relevant retailing technology or expertise) (Lo et al., 2001; CCFA, 2009). A few of the domestic retailers have broad economies of scale, which prevents them from operating nationally and pushes them to become leading retailers in specific regions, such as Shanghai Lianhua (department store), Gome (home appliances), Five Star (home appliances), CR Vanguard (supermarket), and Dashang (supermarket and hypermarket). In addition, more and more domestic retailers, including a number of previously state-owned enterprises, have begun to adopt managerial structures similar to those of the international retailers, and are becoming increasingly competitive (Hingley et al., 2009; CCFA, 2009). However, compared with some multinational retailers in China, Chinese retailers, especially traditional retailers, have less

marketing skills and experience (Luk, 1998). With the commitment of further opening up the service sector after joining the WTO, China has become a battleground for giant global retailers (CCFA, 2009). Over the last few years, more and more multinational retailers have begun to open chain stores in small- and medium-sized cities in China. Competition among the Chinese and foreign-based retailers will probably grow stronger in the future, because they target populations with similar buying behaviours and income levels (Hingley et al., 2009).

Additionally, as mentioned above, a great number of Chinese retail companies have shown unprecedented development in recent years, and a few leading domestic giants have established dominating sales records and a national brand name. However, a lack of management expertise and technical skills in retail operations has become one of the biggest challenges for most Chinese retail companies, especially for small- and medium-sized retailers (CCFA, 2009; Mofcom, 2009). There was a serious shortage of skilled labour, particularly in the terms of stock control systems and logistics, retail brand management, and purchasing and sourcing (Lo et al., 2001; Cayla and Eckhardt, 2007; Wang, 2008). In addition, retailing is a sector with high labour turnover (Gamble, 2006). In recent years, employee turnover has increased dramatically in China's retail sector (CCFA, 2009). Labour turnover in China's retail sector, in one case, was as high as 30 percent in a year (Mofcom, 2009; CCFA, 2009). The high turnover rate in China's retail market has major implications for retailers, and can be a serious obstacle to retail productivity and quality (KPMG, 2008).

Since the "open-door" policy and economic reforms in 1978, China's retail industry has gradually transformed from one with a very high degree of government intervention into a more market and consumer-oriented system (Wong and Yu, 2002). Although China is working to develop its legal structure and professionalise its businesses, *guanxi* (such as relationships with

the provincial government and district administration) remains fundamental to business success, so retailers in China must have solid networks of business and government contacts (Chee and West, 2004). There is a high degree of government intervention within China's retail sector (Wong and Yu, 2003). Lo et al. (2001), for example, stated there were too many licences and approvals required from different government departments before opening a store. The procedure was both cumbersome and time-consuming. Although the previously state-owned retailers are becoming commercial, the government still holds the majority of their stock. Each strategic implementation must receive government approval; most of the funds that support these retailers come from the government as well (Hingley et al., 2009).

2.1.3.2. Evolution of retail shopping patterns in China

As mentioned previously, since the "open door" policy in 1978, the standard of living of the Chinese population has improved along with China's rapid economic development. Studies have revealed that with rising affluence, the shopping preferences of Chinese consumers have also gradually evolved from physical satisfaction, such as the quality and function of the merchandise, to psychological satisfaction, like the design of products and services of retail outlets (Chan and Lin, 1992; Li, 1997). As average incomes increase in China, the spending patterns of different consumer groups are likely to evolve, both as a result of, and leading to greater choice and changing tastes (Wong and Dean, 2009). That is, a shift in spending towards clothing, consumer durables (appliances and furnishings), personal care products, and household goods. In addition, the limited living space of most of the people in the small- and medium-sized cities (with small refrigerators at home) poses a physical constraint to the amount of goods that they could buy at any one time (CCFA, 2009). This was coupled with the fact that bicycles, rather than cars, were

the major personal transportation tools, which gave no inducement for shoppers to “buy in bulk” like developed countries’ shoppers (CCFA, 2009; Hingley et al., 2009). Moreover, the relatively poor living environment, especially in small- and medium-sized cities, makes shopping around a leisure pursuit for Chinese consumers. Shopping plays a significant role in Chinese consumers’ lives, and consumers’ interaction with the shopping environment has been shown to influence their experiences and patronage decisions (Mai and Zhao, 2004; Zhang et al., 2008).

In addition to the unique nature of the Chinese consumers’ perceptions and psychology, the huge consumer market in China is also geographically fragmented, with consumption patterns differing significantly between consumers living in coastal areas and inland areas, and among consumers from various parts of China (Schmitt, 1997). Wong and Dean (2009) argued that one of the main issues in designing a study in China is to acknowledge, and endeavour to understand, the diversity of consumption behaviour throughout the nation. With the largest consumer market in the world in terms of population, understanding the consumption and shopping patterns of China’s huge population is crucial to the success of existing retailers and potential investors (Wong and Yu, 2002). China is a continental economy with substantial differences in climate, culture, tastes, and consumer preferences across regions (Chaney and Gamble, 2008; Walters and Samiee, 2003). The Chinese retail market is also influenced by various social, political, and economic factors. The Chinese consumer base, because of the vast size of the country and the huge population, remains relatively diverse (CCFA, 2009; Mofcom, 2009; IGD, 2005b). Hingley et al. (2009), for example, found geographical differences in taste. Consumers in the south of China prefer lighter tastes and low sugar content, and they also consume more fruit and vegetables than consumers in the north of China, likely due to the tropical climate. In the north, consumers tend to consume more sugar and protein to withstand the cold temperatures. Such

differences confirm the suggestion that Chinese consumers are quite heterogeneous (Hingley et al., 2009).

Even with this diversity, Chinese consumers display several common characteristics: price sensitivity, desire for convenience and quality, and a long-term orientation that encourages savings (Hingley et al., 2009; CCFA, 2009). According to a consumer survey carried out by CCFA (2008), the main aspects that Chinese consumers usually consider when deciding on which shopping centre to visit are: convenience (such as proximity to public transport); general price level; product and service quality; shopping environment (such as store ambiance and decorations); delivery of goods; and sales and promotional activities. Although China is the world's second-largest economy and has great purchasing power, a significant income gap still exists between rural areas and the cities, as well as between wealthier downtown populations and suburbanites (CCFA, 2009; Hingley et al., 2009). Chinese consumers, especially in small- and medium-size cities, tend to visit several different stores to find the merchandise with the best price (CCFA, 2009; Lo et al., 2001). Chinese consumers usually save most of their income, because the country's social safety net is thin, and most people must pay for healthcare and pensions out of their own pockets (McKinsey Quarterly, 2006). On the other hand, the rise of the national economy has increased the wealth of Chinese consumers, and they now demand more convenience and quality (Hingley et al., 2009; Ramaseshan et al., 2006). Chinese consumers, especially in big cities, remain conscious of food quality, particularly its freshness (Hingley et al., 2009; Ramaseshan et al., 2006). Some Chinese consumers, especially urban residents, are willing to pay higher prices for products of better quality (CCFA, 2008). Chinese consumers also appear willing to try new products. In particular, Chinese consumers in the big cities such as Beijing, Shanghai, Zhejiang, and Guangzhou largely are aware of domestic giants or foreign-based

retailers, recognizing their names and promotional activities (Hingley et al., 2009; Wang, 2008). Such consumers are open to the idea of foreign retailers, and many enjoy shopping in foreign retail stores because they assume that they sell products of higher quality. These image-conscious consumers will pay a premium for better products, if they can afford them. Besides the range and quality of product and service, service delivery and store ambiance have also been highlighted as influential factors affecting Chinese consumers' shopping decisions (Schmitt, 1997; Letovsky et al., 1997; Fan and Xiao, 1998).

As noted above, consumers in China, particularly in small- and medium-sized cities, are very price sensitive (Hingley et al., 2009). There are a large number of retailers with different formats and millions of retail networks all over China, providing various varieties of products and services. People tend to visit different stores and shop around for the best price before making their purchases (Lo et al., 2001). As a result, patronage is more impulse-driven than pre-planned. It is therefore difficult to cultivate patronage loyalty. Thus, retailers in the emerging market economy of China are expected to have great interest in understanding how to gain and sustain customer loyalty (Wong and Dean, 2009).

2.2. Theories for linking operations strategy with operational factors

Recent interest in operations and the notion of operations strategy has been the result of a number of complementary developments. Operations strategy cannot be formed in a vacuum, and it affects and is affected by many organizational groups inside and outside a company (Fine and Hax, 1985; Wheelwright, 1984).

A strategy is a set of plans and policies by which a company aims to gain advantage over its competitors (Skinner, 1969). It is formulated by a company in order to achieve a more

favourable position in the market. Generally a strategy includes plans for products and the marketing of these products to a particular set of customers. Over the past few decades a large number of concepts and techniques have been proposed regarding how organizations should develop a suitable strategy (Platts and Gregory, 1990). Some of these concepts concentrate on matching an organization's resources and skills with the opportunities and threats created by its external environment (Porter, 1980), while others focus on the organization's resources and capabilities as drivers of competitive advantage (Grant, 1991).

The traditional view of the strategy formulation process is based on an analysis of the environment (opportunities and threats) and the internal strengths and weaknesses of an organization (Andrews, 1987; Ansoff, 1988). The strategy formulation process seeks to identify organizational internal strengths to take advantage of external opportunities, and to avoid threats while addressing weaknesses. A business strategy is a set of well-coordinated action programs aimed at securing a long-term, sustainable competitive advantage (Hax and Majluf, 1984). Before strategies for individual businesses are developed, current and future business positions should be analyzed in terms of two dimensions (Hax and Majluf, 1984):

- The non-controllable forces associated with the external environment that determines industry trends and market opportunities.
- The internal competences residing in the company, which will determine the unique potential for competitive leadership in order to establish business superiority against competitors.

A business strategy is designed to deal with these two dimensions, to take advantage of market opportunities and neutralize adverse environmental impacts, whilst simultaneously reinforcing internal strengths and improving upon perceived weaknesses with regard to

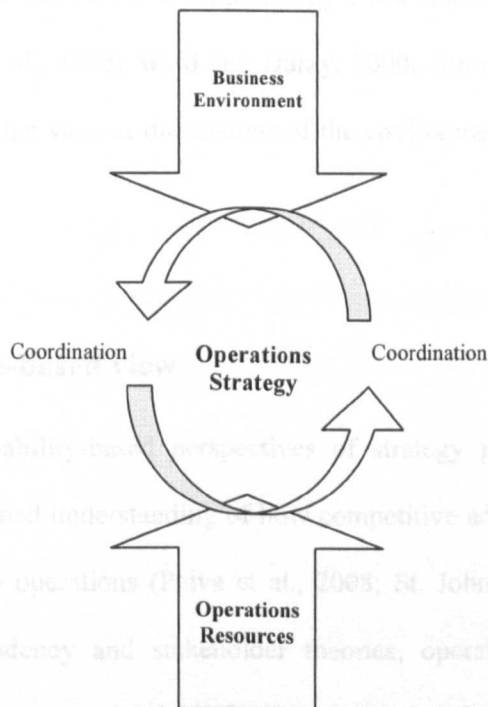
competition (Hax and Majluf, 1984). Black and Boal (1994) further stated that the strategy formulation starts properly not only with an assessment of the organization's external environment, but with an assessment of the organization's resources, capabilities, and core competencies.

Due to the interrelationships within a company, with its stakeholders and competitors, the development of "comprehensive" operations strategies is vital (Fine and Hax, 1985). Fine and Hax (1985) stated that in developing and implementing the operations strategy, operations must work with finance, marketing, engineering and R&D, personnel, and purchasing. Cooperation and consistency of overall objectives are the keys to success in these interactions. They further argued that design of the operations strategy must be based on careful monitoring of the firm's markets by operations along with the other functional groups. For example, operations, in conjunction with marketing, monitors the product markets in which it competes, so that it is aware of competitors' improvements and new product introductions (Fine and Hax, 1985). Therefore, firms seeking to achieve success in fierce market competition must formulate appropriate operations strategies that are suited to the external environment in which they operate, and employ resources in ways that support these strategies (Skinner, 1969; Hay and Wheelwright, 1984; Lawson, 2003).

As noted previously, Slack and Lewis (2008) developed a theoretical framework that suggests operations strategy align market requirements with operations resources. The market requirements and the operations resources perspectives on operations strategy represent two sides of a strategic equation that all operations managers have to reconcile. On one hand, the operations must be able to meet the requirements of the market. The market requires only what it can assess and the customer only assesses what is seen. Hallgren and Olhager (2006) categorised

these requirements into quality, delivery speed and reliability, price and product range. On the other hand, it also needs to develop operations capabilities that make it able to do the thing that customers find valuable but competitors find difficult to imitate (Slack and Lewis, 2008). Further, Lawson (2003) argued that it is necessary to review both the market-driven and the resource-based views in order to gain a good understanding of how an operations strategy is developed. An “integrated” operations strategy with market-based elements and resource-based aspects seems to be the right answer to a challenging environment with high competitive intensity (Thun, 2008). Figure 2.1 depicts the integrated operations strategy. The two views of operations strategy are discussed in more detail below.

Figure 2.1: The market-driven and the resource-based views of operations strategy



Source: Adapted from Slack and Lewis (2008) and Thun (2008)

2.2.1. The market-driven view

With increasing competition and advances in technology, firms are facing environments that are extremely complex and dynamic. In this research market-based operations strategy is investigated in terms of the impact of business environment on the choice of operations strategy. Environmental uncertainty, and its dimensions of dynamism and heterogeneity, has received extensive coverage in the operations strategy literature. Alignment between environment and operations strategy is critical for firms to achieve success (Skinner, 1969; Hayes and Wheelwright, 1984). Operations strategy literature suggests that it is similarly critical that operations strategies of firms are suited to the external environments in which they operate (e.g. Skinner, 1969; Leong et al., 1990; Hill, 2000). The necessity of aligning the operations strategy with external environmental factors is supported by a few empirical studies (e.g. Swamidass and Newell, 1987; Ward et al., 1995; Ward and Duray, 2000; Amoako-Gyampah and Boye, 2001). These studies showed that various dimensions of the environment cause manufacturing firms to react differently.

2.2.2. The resource-based view

The resource and capability-based perspectives of strategy provides research in operations strategy a more fine-tuned understanding of how competitive advantage is provided through the resources generated by operations (Paiva et al., 2008; St. John et al., 2001). As per resource-based, resource dependency and stakeholder theories, operations strategy should build on available corporate human, technological, financial and informational resources. Operations resources such as human resources, technology information and business relationships can be a

formidable weapon in achieving competitive superiority. Ultimately the contribution of the RBV to operations management is the discussion of the conditions under which bundles of resources provide competitive advantage for a company. Over the last few years, some studies concerning the impacts of technology applications (Voss, 2003), human resources (Pfeffer, 1994; Wright et al., 1994), and business relationship with customer and supplier (Zineldin, 2007) on strategic decision-making have been conducted.

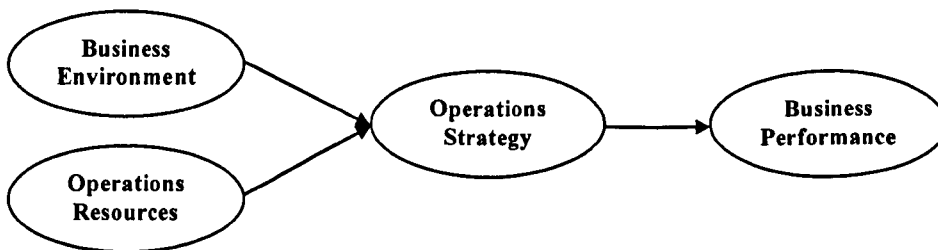
2.3. Theoretical underpinnings and the framework

However, a review of the literature reveals that there is no study in which the connections between operations strategy, business environment, and operations resources are considered simultaneously using empirical evidence. Therefore, drawing upon the contingency theory, the resource/capability-based view, the resource dependence theory, and the stakeholder theory, this research develops an overall framework through the reconciliation of operations strategy, business environment, operations resources and business performance. The overall framework is presented in Figure 2.2. The proposed framework incorporates some key features. It suggests that the relationships between operations strategy (cost, quality, flexibility and delivery performance), business environmental factors (business cost, labour availability, competitive hostility and environmental dynamism), operations resources (human resources, IT applications and business relationships with principal stakeholders) and business performance are linked.

Operations strategy here is characterized by the four familiar competitive priorities of cost, quality, flexibility, and delivery performance (Hayes and Wheelwright, 1984; Wheelwright, 1984; Fine and Hax, 1985; Ward et al., 1998). Hereafter, these four competitive priorities are referred to as “operations strategy choices”. Business environment is characterized by four main factors

that are outside the short-run control of company management, namely business cost, labour availability, competitive hostility, and environmental dynamism (Lawrence and Lorsch, 1967; Miller and Friesen, 1983; Ward et al., 1995). Operations resources are characterized by three main dimensions that are regarded as the core competencies for companies to pursue competitive advantages, i.e. human resources (Pfeffer, 1994; Wright and McMahan, 1992; Wright et al., 1994), Information Technology (IT) applications (Powell and Dent-Micallef, 1997; Clemons and Row, 1991), and business relationships with principal stakeholders (Ford et al., 2003; Slack et al., 2010). In addition, business performance is measured using self-reported changes in market share, sales growth, profits growth and return on investment (Swamidass and Newell, 1987; Dess and Beard, 1984; Ward et al., 1995; Ward and Duray, 2000).

Figure 2.2: A framework linking business environment, operations resources, operations strategy, and business performance



In order to test the framework presented in Figure 2.2, three sub-frameworks were developed: business environment → operations strategy → business performance (the contingency theory); human resources and IT applications → operations strategy → business performance (the resource-based view); and business relationships → operations strategy → business performance (the resource dependence theory and the stakeholder theory). These sub-frameworks are based

on the organisational theories mentioned earlier. They will be discussed in the next three sub-sections.

2.3.1. The contingency theory: operations strategy and business environment

The contingency theory suggests that business environment influences organizational strategy (Porter, 1980; Kim and Lim, 1988). Today's business environment is highly dynamic, and firms are forced to constantly adapt to fast-changing circumstances (Lowson, 2003). The dynamic and global competitive forces have created a need for revolution in operations strategies to help firms employ appropriate resources that enable innovative designs, to produce high-quality goods, and to respond quickly to changes in the marketplace (Paiva et al., 2008). Therefore, firms seeking to achieve success in an environment of fierce market competition must formulate appropriate operations strategies that are suited to the external environment in which they operate, and employ firm resources in ways that support these strategies (Skinner, 1969; Hay and Wheelwright, 1984).

A few previous studies have found evidence of a relationship between environmental factors and manufacturing strategy. For example, building on the work of Swamidass and Newell (1987), Ward et al. (1995) identified the strong relationships between environmental hostility and dynamism and operations strategy encompassed by competitive priorities. Ward and Duray (2000) subsequently developed a conceptual model establishing a link between business environment, competitive and operations strategies, and firm performance. In recent years, some scholars conducted similar studies in developing countries such as Ghana (Amoako-Gyampah and Boye, 2001; Amoako-Gyampah, 2003) and the United Arab Emirates (Badri, et al., 2000) to

identify the environmental factors that influence the operations strategy choices of manufacturing firms.

The contingency theory will be used in this research to test the first sub-framework (see Figure 2.3) linking operations strategy, business environmental factors (business cost, labour availability, competitive hostility and environmental dynamism) and business performance. This framework will be developed and discussed in more detail in Section 3.1.

Figure 2.3: The first sub-framework linking business environment, operations strategy and business performance



2.3.2. The resource-based view (RBV): operations strategy and operations resources (human resource and IT applications)

Since the end of the 1980s, the resource-based view (RBV) has been extended to the field of strategic analysis and strategic choice by identifying the importance of resources in strategy development (Lowson, 2002). Porter (1991) viewed the resource-based theory of strategy as one of the most promising ways to address the longitudinal nature of competitive strategy and performance. In recent years, the RBV has been used in operations strategy to survey what constitutes and makes the sustainable capabilities different in the context of manufacturing. The resource- and capability-based perspectives of strategy have also been applied to issues of production and operations management (Bates and Flynn, 1995; Schroeder et al., 2002). The resource-based view is attractive to operations management researchers because it emphasizes

capabilities residing within the company, which is consistent with the general orientation of operations management (Amundson, 1998). The literature on operations strategy has argued that the RBV is a theory fitted to the current competitive trends and provides a frame for operations strategy research (St. John et al., 2001). It provides research in operations strategy a more fine-grained understanding of how competitive advantage is provided through the resources generated by operations (St. John et al., 2001; Paiva et al., 2008).

A well-articulated resource-based operations strategy should capitalize on a company's operations resources to attain and sustain a competitive advantage. This can be achieved by increasing the uniqueness or reducing the substitutability of different resources required for the strategy (Zahra and Das, 1993). Zahra and Das (1993) also stated that the resource-based perspective offers an innovative approach to thinking about and developing an operations strategy. According to this approach, a company's operations strategy must capitalize on, and add to, its resources and capabilities. Furthermore, from strategic management, the resource-based theory of competitive advantage focuses on the role of internal operations resources like employees' roles and IT applications play in developing and maintaining a firm's competitive capabilities (Barney, 1991; Wright and McMahan, 1992). Some empirical studies examined the important roles of operations resources (such as human resources, IT applications, and customer and employee relationships development) on operations strategy choices and business performance (e.g. Youndt et al., 1996; Kathuria and Igarria, 1997; Voss, 2003; Wright and McMahan, 1992).

Drawing on the resource-based view, a second sub-framework presented in Figure 2.4 is developed. This sub-framework aims to investigate the effects of operations resources (human

resources and IT applications) on operations strategy and performance. The sub-framework will be discussed in more detail in Section 3.2.

Figure 2.4: The second sub-framework linking operations resources (human resource and IT applications), operations strategy and business performance



2.3.3. The resource dependence and stakeholder theories: operations strategy and operations resources (business relationships with principal stakeholders)

In addition, according to the Resource Dependence (RD) theory, organisations attempt to obtain stability and legitimacy through interdependencies and by exercising power and control (Pfeffer and Salancik, 1978). RD theory is based largely on the concept of interdependence, which exists when one actor does not entirely control all of the conditions necessary for achievement of an action or a desired outcome (Handfield, 1993). Paulraj and Chen (2007) highlighted the underlying assumptions of the RD perspective:

- Very few organizations are internally self-sufficient with respect to strategic and critical resources, thereby leading to dependence on other companies (Heidi, 1994). Under the conditions of interdependencies, firms can synergistically combine their resource sets with the complementary resources of their partners, thereby creating a resource bundle that is idiosyncratic and difficult to imitate (Harrison et al., 1991).

- Companies seek to reduce uncertainty and manage dependence by purposefully structuring their exchange relationships, establishing formal and semiformal links with other companies (Ulrich and Barney, 1984).

Conceptually, the establishment of such inter-firm relationships is viewed as dealing with problems of uncertainty and dependence by increasing the extent of coordination with exchange partners (Cyert and March, 1963). From an operational perspective, managers need to assess and measure relationships to understand their deficiencies in order to work on them with their partners or to make decisions about which partners to use for particular contracts or purposes (Staughton and Johnston, 2005). Operations managers are concerned about relationships with not only customers but also suppliers that provide them with goods and services. Such business relationships are crucial for efficient and effective operations of a company (Staughton and Johnston, 2005). It is important to consider how the understanding of the significance of relationships with individual customers and suppliers can be translated into management strategy/actions (Zolkiewski and Turnbull, 2002).

Reliance on strategic alliances and business relationships has grown considerably in recent years (Gulati, 1995). During the 25 years since Freeman (1984) first proposed his stakeholder approach to strategic management, the stakeholder theory has gained increasing popularity in strategy development literature, both academic and practitioner (Donaldson and Preston, 1995; Polonsky, 1995; Clement, 2005). Stakeholders are people and groups that have an interest in the company and may be influenced by, or influence, its operations (Freeman, 1984; Slack et al., 2010). Many commentators expressed the view that a business is a coalition of stakeholders including employees, suppliers, shareholders, community, government and customers (Bourgeois, 1980; Freeman, 1984; Donaldson and Preston, 1995). Each stakeholder group has a

different set of expectations relating to companies' performance. These different expectations may cause conflict to arise between the company and its stakeholders. Such conflict can be extremely detrimental for the industrial marketer, as industrial marketers tend to be more integrated with their customers and suppliers, two key stakeholder groups (Polonsky, 1995).

The stakeholder theory requires a company to take into account its relationship with specific stakeholder groups as it sets corporate direction and formulates its strategies (Roberts, 1992). Therefore organizations have to attempt to develop policies that balance their needs and the needs of their stakeholders (Polonsky, 1995). The effective and efficient operations strategy which any company might pursue can be shaped by identifying its stakeholders (Slack et al., 2006). Thus it is important to understand business relationships with key stakeholders (such as customer, supplier, competitor and government) while developing operations strategy to improve business performance (Staughton and Johnston, 2005; Slack et al., 2010). In general, management literature is fairly clear: operations strategy is one capability that managers can develop to improve company performance and to cope with a dynamic marketplace in which the behaviour of customers, suppliers and competitor are different to predict (Bourgeois, 1985). Moreover, business relationships have generally been considered to be one of the most important sources of competitive advantage for companies doing business in China (Tsang, 1998; Xin and Pearce, 1996).

Drawing upon the resource dependence and stakeholder theories, another sub-framework is developed and presented in Figure 2.5. The sub-framework examines the relationships between operations strategy, operations resources (business relationships with customers, suppliers, competitors and government) and performance. This third sub-framework will be discussed in more detail in Section 3.3.

Figure 2.5: The third sub-framework linking operations resources (business relationships with principal stakeholders), operations strategy and business performance



The variables and relationships included in the three sub-frameworks have various levels of support in the literature, which is reviewed in more detail below, including service operations, operations strategy, business environment, operations resources, and business performance.

2.4. Service operations

2.4.1. Service versus manufacturing operations

A great deal of attention has been devoted recently to the rapid changing face of the service sector over the last decade. The service sector has become an important part of the world economy over the past several decades, as manufacturing's share of total employment and output has fallen dramatically (Machuca et al., 2007). Service has become an important feature of manufactured products; repair and maintenance, sales, and training are examples of services that enhance and differentiate manufactured products (Chase and Apte, 2007). Today, there are very few firms that do not view providing service as part of their strategy (Johnston and Clark, 2008).

A question that arises in the study of services is: how different is the management of such operations when contrasted with manufacturing firms? As it turns out, the basic management principles are the same for both services and manufacturing systems. However, there are

characteristics of services that require a different emphasis on some of the principles, and some disciplines are also more or less relevant (Bitran and Lojo, 1993). Services, compared to manufacturing, involve the conversion of resources into an “intangible” output (Adam and Swamidass, 1989; Johnston and Clark, 2008). In general, service operations are distinguished by the following major characteristics: the intangible nature of output, immediate consumption of output, conversion processes that require a great deal of labour and little equipment, direct customer contact, and frequent customer participation in the conversion process (Adam and Swamidass, 1989; Bitran and Lojo, 1993; Spring and Araujo, 2009). The distinguishing characteristics of service operations were manifested in many typological or classificatory studies of service operations (e.g. Mills and Moberg, 1982; Snyder et al., 1982; Roth and van der Velde, 1991). More specifically, Bitran and Lojo (1993) summarised the distinguishing characteristics of service products, as compared to manufactured goods. They are:

- **Intangibility:** in contrast to manufacturers, service firms usually sell bundles of goods and services, composed of both physical items and intangibles that are both explicit (having sensual benefits) and implicit (having psychological benefits).
- **Perishability:** the intangible nature of services means that they are perishable and cannot be inventoried in the traditional sense.
- **Heterogeneity:** this characteristic creates a major challenge that workers in service firms need to behave consistently and be well prepared and flexible to deal with customers’ diversity.
- **Simultaneity:** many services are produced and consumed at the same time. Like heterogeneity, this characteristic presents a challenge for the manager of quality since the service cannot be inspected before being consumed by the customer.

- **Transferability:** diverse services tend to have more in common with each other than diverse goods do because there are so many similar elements among distinct types of services.
- **Cultural specificity:** culture influences the expectations and behaviour of customers and service providers.

In addition, Lovelock and Gummesson (2004) traced a sustained utilization in the service management literature of what they term the “IHIP characteristics”, which are:

- **Intangibility;**
- **Heterogeneity;**
- **Inseparability (simultaneous production and consumption); and**
- **Perishability (hence non-storable or transportable).**

The intangible, perishable, heterogeneous, and simultaneous specific nature of service products deserves special attention from managers in service firms and requires different methods of analysis than those traditionally used in manufacturing settings (Bitran and Lojo, 1993). Based on these characteristics, the following are typical service sector industries: transportation, communications, utilities, wholesale and retail trade, finance, insurance, real estate, business services, and personal services (Spring and Araujo, 2009; Roth and van der Velde, 1991 Adam and Swamidass, 1989).

2.4.2. Service operations management

A number of service industries are now characterized by low growth, intense competition, rapid technological changes and spiralling customer expectations (Bharadwaji and Menon, 1993; Spring and Araujo, 2009). Heskett et al. (1990) and Bowen et al. (1990) highlighted the

importance of operations as a competitive weapon in service organizations. A service strategy must address how operations will support and mesh with the competitive marketing thrusts of a business. In examining the service management literature, as a distinct area within operations, Roth and van der Velde (1991) found that much of the disparity between manufacturing and service operations strategy pertained to the degree/role of customer contact in the service production function. Roth and van der Velde further suggested many service analogues for manufacturing success factors, including quality, price, convenience, customization, and/or customer relationships. The greater their fit with customers needs and expectations, the greater their competitive advantage. In the service operations literature the degree to which the customer is part of the service process is postulated to have the most profound impact on service operations issues. The customer being part of the service process has been called customer contact, customer interaction and customer participation (Kellogg and Nie, 1995). Customers can influence the service process in the following ways: the customer can influence the design of the service; the delivery; and both service content and delivery (Murdick et al., 1990; Kellogg and Nie, 1995; Fitzsimmons and Fitzsimmons, 2005).

Recent attempts to delineate the strategic dimensions of service operations focus upon characteristics that distinguish service organizations from their manufacturing counterparts; few centre on their similarities. One research stream analyzes service operations strategy in terms of core operations strategy content areas including quality, process technology, capacity, human resources, information systems, customer contacts and relationships, facilities design and location (Collier, 1987; Heskett, 1987; Lovelock, 1988). Another research stream specifically considers the interplay between marketing and operations in designing and delivering services (Heskett et al., 1990; Bowen et al., 1990). An analysis of service operations strategy literature

reveals these variables: capacity, automation, quality, queuing, staffing, customer awareness, and multi-site operations (Adam and Swamidass, 1989). Table 2.2 provides the context of each content variable in service operations. The traditional top-ranked critical success factors in manufacturing (quality, delivery, flexibility, and cost) have counterparts in service organizations. For example, Roth and van der Velde (1991) found service quality, convenience, high-value services, and price to be the foremost critical success factors for banks. In addition, bankers also emphasized capabilities to build relationships with customers. Heskett (1986) suggested a position be taken on where management effort is to be focused; either on investments, quality and cost control, or on specifying the results to be expected against competition (in terms of quality, cost, productivity, and morale/loyalty of service staff). Moreover, Voss (1986) stated that operations strategy must be changed and adapted to maximize the market criteria for success, specifically the strategic dimensions such as efficiency, price, effectiveness, quality, and flexibility chosen, as demanded by the market. Voss's (1986) statement on setting operations strategy is built on the simple idea of a customer (or market) orientation for operations: match operations to markets or select markets to match existing operations capability (Adam and Swamidass, 1989). In service strategy formulation, because of the closeness of the service business to customers, service operations must be extremely sensitive to customers and markets (Adam and Swamidass, 1989; Spring and Araujo, 2009).

Table 2.2: Service operations content variables in the literature

Content Variable	Service Operations Usage
Capacity	Because no inventories are available to buffer demand, capacity defines the capacity to meet demand. Capacity has temporal (time of week, day, etc.) dimensions. Incorrectly established capacity can strangle a service business. On one hand, too high a capacity defines a high fixed cost structure or, on the other hand, too low a capacity can end the business because of inadequate service delivery, resulting in customers who never return.

Content Variable	Service Operations Usage
Automation	Establish the level of technology, mechanization, and automation – often computer-based – that is economically and technically feasible.
Quality	Consistency in service delivery.
Queuing	Managing waiting lines. Use of flexible labour staffing, signs making apparent all stages of the process, and fair queues (first come-first serve). Customer participation in the service process.
Staffing	People-oriented staff given “customer contact”, task oriented staff “in back office”, cross-training, part-time employees, and so forth. Service worker skills are the focus.
Customer Awareness	Commitment to the customer as reason for existence. Understanding customer interactions. Proximity to customer.
Multi-sites	Capability to repeat a winning service business. Standardization of processes and services.

Source: Adapted from Adam and Swamidass (1989), Roth and van der Velde (1991) and Spring and Araujo (2009)

2.4.3. Retail operations

The face of retailing is changing. Since the 1980s a number of major structural and operational changes have been witnessed in the industry, including range and speed/efficiency of operation; single trading format of “conforming” superstores with a broad range of products and services; range extension; unrelated product diversification; service and added value; and technological adoption (Sparks, 1993; Smith and Sparks, 1993; Dawson, 2001; Lowson, 2005). Dawson (2001) also outlined some of the growing problems associated with increasing scale that include: retaining customer responsiveness and keeping in touch; keeping a focus on the competition; entering new markets; new diversification strategies; supplier relationships; other retail relationships; marketing execution; and relationships with financial institutions and governmental agencies. These changes have brought some challenges for retail operations. Miller and Merrilees (2000) stated that the retail sector is now facing even greater challenges from rapidly evolving technology, changing consumer tastes and patterns and ever-increasing competition than at any time in its robust past.

Competition in the retail sector is no longer between products, but encompasses all elements of this mix, including: product offer and positioning, store location, customer service, quality, retail design and store image, retail promotion, retail advertising, price points and other channel members (Lowson, 2005). It is postulated that many of the challenges facing contemporary retailers, of any size, will revolve around: “the effective management of operations” (Harris and Walters, 1992). Retail operations and practices will vary markedly among countries and thus generalisations are often difficult (Fernie, 1995). However, a broad classification of retail operations can be suggested as being: forecasting, supply chain speed, inventory planning and providing accurate and available data (Fisher et al., 2000). The effective management of the operational issues are vital to the success of retail companies. Slack et al. (2006) also argued that operations managers, and by default operations per se, hold the key to either satisfying or disappointing customers on whom the whole organisation depends. Understanding customer needs and meeting and exceeding expectations have become part of the lexicon of marketers and retailers (Pal and Byrom, 2003). Retail operations/store managers hold the key to either satisfying or disappointing customers, on whom the whole company depends. A number of studies (e.g. Hart et al., 1996; Megicks, 2001; Pal and Byrom, 2003; Oldfield et al., 2000) have emphasised the role of operations in a retail setting. Megicks (2001), for example, identified six retail operations clusters in his analysis:

- Merchandise and range;
- Service and quality lines;
- Active marketing;
- Low prices and incentives;
- Local involvement; and

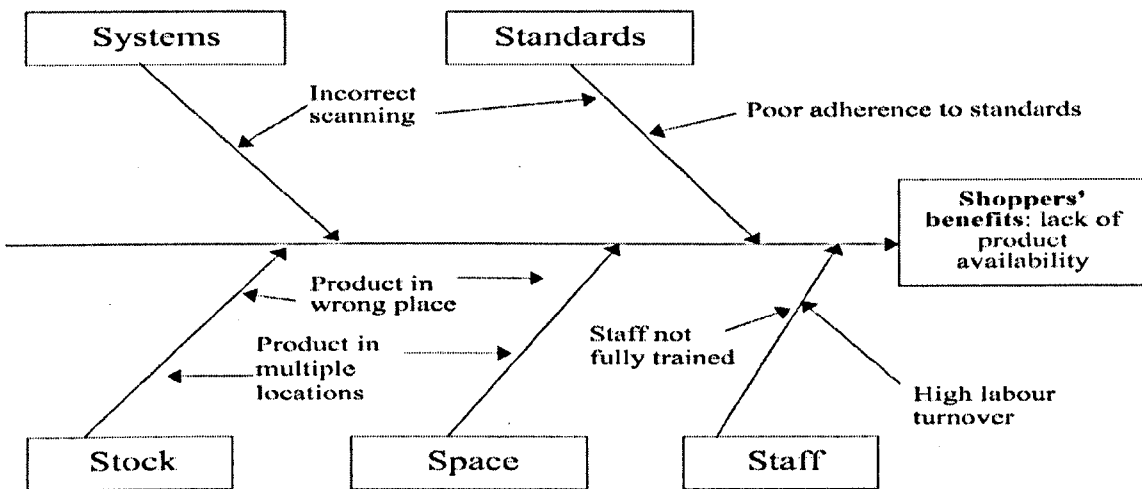
- Unique products.

Hart et al.'s (1996) text contains 18 cases focused on operational aspects of retailing grouped under the headings of “marketing and merchandising management”, “buyer-supplier relationships and logistics”, “operations and customer service”, and “human resource management”. Moreover, Harris and Walter (1992) developed a profit model specifically for use by retailers. They identified the functional strategies that make up this model: merchandise; customer service; trading format and store environment; and customer communications. More specifically, building on previous studies on retail operations, Pal and Byrom (2003) further developed the retail operations improvement tool (ROIT), containing the following five key elements:

- Stock: there are many more issues under this heading that are of importance. For instance, having the “right” quantities at the “right” time (such as in season).
- Space: once the stock is within the store operation, the manager is responsible for laying out the stock in such a way as to entice customers, achieve a suitable return and make best use of the available space.
- Staff: irrespective of the number of staff employed or the wage-to-sales ratio, all operations have some staff.
- System: for multiple retailers in particular, the systemisation of operations has become important in order to reap efficiencies and share best practice across a network of stores.
- Standards: retailing remains a very competitive business and it is becoming increasingly important that customers know what standards of service can be expected, whatever market position(s) a retailer adopts.

The ROIT model provides managers with a useful guiding framework that can be exploited in the retail operations process. Figure 2.6 shows the one worked example providing exemplification of how the ROIT can be adapted for use in a store operations context.

Figure 2.6: The five Ss of retail operations (worked example)



Source: Pal and Byrom (2003)

In addition, some retail academics (e.g. Arnold, 2002; Lawson, 2005; Berry et al., 1997; La Vere and Kleiner, 1997) have attempted to identify the attributes of successful retailers by describing what a number of contrasting retailers achieved and by offering a list of characteristics that high-performance retailers display. Berry et al. (1997), for example, suggested the main operations characteristics of a successful retailer are: defiance of common wisdom, focused strategy and focus on execution; merchandise credibility; supply chain coordination; emphasis on speed and convenience; fun to shop; and leadership with heart. La Vere and Kleiner (1997) also identified several success factors demonstrated by high-performance retailers, including quality and service; empowerment and reward structures; and

leadership. Miller and Merrilees (2000) developed a conceptual framework for analysing success factors in retailing, including new technology, new forms of advertising and new forms of merchandise display. They further suggested an optimal marketing strategy may need to be changed if the marketing environment changes, for instance due to new or revitalized competition, changing consumer tastes, changing technology or the maturing of an industry. Additionally, Lawson (2005) suggested that a successful retailer will have to adopt core strategies that:

- Build an individual identity for each store product, which consumers perceive as a brand in its own right;
- Provide a higher value than any competitor, but at a lower cost;
- Offer unique products and services; and
- Supply a unique customer service through convenience and added-value.

The dynamism and complexity of the retail environment provides a clear indication that any competitive success must be closely linked to operational planning. There are increasing uses of strategic partnerships to support different strategies, such as efficient consumer response (ECR); involving retailers in product development, quality management and operational processes; and an increasing variety and complexity in consumer demand leading to divergent consumption patterns (Lawson, 2001a, 2001b, 2003).

2.5. Operations strategy

The transfer of ideas from manufacturing strategy literature to service operations strategy is a fertile subject for research (Adam and Swamidass, 1989; Spring and Araujo, 2009). The manufacturing strategy literature provides some important insights concerning the evolution of a

service strategy paradigm (Roth and van der Velde, 1991). Therefore, the following sections review the literature of general operations strategies that are applicable for both manufacturing firms and service firms.

As a working definition, operations strategy is viewed as the effective use of manufacturing strengths as a competitive weapon for the achievement of business and corporate goals (Swamidass and Newell, 1987). It reflects the goals and strategies of the business, and enables the operations function to contribute to the long-term competitiveness and performance of the business (Skinner, 1969; Wheelwright and Hayes, 1985). Operations strategy is part of the widely accepted hierarchy of strategy suggested by Hofer (1975) and Hofer and Schendel (1978). The hierarchical view of strategy visualizes at least three levels of strategies (Swamidass and Newell, 1987). Firstly, within large multi-business corporations, corporate strategy involves the selection of product markets or industries and the allocation of resources among them. Secondly, each business unit within a multi-business corporation could have its own specially tailored business strategy designed to use its distinctive competences as competitive weapons. Thirdly, operations strategy forms a part of a cluster of functional area strategies such as marketing strategy and financial strategy, which complement higher level business and corporate strategies (Swamidass and Newell, 1987). Wheelwright (1984) identified four strategic capabilities in manufacturing, i.e. the ability to produce:

- with low cost;
- in high quality;
- with reliable and fast delivery; and
- with flexibility concerning mix and volume of products.

Operations strategy can be viewed as the effective use of production capability and technology for achieving business and corporate goals (Kim and Lee, 1993). These goals include profit, innovation, customizations, product flexibility, product reliability, quality, response, delivery reliability and after-sales services (Ahmed et al., 1996). A common theme in operations strategy research has been describing manufacturers' choice of emphasis among key capabilities. The operation system design must be congruent to operations strategy in order to obtain superior performance (Skinner, 1969; Anderson et al., 1989; Hill, 2000; Roth and Miller, 1992).

Operations strategies are related to the selection of competitive priorities as a functional sub-strategy (Skinner, 1969). Many operations strategy researchers use the term "competitive priorities" to describe these capabilities (e. g. Hayes and Schmenner, 1978; Wheelwright, 1984; Roth and van der Velde, 1991; Leong et al., 1990; Vickery et al., 1997). However, other terms are also used to describe these same concepts: external performance measures (Fine and Hax, 1985), manufacturing tasks (Skinner, 1969; Berry et al., 1991; Richardson et al., 1985), order winners and order qualifiers (Hill, 2000), organizational priorities and generic capabilities (Ferdows and De Meyer, 1990), and performance objectives (Slack, 1991; Slack and Lewis, 2008). The recent lists also include innovation and customer service as important priorities (Giffi et al., 1990).

Despite the differences in terminology, there is broad agreement that operations competitive priorities can be expressed in terms of at least four basic components: cost, quality, delivery performance, and flexibility (Hayes and Wheelwright, 1984; Van Dierdonck and Miller, 1980; Wheelwright, 1984; Fine and Hax, 1985) (see Table 2.3). Normally, manufacturing objectives are expressed in terms of the four major dimensions of performance measurement used in formulating operations strategy (Fine and Hax, 1985; Wheelwright, 1981). Stonebraker and

Leong (1994) also defined competitive priority to include cost, quality, delivery and flexibility. They defined the *cost strategy* as “the production and distribution of a product with a minimum of expenses or wasted resources such that you have a cost advantage in the market”; the *quality strategy* as “the manufacture of products in conformance with specifications, or meeting customer needs”; the *delivery strategy* as “the dependability in meeting requested and promised delivery schedules, or speed in responding to customer orders”; and the *flexibility strategy* as “the ability to respond to rapid changes of the product, service, or process, often identified as mix or volume”.

Table 2.3: Competitive priorities of operations strategy in previous studies

Operations Strategy	Domain	Studies
COST	The ability to minimize the total cost of production and distribution (inclusive of labour, materials, and operating costs) through efficient operations, process technology and/or scale economies.	Vickey et al. (1997); Leong et al. (1990); Skinner (1966); Skinner (1974); Wheelwright (1978); Hayes and Wheelwright (1984); Roth and Miller (1990); Wood et al. (1990); Arnold (2002); Berry et al. (1997); Lowson (2001a); Lowson (2001b)
QUALITY	The ability to produce goods and services whose operating characteristics meet established performance stands and high quality.	Vickey et al. (1997); Leong et al. (1990); Skinner (1966); Roth and Miller (1990); Wood et al. (1990); Bharadwaj and Menon (1999); Parasuraman et al. (1988); Heskett et al. (1994)
DELIVERY PERFORMANCE		
Dependability of Delivery	Meet delivery schedules or promises.	Leong et al. (1990); Skinner (1966); Skinner (1974); Hayes and Wheelwright (1984); Roth and Miller (1990); Wood et al. (1990); Vickey et al. (1997)
Speed of Delivery	React quickly to customer orders.	Leong et al. (1990); Roth and Miller (1990); Wood et al. (1990); Vickey et al. (1997); Wheelwright (1978); Berry et al. (1997); Tom and Lucey (1995); Chebat and Filiatrault (1993)
FLEXIBILITY		
Product/Service Flexibility	Improve the ability to introduce new product/service or modify existing ones.	Slack and Lewis (2008); Slack et al. (2010); Leong et al. (1990); Vickey et al. (1997); Suarez et al. (1996); Aranda (2003)
Mix Flexibility	Improve the ability to change the variety of product/service in a given time.	Slack and Lewis (2008); Slack et al. (2010); Leong et al. (1990); Vickey et al. (1997); Suarez et al. (1996); Aranda (2003)
Volume Flexibility	Improve the ability to respond quickly to shift in demand, to increase or decrease operational capacity.	Slack and Lewis (2008); Slack et al. (2010); Vickey et al. (1997); Suarez et al. (1996); Aranda (2003)
Delivery Flexibility	Improve the ability to change planned or assumed delivery dates.	Slack and Lewis (2008); Slack et al. (2010); Vickey et al. (1997); Suarez et al. (1996); Aranda (2003)

It is difficult for a company to achieve superior performance along all the dimensions simultaneously. Instead, the company attaches varying degrees of importance to each priority (Wheelwright, 1984). Important trade-offs must be made among these objectives; it is impossible to excel in all of them simultaneously (Wheelwright, 1984; Hayes and Wheelwright, 1984). Defining the central operations' competitive thrusts, the tasks to accomplish these goals, and a performance measurement system are central to designing operations strategy (Vickey et al., 1997; Leong et al., 1990)

Summary

The most commonly stated operations strategies taxonomy identifies cost, quality, delivery and flexibility as the important dimensions of operations strategy. For the purposes of this research, all the four dimensions are included and examined.

2.5.1. Cost

Cost is any financial input to the operation that enables it to produce its products and services (Slack and Lewis, 2008). Slack and Lewis (2008) divided the financial inputs into three categories: operating expenditure (expenditure on labour, materials, rent, energy etc.), capital expenditure (the money invested in land, buildings, machinery, and vehicles), and working capital. For two companies that compete directly on price, cost will clearly be their major performance objective. The lower the cost of producing their products and services, the lower can be the price to their customers (Slack and Lewis, 2008; Clark, 1989; Human and Provan, 1997). Lowering prices can increase demand for products or services, but it also reduces profit margins if the product or service cannot be produced at a lower cost. To compete based on cost,

operations managers must address labour, materials, scrap, overheads and other costs, to design a system that lowers the cost per unit of the product or service (Slack, 1994). Ward et al. (1995), in an empirical study on cost as a competitive strategy, suggested that business costs should include labour, transport, telecommunication, utilities, rental, healthcare and material costs.

When profit margins are low, price is an “order-winner” and low-cost manufacturing is the priority (Hill, 2000). In such situations, the task of manufacturing is to provide low costs in order to maintain or improve available margins necessary to support the business investment and create opportunity for the future (Hayes and Wheelwright, 1984). Firms pursuing low-cost priority focus on error reduction and standardized processes, and tend to utilize economies of scale that are facilitated by line or continuous process technologies. Even companies whose manufacturing area is positioned at the external integration stage may opt for the competitive priority of cost, because either the “lowest price” may be a criterion for entering a certain competitive environment, or the products of a business unit may have reached the mature stage of their life cycle. The competitive priority of cost is frequently considered either as a cost reduction or operational excellence strategy. The cost reduction or operational excellence strategy implies a systematic improvement of company operations without the accomplishment of radical innovations. An organization following an operational excellence strategy attempts to be a low price provider. Thus, it must build operational systems that continually reduce cost/price, while offering a quality product that consistently adds greater value for its customer than competitors’ products (Beatty and Schneier, 1997).

Low prices are a common feature among the world’s best retailers (Arnold, 2002). Berry et al. (1997) suggested that low price is a key strategy for high-performance retailers. Maintaining low prices and profitable margins requires developing relationships with vendors and keeping

operating costs low. Companies' state-of-the art inventory management systems allow merchandising flexibility and experimentation, and keep inventory costs low (Berry et al., 1997). A retailer seeks to increase value through product availability while simultaneously reducing lead times, stock and other associated costs by embracing all the principles of time-based competition (Fernie, 2000). Low price, although important, may not be the only purchasing criteria for either end-consumer or retail buyer (Lowson, 2001a; Lowson, 2001b).

2.5.2. Quality

There are many definitions to identify quality. Some refer to the "specification" of a product or service, usually meaning high or appropriated specification (Slack and Lewis, 2008) (see Table 2.3). Reeves and Bednar (1994) identified quality as excellence, value, conformance to specifications, and meeting or exceeding customers' expectations. Avella et al. (1999) also stated that quality is considered as meeting the customer's needs, and it is the primary orientation of all employees. Garvin (1987) argued that quality is multidimensional, and that each of its dimensions can be used strategically to gain competitive advantage by manufacturing products with high quality or performance standards. A company must embrace strong acceptance and maintenance of a total quality plan (Chan, 1993; Kasul and Motwani, 1995; Slack et al., 2006).

Over the last two decades, the literature on quality management has been paying increasing attention to understanding the critical dimensions of quality (Saraph et al., 1989; Flynn et al., 1994). Based on the empirical evidence, Ahire et al. (1996) suggested that strategies for quality management must centre on three critical factors: customer focus, superior supplier quality, and human resource management. Flynn et al. (1994) developed an instrument that includes the following critical dimensions: top management support, customer involvement, supplier

involvement, workforce management, quality improvement rewards, product design, process management and feedback. Moreover, Dewhurst et al. (1999) suggested that IT has a key role to play in the process of applying TQM in an organization, and can affect all the dimensions of quality.

Berry et al. (1988) stated that service quality in the retail experience has become the most important purchase-determining condition. Quality plays an important strategic role in service firms (Bharadwaj and Menon, 1993). As the current marketplace becomes more competitive, consumers tend to become more and more demanding. Customers do not typically purchase many products or services based solely on their characteristics or price (Bharadwaj and Menon, 1993). In the event of challenges such as continuous increase in customer expectations and customers' subsequent demands as the quality of service improves (Rao and Kelkar, 1997), service firms unable to effectively cater to the needs and wants of customers risk not only losing dissatisfied customers to competitors, but also ultimate erosion of profits and, consequently, failure (Wong and Sohal, 2003). Service quality is increasingly being offered as a strategy by marketers to position themselves more effectively in the marketplace (Parasuraman et al., 1988). Increased service quality is assumed to have a positive impact on customer loyalty, and hence on profitability (Parasuraman et al., 1988; Heskett et al, 1994). Some empirical studies (e.g. Bharadwaj and Menon, 1993) have found a positive relationship between quality and market share or profitability. Service quality has become a significant differentiator and the most powerful competitive weapon which many leading service organizations possess (Berry et al., 1988; Bharadwaj and Menon, 1993).

2.5.3. Delivery performance

As shown in Table 2.3, delivery performance has two primary components: (1) reliability of delivery, which is the ability to deliver when promised; and (2) delivery speed, which is typically thought of in terms of short delivery times (Hayes and Wheelwright, 1984; Fine and Hax, 1985; Cleveland et al., 1989; Ferdows and De Meyer, 1990; Wood et al., 1990; Roth and Miller, 1990, 1992). Delivery performance measures include emphasis on activities intended to increase either delivery reliability or delivery speed. Other researchers who stressed the use of time-based strategies include Stalk et al. (1992), Beesley (1995) and Schul et al. (1995). Markland et al. (1995) used the phrase time-based competition to stress that managers should carefully define the steps and time needed to deliver a product and then critically analyze each step to determine whether time can be saved without compromising quality. Kumar and Kumar (2004) further stated that delivery of the required function means ensuring that the right product (meeting the requirements of quality, reliability and maintainability) is delivered in the right quantity, at the right time, in the right place, from the right source (a vendor who is reliable and will meet commitments in a timely fashion), with the right service (both before and after sale), and, finally, at the right price.

Speed of service has become a competitive weapon for retailers to survive in an increasingly dynamic market (Berry et al., 1997). Time seems to be the factor most critical to customers' shopping experience, not just in grocery stores but in retail outlets in general (Peritz, 1993). Despite retailers' efforts, and large expenditures on technological improvements to speed up the checkout process, almost one customer in four remains dissatisfied (Tom and Lucey, 1995). Studies indicating a negative relationship between long waiting time and consumer satisfaction (Chebat and Filiatrault, 1993) demand that management be ever alert to strategies to decrease

waiting time in line. The amount of time customers must spend waiting in checkout lines in stores can significantly influence their satisfaction (Tom and Lucey, 1995).

2.5.4. Flexibility

As more and more manufacturers are achieving low-cost and high-quality market positions, firms are seeking alternative sources of competitive advantage. Increasingly, manufacturers concentrate on flexibility as a way to outdistance their competition (Upton, 1995). Flexibility is a theme in operations management suggested by many scholars (e.g. Wheelwright, 1984; Plossl, 1992; Schonberger, 1992; Buffa, 1984). In general terms, flexibility refers to a firm's agility, adaptability, and responsiveness. However, flexibility remains a very multidimensional concept and conjures up many different meanings among firms (Dean and Snell, 1996; Upton, 1995). It can be defined as the capability to deploy and redeploy resources effectively in response to changing situations; capability to respond to changes; quick response as well as wide variety; and the ability to change or react with little penalty in time, effort, cost or performance. For example, some firms view flexibility as the ability to scale production up and down quickly in an effort to increase delivery performance, whereas others see it as the ability to quickly expand the scope of their product offerings by producing small lots and accommodating nonstandard orders (De Meyer et al., 1989; Leong et al., 1990).

In summary, four important aspects of flexibility are product flexibility, volume flexibility, mix flexibility, and delivery flexibility (Slack and Lewis, 2008; Slack et al., 2010) (see Table 2.3). A business that competes on the basis of product flexibility emphasizes its ability to handle difficulties and to introduce new products (Wheelwright, 1978). Still other businesses compete through mixed flexibility, emphasizing their abilities to change the variety of product/service in a

given time (Slack and Lewis, 2008). Volume flexibility is the ability to accelerate or decelerate the rate of production quickly, to handle large fluctuations in demand (Wheelwright, 1978). Delivery flexibility is the ability to change planned or assumed delivery dates (Slack and Lewis, 2008). Hall's (1983) definition of flexibility recognizes the value of flexibility in adapting to changes. He noted that "flexibility means that plans should be capable of switching very quickly from one product to another, or from one part to another, almost instantly". Krajewski and Ritzman (1990) suggested that some firms give top priority to flexibility as means of outperforming competitors. As a result, some firms turn to customization, whereby products or services are tailored to individual preferences. In this context, coping with the environment means that performance is unaffected by environmental uncertainty. Since manufacturing flexibility permits a manufacturing firm to cope with environmental uncertainty, operations flexibility is treated as an important representative of operations strategy.

In the service sector, flexibility is a vague concept, as not all service flexibility dimensions have been clearly determined. However, flexibility is generally accepted as a useful tool to improve the competitive position of the firm, especially when related to the process of decision-making in technologies adoption and implementation (Slack, 2005; Adler, 1988; Alvarez-Gil, 1994). Operations strategy determines the level of uncertainty to be supported by the service delivery system by "adapting the different flexibility dimensions to environmental changes" (Chambers, 1992; Gerwin, 1987). In this context, flexibility in services involves the introduction of new designs and services into the service delivery system quickly, adjusting capacity rapidly, customizing services, handling changes in the service mix quickly and handling variations in customer delivery schedules (Suarez et al., 1996; Aranda, 2003).

2.6. Business environment

2.6.1. Dimensions of business environment

Environment is a multidimensional concept comprised of factors relating to the market, government regulations, technology, and location among others. The concept of the microenvironment relates to those factors in the immediate environment of the business to which the organization can purposively respond and/or influence. It is generally categorized into demographic, political, economic, cultural, legal, technological and social issues. Heizer and Render (1993) defined environmental variables to include: economic, socio-cultural, technological, demographic and political-legal. The environment consists of a large number of non-controllable variables which pose both threats and opportunities for companies in pursuit of their objectives (Sanderson and Luffman, 1988). Although the “relevant” environment is comprised of many domains, the most important domain for a company from the market-based perspective is the industry in which it competes (Großler, 2007). The external business environment in which a firm competes changes continually, so an organization needs to adapt to that environment continually (Kim and Lim, 1988; Roth and Van der Velde, 1991). Krajewski and Ritzman (1990) identified the important environmental concerns to include economic trends, technological changes, political conditions, social changes, the availability of vital resources and the collective powers of customers and suppliers. As a result, many researchers note that environmental changes may cause a company to reconsider its current strategies (Day and Nedungadi, 1994; Leong et al., 1990; Reynolds et al., 1994; Schroeder and Mavondo, 1994; Shaffer and Meredith, 1998).

Scholars have long viewed the environment as an important source of organizational contingencies (Thompson, 1967). Based on previous studies, Aldrich (1979) developed a

conceptual framework of environmental dimensions “which are consistent with both resource based and population ecology views of organizations”. Dess and Beard (1984) used empirical methods and archival data, based on transactions between companies and their environments, to reduce Aldrich’s original six dimensions to three, which they labelled munificence, dynamism, and complexity. The first environmental variable is dynamism, which is characterized by the rate of change and innovation in the industry as well as the uncertainty or unpredictability of the actions of competitors and customers (Lawrence and Lorsch, 1967; Thompson, 1967). The second environmental dimension is hostility, which represents the degree of threat to the firm posed by its multifacetedness, vigour and intensity of the competition and the downswings and upswings of the firm’s principal industry (Khandwalla, 1972; Miller and Friesen, 1978). The final environmental dimension is complexity or heterogeneity, which encompasses variations between the firm’s markets that require diversity in production and marketing orientations (Khandwalla, 1972; Porter, 1979).

Subsequent studies have used Dess and Beard’s (1984) descriptions of environment, either as they are or with some modifications. Dimensions that have been addressed adequately by other researchers include: environmental hostility or munificence (Miller and Friesen, 1983); environmental dynamism (Bourgeois, 1980; Bourgeois and Eisenhardt, 1988) and environmental complexity (Jaikumar, 1989). Sharfman and Dean (1991) provided a contemporary literature review which suggested a convergence in the literature supporting Dess and Beard’s dimensions. While there is considerable debate regarding the method to adequately measure an executive’s perceptions of the external environment (Boyd et al., 1993), three of the most commonly accepted dimensions of the environment are heterogeneity, dynamism, and hostility (Dess and

Beard, 1984; Keats and Hitt, 1988; Miller and Friesen, 1983). The dimensions of dynamism, hostility, and heterogeneity have often been used to characterize the environment (see Table 2.4).

Summary

The dimensions of dynamism, hostility, and complexity have commonly been used to characterize operations environment. Hostility captures the capacity of the industry in comparison to growth in the market. Dynamism covers both stability-instability (unpredictability) and turbulence (volatility). For the purposes of this research, operations environmental dimensions examined in this study focus on business environmental hostility and dynamism, which do not include an environmental complexity scale (e.g. Ward et al., 1995; Ward and Duray, 2000; Amoako-Gyampah and Boye, 2001).

Table 2.4: Environmental hostility, environmental dynamism, and their theoretical domains

Business Environmental Factors	Domain	Studies
Environmental Hostility	Environmental hostility is defined as the extent of threat a firm faces due to the intensity and vigour of competition and also from industry cycles. Hostility in environment is evidenced by rising business cost, low profit margin, server regulatory restrictions, and shortages of labour or raw materials.	Miller and Friesen (1983); Miller (1987); Starbuck (1976); Dess and Beard (1984); Aldrich (1979); Bourgeois (1980); Ansoff (1965); Mintzberg (1979)
Environmental Dynamism	Environmental dynamism refers to unpredictable change in environmental conditions faced by companies. It is characterized by the rapid changes in production and service technology, customer tastes and preferences, legal regulations, and competitor action.	Miller and Friesen (1983); Miller (1987); Starbuck (1976); Aldrich (1979); Bourgeois (1980); Ansoff (1965); Mintzberg (1979)

2.6.1.1. Environmental hostility

Environmental hostility (also called munificence) is defined as “the degree of threat a firm faces due to the vigour and intensity of the competition and the downswings and upswings of the firm’s principal industry” (Khandwalla, 1976, 1977; Miller and Friesen, 1983). As defined by Covin and Slevin (1989), hostile environments are characterized by precarious industry settings, intense competition, harsh, overwhelming business climates and the relative lack of exploitable opportunities. In a hostile environment, there are likely to be intense competitive pressures, low margins and a harsh business climate which offers few opportunities to exploit (Covin and Slevin, 1989). Hostile environments are “those where the conditions facing the firm are perceived as harsh and threaten the firm’s ability to effectively compete” (Miller and Friesen, 1983). Environmental hostility indicates the amount of unfavourable external forces for a firm’s business that threaten its mission or outputs. A review of the literature reveals that characteristics of a hostile environment can include intense price, product, technological and distribution competition, rising business costs, low profit margins, severe regulatory restrictions, shortages of labour or raw materials, and unfavourable demographic trends, which offer few opportunities to exploit (Miller and Friesen, 1983; Covin and Slevin, 1989; Mintzberg, 1979). Environmental munificence is the extent to which an environment supports the growth of organizations within it. Munificence is often measured on a reverse scale as environmental hostility; for example an increasingly competitive marketplace (Mintzberg, 1979).

Dess and Beard (1984) defined “hostility” in terms of resource abundance and resulting capacity to support growth. Relative scarcity of resources in existing markets increases the risk of remaining in those markets and increases the need to expand operations into new markets to

reduce dependencies on existing domains (Hannan and Freeman, 1977). Thus, firms direct diversification efforts into markets with more munificent environments in order to balance overall risk (Bettis, 1981; Thompson, 1967). Moreover, rapid changes that are characteristic of a hostile environment also make it difficult for the firm to obtain accurate and timely information (Bourgeois and Eisenhardt, 1988). Thus, strategy may directly and indirectly be a function of environmental munificence. Furthermore, hostile environments, like dynamic ones, intensify challenges to the firm, and often complicate these challenges. It is a condition of perceived threat to the firm's primary goals. For a firm this may mean a serious threat to its profitability, liquidity, or market share (Khandwalla, 1972). Greater analytical effort must therefore be devoted to understanding and mastering threats (Khandwalla, 1972). In contrast to dynamism, however, hostility makes for scarcer resources, slimmer profit margins, and, in general, less manoeuvrability. It is therefore required that more attention be paid to the conservation of resources and the selective pursuit of competitive strategies during the most threatening periods. Organizational theorists emphasize that firms must adapt to their environmental uncertainty if they are to remain viable (Duncan, 1972). Even though the environment within which a firm competes is not under its managerial control, understanding how environmental hostility affects the strategic decision making allows managers to adapt to varying environmental conditions (Calantone et al., 1997).

2.6.1.2. Environmental dynamism

Environmental dynamism (see Table 2.4) refers to the extent of the unpredictability of change within the firm's environment (Dess and Beard, 1984). This change can arise from many sources, including the introduction of new products, services, processes and technologies, from changes

in the regulatory, competitive landscapes or customer tastes, and from the modes of competition in the firm's principal industries (Miller and Friesen, 1983). This construct has also been referred to as environmental variability or volatility (Child, 1972), and is considered a dimension of environmental uncertainty (Scott, 1992). Environmental dynamism represents the perceived frequency of change and turnover in the marketing forces of the external/task environment (Aldrich, 1979). Miller and Friesen (1983) described dynamic environments as consisting of two distinct characteristics, i.e. "unpredictability of change" and "rate of change" (velocity or volatility). The first dimension of the environment is the unpredictability of change in the different elements that constitute the external environment: market, product, and technology innovations and labour. The second dimension is the volatility, which is described as the degree of instability in the various factors that constitute the firm's environment. High velocity environments are "those in which there is rapid change in demand, competitors, technology, and regulations such that information is often inaccurate, unavailable, or obsolete" (Bourgeois and Eisenhardt, 1988). A review of the literature reveals that environmental dynamism is characterized by the rate of change and innovation in the industry, as well as the uncertainty or unpredictability of competitors' actions and customers' preferences (Lawrence and Lorsch, 1967; Thompson, 1967; Miller and Friesen, 1983).

Dynamism is the natural state of the world (Mintzberg, 1994). In dynamic environments, there are many rapid and unexpected changes (Mason, 2007). This increases the relative uncertainty faced by decision makers (Duncan, 1972; Leblebici and Salancik, 1981). Uncertainty will affect organizational structure, because when task uncertainty increases, more information must be processed by decision makers to achieve a given level of performance (Galbraith, 1973). The growth in environmental dynamism will lead to the reduction of orderly competition, an

increasing need for information, innovation, and quicker cycles of development, and more difficulty in predicting customer, product and service requirements (Achrol, 1991; Pine et al., 1993; Haleblan and Finkelstein, 1993; Chakravarthy, 1997). Thus, decision windows are shorter, risk of obsolescence is greater, long-term control becomes impossible and managers have to learn new ways to operate in turbulent environments (Davis et al., 1991). Firms operating in a dynamic environment have to contend with rapid changes in technology, customer needs and preferences, as well as competitive action. Often, they have to come up with innovative and creative solutions to problems that are encountered in making a sale or in satisfying customers. Although this seems negative, Mavondo (1999) showed that destabilisation in the environment leads to heterogeneity in the business environment, thereby avoiding “me too” strategies and encouraging differentiation.

2.6.2. Business environment and operations strategy

With increasing competition and advances in technology, firms are facing environments that are extremely complex and dynamic. Environmental uncertainty and its dimensions of dynamism and heterogeneity have received extensive coverage in the operations strategy literature. Alignment between environment and operations strategy is critical for firms to achieve success (Skinner, 1969; Hayes and Wheelwright, 1984). Operations strategy literature suggested that it is similarly critical that operations strategies of firms are suited to the external environments in which they operate (e.g. Skinner, 1969; Leong et al., 1990; Hill, 2000). The necessity of fit of the operations strategy with external environmental factors is supported by a few empirical studies (e.g. Swamidass and Newell, 1987; Ward et al., 1995; Ward and Duray, 2000; Amoako-Gyampah and Boye, 2001; Anand and Ward, 2004; Chi et al., 2009). These studies have shown

that various dimensions of the environment cause manufacturing firms to react differently. The main findings of these studies are summarized in Table 2.5.

Table 2.5: Summary of previous studies linking business environment and operations strategy

Study	Environmental Variables	Operations Strategy Elements	Additional Factors	Country of Focus	Main Findings
Van Dierdonck and Miller (1980)		<ul style="list-style-type: none"> ● Flexibility ● Cost ● Quality ● Delivery performance ● Innovativeness ● Marketing leverage 		USA	The study provided managers with a framework for anticipating changes in a production control system needs, as they anticipate changes in their firm's environment and strategy.
Swamidass and Newell (1987)	Environmental uncertainty	Flexibility	Managers' decision making	USA	Environmental uncertainty influenced manufacturing in flexibility and the role of manufacturing managers in strategic decision making. The manufacturing flexibility, in turn, influenced business performance.
Ward et al. (1995)	<ul style="list-style-type: none"> ● Business cost ● Labour availability ● Competitive hostility ● Environmental dynamism 	<ul style="list-style-type: none"> ● Flexibility ● Cost ● Quality ● Delivery performance 	<ul style="list-style-type: none"> ● Performance measures ● Industry variable 	Singapore	The authors identified strong relationships between environmental factors such as labour availability, competitive hostility, and market dynamism and the operations strategy choices encompassed by competitive priorities.
Ward and Duray (2000)	Environmental dynamism	<ul style="list-style-type: none"> ● Flexibility ● Cost ● Quality ● Delivery performance 	<ul style="list-style-type: none"> ● Performance measures ● Competitive strategy measures 	USA	The mediating effect of competitive strategy suggests that environmental dynamism has an important influence on manufacturing strategy but that influence is articulated through and modified by competitive strategy.
Badri et al. (2000)	<ul style="list-style-type: none"> ● Business cost ● Labour availability ● Competitive hostility 	<ul style="list-style-type: none"> ● Flexibility ● Cost ● Quality ● Delivery performance 	Performance measures	United Arab Emirates	The authors identified strong relationships between environmental factors such as labour availability, competitive hostility, government laws and regulations, political concerns and market dynamism and the operations strategy choices encompassed by

Study	Environmental Variables	Operations Strategy Elements	Additional Factors	Country of Focus	Main Findings
	<ul style="list-style-type: none"> ● Government laws and regulations ● Political environment ● Environmental dynamism 				competitive priorities.
Amoako-Gyampah and Boye (2001)	<ul style="list-style-type: none"> ● Business cost ● Labour availability ● Competitive hostility ● Environmental dynamism 	<ul style="list-style-type: none"> ● Flexibility ● Cost ● Quality ● Delivery performance 	<ul style="list-style-type: none"> ● Firm size ● Degree of foreign ownership 	Ghana	Among firms in Ghana, the two strongest factors that influence the degree of emphasis placed on operations strategy choices are perceived business costs and competitive hostility. Environmental dynamism did not have any significant effects on any of the operations strategy choices.
Amoako-Gyampah (2003)	<ul style="list-style-type: none"> ● Business cost ● Labour availability ● Competitive hostility ● Environmental dynamism 	<ul style="list-style-type: none"> ● Flexibility ● Cost ● Quality ● Delivery performance 	<ul style="list-style-type: none"> ● Firm size ● Degree of foreign ownership 	Ghana	Competitive hostility is the factor with the strongest influence on manufacturing strategy choice made by manufactures in Ghana. Environmental dynamism did not appear to have any significant impacts on manufacturing strategy.
Anand and Ward (2004)	<ul style="list-style-type: none"> ● Unpredictability of environmental dynamism ● Volatility of environment dynamism 	<ul style="list-style-type: none"> ● Mobility of flexibility ● Range of flexibility 	Performance measures	USA	The unpredictability or the volatility aspects of environmental dynamism play a crucial role in determining the types of flexibility strategies.
Chi et al. (2009)	<ul style="list-style-type: none"> ● Environmental dynamism ● Environmental complexity ● Environmental diversity 	<ul style="list-style-type: none"> ● Flexibility ● Cost ● Quality ● Delivery performance 	<ul style="list-style-type: none"> ● Performance measures ● Supply chain structures 	USA	Results of the study reveal that the differences in both strategic and supply chain responses to business environment between high- and low-performing firms in the US textile manufacturing industry are striking. The findings provide evidence to corroborate the impact of the alignment between

Study	Environmental Variables	Operations Strategy Elements	Additional Factors	Country of Focus	Main Findings
<ul style="list-style-type: none"> ● Environmental munificence 					business environment characteristics, competitive priorities, and supply chain structures on firm business performance.

As outlined in Table 2.5, perhaps the first known empirical study on environmental factors and operations strategy is the work of Van Dierdonck and Miller (1980). They aimed at understanding the relationship between environmental factors (i.e., uncertainty and complexity) and the design of production systems. Their work highlighted the importance of considering the environment in the context for operations strategy. Another of the earlier studies of operations strategy and business environments is the work of Swamidass and Newell (1987). In that study, the authors investigated the causal relationships between environmental uncertainty and manufacturing strategy content (specifically flexibility) and the roles that manufacturing managers play in strategic decision making. They argued that although the literature on business strategy explicitly recognized the importance of environmental uncertainty on strategy, the operations management literature had not paid much attention to the effect of the business environment when discussing operations strategy.

The most comprehensive research that postulated an explicit relationship between the environment and operations strategy was that of Ward et al. (1995), who used a path analytic framework to study the effects of environment on operations strategy selection and performance (self-reported change in profits) for a sample of 319 Singaporean manufacturers. They included three scales which are conceptually related to environmental hostility: costs of doing business in Singapore (business costs), labour availability, and competitive hostility. The *business costs* dimension included concerns pertaining to the rising cost of inputs in the manufacturing process; namely labour, raw materials, transportation, telecommunications, utilities, rent, health care, and costs related to the strength of Singapore's currency. *Labour availability* referred to concerns about the potential shortage of technicians, clerical, skilled, and production workers. *Product market hostility* included concerns about changes in the marketplace, such as increasing

competition and declining demand in either local or foreign markets. Competitive hostility also included concerns about low profit margins and more demanding quality standards imposed by the marketplace. Ward et al. (1995) identified that successful firms facing greater perceived competitive hostility responded with a greater emphasis on delivery performance, thus indicating an attempt to further differentiate their products rather than emphasizing cost reduction. Their analysis also showed that successful Singaporean firms respond to perceived labour shortages through a strategic emphasis on flexibility.

On the other hand, Ward et al. (1995) used *environmental dynamism* scale to measure the rate at which products and services become outmoded, the rate of innovation in product/service and in process, and the rate of change in taste and preference among customers. They identified strong relationships between market dynamism and the operations strategy choices encompassed by competitive priorities. Higher environmental dynamism sparks significantly more operations strategy emphasis on the delivery performance, flexibility, and quality competitive priorities. This finding is consistent with Swamidass and Newell's (1987) conclusion about the relationship of uncertainty with flexibility. The finding also implied that a set of capabilities which support responsiveness to customers is particularly valued in a dynamic environment. Conceptual work in operations strategy also supports the notion that quality, flexibility, and delivery are appropriate operations strategy responses to environmental dynamism (Ward et al., 1995).

In recent years, building on the work of Ward et al. (1995), a few authors (see Table 2.5) especially examined the effects of environment characteristics on operations strategy choices in developing countries such as Ghana and the UAE. Badri et al. (2000) extended the work of Ward et al. (1995) to the business environment of developing countries by adding two neglected environment variables, "government laws and regulations" and "political considerations". The

authors identified strong relationships between environmental factors such as labour availability, competitive hostility, government laws and regulations, political concerns and market dynamism and the operations strategy choices encompassed by competitive priorities. Successful manufacturing firms facing greater perceived uncertainty with regard to government laws and regulations respond with a greater emphasis on delivery performance along with quality rather than emphasizing cost reduction strategies. Political factors had a major effect on the two operations strategies of delivery and cost. Amoako-Gyampaha and Boye (2001) examined the influence that specific business environmental factors have on the operations strategy choices of cost, quality, flexibility, and delivery dependability among manufacturing firms in Ghana. They found that the two strongest factors that influence the degree of emphasis placed on operations strategy choices are perceived business costs and competitive hostility. Competitive hostility has direct significant effects on the emphasis placed on cost, quality and flexibility as operations strategy choices. More recently, Anand and Ward (2004) identified that depending on the extent and sources of dynamism, firms devise strategies to tackle them in different ways. They might avoid uncertainty by establishing long-term contracts, or they might maintain slack resources such as inventory buffers or a capacity cushion, or they might cope with the turbulence by installing flexible manufacturing systems and gearing up for pursuing manufacturing flexibility as a priority (Anand and Ward, 2004). Some of their findings confirmed those of the earlier work by Swamidass and Newell (1987). In addition, Chi et al. (2009) found that the differences in both strategic and supply chain responses to business environment between high- and low-performing firms in the US textile manufacturing industry are striking. The findings provided evidence to corroborate the impact of the alignment between business environment characteristics, competitive priorities, and supply chain structures on firm business performance.

Summary

Business environmental issues have long been recognized as important considerations in the development of corporate strategy (Porter, 1980). However, as noted by Ward et al. (1995), environmental issues have not received much attention in operations strategy research. This lack of attention is occurring although empirical evidence seems to suggest that practicing managers do consider environmental factors when they seek to develop operations strategy. Thus, research linking environmental issues and operations strategy is manifestly worthwhile.

2.7. Operations resources

2.7.1. Main operations resources

The term “resource” is used in a very broad sense by the theorists. A resource is a basic element that a company controls in order to best organize its processes (Lowson, 2003). Resources can also be “tangible”, which can be observed and evaluated with clarity, like physical resources, or “intangible”, which cannot be directly observed or quantified, like the reputation of a company or a product, organizational culture, management and coordination abilities, non-documented technologies and knowledge, among others. Barney (1991) classified internal organizational resources into three categories: physical capital, human capital, and organizational capital. Grant (1991) listed six categories of firm resources: financial, physical, human, technological, reputational, and organizational. Moreover, Walton (1989) and Benjamin and Levinson (1993) classified resources as organizational, business, and technological, and argued that IT performance depends on the integration of resources cross these categories. Keen (1993) divided

resources into human, business, and technology resources, and developed a “fusion framework” that strongly parallels resource-based theory, arguing that the key to IT success lies in the capacity of organizations to fuse IT with latent, difficult-to-imitate, firm-specific advantages embodied in existing human and business resources. Powell and Dent-Micallef (1997) also classified resources into human resources, business resources, and technology resources. They developed an integrated and resource-based theoretical framework, and revealed that ITs alone have not produced sustainable performance advantages in the retail industry, but that some firms have gained advantages by using ITs to leverage intangible, complementary human and business resources such as flexible culture, the integration of strategic planning with IT and supplier relationships. Zahra and Das (1993) argued that to accomplish the firm’s objectives, manufacturing strategy should build on available corporate human, technological, financial and informational resources. Based on a review of the literature, resources can be generally classified into three main categories (Penrose, 1959; Barney, 1991; Grant, 1991; Benjamin and Levinson, 1993):

- Physical resources, like plants and equipment, land, natural resources and raw materials;
- Human resources, including the productive, technical and managerial workers; and
- Business resources, formed by the routines that coordinate the human and physical resources in a productive way.

Resources enable a company to develop and implement strategies that improve its efficiency and effectiveness. A firm’s tangible and intangible operations capabilities constitute such a resource. More recently, intangible assets have been identified as key resources and sources of competitive advantage (Lowson, 2001; Lynch, 2003).

Summary

Various researchers have proposed different subcategories of resources, including Barney (1991) with physical, human, and organizational resources; Grant (1991) with financial, physical, human, technological, reputation, and organizational resources; and Black and Boal (1994), who identified contained and system resources. For the purposes of this study, operations resources examined in this study include human resources, business relationships with principal stakeholders, and information technology.

2.7.1.1. Human resources

Besides economic, market, and technological considerations, a fourth question that deserves attention is the availability and quality of the supply of human resources. For some firms, this is their most critical constraint. Therefore, it is essential that the trends for especially critical professional and technical skills be understood. Many researchers believe that of all a firm's assets the most important and most difficult to manage are the human assets (Peters and Waterman, 1982). The principal issues in human resource management are selection, promotion, and placement of personnel; appraisal of employee performance; rewards and motivational support; management development; and employee relations (Hax, 1985). Human resource managers must design policies to motivate employees to work as a team to achieve the firm's goals.

People are a vital competitive resource in most companies. From micro-economics, human capital theory suggests that people possess skills, abilities and knowledge of economic value to companies (Snell and Youndt, 1995; Youndt et al., 1996). From strategic management and organizational economics, the resource-based theory of competitive advantage focuses on the

role internal resources like employees play in developing and maintaining a company's competitive capabilities (Barney, 1991; Wright and McMahan, 1992). Ackoff (1994) suggested that the more unpredictable global environment becomes, the more organisations must rely upon their employees to create the desired future. It is essential to consider human resources during the development of corporate strategy because of the need to explore people-related strategies at an early stage (Lynch, 2003). Human resource practices have significant implications for marketing effectiveness, since the skills of the employees are possibly the most important strategic asset of any company. Dess and Origer (1987) found that high-performance companies in dynamic and complex markets strive for consensus to ensure effective strategy implementation. Successful companies tend to have supportive management skills that stimulate creativity and improve company performance. It has been widely argued that people provide companies with an important source of sustainable competitive advantage (Pfeffer, 1994; Wright et al., 1994) and that the effective management of human capital may be the ultimate determinant of company performance. Some previous studies on the relationship between strategic decision-making and human resources are reported in Table 2.6.

The essence of strategy is to achieve a long-term advantage over the firm's competitors. The corporate strategic planning process is a disciplined and well-defined organizational effort aimed at the complete specification of business and functional strategies (Hax, 1985). According to Hax (1985), firstly, the corporate level articulates the vision of the firm and its strategic posture. Next, the business managers develop business strategies in consonance with the corporate thrusts and challenges. Finally, the functional managers provide the necessary functional strategic support. It is important, therefore, to ensure proper linkage between the business strategies and the resulting human resource strategies. Hax (1985) suggested that it is important to conduct a broad strategic

audit of the human resource function prior to developing its functional strategies. This initial audit has several objectives: to assess the availability and use of human resources data in the organization; to assess the impact of human resource considerations on strategy formulation; and to detect strengths and weaknesses in the current human resource strategy by each decision category. Human resources can be a formidable weapon in achieving competitive superiority. With a conceptual framework and programmatic guidelines for designing a human resource strategy, the HR professional can make a substantial contribution to the business goals of his or her organization (Hax, 1985). Moreover, Lynch (2003) suggested that human resource audit needs to be considered during the development of strategy. Human resource audit is an examination of the organization's people and their skills, backgrounds and relationships with each other. The author has developed a basic list of human resource audit, the main principles including to obtain some basic information on the people and policies involved in the organization, and to explore in detail the role and contribution of the human resource management function in the development of corporate strategy (Lynch, 2003).

Human resources in retailing

Employees play a major role in shaping the service experience as the interface between the service and its provider is inseparable. Service industries can be classified on a spectrum from "tangible dominant" to "intangible dominant (Santos, 2002). The less standardised and the less tangible dominant the service offer, then the more likely it is that employee discretion and employees' ability to customise the service across a wide range of customer encounters will become determinant factors of organisational success (Lashley and Taylor, 1998). This is to say, the less tangible dominant a service then the greater the degree of labour utilisation and level of

customer contact required for service delivery. As mentioned previously, some retail scholars (e.g. Arnold, 2002; Berry et al., 1997; La Vere and Kleiner, 1997) have identified a number of success factors demonstrated by high-performance retailers. The employees in high-performance retailers are cross-trained in all product categories, the required training ranges from customer service to ordering and receiving as well as displaying and selling merchandise (Berry et al., 1997). Moreover, employees in a high performer are paid well above industry average and held to high standards. In a retail context, the most important aspect for a company is the ability to attract, educate, motivate, and retain high-quality employees. This strengthens a retailer's creativity to implement tightly-focused, customer-driven merchandising and service strategies (Berry et al., 1997).

The importance of the customer-employee interaction for the customers' quality perceptions is emphasized in the service quality literature (e.g. Parasuraman et al, 1985; Bitner, 1990; Heskett et al, 1994). In retailing, customer service quality is not only dependent on the immediate interaction with the staff (such as cleanliness of the store and control of freshness of fruits and vegetables), is also dependent on the work of the employees. For example, salespeople have an important impact on the customer's perception of the store and its quality (Kotler, 1988). As services are intangible, the direct interaction with personnel is important for customers' quality evaluations (Bitner, 1990). Employee behaviour thus has an indirect and a direct effect on perceived service quality.

Summary

Companies wishing to succeed in today's global business environment must make appropriate human resource investments to acquire and build employees who possess better

skills and capabilities than their competitors (Pfeffer, 1994). Employee competencies such as good team working, working experience, employ loyalty, and a high degree of self-motivation play significant roles in gaining sustainable competitive advantages.

Table 2.6: Representative studies on the relationship between strategy and human resource

Study	Representative Findings
Hax (1985)	It is important to ensure proper linkage between the business strategies and the resulting human resource strategy. The author further suggests that it is important to conduct a broad strategic audit of the human resource function prior to developing its functional strategies.
Lynch (2003)	Human resource audit need to be considered during the corporate strategy formulation. The main principles include: to obtain some basic information on the people and policies involved in the organization, and to explore in detail the role and contribution of the human resource management function in the development of corporate strategy.
Karami et al. (2005)	The study examined the role of Chief Executive Officers (CEOs) in the development of business strategies within Small- and Medium-sized Enterprises (SMEs). The authors found that professionally experienced CEOs placed more emphasis on formal strategy development; CEOs with an educational background are inclined to develop formal strategic plans. Strategic awareness of the CEOs plays a significant part in the formulation of business strategies.
Pfeffer (1994)	A quality operations strategy and other operations strategies moderated the HR-performance relationship. Firms wishing to succeed in today's global business environment must make appropriate HR investments to acquire and build employees who possess better skills and capabilities than their competitors.
Youndt et al. (1996)	Administrative HR systems (i.e., selection for manual skills, policies and procedures training, results-based performance appraisal, hourly pay, and individual incentives) are consistent with the requirements of a cost strategy focused on standardizing processes, reducing errors, and maximizing production efficiency.
Hayes et al. (1988)	The technical and problem-solving skills of employees tend to be more important in total quality environments.
Parthasarthy and Sethi (1992)	Operations flexibility strategies are complemented by comprehensive staffing systems aimed at acquiring talented employees who possess high levels of both problem-solving and technical skills that allow them to understand an entire production process, thereby facilitating quick production line and product changes.

2.7.1.2. Information technology

A review of the literature reveals an inconsistency in categorically defining what constitutes information and technology (IT). Orlikowski and Gash (1992) defined IT as “any form of

computer-based information system, including mainframe as well as microcomputer application". In its most simplistic form, Daniels (1994) defined IT as "the application of technology to business processes to gather data and create information that is valuable to managers". A growing consensus, however, argues that IT should be defined broadly to encompass hardware, software, telecommunications (including voice, facsimile and e-mail), as well as the personnel and resources assigned to supporting IT. Cooper and Zmud (1990) stated that IT refers to any artefact whose underlying technological base is comprised of computer or communications hardware and software.

IT is a tool to enhance the overall strategy of the company as well as being used to promote competitive advantage in the market (Voss, 2003). Voss outlined several propositions regarding the impact of the new technology on the firm. One proposition asserts that the maximum benefit will accrue if there is a match between the capabilities of the technology and the firms business and competitive priorities. The new technology should be used to make the firm more competitive and not merely more productive. Over the last few decades, studies concerning the effect of IT on management strategy and marketing have been conducted. IT researchers advocated tight IT-strategy linkages, asserting that IT affects company strategy that strategies have IT implications, and that companies must somehow integrate strategic thrusts with IT capabilities (Bakos and Treacy, 1986). Porter and Millar (1985) related IT to the value chain, concluding that the main strategic purpose of IT is to coordinate activities in the chain. Rackoff et al. (1985) concluded that IT should support competitive thrusts such as cost leadership, differentiation, innovation, growth, and external alliances.

Skinner (1984) was one of the first to point out that investment in operations equipment and process technology can do more than achieve low costs. It can also provide superior quality,

shorter delivery cycles, lower inventories, lower investment in equipment, shorter new product development cycles and new production economies (Slack et al., 2010; Voss, 2003). From a strategic point of view, the role of technology has been dramatically changing. Traditionally technology was employed for cost improvement and efficiency considerations (Anderson et al., 1989). Increasingly technology is being employed for improved operations effectiveness, and consequently competitive advantage (Anderson et al., 1989). Process technology now needs to be aggressively incorporated as part of operations strategy (Anderson et al., 1989; Slack et al., 2010; Slack and Lewis, 2008).

However, technology alone is not able to produce competitive advantages as its fast evolution and the ready availability of substitutes erodes any advantage a company has (Powell and Dent-Micallef, 1997). Every leading company in an industry has access to the same information technology capabilities. For example, all firms can obtain telecommunications, computer hardware, workstations, software development, and information management tools from a wide range of vendors. Moreover, successfully harnessing the power of IT requires careful management of system-wide resources. Not all IT investments have positive effects on all types of performance (González-Benito, 2007). Zahra and Covin (1993), for example, found no direct technology–performance connection. Powell and Dent-Micallef (1997) suggested that human resources play an important role in the absorption and assimilation of IT capabilities. If IT does not provide distinct advantages, then companies must use them to leverage intangible, complementary human and business resources such as IT training, organizational leadership and culture, strategic planning-IT integration, and supplier relationships (Powell and Dent-Micallef, 1997; Clemons and Row, 1991). In addition, Ross et al. (1996) argued that enhancing firm competitiveness through IT was contingent upon the development of an especially effective IT

capability. Encompassed in this capability is the ability to control IT-related costs, deliver systems when needed, and affect business objectives through IT implementations. The elements of this capability are realized by the careful management of three key assets: highly competent IT human resources, a reusable technology base and a strong partnership between IT and business management (Ross et al., 1996). Some previous studies on the relationship between IT and strategy are reported in Table 2.7.

The introduction of technology is playing the critical role in the management of retail operations. For example, in the adaptation of technology in the distribution system, separate strategies are formulated for the logistics and information technology functions that are of increasing importance for the successful management of retail distribution operations. Cox and Brittain (2000) outlined the main IT available to retail companies, such as the collection of sales at the retailer's point of sale (POS) and the electronic transmission of information via Electronic Data Interchange (EDI) technology that facilitates supply chain firms' coordination. Retailers now spend lots of money in their yearly budgets on IT, mostly to track merchandise and operations, automate transactions, and optimize inventory levels and other supply chain decisions (Raman et al., 2001). Thanks to these information efficiencies and synergies, the retailers can reduce costs, improve product and service quality, enhance dependability, or increase flexibility (Powell and Dent-Micallef, 1997; Cox and Brittain, 2000).

Summary

Information technology (IT) is a tool to enhance the overall strategy of the company as well as being used to promote competitive advantage in the market (Voss, 2003).

Table 2.7: Representative studies on the relationship between information technology and strategy

Study	Representative Findings
Bakos and Treacy (1986)	IT researchers advocated tight IT-strategy linkages, asserting that IT affects firm strategy that strategies have IT implications, and that firms must somehow integrate strategic thrusts with IT capabilities.
Porter and Millar (1985)	The authors related IT to the value chain, concluding that the main strategic purpose of IT is to coordinate activities in the chain.
Rackoff et al. (1985)	The authors concluded that IT should support competitive thrusts such as cost leadership, differentiation, innovation, growth, and external alliances.
Goldhar and Lei (1995)	The authors found that organizations in the manufacturing sector were integrating new technology with innovative and more flexible organization designs in order to create an all-encompassing IT resource for competitive advantage.
Voss (2003)	Information technology (IT) is a tool to enhance the overall strategy of the organization as well as being used to promote competitive advantage in the market.
Kathuria and Igbaria (1997)	The authors developed a theoretical model, which seeks to help managers and practitioners to align IT application with competitive priorities (cost, flexibility, quality, and delivery performance).

2.7.1.3. Business relationships

Resource dependence theory asserts that companies facing substantial environmental uncertainty will attempt to stabilize it by imposing interorganizational ties (Pfeffer and Nowak, 1976; Pfeffer and Salancik, 1978). By fostering such relationship-specific capabilities that are far superior to what the companies may possess on their own (Dyer and Singh, 1998), resource dependence can ultimately lead to sustainable competitive advantage (Paulraj and Chen, 2007). Interfirm relationships are a company's most important assets, because without them it cannot gain access to the resources of others, acquire the supplies it needs, or solve its customer's problems and thus generate revenue (Lorenzoni and Lipparini, 1999; Ford et al., 2003). Managing relationships is a critical task of business (Ford et al., 2003). Over the last few years, the stakeholder theory has been advanced and justified in the management literature on the basis of its descriptive accuracy, instrumental power, and normative validity (Donaldson and Preston, 1995). It has generally been

agreed by managers and marketers that establishing long-term business relationships with stakeholders is vital for their business development and survival (Zineldin, 2007).

Stakeholder theory suggests that relationships are a company's most important assets, because without them it cannot gain access to the resources of others, acquire the supplies it needs, or solve its customer's problems and thus generate revenue (Ford et al., 2003). The theory of service-profit chain (Heskett et al., 1994) highlights the importance of the customer for profitability of a company, and the importance of keeping employees happy for customer satisfaction in a service setting. Managing relationships is a critical task of business (Ford et al., 2003). According to Hax and Majluf (1984), a well-formulated corporate philosophy should address, at least, the relationship between the company and its principal stakeholders, including the employees, customers, shareholders, suppliers, and communities. Today's businesses are facing fierce and aggressive competition while operating in both domestic and global markets. It is important to know about key operation's stakeholders (Slack et al., 2010). It has generally been agreed by managers and marketers that establishing long-term business relationships with stakeholders is vital for their business development and survival (Zineldin, 2007).

It has long been argued that "relationship management" is as important to marketing management as manipulating the marketing mix, and relationship value has been accepted as a core concept of marketing exchange (Turnbull et al., 1996). The literature to date has covered many aspects of business relationships, for example: the value of long-term relationships (Ford et al., 2003); relationships as an organisational capability (Lorenzoni and Lipparini, 1999); managing a relationship (Ford et al., 2003); characteristics of "successful" relationships (such as commitment, trust, satisfaction, coordination, and communication goal congruence) (Mohr and Spekman, 1994; Johnston et al., 2004); impact on competitiveness (Turnbull et al., 1996); and

types and nature of relationships (Ford et al., 2003). Reliance on strategic alliances and business relationships has grown considerably in recent years (Gulati, 1995). Many commentators expressed the view that a business is a coalition of stakeholders including employees, suppliers, shareholders, the community, as well as customers (Murphy and Wang, 2006). According to Hax and Majluf (1984), a well-formulated corporate philosophy should address, at least, the following issues: the relationship between the firm and its principal stakeholders, including the employees, customers, shareholders, suppliers, and communities. In sum, the links between customer relationship, buyer-supplier relationship, competitor analysis, strategic decision-making, and performance outcomes have long been asserted in conceptual work in management.

Dill (1958), in his study of two Norwegian firms, suggested that top management planned action on the basis of information which they received about environmental events in terms of four factors: 1) customers, including distributors and users; 2) suppliers of materials, labour, capital etc.; 3) competitors for both markets and resources; and 4) regulatory groups both public and private. Bourgeois (1980) also pointed out that firms need to focus on the external environment: customers, competitors, suppliers and regulatory agencies. In a case study of six manufacturing firms on the development of manufacturing strategy conducted by Maruchek et al. (1990), the data showed that managers indeed do consider the importance of the assessment of competitors and customers in the development of manufacturing strategy. It is important to consider how the understanding of the significance of relationships with individual customers and suppliers can be translated into management strategy/actions (Zolkiewski and Turnbull, 2002). Some previous studies on the relationship between strategy and business relationships are presented in Table 2.8.

Business relationships in retailing

Relationship marketing may be used to describe a plethora of marketing relationships, such as those between a firm and its buyers, suppliers, employees and regulators (Morgan and Hunt, 1994). Interaction with principle stakeholders (consumers, suppliers, competitors, and government) has become an important element determining a retailer's costs and effectiveness (Goldman, 2001). In the current marketplace, considerable attention has been paid to the concept of relationships between service providers and their customers (Gwinner et al., 1998; Reynolds and Beatty, 1999; Reynolds and Arnold, 2000), and this concept has been enthusiastically embraced by academics and practitioners (Beatty et al., 1996; Berry, 1995; Reynolds and Arnold, 2000).

Previous research has suggested a number of important benefits of building long-term relationships with customers (Wong and Sohal, 2002). It is widely accepted that customer attraction, retention and satisfaction are imperative to the survival and success of a retailer. Understanding customer needs and meeting and exceeding expectations have become part of the lexicon of marketers and retailers (Pal and Byrom, 2003). For retail stores, the personalisation of service encounters (Mittal and Lassar, 1996) and relational selling behaviours (Crosby et al., 1990; Foster and Cadogan, 2000) have been found to be important determinants of perceived service quality, customer satisfaction, and purchase intentions. Without a clear understanding of customer needs, however, it would have been almost impossible to achieve a success.

To be competitive, retailers and suppliers have to work together to reduce cycle times, improve communications, speed the flow of merchandise and information, and ensure correct inventory availability using strategies such as quick response (Giunipero et al., 2001; Lowson, 2005). A long-term orientation in a buyer-seller relationship can add more values to both

supplier and retailer (Ganesan, 1994). The value-added services include provision of market information, information sharing, and responsiveness to retailers' needs – suppliers might be required to provide services such as free delivery service, joint advertising and sales promotional activities, and sales staff training (Luk, 1998). Suppliers can improve relationships with retailers and place themselves in a position of greater value to them. For example, it has been shown that the information sharing mechanisms used to govern the interorganizational relationship are tied to cooperation, trust, and commitment (Mohr and Nevin, 1990). In a competitive environment, understanding retailers and committing to provide good value to satisfy them is vital for a supplier to stay on the preferred list of a retailer. Additionally, interfirm communication is a crucial part of the buyer-seller interaction process (Frazier, et al., 1989; Sternquist et al., 2010). Suppliers need to communicate with retailers to improve retailer perception (Sternquist et al., 2010). For example, organizing regular meetings and social activities for the staff of two companies may increase understanding between those two companies. The development of strong relationships with suppliers, integrated technological systems and the willingness to be flexible has changed the marketplace (Fernie, 2004).

Summary

Stakeholder theory suggests that business relationships with principal stakeholders are a company's most important assets to gain competitive advantages. For the purpose of this study, business relationships with stakeholders such as customers, suppliers, competitors and government are examined in this study.

Table 2.8: Representative studies on the relationship between business relationships and strategy

Study	Representative Findings
<i>Relationship with Customers</i>	
Reinartz et al. (2004)	An understanding of how to manage customer relationships effectively has become an important topic for both academicians and practitioners in recent years.
Peppers and Rogers (1995)	Organizations will be more successful if they concentrate on obtaining and maintaining a share of each customer rather than a share of the entire market.
Law et al. (2004)	In an increasingly competitive environment, companies must be customer-oriented. It is thus not surprising that companies spend substantial resources in measuring and managing customer satisfaction
Pfeffer (1994)	A quality manufacturing strategy and other manufacturing strategies moderated the HR-performance relationship. Firms wishing to succeed in today's global business environment must make appropriate HR investments to acquire and build employees who possess better skills and capabilities than their competitors.
Levitt (1960)	The purpose of an enterprise is to create and keep a customer.
Lynch (2003)	Customers are vital to corporate strategy development.
Fram (1995); Hahn et al. (1990); Kannan and Tan (2006)	Relationships between buyer-supplier have been characterized in a number of ways. Willingness, however, to work together and to share risks allows benefits to be achieved not only in cost, quality, delivery, and productivity, but in product development, technology deployment, and problem solving.
<i>Relationship with Suppliers</i>	
Kannan and Tan (2006)	Competitive forces are putting firms under pressure to improve quality, delivery performance, and responsiveness while simultaneously reducing costs. In response, firms are increasingly exploring ways to leverage their supply chains, and in particular, to systematically evaluating the role of suppliers in their activities
Zolkiewski and Turnbull (2002)	It is important to consider how the understanding of the significance of relationships with individual customers and suppliers can be translated into management strategy/actions.
Fine and Hax (1985)	The cooperative approach recommends developing long-term relationships based on mutual dependence and trust. Suppliers are given advice and training if their performance is unsatisfactory.
<i>Relationship with Competitors</i>	
Simkin and Cheng (1997)	The process of understanding competitors is undertaken by competitor analysis.
Kotler (1988)	Organizations are required to assess the impact of competition by benchmarking themselves against leading competitors, and by understanding the competition they face.
Bernhardt (1994); Rouach and Santi (2001)	The primary benefits of competitor analysis in terms of enhanced awareness of internal strengths and weaknesses (consequent to the systemic analysis of the strengths and weaknesses of competitors), and of external opportunities and threats.
Simkin and Cheng (1997)	Practical benefits arising from competitor analysis include the development of more realistic targets, improvements in service levels to bring them in line with those of competitors, and the ability to imitate competitors' successful marketing communications.

Study	Representative Findings
<i>Relationship with the Government</i> Lynch (2003)	Corporate strategy is not concerned with forming such policies but does need to understand the implications of the decision taken. It is critical to consider the role of government during the development of corporate strategy.
Luo (2001)	Despite continued reform in China, officials at various levels of government still have considerable power to approve projects, allocate resources, and arrange financing and distribution.
Mavondo and Rodrigo (2001); Yau et al. (2000)	When doing business in China, it is important for firms to learn to coordinate with the local and central government, especially establishing good relationship with government bodies to obtain important information and to influence Chinese decision makers.

2.7.2. Operations resources and operations strategy

Today's dynamic and global competitive forces require new thinking about the implications of manufacturing for achieving superiority in the marketplace. The global competitive climate is undergoing vast changes arising from volatility in consumer buying patterns, faster diffusion of technological advances that are transforming industries, and the emergence of companies that have worldwide product facilities and networks of suppliers. These changes have created a need for a revolution in manufacturing strategies which companies can employ to marshal appropriate resources that enable innovative designs, production of high quality goods, and speedy response to changes in the marketplace. A resource-based perspective offers an innovative approach to thinking about and developing a manufacturing strategy. According to this approach, a company's manufacturing strategy must capitalize on, and add to, its resources and capabilities (Zahra and Das, 1993).

The RBV is attractive to operations management researchers because it emphasizes capabilities residing within the firm, which is consistent with the general orientation of operations management (Amundson, 1998). Ultimately the contribution of the RBV for operations management is the discussion of the conditions under which bundles of resources provide competitive advantage for a firm. To accomplish this objective, operations strategy should build on available corporate human, technological, financial and informational resources. Resources enable a firm to develop and implement strategies that improve its efficiency and effectiveness. A firm's tangible and intangible operations capabilities constitute such a resource. Viewed in this context, manufacturing resources can be a strength that a firm can use in conceiving and implementing its business strategy (Zahra and Das, 1993). To be viable, a firm's tangible and intangible operations resources should possess high uniqueness and low

substitutability. Adopting a resource-based perspective on operations strategy, Zahra and Das (1993) developed a framework of operations strategy that focuses on the unique assets and capabilities of firms and a firm can use it to obtain different types of competitive advantage. A well-articulated resource-based operations strategy should capitalize on a firm's operations resources to attain and sustain a competitive advantage. This can be achieved by increasing the uniqueness or reducing the substitutability of different resources required for the strategy (Zahra and Das, 1993).

In recent years, RBV has been used in operations strategy to survey what constitutes and makes the sustainable capabilities different in the manufacturing field. RBV of the firm has brought about a new research prospect for operations strategy in recent years (Barney, 1991). More recently, the resource and capability-based perspective of strategy has also been applied to issues of production and operations management (Schroeder et al., 2002; Bates and Flynn, 1995). It emphasizes that what makes an enterprise successful and unique from others is those resources and ability which are not easily be duplicated and learned by other competitors. As this theory is taken into account in the operations strategy, the resources and ability are those which can make the manufacturing process different and distinguished from others (Hayes and Wheelwright, 1984). For example, Bates and Flynn (1995) considered the history of technology innovation as the unique resource of an enterprise in manufacturing process and explain the strong relationship between this history and performance. Schroeder et al. (2002) examined operations strategy from the perspective of the resource-based view of the firm. They explored the role of resources and capabilities in manufacturing plants that cannot be easily duplicated, and for which ready substitute are not available. Furthermore, they proposed that such resources and capabilities are formed by employees' internal learning, external learning and proprietary processes and

equipment. They also demonstrated that competitive advantage in manufacturing results from proprietary process and equipment which, in turn, is driven by external and internal learning.

Summary

Resource-based perspective offers an innovative approach to thinking about and developing an operations strategy. According to this approach, a company's operations strategy must capitalize on, and add to, its resources and capabilities. Although some studies have investigated the links between human resources, technology applications, competitive advantages, and performance outcomes, few have tried to examine them in a systematic manner.

2.8. Business performance

2.8.1. Business performance

Performance is a difficult concept, both in terms of definition and measurement. Thompson (1967) suggested that regardless of the basis for organizational assessment (efficiency, instrumental, or social tests), the important issue for organizations is preparedness for future action. Both internal and external constituencies will judge preparedness, and because of uncertainty, will typically measure it in "satisfying" terms, often based on economic-financial information. Firm success can be assessed in many ways. Thompson and Strickland (1993) identified the types of goals that firms typically establish to measure their success. These goals can be categorized into four areas:

- Market: market share; sales volume.

- Product: product quality; new and improved product introduction; productivity; ability to improve.
- Economic: annual earnings; profitability; return on investment.
- Employees: improvement in employee skills; employee flexibility.

This categorization represents an attempt to capture a broad range of outcomes that are important to firms. A company's market share and financial performance are vital to its existence. It was reported that above average financial performance was associated with above average emphasis on a wide variety of operational competencies (Droge et al., 1994).

2.8.2. Business performance and operations strategy

The relationship between the operations strategies chosen by a firm and performance outcomes may depend on the particular strategy and the outcome selected (Ahmed et al., 1996). Performance measures reflect how well the different competitive priorities fit in the implemented operations strategy (Suarez et al., 1996). For the service industries, effective performance measures related to operations strategies require a shift from "measures that focus on manufacturing efficiency to those capturing the critical success factors related to customer initiated demands" (Abernethy and Lillis, 1995). The good operations have an impact upon business success.

The existence of a relationship between operations strategy and business performance has long been supported by the operations strategy literature, especially in the manufacturing environment (Ward and Duray, 2000). For instance, Williams et al. (1995) identified a relationship between operations strategy and performance for a sample of manufacturers in the textile industry. Swamidass and Newell (1987) and Anand and Ward (2004) empirically

examined the linkages between business environment, operations strategy and performance. They found that manufacturing performance was positively related to a particular operations strategy, flexibility. Moreover, some empirical studies in the manufacturing sector have also found a positive relationship between quality and various measures of business performance (Flynn et al., 1995). Ward et al. (1995), for example, identified strong relationships between environmental dynamism and operations strategy choices of quality and delivery performance among higher performers. In a later work, Ward and Duray (2000) also showed that the operations strategy choice of quality was positively related to business performance.

Building upon the investigation of the unique characteristics of services, some retail academics have suggested the importance of competitive priorities of low price, quality and speed for retail success. Berry et al. (1997) stated that low price is a key strategy for high-performance retailers. A low cost strategy leads to improvements in operational efficiencies that a retailer can use to reduce its price and all things being equal achieve an increase in market share and sales growth. Moreover, quality plays an important strategic role in service firms, and service quality in the retail experience has become the most important purchase-determining condition (Bharadwaj and Menon, 1993; Berry et al., 1990). Some empirical studies (e.g. Bharadwaj and Menon, 1993) have found positive relationship between service quality and market share or profitability. Additionally, speed of service has become a competitive weapon for retailers to survive in an increasingly dynamic market (Berry et al., 1997). Time seems to be the factor most critical to customers' shopping experience (Peritz, 1993). Decreasing waiting time in line allows a retailer to achieve a higher level of customer satisfaction that can potentially increase performance outcomes, such as market share and sales. Moreover, while keeping cost

low and quality high, a retailer with high operational flexibility is expected to respond faster to market changes and thus achieve higher performance.

Summary

For the purposes of this research, business performance is measured using self-reported changes in market share, sales growth, profits growth and return on investment.

2.9. Summary

This chapter has reviewed the most important and relevant theoretical and empirical studies conducted in the last few years on operations strategy. It has presented the theoretical foundation studies, and discussed some empirical researches on the ways in which to investigate the links among business environment, operations resources, operations strategy, and performance outcomes. The two main business environmental dimensions (including environmental hostility and dynamism) have been described, and previous studies on the effects of business environment on operations strategy have also been examined. Additionally, this chapter has investigated the impacts of operations resources on operations strategy in both the manufacturing and retail sectors. The main operations resources (including human resources, IT applications, and business relationships with principal stakeholders) and the influences on operations strategy have been examined. Furthermore, the previous studies on the link between operations strategy and business performance in retailing have been reviewed. These discussions lead to the recognition of the importance impacts of business environmental factors and operations resources on operations strategy and business performance. Building on contingency theory as well as resource-based view, resource dependence and stakeholder theories, an overall theoretical

framework has been developed. The following chapter develops three sub-frameworks and the relevant hypotheses based on the overall framework.

CHAPTER THREE: SUB-FRAMEWORKS AND HYPOTHESES

DEVELOPMENT

This chapter aims to develop three sub-frameworks that set up links between business environment (business costs, labour availability, competitive hostility and environmental dynamism), operations resources (human resources, IT applications and business relationships with customers, suppliers, competitors and government), operations strategy (cost, quality, flexibility and delivery performance) and performance.

In this research, the *overall framework* linking operations strategy, business environment, operations resources and performance (see Figure 2.2) is approached via three sub-frameworks. The sub-frameworks are needed because they are based on different theories, as discussed in Section 2.4. Moreover, no study to-date has investigated the linkages in a systematic and empirical manner, especially in the Chinese context. Therefore, to investigate the links presented in the overall theoretical framework, three sub-frameworks are developed in this chapter.

The *first sub-framework* draws upon on the contingency theory and links operations strategy with business environmental factors (business costs, labour availability, competitive hostility and environmental dynamism) and business performance. On the other hand, the resource-based view suggests that operations resources (human resources, IT applications and business relationships with principal stakeholders) are the vital tools to enhance the overall strategy of the company, as well as being used to promote competitive advantage in the market. However, empirical studies on the role of human resources, IT applications and business relationships on operations strategy in a systematic manner are quite rare, especially in the Chinese context. Therefore, to investigate the important roles of operations resources in competitive operations

strategy development and business performance, another two sub-frameworks are developed. Thus the *second sub-framework* focuses on the relationships between operations strategy, operations resources (human resource and IT applications) and business performance. The *third sub-framework* investigates the linkages among operations strategy, operations resources (business relationships with customers, suppliers, competitors and government) and performance, drawing upon the resource dependence theory and the stakeholder theory.

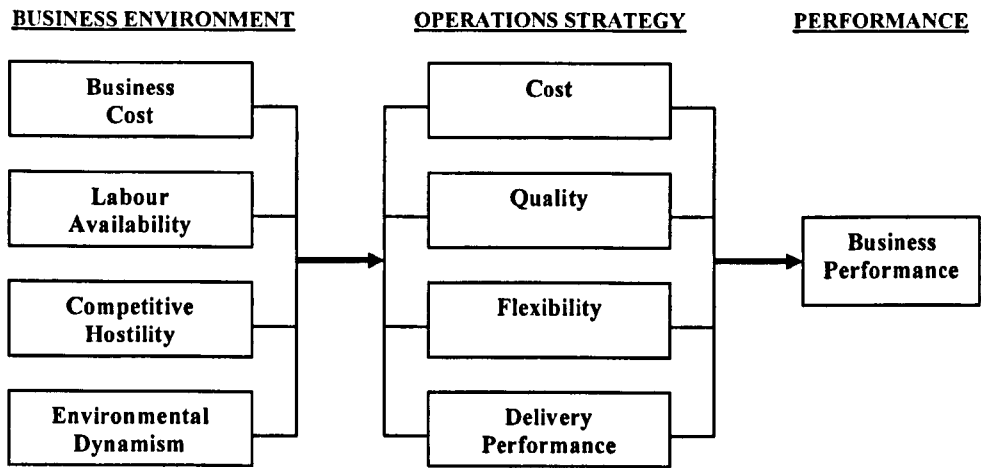
In accordance with these three sub-frameworks, a number of hypotheses are also developed in this chapter.

Sub-Framework ONE and Hypotheses:

Operations strategy, business environment and performance

The first sub-framework (see Figure 3.1) shows the relationships between some components of the overall framework. The components considered are business environment, operations strategy and business performance.

Figure 3.1: A sub-framework linking business environment, operations strategy and performance



The criticality of fit between external environment and elements of strategy has long been stressed in management literature (e.g. Lawrence and Lorsch, 1967; Venkatraman and Prescott, 1990). The strategic effectiveness of an organization depends on fit, which is the compatibility of structures and processes both within the firm with the environment in which it operates (Miller, 1992). Thus, the necessity for fit between strategy and business environmental characteristics continues to be a major tenet of management thought (D’Aveni, 1995). Building on previous work, a sub-framework is developed through the reconciliation of business environment, operations strategy and business performance (see Figure 3.1). The proposed framework incorporates some key features. Although a few previous studies summarized in Table 2.5 developed a conceptual model that set up links among business environment, operations strategy and performance, none of those studies investigated the linkages in the services sector, especially in the Chinese context. The framework presented in Figure 3.1 suggests that the relationships among business environment, operations strategy and business performance are linked.

As discussed in Section 2.6, operations strategy in this research is characterized by four familiar competitive priorities of cost, quality, flexibility, and delivery performance. As presented in Section 2.7, business environment is characterized by four main factors that are outside of the short-run control of company management, i.e. business cost, labour availability, competitive hostility, and environmental dynamism. In addition, business performance is measured using self-reported changes in market share, sales growth, profits growth and return on investment (Section 2.9).

3.1. Hypotheses development for sub-framework one

In accordance with the sub-framework presented in Figure 3.1, this research develops hypotheses that concern reasonable linkages among business environment, operations strategy and business performance.

3.1.1. Business environment and operations strategy

Traditional contingency theory suggests that environment influences strategy (Dess and Beard, 1984; Miller and Friesen, 1983). A review of the literature reveals that the dimensions of dynamism and hostility have commonly been used to characterize business environment. Miller and Friesen (1978) stated that increases in environmental dynamism and hostility are related to specific changes in the amount of analysis which characterizes strategy-making activity. Hostile environments intensify challenges to the firm, and often complicate these challenges. Hostility in environment is characterized by rising business costs, low profit margins, severe regulatory restrictions, shortages of labour or raw materials, and unfavourable demographic trends which

offers few opportunities to exploit (Miller and Friesen, 1983; Covin and Slevin, 1989). Therefore, greater analytical effort must be devoted to understanding and mastering threats (Khandwalla, 1972). On the other hand, environmental dynamism refers to the extent of the unpredictability of change within the firm's environment (Dess and Beard, 1984). This change can arise from many sources, including the rate of change and innovation in the firm's principal industries, the introduction of new products and services, the uncertainty or unpredictability of competitors' actions and customers' preferences (Lawrence and Lorsch, 1967; Miller and Friesen, 1983). Firms operating in a dynamic environment have to contend with rapid changes in technology, customer needs and preferences, as well as competitive action (Miller and Friesen, 1983; Mintzberg, 1994).

A number of empirical studies have examined the relationships between business environmental factors, including hostility and dynamism, and the operations strategy choices of cost, quality, flexibility, and delivery performance (see Table 2.5). The scholars specifically pointed out the importance of environmental factors on operations strategy choices. For example, building on the work of Swamidass and Newell (1987), Ward et al. (1995) identified the strong relationships between environmental hostility and dynamism and operations strategy. Ward and Duray (2000) subsequently developed a conceptual model which sets up a link between business environment, competitive and operations strategies, and firm performance. In recent years, some scholars have conducted similar studies among developing countries such as Ghana (Amoako-Gyampah and Boye, 2001) and the United Arab Emirates (Badri et al., 2000) to identify the environmental factors that influence operations strategies made by manufacturing firms.

However, all of these studies concentrated on manufacturing strategy and involved samples drawn from multiple manufacturing industries. Empirical studies that examine the effects of

business environment on operations strategy development in the service (retail) industry are quite rare. Few studies to date have investigated how retail managers develop competitive operations strategies to survive in an increasingly dynamic and complex environment. Services, compared to manufacturing, involve the conversion of resources into an “intangible” output (Adam and Swamidass, 1989). Voss (1986) stated that operations strategy must be changed and adapted to maximize the market criteria for success, and choose the strategic dimensions such as efficiency, price, effectiveness, quality, and flexibility, as demanded by the market.

As described previously, China’s retail market has been experiencing exponential growth in the last 20 years. However, the high levels of economic development have generated business environmental pressures such as increasingly keen competition, low profit margins, and high operating costs in the retail sector (Lo et al., 2001). In particular, Chinese customers are becoming more demanding with respect to quality, variety, flexibility and taste (Ramaseshan et al., 2006). Therefore, it can be expected that retailers in China must develop competitive operations strategies to adapt to an increasingly dynamic marketplace.

The first hypothesis is aimed at examining the specific nature of any relationships that exist between business environmental hostility and dynamism and operations strategies made by retailers in China. The researcher is interested in knowing if direct paths exist between each of the business environmental factors and the previously identified operations strategy elements. As mentioned earlier, the arguments for the relationships between business environmental factors and operations strategy have been clearly established in the literature (see Ward et al., 1995; Badri et al., 2000). To find out the nature of the linkages among retail firms in China, the following hypotheses are formulated:

*H1a: The business environmental factor of **business cost** has a significant positive effect on the operations strategy choices of cost, quality, flexibility, and delivery performance.*

*H1b: The business environmental factor of **labour availability** has a significant positive effect on the operations strategy choices of cost, quality, flexibility, and delivery performance.*

*H1c: The business environmental factor of **competitive hostility** has a significant positive effect on the operations strategy choices of cost, quality, flexibility, and delivery performance.*

*H1d: The business environmental factor of **environmental dynamism** has a significant positive effect on the operations strategy choices of cost, quality, flexibility, and delivery performance.*

3.1.2. Operations strategy and business performance

The link between operations strategy and business performance has been empirically examined over the last decade, especially in the manufacturing environment (Ward and Duray, 2000). The results of these studies have been mixed (Vickery et al., 1993). For instance, Swamidass and Newell (1987) found that operations strategy (flexibility) is positively related to business performance. Anand and Ward (2004) also showed that the implementation of mobility-flexibility in operations strategy results in performance benefits (market share and sales growth). In addition, Ward et al. (1995) identified positive links between environmental dynamism and quality and delivery capabilities among high performers. Vickery et al. (1993) found positive links between competitive strategy and production competence with business performance. Ward

and Duray (2000) identified strong links between the operations strategy of quality and business performance.

As noted previously, building upon the investigation of the unique characteristics of services, some retail academics have suggested the importance of competitive priorities of low price, quality and speed for retail success. Some retail academics (e.g. Arnold, 2002; Lawson, 2005; Berry et al., 1997; La Vere and Kleiner, 1997) have identified the major success factors demonstrated by high-performance retailers, including low price, speed, and quality of products/services. For instance, reducing waiting time in line can help a retailer to achieve a higher level of customer satisfaction that can potentially increase performance outcomes (such as market share and sales). Some empirical studies in a service context (e.g. Bharadwaj and Menon, 1993) have found positive relationship between service quality and performance (such as market share or profitability). Moreover, while keeping cost low and quality high, a retailer with high operational flexibility is expected to respond faster to market changes and thus achieve higher performance. Therefore, the following hypothesis is tested:

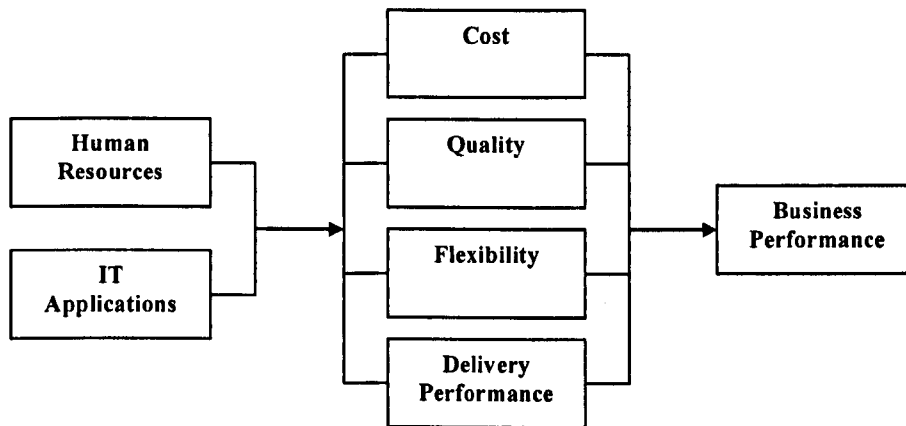
H1e: Operations strategy has a significant positive effect on business performance.

Sub-Framework TWO and Hypotheses:

Operations strategy, operations resources (human resources and IT applications) and performance

The second sub-framework (see Figure 3.2) links operations strategy with operations resources (human resources and IT applications) and performance.

Figure 3.2: A sub-framework linking human resources, IT applications, operations strategy and performance



As described in Section 2.8, the term “resource” is used in a very broad sense in the literature. A resource is a basic element that a company controls in order to best organize its processes (Lowson, 2003). Resources enable a company to develop and implement strategies that improve its efficiency and effectiveness. The Resource-Based View (RBV) is attractive to operations management researchers because it emphasizes capabilities residing within the company, which is consistent with the general orientation of operations management (Amundson, 1998). In recent years, RBV has been used in operations strategy to survey what constitutes and

makes the sustainable capabilities different in operations field. A well-articulated resource-based operations strategy should capitalize on a firm's operations resources to attain and sustain competitive advantage. This can be achieved by increasing the uniqueness or reducing the substitutability of different resources required for the strategy (Zahra and Das, 1993). Ultimately the contribution of the RBV to operations management is the discussion of the conditions under which bundles of resources provide competitive advantage for a company. To accomplish this objective, operations strategy should build on available corporate human, technological, financial and informational resources.

In this research, the second sub-framework approaches the operations strategy choices of retail companies in China from the perspective of RBV. As noted previously, many researchers have stated that operations strategy focuses on developing specific capabilities called competitive priorities (e.g. Roth and van der Velde, 1991; Vickery et al., 1997; Wheelwright, 1984). To research the integration of human resource management and operations, it is necessary to consider the competitive priorities of operations strategy that are directly related to the competitive potential of functional areas (Santos, 2000).

Information technology is a tool to enhance the overall strategy of the company as well as to promote competitive advantage in the market (Voss, 2003). Some studies concerning the impacts of IT applications on strategic decision-making have been conducted over the last few years. It has been widely argued that people provide companies with an important source of sustainable competitive advantage (Pfeffer, 1994; Wright et al., 1994). Companies wishing to succeed in today's global business environment must make appropriate human resource investments to recruit and train employees, such that these companies can retain highly skilled employees compared to competitors (Pfeffer, 1994).

The link between operations strategy and business performance has been empirically examined over the last decade. For example, Williams et al. (1995) identified strong relationships between operations strategy and performance for a sample of manufacturers in the textile industry. Gupta and Lonial (1998) used a path model to test linkages among business strategy, manufacturing strategy, and organizational performance. Moreover, Swamidass and Newell (1987) and Ward et al. (1995) empirically explored the linkages between business environment, operations strategy and performance. Both of these studies used path models to establish that business environmental factors affect operations strategy and business performance. Anand and Ward (2004) also showed that business performance was positively related to a particular operations strategy, namely flexibility.

However, a review of the literature reveals that there is no study that simultaneously explores the connections between human resources, IT, operations strategy, and performance implications using empirical evidence. Therefore, building on previous work, this research develops a sub-framework through the reconciliation of human resources, IT applications, operations strategy, and business performance (see Figure 3.2). As presented in Figure 3.2, the sub-framework postulates that human resources and IT applications serve as potential driving forces influencing operations strategy and performance (Wright et al., 1994; Youndt et al., 1996; Powell and Dent-Micallef, 1997). Human resources are characterized by employee competencies, and hence the terms “human resources” and “employee competencies” are used interchangeably in this paper. Operations strategy here is also characterized by the four familiar competitive priorities of cost, quality, flexibility, and delivery performance. In addition, business performance is also measured using self-reported changes in market share, sales growth, profits growth and return on investment. These measurements are discussed in more detail in the following chapter.

The proposed framework incorporates some key features. A few previous studies have suggested that the effects of human capital and technology applications should be considered during the strategic decision-making process (e.g. Youndt et al., 1996; Voss, 2003). However, empirical studies on the roles that employee competencies and technology implementations play in developing operations strategy and improving performance have not received any significant attention among service operations researchers, particularly in a developing country context. Therefore, research linking human resources, IT applications, operations strategy and performance in China is clearly required.

3.2. Hypotheses development for sub-framework two

In accordance with the framework presented in Figure 3.2, this research develops three hypotheses representing reasonable linkages between human resources, IT applications, operations strategy, and business performance.

3.2.1. Human resources and operations strategy

Resource-based view suggests that human resources can be a formidable weapon in achieving competitive superiority. Hax (1985) suggested that it is important to conduct a broad strategic audit of the human resource function prior to developing functional strategies. Jackson and Schuler (1995) presented some features of human resource management focusing on the operations strategy choice of quality, which allows a differentiation of human resource practices from those aligned with cost. To attain competitiveness through quality, Jackson and Schuler (1995) suggested that a number of key practices of human resource management (e.g.

enhancement of training and development programmes for all employees) should be developed. With regard to the alignment of human resource management with the operations strategy choice of delivery performance, some changes, including the need of communication for all elements of the company which constitute the internal logistical chain (supply, production planning and control and distribution) as well as the entire supply chain (several suppliers and customers) need to be considered (Jackson and Schuler, 1995). According to Jackson and Schuler (1995), companies that pursue an innovation strategy and an operation strategy choice of flexibility may be characterized by some features, including jobs that allow employees to develop skills that can be used in other positions in the company, and broader career paths to reinforce the development of a broad range of skills.

Some empirical studies have examined the important impacts of human resources on operations strategy choices. It has been widely argued that people provide companies with an important source of sustainable competitive advantage (Pfeffer, 1994; Wright et al., 1994). Youndt et al. (1996) found that a Human Resource (HR) system focused on human capital enhancement is directly related to multiple dimensions of operations strategy. Subsequent analysis by the same authors revealed that the main effect was predominantly the result of linking human-capital-enhancing HR systems with the operations strategy choice of quality (Youndt et al., 1996). Other operations strategies also moderate the human resource-performance relationship. For example, the operations strategy choice of cost tends to focus on internal effectiveness, thereby reducing the impact of human capital on performance. Quality and operational flexibility tend to require enhanced employee skills, thereby necessitating a human-capital-enhancing approach to HR that focuses on skill acquisition and development (Youndt et al., 1996). Most total quality management theorists (e.g. Crosby, 1979; Deming, 1982) argued

that skill acquisition and development form the core of a successful quality strategy. More specifically, the technical and problem-solving skills of employees tend to be more important in total quality environments because employees must be able to work in teams to diagnose and solve problems (Hayes et al., 1988). Reflecting this relationship, selective staffing and comprehensive training programs that emphasize attracting and developing individuals with superior technical, problem solving, and interpersonal skills are considered to be instrumental for increasing productivity and ensuring conformance to customer requirements. Other research findings have shown that the operations strategy choice of flexibility depends much more on people than on technical factors per se (Hayes et al., 1988; Upton, 1995). If companies want to successfully pursue a flexibility strategy, they must develop and maintain a highly skilled, technologically competent, and adaptable workforce that can deal with both routine and exceptional circumstances requiring creativity and initiative (Adler, 1988; Hayes et al., 1988; Upton, 1995). Similarly, comprehensive training programs focusing on both problem-solving and technical skills would be advantageous in volatile environments. The operations strategy choice of flexibility requires human-capital-enhancing HR systems that focus on skill acquisition and development in an effort to facilitate adaptability and responsiveness.

Although it is frequently acknowledged that human resource activities play central roles in linking employee capabilities with strategic decision making and company performance, the specific form of this relationship is still open to debate, particularly in the area of operations strategy (Youndt et al., 1996). In particular, empirical studies on the role of human resources on operations strategy development in the Chinese context are quite rare. No study to date has investigated how retail managers develop their operations strategies based on employee

competencies. As human resources are expected to affect operations strategy choices of cost, quality, flexibility and delivery, the following hypothesis is proposed.

H2a: Human resources have significant positive impacts on the operations strategy choices of cost, quality, flexibility, and delivery performance.

3.2.2. IT applications and operations strategy

As the field of strategic management has expanded, strategy researchers and practitioners have shown increasing interest in understanding the role of IT in strategy formulation, implementation (e.g. Holland et al., 1992; Cooper and Zmud, 1990), and its impacts on business performance (e.g. Dewett and Jones, 2001; Kettinger et al., 1994). Technology is frequently discussed as a major strategic variable in service operations. Technology can assist a company to gain strategic advantages in the form of improved delivery speed, increased quality and reliability, and increased new services that the customer could not envision (Adam and Swamidass, 1989). Building on Parsons's (1983) work, Kathuria and Igarria (1997) developed a theoretical model that seeks to help managers and practitioners to align IT applications with operations strategy choices (cost, product flexibility, volume flexibility, quality of design and product features, quality of conformance, delivery reliability, and delivery speed). They described how IT applications could be aligned with operations strategy choices by matching manufacturing tasks underlying those operations strategies and the compatible process structures with characteristics of various IT applications. They also provided a theoretical reasoning as to why and how certain IT applications enable some process structures to pursue a given operations strategy choice and provide a company with competitive edge, while others do not. In other research endeavours

(e.g. Hayes and Wheelwright, 1979; Hayes and Wheelwright, 1984; Skinner, 1985), it has been argued that different production systems (IT applications) or process structures have inherent advantages in pursuing certain operations strategy choices of cost, quality, flexibility and delivery performance. There are distinct management tasks and structural variables associated with different operations strategy choices (Hayes and Wheelwright, 1979). In addition, Voss (2003) has found that companies can reduce costs, improve product and service quality, enhance dependability, and increase flexibility by employing IT substantially. Sohal et al. (2001) highlighted that both the manufacturing and service industries are only achieving moderate benefits from IT investments. They argued that IT departments in service industries have a more direct role in operations strategy development than are the case in manufacturing industries. They also identified that economic factors, insufficient top management support, and difficulty to justify costs as the greatest impediments to IT success in both industries.

In addition, some studies examined the impacts of technology applications on developing operations strategy. Fletcher (1995) found positive links between IT and the strategies of marketing, sales, and innovation in new product development. Mathe and Dagi (1996) argued that IT applications contributed to the success of the implementation of international strategies in service industries. Moreover, Parsons (1983) suggested that the suitability of IT applications supported generic strategies of companies (cost and product differentiation). Ross et al. (1996) argued that companies could use IT to enhance competitiveness by developing effective IT capabilities in relation to the development of new technologies. Based on an analysis of fourteen well-known IT cases, Neo (1988) concluded that the most successful IT implementers are those that have already implemented similar systems, having built an infrastructure of IT experience and learning. In general, IT can benefit a company in two ways: it can be used to reduce costs

through substitution of workforce by technology; or IT investment can be made for final service improvement, for example, through simulation technology to verify service quality and reliability (Berry, 1995). Powell and Dent-Micallef (1997) found that IT alone does not produce sustainable performance advantages in the retail industry, but that some retailers could reduce transaction costs by leveraging intangible and complementary human resources through appropriate use of IT.

However, most previous studies focused heavily on manufacturing case studies and conceptual frameworks, with insufficient empirical work and minimal synthesis of findings (Powell and Dent-Micallef, 1997). In addition, empirical studies examining the effect of technology applications on strategic operations decision-making among Chinese retailers have not received significant attention. Clearly there is a need for more empirical research in the area of technology applications and service operations management (Sohal et al., 2001). To provide evidence of the importance of technology applications in operations strategy content, the following hypothesis is proposed:

H2b: IT applications have significant positive impacts on the operations strategy choices of cost, quality, flexibility, and delivery performance.

3.2.3. Operations strategy and business performance

As mentioned in the first sub-framework, the existence of a relationship between operations strategy and business performance has long been supported by the operations strategy literature (e.g. Swamidass and Newell, 1987; Anand and Ward, 2004; Ward et al., 1995; Vickery et al., 1993; Ward and Duray, 2000). Building upon the investigation of the unique characteristics of

services, some retail academics (e.g. Arnold, 2002; Lawson, 2005; Berry et al., 1997; La Vere and Kleiner, 1997) have suggested the importance of competitive priorities of low price, quality and speed for retail success. Thus, the following hypothesis is formulated, in the expectation of identifying whether this linkage exists in China's retail sector:

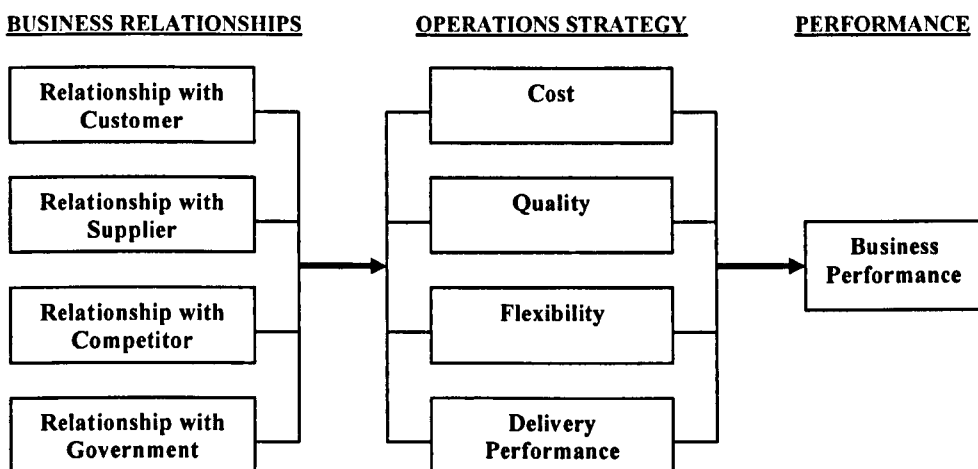
H2c: Operations strategy has significant positive effects on business performance.

Sub-Framework THREE and Hypotheses:

Operations strategy, operations resources (business relationships) and performance

The third sub-framework (see Figure 3.3) focuses on the links among operations strategy, operations resources (business relationships with customer, supplier, competitor and government) and business performance.

Figure 3.3: A sub-framework linking business relationships, operations strategy and performance



This research draws upon resource dependence and stakeholder theories to provide conceptual foundations of our theoretical framework. Resource Dependence (RD) theory gives a useful account of stakeholder power, although not in the form of a stakeholder attribute but as a structural component (Frooman, 1999).

Although there are studies linking business relationships with performance and operations strategy with performance, there is no study that links all the three in a systematic empirical manner. Therefore, drawing upon resource dependence and stakeholder theories, the research develops a framework through the reconciliation of business relationships, operations strategy and business performance (see Figure 3.3). Resource dependence theory and stakeholder theory highlight that business relationships with other companies or stakeholders is important in influencing the actions (such as the development of operations strategy) of organizations. Both theories suggest that businesses align their actions to improve performance and long-term stability. Thus, the framework presented in Figure 3.3 postulates that business relationships serve as the potential driving forces influencing operations strategy and business performance.

Business relationships are characterized by four main dimensions that are regarded as the core competencies for companies to pursue competitive advantages (i.e. the relationships with customer, supplier, competitor and government). Among business relationships, the relationship with competitor is characterized by competitor analysis. Thus, hereafter, the terms “relationship with competitor” and “competitor analysis” are used interchangeably. As noted in the first and second sub-framework, operations strategy in this sub-framework is characterized by the four familiar competitive priorities of cost, quality, flexibility, and delivery performance. In addition, business performance is measured using self-reported changes in market share, sales growth, profits growth and return on investment. These measurements are discussed in more detail in the next chapter.

3.3. Hypotheses development for sub-framework three

In accordance with the framework presented in Figure 3.3, this research develops hypotheses that concern reasonable linkages among business relationships, operations strategy choices and business performance.

3.3.1. Relationship with customers and operations strategy

Levitt (1960) stated that the purpose of an enterprise is to create and keep a customer. In an increasingly competitive environment, companies must be customer-oriented and treat customers as partners (Anderson, 2002). The stakeholder theory suggests that customer stakes are based on the satisfactions and protections implicitly promised in the market offer (Donaldson and Preston, 1995). Customer satisfaction with a company's products or services is often seen as the key to a company's success and long-term competitiveness, and services should correspond to customers' expectations and satisfy their needs and requirements. An understanding of how to manage customer relationships effectively has become an important topic for both academicians and practitioners in recent years (Reinartz et al., 2004). It is more important than ever for companies to create and sustain long-term, profitable customer relationships in a climate where there is greater awareness of service quality and customers are more in charge of the buyer-seller relationship (Curry and Kkolou, 2004). Effective Customer Relationship Management (CRM) has become a strategic imperative for companies in virtually every business sector. In essence, CRM focuses on building long-term and sustainable customer relationships that add value to both the customer and the company. Effective CRM can help companies maximize their abilities to interact with customers. This not only leads to improved quality but also enhances response to

customers' needs (Nguyen et al., 2007). As such, CRM is necessary for businesses because it distinguishes a company from its competitors in terms of knowledge about product ideas, and in terms of the ability to identify and find solutions to customers' problems. Effective CRM can shorten the distance between customers and the company, contributing to organizational success through customer loyalty, superior service, and better information gathering (Nguyen et al., 2007).

In summary, effective CRM is a foundation of simplifying customer support activities and reducing transaction costs so that the company may not only differentiate its products but also offer appropriate specification products at lower prices (Goodhue et al., 1992). Lynch (2003) also suggested that customers are vital to corporate strategy development. However, empirical studies directly relating to operations strategy and relationship with customer are quite rare. Although some scholars have suggested that customer value is a strategic weapon in attracting and retaining customers and has become one of the most significant factors in the success of both manufacturing businesses and service providers, customer value on effective operations strategy choices has not received any significant attention in the Chinese context. Therefore, research linking relationship with customers and operations strategy choices in the service sector in China is necessary. The hypothesis is as follows:

H3a: Relationship with customer has a significant effect on the operations strategy choices of cost, quality, flexibility and delivery performance.

3.3.2. Relationship with suppliers and operations strategy

Proponents of the resource dependence perspective note that under conditions of uncertainty, companies attempt to interact closely with their supply partners to manage the repercussions of such uncertainties (Paulraj and Chen, 2007). Competitive forces are putting companies under pressure to improve quality, delivery performance, and responsiveness while simultaneously reducing costs. In response, companies are increasingly exploring ways to leverage their supply chains, and in particular, to systematically evaluate the role of suppliers in their activities (Kannan and Tan, 2006). This has for some companies meant reducing and streamlining the supplier base, and developing closer relationships with suppliers (Scannell et al., 2000). Consistently, stakeholder approach recommends developing long-term relationships based on mutual dependence and trust. As a result, partners who work together and share risks could achieve benefits not only in cost, quality, delivery, and productivity, but also in product development, technology deployment, and problem solving (Fram, 1995). At an operational level, the benefit to a buyer of developing close relationships with key suppliers comes in the form of improved quality or delivery service, reduced cost, or some combination thereof (Kannan and Tan, 2006). At a strategic level, it should lead to sustainable improvements in product quality and innovation, enhanced competitiveness, and increased market share. These should in turn be reflected by improvements in financial performance (Kannan and Tan, 2006). Therefore, it is important to consider how the understanding of the significance of relationships with suppliers can be translated into management strategy/actions (Zolkiewski and Turnbull, 2002).

Some empirical studies have examined the linkages between buyer-supplier relationship and operations competitive priorities. Effective supplier management can result in improved

flexibility, responsiveness and customer loyalty (Martin and Grbac, 2003), innovation (Johnston et al., 2004), costs (Christopher, 1997), and high quality (Johnston et al., 2004); other benefits include better delivery performance (Christopher, 1997) and support for new product development (Ragatz et al., 1997), both of which lead to sustainable competitive advantage. Zhang and Goffin (2001) found that foreign companies in China seek to generate long-term relationships with their suppliers to reduce business costs and enhance product innovation. However, empirical studies on the role of supplier relationships on operations strategy choices in the Chinese context are quite rare. No study to date has investigated how retail managers develop their operations strategies through supplier management. Thus, to identify whether this relationship exists in China's retail sector, the following hypothesis is proposed:

H3b: Relationship with supplier has a significant effect on the operations strategy choices of cost, quality, flexibility and delivery performance.

3.3.3. Competitor analysis and operations strategy

Competitors were introduced as factors that have “an influence on managerial autonomy” in Dill's seminal article (1958), which is appropriately cited in the literature as a precursor of stakeholder analysis (Donaldson and Preston, 1995). According to Porter's (1980) five forces, companies are required to assess the impact of competition by benchmarking themselves against leading competitors, and by understanding the competition they face. Having identified the competitors, the next step is to know what they are doing and what they want to do; to try to understand their ability in different aspects and their strategy. An important feature is to know their strengths and weaknesses. The process of understanding competitors is undertaken by

competitor analysis (Simkin and Cheng, 1997). Kotler (1988) suggested that a primary benefit of competitor analysis is its capacity to pinpoint which competitors a company should compete with, and which should be avoided. The company could subsequently focus its competitive strategy on taking business from weak competitors while avoiding retaliation from strong competitors. Similarly, Bernhardt (1994) stated that competitor analysis enhances awareness of internal strengths and weaknesses, as well as of external opportunities and threats. An assessment of competitors' strengths and weaknesses permits a company to predict competitors' next moves and how they are likely to modify their activities in response to a challenge (Kotler, 1988). Consequently, competitors' strengths could be undermined and weaknesses exploited.

Engaging in competitor analysis allegedly encourages innovativeness. Practical benefits arising from competitor analysis include development of more realistic targets (via an appreciation of the scale of competitors' operations), improvements in service levels to bring them in line with those of competitors, and the ability to imitate competitors' successful marketing communications. On the other hand, Simkin and Cheng (1997) stated that companies that do not track their competitors' activities run the risk of becoming excessively reactive to their rivals' moves. Such companies lacked the "fighting spirit" conducive to innovation and possessed only a shallow understanding of external environments.

Effective competitor analysis is especially important in the Chinese context. China's retail sector is becoming increasingly competitive. For example, the local grocery retailers face keen competition not only from other food retailers, from other retail formats such as department stores, but also from big multinational giants such as Wal-Mart, Carrefour and Tesco, and from other traditional retail outlets (Lo et al., 2001). Thus a good understanding of major competitors has become more important than ever to make a successful business. Hingley et al. (2009)

suggested that most Chinese retailers suffer from limited economies of scale. To resist mergers with other retailers and gain more power in operations, domestic retailers should co-operate with one another. Therefore, it can be expected that effective competitor analysis seems to affect the appropriate operations strategy choices. The following hypothesis is constructed:

H3c: Competitor analysis has a significant effect on the operations strategy choices of cost, quality, flexibility and delivery performance.

3.3.4. Relationship with the government and operations strategy

According to resource dependence theory, inter-organizational strategies are pursued to mitigate the adverse impact of external forces and thus enhance the efficacy of an organization's strategies (Pfeffer and Salancik, 1978). At government policy level, politics and economics are inextricably linked. Corporate strategy is not concerned with forming such policies but does need to understand the implications of the decision taken (Lynch, 2003). Governments at both national and local levels can affect companies not only on a day-to-day basis through laws, policies and its authority, but also at a strategic level by creating opportunities and threats. Governments can stimulate national economies, encourage new research projects, impose new taxes and introduce many other initiatives that affect the organization and its ability to develop corporate strategy (Lynch, 2003). Therefore, Lynch (2003) suggested that it is critical to consider the role of government during the development of corporate strategy. Moreover, every country has a legislative or regulatory environment within which both local and foreign companies operate. As with any external force, the political/legal environment presents a company with strategic opportunities as well as threats (Walker et al., 1999). Johnson et al. (2005) stated that

understanding the role of the government bodies is particularly important when developing competitive international strategy. Companies can be beneficiaries of fiscal and trade benefits through regional development programmes and industrial regeneration policies, which, in turn, can bestow cost benefits (Tsang, 1998). Finally, government, of itself, is a large consumer and producer of products and services. Thus government purchasing power and buying methods are of importance to many companies (Lynch, 2003).

A number of authors have suggested that, when doing business in developing countries such as China, it is important for companies to learn to coordinate with the local and central governments, especially establishing good relationships with government bodies to obtain competitive advantages (Mavondo and Rodrigo, 2001; Yau et al., 2000). Although most previously state-owned retailers in China are becoming commercial, the government still holds the majority of their stock. Each strategic implementation must receive government approval, and most of the funds that support these retailers come from the government as well (Hingley et al., 2009). Also, many Chinese retailers compete by operating smaller formats and maintaining good relationships with government and local communities. The above discussion highlights the importance of a close relationship with government, and it can be expected that the relationship with government might affect a retailer's strategic decision-making. According to resource dependence theory, a company possessing a good relationship with the government is expected to have the capacity to develop competitive priorities of cost, quality, flexibility and delivery performance more effectively. Hence, to empirically identify whether this linkage exists within retail operations management, the following hypothesis is developed.

H3d: Relationship with government has a significant effect on the operations strategy choices of cost, quality, flexibility and delivery performance.

3.3.5. Operations strategy and business performance

As noted in the previous two sub-frameworks, the existence of a linkage between operations strategy and business performance has been supported by the operations strategy and retailing literature. Hence the following hypothesis is posited, to investigate whether this relationship exists in China's retail sector:

H3e: Operations strategy has a significant positive effect on business performance.

3.4. Summary

This chapter has developed three sub-frameworks that set up links among operations strategy choices, business environmental factors, operations resources and performance. The research hypotheses were also developed in accordance with these three sub-frameworks.

The first sub-framework investigates the relationships between business environmental factors (business cost, labour availability, competitive hostility and environmental dynamism), operations strategy and performance. Building on the sub-framework, the hypotheses 1a – 1e were set up. The second framework focuses on the links between operations resources (human resources and IT applications), operations strategy and business performance. The hypotheses 2a – 2c were also posited, in the expectation of identifying whether this relationship exists in China's retail sector. The last framework identifies the linkages between operations resources

(business relationships), operations strategy and performance. The hypotheses 3a – 3e were also proposed, anticipating the reasonable linkages presented in this sub-framework. Chapter Five discusses in full detail the methodology applied in this research, including data collection, questionnaire design, sampling, case study, and data analysis techniques.

CHAPTER FOUR: METHODOLOGY

This chapter aims to describe the methodology that is adopted by this research. This is done by explaining in detail the sampling, questionnaire design, measurements and variables, case study, and interview guides used in the research.

For the purposes of this research, both quantitative and qualitative methodologies are used to analyse the collected primary and secondary data. Structural Equation Modelling (SEM) is primarily used as a quantitative method to analyse the primary data obtained from questionnaire survey. The qualitative studies are also performed using case studies and interviews. Both quantitative and qualitative methods presented in sections below relate to the research questions set forth in Section 1.3:

- What are the relationships among operations strategy (cost, quality, flexibility and delivery performance), business environmental factors (business costs, labour availability, competitive hostility and environmental dynamism) and business performance?
- What are the relationships among operations strategy (cost, quality, flexibility and delivery performance), operations resources (human resources, IT applications and business relationships with customers, suppliers, competitors and government) and business performance?
- Operating in a highly dynamic and hostile environment, how can a firm develop operations strategy and improve business performance building on their operations resources development?

4.1. Methodology: triangulation

Methodology is a research strategy that translates ontological and epistemological principles into guidelines that show how research is to be conducted (Lather, 1992). The methodology inherits all the assumptions established in the epistemology, ontology and theoretical perspective (Crotty, 2003). The selection of an appropriate methodology is fundamental to the success of any research work. Undertaking any type of research should be governed by a well-defined research methodology based on scientific principles. Kaplan (1973) suggested that a well-developed research methodology can provide an understanding of the products and processes of scientific enquiry. However, due to the great debate about the meaning of science, so far there is no “perfect” research methodology (Amaratunga et al., 2002). Each research method has its own specific approach to collect and analyse empirical data, and therefore each method has its own advantages and disadvantages (Amaratunga et al., 2002). In order to avoid gross misfits between the desired outcome and the chosen strategy, according to Yin (1994), research strategy should be chosen as “a function of the research situation”.

There are a number of traditional research strategies for real-world social research, such as experiment research, survey research, action research, and grounded theory. The survey is the most commonly used research design in operations management. Surveys can do a good job of describing a large population and getting good and reliable answers to the same set of questions by all respondents (Forza, 2002; Flynn et al., 1994). This approach usually involves sophisticated statistical analysis, and remains popular with operations management researchers (Scudder and Hill, 1998). Therefore, the methodology of this research is survey. In survey research, the main methods used to collect data are interviews and questionnaires. Each data collection method has merits and shortcomings. Decisions on which method is best depend on the needs of the specific

survey as well as time, cost and resource constraints (Forza, 2002). In this research, interview and questionnaire are employed.

Methods are instruments employed in the collection and analysis of data. Research can be classified into two distinct types: qualitative and quantitative research. Crotty (2003) argued that the distinction between qualitative and quantitative research occurs at the level of methods, not at the level of epistemology or theoretical perspective. He introduced a model that challenges the conception that objectivist research must use quantitative methods while subjectivist research must be limited to qualitative methods (De Quiros et al., 2007). Amaratunga et al. (2002) also suggested that both qualitative and quantitative methods involve differing strengths and weaknesses. This emphasis has developed with the growing attention focused on “triangulation” in research (Yin, 1994). Triangulation is the combination of quantitative and qualitative research methods in the study of the same phenomenon. It refers to a broad approach which combines multiple observers, theoretical perspectives, and methodologies (Amaratunga et al., 2002). In line with these observations, this research uses both quantitative and qualitative methods to analyse the data from questionnaire survey and case study.

4.2. Qualitative Method and Case Study

4.2.1. Qualitative study

For the purposes of this research, a case study methodology was employed on retail firms in China. Such a qualitative methodology can offer a holistic view of the issue under investigation by providing retrospective in-depth insights into the knowledge base of operations strategy (Voss et al., 2002). Specifically, the use of the case study methodology is appropriate given that the

current research involves an exploratory examination of the links between business environment, operations resources and operations strategy.

Case studies and field research can be extremely useful for “theory development and testing” and answering questions about “how” or “why” phenomena or relationships between variables are observed in operations management (Meredith, 1998; McCutcheon and Meredith, 1993; Stuart et al., 2002; Voss et al., 2002). This methodology is typically aimed at generating deeper insights about operations management issues and problems through direct observation and on-the-spot data collection. According to Stake (2000), the use of case study design helps to optimize understanding through the use of experiential knowledge. The use of a collective case study design is particularly helpful in looking beyond what has been studied in academia to what is being applied in practice. Hence, the objective of the present research is of a theory-building nature, and case study research is the recommended method to employ (Eisenhardt and Graebner, 2007).

The use of single or small numbers of case studies as knowledge building tools is increasing in the operations management literature (Krishnamurthy and Yauch, 2007; Strijbosch et al., 2002; Towers et al., 2005; Waring and Wainright, 2002; Acur and Englyst, 2006; Decoene and Bruggeman, 2006). Reviewing the use of research methods in operations management, it has been suggested that the relative rarity of case research (when compared to quantitative investigation) is not driven by a methodological bias but by the poor rigour of much of the case research being conducted (Stuart et al., 2002). To improve rigour in operations management case research, Stuart et al. (2002) and Voss et al. (2002) recommended similar frameworks, each of which follows several distinct phases: definition of the research question; selection of cases;

development of a measurement instrument; data gathering; data analysis; and results dissemination.

Qualitative study was conducted during February 2008 and February 2009, including designing an interview guide, case selection, pilot case studies, conducting interviews, and organizing interview transcripts. The timescale for qualitative data collection through interviews is reported in Table 4.1. The case study design for this research is discussed as follows.

Table 4.1: Timescale for case study

Main activities	Time scale
Interview guide design (literature review)	February 2007 – January 2008
Design interview guide	February 2008 – April 2008
Case selection	March 2008
Pilot case studies	April 2008
Interviews and qualitative data collection in China [Shanghai (A-Mart), Jiangsu province (E-Mart), Henan province (B-Mart, C-Mart and D-Mart)]	April 2008 – December 2008
Organize interview transcripts	December 2008 – February 2009
Within- and cross-case analysis	From March 2009

4.2.2. Interview guide

The aim of this research is to investigate the links between business environment, operations resources (human resources, IT applications and business relationships), operations strategy and business performance. Interviews were conducted in Chinese using open-ended questions generated from the framework presented in Figure 2.2. The interview guide was developed based on the following three main research questions:

- What are your evaluations of current business environment?
- How could your firm develop operations resources to deal with a dynamic and hostile business environment?

- In order to achieve superior performance, how could your firm develop effective operations strategy based on the development of operations resources?

More details of interview guidelines (English and Chinese versions) are presented in Appendices 3a and 3b.

4.2.3. Case selection

A multi-case study method was adopted in this research. It adds to the richness of insight, allows inter-firm aspects and relations to be explored from multiple perspectives, contributes to drawing a more complete theoretical picture, and allows for the study of multiple units of analysis (i.e. retail firm, business environment, business relationships with principal stakeholders, and operations strategy development). Given the relative infancy of the effects of business environment and operations resources on operations strategy and performance, the research is exploratory. Furthermore, this research is considered as exploratory work because: (1) it is the first time that such a study has been conducted for retail sector; and (2) the Chinese context is novel. Voss et al. (2002) suggested that the case method lends itself to early, exploratory investigations where the variables are still unknown and the phenomenon not entirely understood (Benbasat et al., 1987; Meredith, 1998). Exploratory case study research can be an important step toward theory building (Eisenhardt, 1989; Eisenhardt and Graebner, 2007). When exploring a new theory, the multi-case method can be appropriate, augment external validity, guard against observer bias (Meredith, 1998; Voss et al., 2002), aid triangulation and improve the generality of findings (Voss et al., 2002; Yin, 2003).

Choosing which, and how many, cases to study are important methodological considerations (Stuart et al., 2002; Yin, 2003). To address the above research questions it is necessary to select

appropriate firms for investigation. The main criteria used in selecting each case company were driven by the research questions rather than random sampling (Yin, 2003). Also, another criterion was that the author could reliably address questions of retail operations by having access to upper management time and internal company documents (Eisenhardt, 1989; Yin, 2003). The purpose of the research is to investigate the links between business environment, operations resources, operations strategy, and performance, therefore it is necessary to select both local and foreign companies who operate their business in food and non-food retail sectors. Because of China's size and economic diversity (Zhao et al., 2006), the firms were strategically selected as representative types based on preliminary visits by the author. More than 30 retail companies in China were selected in March 2008, to provide an in-depth analysis as is required for exploratory research (Voss et al., 2002; Perry, 1998; Yin, 2003). The author contacted executives in these selected retailers by e-mail and telephone to request their company's participation in this research. But, most of the companies declined due to insufficient time or concerns about confidentiality protection. Finally, five companies agreed to participate in the study, including two foreign retailers and three local firms in China. All of these five retail firms were involved in food and non-food retail sectors for more than five years in China. Multiple case studies add confidence to the findings and increase the reliability of the study (Miles and Huberman, 1994). The use of multiple cases also allows for some degree of triangulation in the research (Easterby-Smith et al., 2002).

The names of the case companies have been disguised as "A-Mart", "B-Mart", "C-Mart", "D-Mart", and "E-Mart", for confidentiality reasons. The descriptions of participant firms are summarized in Table 4.2. The main sources of the profiles of the case companies are the firms'

websites and internal documents. The detailed profiles of case companies are presented in Appendix 4.

Table 4.2: Profiles of case companies

Name used in this research	Retail type	Firm nationality	Established (year)	Sales volume in 2008 (millions of RMB)	Number of employees	Number of stores
A-Mart	Food	Joint venture (JV) in 2004; Wholly foreign owned enterprise in 2006	2004	13,500	21,000	62
B-Mart	Food	National	2000	625	1,872	26
C-Mart	Department store and food	Regional	1999	250	1,200	2
D-Mart	Food	Regional	2001	100	1,000	20
E-Mart	Home appliances	Joint venture (JV) in 2006; Wholly foreign owned enterprise in 2009	1998	23,000	8,100	256

4.2.4. Data collection

After contacting the selected firms and obtaining formal permission, in-depth structured interviews of selected managers and staff in different positions were used as the data collection method in order to understand the perspective of a variety of people in the firms. All the interviews were guided by the framework presented in Figure 2.2. The purpose of the in-depth interviews is to investigate the interviewees' opinions on how to develop competitive operations strategy to survive in today's complex and dynamic markets, building on their operations resources development. This research used convergent in-depth interviewing that allows the researcher to develop, clarify, and refine the core issues of the interview protocol. It consists of a number of interviews in which the procedure is both structured and unstructured. Face-to-face

interviews and interviews via telephone and Internet were conducted during April–December, 2008.

To minimize perceptual biases linked to managers' specific organizational roles, the researcher attempted to include informants with diverse functional and managerial backgrounds from different levels. The panel of interviewees is reported in Table 4.3. As part of this field research, a total of 36 interviews were carried out with top management teams and senior managers in the five case companies, who were in charge of the retail operations function. The target personnel in each firm were:

- Top management
- Product/service management
- Human resources management
- Sales and marketing management
- Store operations and management
- Purchasing management
- Strategic planning management

Field research that investigates the views and opinions of companies directly and indirectly involved in the decision-making process is becoming increasingly prevalent within the literature (Sparks, 1996; Palmer and Quinn, 2003). Therefore, more interviews were also conducted with cashiers, stock persons, and salesmen. In addition, shop visits were arranged immediately after interviews so that the researcher could have a better understanding of case company operations.

Table 4.3: Details of interviewees

Name used in this study	Formal interviewees	Informal discussions	Shop visits	Number of interviews	Length of interviews (hours)
A-Mart	<ul style="list-style-type: none"> • Human resource manager • District operations manager • Store manager • Sales and marketing manager 	<ul style="list-style-type: none"> • Checkout cashier • Salesmen 	<ul style="list-style-type: none"> • Shop visits in Shanghai, Zhejiang province (Hangzhou and Ningbo city) 	5	6.5
B-Mart	<ul style="list-style-type: none"> • President • General manager • Operations manager • Human resource manager • Purchasing manager • Store manager • General manager • Purchasing manager • Store manager • Sales manager • Human resource manager • General manager • Human resource manager • Strategic planning manager • Store manager • District operations manager • Store manager • Sales and marketing manager 	<ul style="list-style-type: none"> • Checkout cashiers • Stock persons • Salesmen 	<ul style="list-style-type: none"> • Shop visits in Henan province (Nanyang city) and Hebei province (Baoding city) • Participation in company weekly meetings (B-Mart's head office) 	8	9
C-Mart	<ul style="list-style-type: none"> • General manager • Purchasing manager • Store manager • Sales manager • Human resource manager • General manager • Human resource manager • Strategic planning manager • Store manager • District operations manager • Store manager • Sales and marketing manager 	<ul style="list-style-type: none"> • Checkout cashiers • Salesmen 	<ul style="list-style-type: none"> • Shop visits in Henan province (Nanyang city) • Participation in company weekly meetings (C-Mart's head office) 	11	14
D-Mart	<ul style="list-style-type: none"> • General manager • Human resource manager • Strategic planning manager • Store manager • District operations manager • Store manager • Sales and marketing manager 	<ul style="list-style-type: none"> • Checkout cashiers • Stock persons • Salesmen • Checkout cashiers • Salesmen 	<ul style="list-style-type: none"> • Shop visits • Participation in company monthly meetings (D-Mart's head office) 	9	10
E-Mart	<ul style="list-style-type: none"> • District operations manager • Store manager • Sales and marketing manager 	<ul style="list-style-type: none"> • Checkout cashiers • Salesmen 	<ul style="list-style-type: none"> • Shop visits in Jiangsu province (Nanjing city) and Henan province (Zhengzhou city) 	3	5
Total				36	44.5

The length of the interviews typically varied from half-an-hour to two-hours, and comprehensive notes were taken during the interview. Reflections on each interview were written by the author as field notes for future reference. All of the 36 interviews were recorded. For confidentiality reasons, the identities of respondents are not disclosed in this research (Huber and Power, 1985). Before, during, and after the interviews, relevant documents were sought from interview participants. Moreover, questions arising from the interview notes were answered by interviewees through follow-up emails and phone calls. Interviewees were invited to comment on the transcripts and to clarify points which had remained potentially unclear. Some statistics (such as sales volumes and number of employees) reported in this study have also been modified due to confidentiality reasons.

To develop convergent lines of inquiry (Yin, 2003; Voss et al., 2002; Merriam, 1998), multiple and independent sources of evidence sources were used in this research: (1) quantitative and qualitative data from face-to-face interviews with corporate and divisional level managers; (2) emails and phone calls to follow up interviews; (3) secondary data, including company internal documents, presentations, business publications, archival data and further materials provided by company informants; and (4) quantitative data from retail institute (e.g. CCFA, 2009) and government statistics (e.g. Mofcom, 2009). The use of multiple respondents and multiple types of data mitigates the biases of a single respondent and increases the odds of capturing the organization's view of a construct (Yin, 2003).

The whole data collection process lasted about nine months. The data collection activities resulted in the completion of a retrievable database, including 20 pages of structured field notes, about 45-hour digital voice recording, 115 pages of single spaced interview transcripts, site visit

notes, and other related documents such as government statistics, financial statements and archival data.

4.2.5. Data analysis

Data analysis had two main components: within- and cross-case analysis. Within-case analysis is a process of data reduction and data management (Miles and Huberman, 1994). Within-case analysis helps the researcher to examine operations management in a single context, while the cross-case analysis serves as a form of replication (Yin, 2003) whereby the constructs of interest in one setting are tested in other settings. According to the recommended approach, in this research interview data were triangulated based on information collected through interview, observation and documentation analysis. Further triangulation of data was achieved by ensuring that interviews were conducted at multiple levels within the firm. The data were first analyzed within-case and then cross-cases (Miles and Huberman, 1994; Stake, 2000).

Borch and Arthur (1995) highlighted that analyzing case study evidence is especially difficult because the connection between the data collection and the data analysis phase is not sequential, but interactive. That was true in this research; much more was known about the framework presented in Figure 2.2 when the last interview was conducted than when the first interview was conducted. The constructs and operationalization of data analysis are reported in Table 4.4. Initial interviews had to focus on the main components of the framework, such as business environment, operations resources (human resources, IT applications and business relationships) and operations strategy development, or general questions about the framework as a whole. Towards the end, it was possible to ask respondents more in-depth questions about the links among these components (Stevenson and Spring, 2009).

Table 4.4: Constructs and operationalization

Research constructs	Data collection protocol
<i>Business environment</i>	
Business cost	Information on business environment was collected through in-depth interviews, company reports/documents, company websites, government statistics (e.g. CCFA, 2008; Mofcom, 2008), and other media, as well as shop visits
Labour availability	
Competitive hostility	
Environmental dynamism	
<i>Operations resources</i>	
Human resources	Operations resources were evaluated through in-depth interviews with top management, middle and senior manager, low level employees (e.g. checkout, sales assistant, and stock staff)
Relationship with customers	
Relationship with suppliers	
Relationship with competitors	
Relationship with government	
IT applications	
<i>Operations strategy</i>	
Cost	Operations strategy development and implementation were evaluated through in-depth interviews with top management, middle and senior manager, low level employees (e.g. checkout, sales assistant, and stock staff), and shop visits
Quality	
Flexibility	
Delivery performance	
<i>Business performance</i>	
Sales volume	Business performance were evaluated through in-depth interviews with top management and store managers, company reports/documents, company websites, government statistics (e.g. CCFA, 2009; Mofcom, 2009)
Market share	

After the interviews were conducted, transcripts pertaining to a single initiative were read several times to grasp what the interviewees were saying. Where necessary, the case histories that had been sketched out on the basis of the secondary data were complemented (Brauer, 2009). The continuous triangulation of interview statements with secondary data was meant to increase the richness and reliability of the account of events (Jick, 1979). In further iterations, the transcripts were read again and again to see whether any important information regarding the facilitating conditions or core categories had been overlooked (Brauer, 2009).

Several measures recommended in the literature were employed in this research to ensure the *validity and reliability* of the data analysis and interpretation process; these practices involved

data and between-method triangulation to describe the examined governance mechanism theme from different perspectives (Yin, 2003). Interview notes were transcribed, analyzed and condensed to ease comparability (Stevenson and Spring, 2009). Data triangulation is based on the collection and comparison of data from two respondents within each firm and different functional areas (Denzin, 1989).

In accordance with Yeo's (2003) work, data triangulation was undertaken as follows to improve validity and reliability of qualitative data. First, data triangulation was achieved in this research through the use of multiple sources of data collection, consisting of in-depth interviews and documents (examination of company documents and archival data, and observation). This research also used evaluator triangulation by discussing the data with colleagues and academics in order to identify unclear or ambiguous descriptions. On some occasions, details were confirmed by respondents after the interview (e.g. through a follow-up telephone conversation). These triangulation methods resulted in this research achieving construct validity (Yeo, 2003). This is when results obtained from the use of measures fit the theories around which the test is designed (Yin, 2003). Second, two academics reviewed the draft case analysis, satisfying investigator triangulation, during the data analysis and report-writing phase (Yin, 2003). By adopting this technique, ambiguous descriptions were detected and clarified, thereby addressing construct validity and increasing the overall quality of case study research (Yin, 2003). Third, internal validity was achieved through the tactics of within-case analysis, cross-case analysis and pattern matching. Fourth, internal validity was achieved through the tactics of within-case analysis (e.g. by comparing primary and secondary data), cross-case analysis (e.g. by comparing the responses of inter-related companies) and pattern matching. Moreover, since inter-related firms were studied, triangulation is built into the research design (Yeo, 2003).

In addition, to improve validity and reliability of data analysis, this research also used two pilot case studies as a pilot test of the intended data collection instrument and to provide some conceptual clarification of the research design (see Table 4.1). These dual sources of information helped to ensure that this research reflected significant issues and questions relevant to contemporary cases (Yin, 2003). Moreover, other practices employed in this research to ensure the quality of the findings included the use of theory to structure the interview guide (Oppenheim, 2000) and the circulation of case study reports and transcripts to the interviewees within each retail firm (Healy and Perry, 2000).

4.3. Quantitative Method and Questionnaire Survey

4.3.1. Sample

Quantitative data for this research were obtained from a primary survey of retail firms in China. The sample was made up of retail firms taken from Market Statistical Yearbook (2007) which is the official publication of the National Bureau of Statistics of China (NBS 2007). The sample consisted of retailers operating their business in food and non-food sectors.

4.3.2. Questionnaire survey

Questionnaire survey was conducted during February–December, 2008. The timescale for quantitative data collection through questionnaire is presented in Table 4.5. The procedure of questionnaire survey is discussed in more detail below.

Table 4.5: Timescale for questionnaire survey

Main activities	Time scale
Preparation for questionnaire design (literature review)	February 2007 – January 2008
Design questionnaire	February 2008 – June 2008
Pre-test with academics and practitioners	April 2008 – June 2008
Initial contact with potential respondents	June 2008 – July 2008
Send out questionnaire	July 2008 – August 2008
Collect questionnaire	August 2008 – December 2008
Screen questionnaire and data analysis using SEM	From January 2009

Before executing the survey, a pre-test was undertaken to ensure that the questions were clear, meaningful, relevant and easy to interpret. The pre-test was performed in two stages: academics' review and practitioners' review. Building on previous studies and an interview with a top executive of a large food retailer in China, a draft questionnaire was developed. The draft questionnaire was pre-tested by two academics to check its content validity and terminology, and was modified based on the feedback. In the second stage, to ensure proper use and interpretation of the technical language of retailing, the modified questionnaire was then pilot-tested with five experienced retail managers in China. After the five respondents had completed the questionnaires, every question was discussed with them to ensure that they had understood correctly. When there was confusion or ambiguity in the wording of the questions or scales, modifications were made. The two stages were satisfactorily completed, suggesting no major problems with the construct measures or response format. In addition, to ensure the reliability of the questionnaire, the English version was first developed and then translated into Chinese. A number of questions were reworded to improve the accuracy of the translation and to relevant to practices in China. This ensured that the questionnaire was both clear to the target Chinese respondents and accurate in reflecting the meaning of the original questions in English. The Chinese version was then back-translated into English, and the back-translated English version

was checked against the original English version for discrepancies. More details of questionnaire (English and Chinese versions) are reported in Appendices 5a and 5b.

The retailers were initially contacted by telephone and email before the questionnaires were sent out. To encourage participation and improve the response rate, the respondents were promised a summary of findings of our study. A total of 318 retail companies replied and agreed to participate in the study. The initial contact revealed that lack of time and concerns about confidentiality protection were the most common reasons for non-participation. Some questionnaires and prepaid self-addressed envelopes were then posted to these retailers. For other retailers, questionnaires were sent via email. Each questionnaire was accompanied by a cover letter indicating the purpose of the study and potential contributions. The letter also assured complete confidentiality to the respondents. Follow-up calls were made to remind and encourage the retailers to complete and send back the questionnaires and to clarify any questions or concerns that the companies had.

Finally, a total of 122 completed questionnaires were received, which represents a 38.4% response rate. After screening, it was found that 16 of the 122 questionnaires had not been completed properly and were discarded, thus leaving 106 responses for use in the subsequent analyses. The results of demographic characteristics of the responding firms are reported in Table 4.6. The respondent retailers operated in six different sector groups as shown in the table. The table also shows number of employees and total sales volume. In China, retailing is a labour-intensive sector; about 20% of the responding retailers had 5,000 or more employees, and about 50% of firms had less than 1,000 employees. About 60% of the responding firms had annual sales of below 500 million yuan (approximately US\$73.1 million), and 9.4% had annual sales of over 5,000 million yuan (approximately US\$731 million).

Table 4.6: Respondent profile²

	Number of firms	Percent (%)
Retail sub-sector		
Food retailing	59	55.8
Health, beauty & pharmacy retailing	10	9.4
Clothing and footwear retailing	8	7.5
Electrical retailing	11	10.4
DIY home improvement & furniture	10	9.4
Others	8	7.5
Total	106	100.0
Number of employees		
1-99	14	13.2
100-299	15	14.1
300-999	20	18.9
1,000-4,999	36	34.0
5,000-9,999	8	7.5
10,000 or more	13	12.3
Annual sales (in million Yuan, 1US\$ = 6.84 RMB)		
Below 10	4	3.8
10-50	14	13.2
50-100	16	15.1
100-500	29	27.3
500-1,000	15	14.2
1,000-5,000	18	17.0
Above 5,000	10	9.4

In addition, a profile of the respondents is presented in Table 4.7. As shown in this table, the respondents typically carried the title of operations manager, general manager, sales manager, and store manager in-charge of retail operations function. Most of them have been in their position for more than 5 years, which indicates that the informants were knowledgeable about the issues under study.

² A paper examining the impacts of firm characteristics (such as firm size, firm age, firm nationality, legal form of ownership, and retail sub-sector) on the nature of relationships between business environmental factors and operations strategy has been published in *International Journal of Services and Operations Management*. The paper is reported in Appendix 2.

Table 4.7: Respondent characteristics

Position	% of respondents	Years in current position	% of respondents
Top/senior management	37.7%	1-5 years	38.7%
Middle management	55.7%	6-9 years	33.0%
Other	6.6%	10-19 years	23.6%
		More than 20 years	5.7%

Since there was a single informant per company, the potential for common method bias was assessed (Flynn et al., 2010). Analysis of Harman's single-factor test of common method bias (Flynn et al., 2010, Podsakoff et al., 2003) revealed nine distinct factors with eigenvalues of more than one, explaining 64.9% total variance. The first factor explained 17.2% of the variance, which was not the majority of the total variance. It is acceptable for a study such as this, where the constructs are correlated, both conceptually and practically (Flynn et al., 2010). To further assess common method bias, confirmatory factor analysis was used to test Harman's single-factor model (Sanchez and Brock, 1996; Flynn et al., 2010). The model's fit indices of ($\chi^2/df = 2.246$; RMSEA = 0.109; CF1 = 0.711) were unacceptable and were significantly worse than those of the measurement model. This indicates that a single factor is not acceptable, thus the common method bias is small (Flynn et al., 2010). To assess potential late response bias, the early and late responses were compared on their annual sales and number of employees (Armstrong and Overton, 1977), with a test showing no significant differences. In addition, the research found no significant non-response bias based on responses' annual sales and number of employees (Armstrong and Overton, 1977).

4.3.3. Measurements and variables

To collect data, the research developed a questionnaire by adapting the instrument and scales developed by the studies described previously. Since all the previous studies pertained to the manufacturing sector, the instruments were modified to reflect the unique characteristics of the retail sector (e.g. Lo et al., 2001; Hingley et al., 2009; Uncles, 2010; Jonsson, 2008; CCFA, 2009), and some special measures were also introduced in this research. The measures used in this research to assess business environment, operations resources, operations strategy, and business performance are described below.

4.3.3.1. Measures for operations strategy

For the purposes of this research, four basic competitive priorities are considered to measure operations strategy, namely cost, quality, delivery performance, and flexibility (Hayes and Wheelwright, 1984; Fine and Hax, 1985; Ward et al., 1998). The measures for operations strategy are reported in Table 4.8. As shown in this table, four questions (e.g. reducing overhead costs, or inventory level, as well as increase equipment utilization and private brands sales) were used to assess *cost strategy* (Ward et al., 1995; Berry et al., 1997; CCFA, 2009). *Quality strategy* was measured by four questions. The questions focused on providing appropriate specification good/service, improving good/service performance and reliability, formulating and implementing extremely strict good/service quality control procedures, and requiring suppliers to pass a formal certification of quality control and improvement system (Johnston and Clark, 2008; Ward et al., 1995; Parasuraman et al., 1988; Bharadwaj and Menon, 1993). *Flexibility strategy* measures also included four items, namely good/service flexibility, mix flexibility, volume flexibility, and

delivery flexibility (Slack et al., 2010; Flynn et al., 2010). In this context, flexibility in the retail sector involves the introduction of wide range of new goods and services, adjusting capacity rapidly, and handling variations in customer delivery schedules (Johnston and Clark, 2008; Aranda, 2003; Suarez et al., 1996). *Delivery performance strategy* measures consisted of providing reliable delivery, decreasing waiting time in line, and improving after sales service (Johnston and Clark, 2008; Ward et al., 1995; Peritz, 1993; Berry et al., 1997).

Table 4.8: Measures for operations strategy

Scale	Items
<p><i>Cost</i> 5-point Likert scale, adapted from Johnston and Clark (2008); Slack and Lewis (2008); Ward et al. (1995); Berry et al. (1997); CCFA (2009)</p>	<p>Reduce overhead costs Reduce inventory level Increase equipment utilization Increase Private Brands (PBs) sales</p>
<p><i>Quality</i> 5-point Likert scale, adapted from Johnston and Clark (2008); Slack and Lewis (2008); Ward et al. (1995); Parasuraman et al. (1988); Bharadwaj and Menon (1993); Ward and Duray (2000)</p>	<p>Provide appropriate specification product/service Improve product/service performance and reliability Make extremely strict product quality control procedures Require suppliers to pass a formal certification of quality control and improvement system</p>
<p><i>Flexibility</i> 5-point Likert scale, adapted from Johnston and Clark (2008); Slack and Lewis (2008); Suarez et al. (1996); Flynn et al. (2010); Aranda (2003)</p>	<p>Improve the ability to introduce new product/service or modify existing ones Improve the ability to change the variety of product/service in a given time Improve the ability to respond quickly to shift in demand, to increase or decrease the operation's aggregated output Improve the ability to change planned delivery dates meeting customers' or chain stores' emergent requirements</p>
<p><i>Delivery Performance</i> 5-point Likert scale, adapted from Johnston and Clark (2008); Slack and Lewis (2008); Ward et al. (1995); Peritz (1993); Berry et al. (1997)</p>	<p>Decrease waiting time in line Meet delivery promises Improve after-sales service</p>

4.3.3.2. Measures for business environment

As noted above, a review of the literature reveals that the dimensions of dynamism and hostility have commonly been used to characterize business environment. The measures for environmental hostility and dynamism are shown in Table 4.9.

4.3.3.2.1. Environmental hostility

As shown in Table 4.9, this research included three scales which are conceptually related to environmental hostility: costs of doing business in China (business cost), labour availability, and competitive hostility. The *business cost* dimension consisted of concerns pertaining to the rising cost of inputs in the retail operations process (i.e. labour, rental, transportation, and utilities costs) (Miller and Friesen, 1983; CCFA, 2009; Hingley et al., 2009; Lo et al., 2001). *Labour availability* referred to concerns about the potential shortages of skilled workers and technicians as well as managerial and administrative workers in China's retail sector (Ward et al., 1995; Cayla and Eckhardt, 2007; Wang, 2008; Lo et al., 2001; CCFA, 2009). *Competitive hostility* included concerns about changes in China's retail market such as increasing competition, declining demand, low profit margins, more demanding quality standards imposed by the marketplace (Lo et al., 2001; Hingley et al., 2009; Ramaseshan et al., 2006; Cayla and Eckhardt, 2007), and severe government laws and regulations (Miller and Friesen, 1983; Lo et al., 2001; CCFA, 2009; Liu, 2007).

Table 4.9: Measures for business environment

Scale	Items
<i>Business Environmental Hostility</i> 5-point Likert scale, adapted from Miller and Friesen (1983); Mintzberg (1979); Achrol and Stern (1988); Ward et al. (1995); Lo et al. (2001); CCFA (2009); Hingley et al. (2009); Jonsson (2008); Liu (2007)	Rising labour cost Rising rental cost Rising transport cost Rising utilities cost Shortage of managerial and administrative staff Shortage of technicians Shortage of skilled workers Shortage of clerical and related workers Keen competition in the retail sector Declining demand in the retail market Low profit margins More demanding quality standards Severe government laws and regulations
<i>Business Environmental Dynamism</i> 5-point Likert scale, adapted from Duncan (1972); Miller and Friesen (1983); Sohi (1996); Achrol and Stern (1988); Ward et al. (1995); Lo et al. (2001); Hingley et al. (2009); Ramaseshan et al. (2006); CCFA (2009)	Rate at which product/service become outdated Rate of changes in retail technology Rate of innovation in new service development Rate of changes in tastes and preferences of customers Rate of changes in key competitors' market activities

4.3.3.2.2. Environmental dynamism

The environmental dynamism items used in this research were also adapted from Miller and Friesen (1983) (see Table 4.9). Respondents were asked to indicate the rate of change in China's retail market, from very slow to very rapid, at which goods and services become outdated, the rate of change in retail technology, the rate of innovation in new service development, as well as the rate of change in competitors' market activities and Chinese customers' tastes and preferences (Lo et al., 2001; Hingley et al., 2009; Ramaseshan et al., 2006; CCFA, 2009). Higher numeric scores indicated higher rates of dynamism.

4.3.3.3. Measures for operations resources

As described above, measures for the variables comprising human resources, IT applications, and business relationships were developed based on previous studies and interviews in the first phase with five top managers or directors of retailers in China, and were subsequently refined.

The measures for operations resources are summarized in Table 4.10.

Table 4.10: Measures for operations resources

Scale and References	Items
<i>Human resources</i>	
5-point Likert scale, adapted from Pfeffer (1994); Wright and McMahan (1992); Wright et al. (1994); Arnold (2002); Berry et al. (1997); La Vere and Kleiner (1997); CCFA (2009)	Responsible/exercise leadership Team working Highly motivated Fully trained Retailing experience Good educational background Play role in formulating plans
<i>IT applications</i>	
5-point Likert scale, adapted from CCFA (2009); Powell and Dent-Micallef (1997); Cox and Brittain (2000); Raman et al. (2001) Mehra (2005)	Barcode technique Radio Frequency Identification (RFID) technology Geographical Information Systems (GIS) Point-Of-Sale (POS) system Electronic Data Interchange (EDI) Retail management software Self-service technology (SSTs) Internet connectivity and e-retailing
Business Relationships	
<i>Relationship with customers</i>	
5-point Likert scale, adapted from Lynch (2003); Johnston and Clark (2008); Slack and Lewis (2008); Wong and Sohal (2002); Pal and Byrom (2003)	Keep in close contact with customers at many levels Regularly receive and act upon customer satisfaction surveys Respond to customers' complaints and suggestions Develop various loyalty card schemes
<i>Relationship with suppliers</i>	
5-point Likert scale, adapted from Luk (1998); Slack and Lewis (2008); Frazier, et al. (1989); Sternquist et al. (2010); Ganesan (1994)	Treat suppliers with honesty, fairness and respect Achieve win-win relationships with suppliers Respond to improvement suggestions from suppliers, and provide them with feedback and complaints Share strategic operations planning with major suppliers
<i>Relationship with competitors</i>	
5-point Likert scale, adapted from Kotler (1988); Simkin and Cheng (1997)	Understand market activities of main competitors Identify strengths and weaknesses of main competitors, and benchmark ourselves against them Set up an appropriate communication approach to competitors

Scale and References	Items
<i>Relationship with government</i>	
5-point Likert scale, adapted from Mavondo and Rodrigo (2001); Yau et al. (2000); CCFA (2009)	Long-term stable relationship with the government Obtain preferential treatments from the government Influence changes to retail regulations to some extent Strictly obey laws and regulations issued by the government

4.3.3.3.1. Human resources

Employees play a major role in shaping the service experience in retailing (Arnold, 2002; Berry et al., 1997). Human resources refer to employee competencies, namely good team working, responsible leadership, retail experience, good educational background, and a high degree of self-motivation (CCFA, 2009; Wright et al., 1994; Arnold, 2002; Berry et al., 1997; La Vere and Kleiner, 1997). Higher numeric scores indicated higher employee competencies (see Table 4.10).

4.3.3.3.2. Information Technology (IT) applications

A review of the literature and interviews with top management of retailers indicated that some related retail information technologies have been popularly used by domestic and foreign retailers in China over the last decade. The retail technologies mainly include sophisticated Point-Of-Sale (POS), barcode technology, Electronic Data Interchange (EDI) with suppliers, and computer-based systems for retail management (Powell and Dent-Micallef, 1997; Mehra, 2005; Cox and Brittain, 2000). In addition, Radio Frequency Identification (RFID), Self-Service Technologies (SSTs), Geographical Information Systems (GIS), internet connectivity and other cutting-edge technologies are also being used by some leading retailers (Cox and Brittain, 2000; CCFA, 2009; Mofcom, 2009). Therefore, all these items were used to measure technology applications (see Table 4.10).

4.3.3.3. Business relationships

As mentioned previously, this research included four dimensions that are conceptually related to business relationships: the relationship with customer, supplier, competitor and the government (Freeman, 1984; Ford et al., 2003; Lorenzoni and Lipparini, 1999; Donaldson and Preston, 1995). High numeric scores indicated better business relationships development with customer, supplier, competitor and government (see Table 4.10).

Previous studies have suggested a number of important benefits of building a long-term relationship with customer in retail operations (Wong and Sohal, 2002; Pal and Byrom, 2003). In this research, *relationship with customer* consisted of customer relationship management in the retail operations process, i.e. keeping contact with customers at many levels, regularly conducting and acting upon customer satisfaction surveys, responding to customer complaints and suggestions, and developing various loyalty card schemes for customers (Lynch, 2003; Johnston and Clark, 2008; Wong and Sohal, 2002; Pal and Byrom, 2003).

A long-term orientation in a buyer-seller relationship can add more values to both supplier and retailer (Ganesan, 1994). *Relationship development with supplier* in this research referred to treating suppliers with honesty, fairness and respect, achieving win-win relationships with suppliers, responding to improvement suggestions from suppliers, and sharing strategic operations planning with major suppliers (Luk, 1998; Slack and Lewis, 2008; Frazier, et al., 1989; Sternquist et al., 2010).

Relationship development with competitor in this research was measured by competitor analysis. The process of understanding competitors is undertaken by competitor analysis (Simkin and Cheng, 1997). The measures include understanding market activities of main competitors,

identifying strengths and weaknesses of main competitors, and conducting an appropriate communication approach to competitors (Kotler, 1988; Kotler et al., 1996; Simkin and Cheng, 1997).

As mentioned previously, establishing a good relationship with government bodies has been considered as important resources when doing business in China (Mavondo and Rodrigo, 2001; Yau et al., 2000). *Relationship with government* in this research was comprised of seeking a long-term, stable relationship with the government, obtaining preferential treatment from the government, influencing changes to retail regulations to some extent, and strictly obeying laws and regulations issued by the government (Mavondo and Rodrigo, 2001; Yau et al., 2000; CCFA, 2009).

4.3.3.4. Measures for business performance

The appropriate way to measure performance has been debated extensively in the literature. Performance can be measured through objective data or subjective means. The appropriateness of the performance measure to use may depend on the circumstances unique to the study (Swamidass and Newell, 1987). In this research, business performance was measured using four perceptual measures, including market share, sales growth, profits growth, and return on investment (Swamidass and Newell, 1987). The measures for business performance are summarized in Table 4.11. Growth is one frequently used measure of performance (Dess and Beard, 1984). In this research, growths in two major aspects of performance (growth in sales and growth in profits) were employed (see Table 4.11). Moreover, Return On Investment (ROI) and market share of the firm were used as one set of measures. The first measure, ROI, is a popular accounting ratio and is commonly used in business analyses. Market share is a commonly used

measure of performance in marketing strategy. Business performance measures are often used in the literature to assess the effects of operations strategy elements (e.g. Swamidass and Newell, 1987; Ward and Duray, 2000; Anand and Ward, 2004). In accordance with these prior operations management studies, the respondents were asked to assess their performance relative to the performance of main competitors on a five-point scale (ranging from 1 “significantly lower” to 5 “significantly higher”).

Table 4.11: Measures for business performance

Scale	Items
Performance Measure	
5-point Likert scale, adapted from Swamidass and Newell (1987); Dess and Beard (1984); Ward et al. (1995); Ward and Duray (2000); Cao and Dowlatshahi (2005)	Market share Sales growth Profit growth Return on investment

Some authors argued that self-reported measures of performance lead to bias. Others, such as Churchill et al. (1985), revealed that self-reported measures of performance do not inflate the correlations with the predictor variables, and could provide the same results as objective data and manager ratings of a company’s performance. Dess and Robinson (1984) believed that in the absence of other objective criteria, self-evaluations could serve as appropriate and reliable alternative indicators. This method of measuring performance had a special appeal for this study, since no access to accurate financial and other performance data was available (such as increases in return on investment or market share). Moreover, managers generally face confidentiality issues when objective data are requested (Ward and Duray, 2000). Although objective performance measures are preferred to perceived measures of performance, self-evaluations have been used and recommended as a substitute when objective measures are unavailable (Dess and Robinson, 1984; Venkatraman and Prescott, 1990). To overcome the potential problems with

self-reported measures, multiple items were used to assess performance. Although any single item contains true variance as well as systematic and random error, averaging cross alternative measures reduces the random error component (Youndt et al., 1996).

4.3.4. Analysis method: Structure Equation Modelling (SEM)

Structural Equation Modelling (SEM) is a useful tool in theory development because it allows the researcher to propose and subsequently test theoretical propositions about interrelationships among variables in a multivariate setting (Hair et al., 2006; Byrne, 2001). It has more recently become one of the preferred data analysis methods among empirical operations management researchers (Shah and Goldstein, 2006). SEM includes path analysis and covariance structure analysis as special cases. Path analysis is an extension of the regression model, used to test the fit of the correlation matrix against two or more causal models which are being compared by the researcher (Hair et al., 2006). The model is usually depicted in a circle-and-arrow figure in which single arrows indicate causation. Path analysis offers some distinct advantages, including the identification of direct and indirect effects in a complex system of variables, and the convenience with which intervening variables could be included in the model (Shah and Goldstein, 2006).

A number of previous studies (e.g. Swamidass and Newell, 1987; Ward et al., 1995; Ward and Duray, 2000; Chi et al., 2009) have strongly advocated the appropriateness of using path analyses to examine the links among business environmental factors, operations strategy and performance. For instance, Swamidass and Newell (1987) showed environment as a precursor to choice of manufacturing strategy in their path model linking perceived environment, operations strategy process, operations strategy content, and firm performance. Using a path analytic framework, Ward et al. (1995) examined the effects of business environment on operations

strategy and performance for a sample of Singapore manufacturers. Ward and Duray (2000) employed a path model to link environment, competitive strategy, operations strategy and performance. Amoako-Gyampah and Boye (2001) used a path model to link environmental factors and operations strategy choices. Therefore, to examine the linkages among business environment, operations resources, operations strategy and business performance of retailers in China, path analysis is used in this study.

4.4. Summary

This chapter has provided specific details regarding the research methodology and designs applied in the research. For the purpose of this research, the qualitative and quantitative research approaches used to analyse the collected data was discussed in more detail.

On the one hand, SEM using AMOS 6.0 was primarily applied as a quantitative method to analyse the primary data obtained from questionnaire survey of retail firms in China. Before executing the survey, a pre-test was undertaken. The draft questionnaire was pre-tested with two academics and five experienced retail managers in China, to check its content validity and terminology. The measures used in this research to assess business environment, operations resources, operations strategy, and business performance were also discussed.

On the other hand, the qualitative studies were undertaken using case study and face-to-face interviews. The empirical research was carried out using multiple case study-based approaches, aimed at five carefully selected retail firms operating in China which were involved in food and non-food retail sectors for more than five years. This in-depth interviewing was used in this research, which allows the researcher to develop, clarify, and refine the core issues of the interview protocol. It consists of a number of interviews in which the procedure is both

structured and unstructured. The profiles of five retail firms and the panel of interviewees were also described. Interview data were first analyzed within-case and then cross-case.

The following chapter reports the research results and the findings in terms of findings of data analysis (SEM and within-/cross-case analysis).

CHAPTER FIVE: RESULTS OF QUESTIONNAIRE DATA ANALYSIS

This chapter aims to report the research results of the three sub-frameworks of the quantitative data collected using questionnaire survey. Multivariate data analysis (such as Principal Component Analysis (PCA), Confirmatory Factor Analysis (CFA), and path analysis) was applied to investigate the links presented in the three sub-frameworks among business environmental factors, operations resources, operations strategy, and business performance. Based on the findings of questionnaire data analysis, the relevant hypotheses are tested in this chapter.

Sub-Framework ONE: Operations Strategy, Business Environment and Performance³

To examine the linkages between business environment, operations strategy and performance among retailers in China, path analysis is used in this study. The results of data analysis are presented into the following two sections. The first subsection reports the results of PCA and CFA. Then, as shown in Figure 3.1, the links among operations strategy, business environment and performance through the path analysis are discussed.

³ A paper based on the research work reported in this section has been published in *International Journal of Services and Operations Management*. The paper is reported in Appendix 2.

5.1. Preliminary analyses of sub-framework one

5.1.1. Principal Component analysis (PCA) of sub-framework one

PCA with an oblique rotation was first undertaken on business environment and operations strategy measures to examine the underlying dimensions of the constructs. Hair et al. (2006) also suggested that such a within-scale PCA also provides additional evidence of convergent validity. Factor analysis for the business environmental factors produced four dimensions with eigenvalues greater than one and factor loadings greater than 0.50 (see Table 5.1) on a single factor for each of the constructs, providing support for unidimensionality (Hair et al., 2006). Moreover, Table 5.1 shows the results of factor analysis for operations strategy encompassed by competitive priorities. As shown in Table 5.1, some business environmental variables used by Ward et al. (1995) and Miller and Friesen (1983) were deleted in this research because of low reliability. This might have occurred due to unique business culture in the Chinese retail industry, sample size, and perceptions of the respondents.

Table 5.1: Factor loadings of business environment, operations strategy and business performance (PCA) for sub-framework one

Variables	Mean	S.D.	Factor loadings	Cronbach alpha
Factor 1: Business cost				0.619
ECOS1 – Rising labour cost	4.273	0.834	0.838	
ECOS2 – Rising rental cost	4.254	0.805	0.795	
Factor 2: Labour availability				0.673
ELAB1 – Shortage of managerial and administrative staff	3.754	0.837	0.803	
ELAB2 – Shortage of technicians	3.773	0.853	0.752	
ELAB3 – Shortage of skilled workers	4.132	0.677	0.742	
Factor 3: Competitive hostility				0.645
ECOM1 – More demanding quality standards	3.820	0.923	0.839	
ECOM2 – Severe government laws and regulations	3.226	1.148	0.853	
Factor 4: Environmental dynamism				0.694
EDYN1 – Rate at which goods/services become outdated	3.320	0.971	0.752	
EDYN2 – Rate of changes in retail technology	3.254	1.033	0.814	

Variables	Mean	S.D.	Factor loadings	Cronbach alpha
EDYN3 – Rate of innovation in new service development	3.471	0.864	0.709	
Operations Strategy				
Factor 1: Cost				0.644
COST1 – Reduce overhead costs	4.198	0.709	0.796	
COST2 – Reduce inventory level	4.198	0.695	0.800	
COST3 – Increase equipment utilization	4.103	0.702	0.622	
Factor 2: Quality				0.591
QUAL1 – Provide appropriate specification of goods/services for customers	4.311	0.735	0.780	
QUAL2 – Improve goods/services performance and reliability	4.245	0.687	0.790	
QUAL3 – Make extremely strict goods/services quality control procedures	4.103	0.872	0.657	
QUAL4 – Increase Private Brands (PBs) sales	3.452	1.374	0.511	
Factor 3: Flexibility				0.672
FLEX1 – Change the variety of goods/services in a given time	3.707	0.861	0.690	
FLEX2 – Respond quickly to shift in demand, to increase/decrease operational capacity	3.877	1.039	0.813	
FLEX3 – Change planned delivery dates to meet emergent requirements	3.726	1.055	0.780	
Factor 4: Delivery performance				0.853
DELI1 – Provide fast deliveries	4.037	0.882	0.803	
DELI2 – Meet delivery promises	4.273	0.834	0.913	
DELI3 – Improve after sales service	4.245	0.766	0.908	
Business Performance				0.764
PERF1 – Market share	3.198	1.072	0.694	
PERF2 – Sales growth	3.481	0.853	0.847	
PERF3 – Profits growth	3.132	0.862	0.801	
PERF4 – Return on investment	3.235	0.900	0.744	

Cronbach's alpha coefficient was used to examine the reliabilities among the items within each factor. A Cronbach's alpha coefficient higher than 0.60 is generally viewed as being acceptable for an exploratory study such as this one (Nunnally, 1978; Byrne, 2001). Moreover, Nunally and Bernstein (1994) recommended a cut-off point of 0.60 for new scales. Some empirical studies that examined the link between business environment and operations strategy used a Cronbach's alpha cut-off of 0.60 to establish scale reliability (e.g. Ward et al., 1995; Amoako-Gyampah and Boye, 2001; Anand and Ward, 2004). In this study, values of Cronbach's

alpha were calculated for each dimension of its construct (Flynn et al., 1990) and reported in Table 5.1. From this table, it can be seen that Cronbach's coefficient alpha values for the four factors were larger than 0.60, representing an acceptable significant level of internal validity (Nunnally, 1978). The first factor including two items was entitled business cost. The second factor contained three items that reflected the availability of labour, and was named labour availability. The next factor, competitive hostility, included two items that related to demanding quality standards as well as government laws and regulations. The next factor, labelled environmental dynamism, contained three items including rate of changes in retail technology and innovation of new service development. Since all these four factors loadings were of an acceptable significant level, the 10 questionnaire items were retained for further analysis. Other factors generated from EFA, however, indicated a low reliability (below 0.60), and were excluded from further analyses (Nunnally, 1978). A number of items (such as ECOST3 - rising transport cost; ECOST4 - rising transport cost; and ECOM3 - keen competition in the retail industry) were deleted from future analysis, since it was found that they have more than one significant loading (cross-loading) (Hair et al., 2006).

As shown in Table 5.1, the 12 items of operations strategy loaded on four factors. The items loaded on the first factor, cost, involved the operations strategy of reducing operations cost. The second factor, quality, included three items about providing high quality products and services for customers. The third factor captured the competitive priority of flexibility. The last factor included three items about offering reliable and fast delivery and after sales service for customers, and was named delivery performance. The alpha coefficients for the four factors were 0.644, 0.591, 0.672, and 0.853, respectively. These values are either close to or exceed the 0.60 criterion generally considered adequate for exploratory work (Hair et al., 2006; Nunnally, 1978;

Nunnally and Bernstein, 1994). In addition, Table 5.1 also shows that Cronbach's coefficient alpha values for business performance (0.76) were higher than 0.60, representing an acceptable significant level of internal validity (Nunnally, 1978).

Because the scales are unidimensional, a single set of factor scores can be used to represent each scale. Factor scores are obtained by multiplying the observed standardized values of each variable by the corresponding standardized factor loading. The result is a set of standardized factor scores, with one score for each scale on each observation (Ward et al., 1995). The correlation matrix of the final scales is reported in Table 5.2. It includes correlation among all the scales items (business environment, operations strategy choices and business performance) for the confirmatory factor analysis.

Table 5.2: Correlation matrix for sub-framework one

Scale	1	2	3	4	5	6	7	8	9
Business Environment Scales									
1. Business cost	(0.619) ^a								
2. Labour availability	0.178	(0.673)							
3. Competitive hostility	0.116	0.042	(0.645)						
4. Environmental dynamism	-0.045	-0.035	-0.005	(0.694)					
Operations Strategy Scales									
5. Cost	0.062	0.031	-0.094	0.351**	(0.644)				
6. Quality	-0.038	-0.033	0.229*	0.251**	0.291**	(0.591)			
7. Flexibility	-0.043	-0.050	0.033	0.358**	0.179	0.187	(0.672)		
8. Delivery performance	0.126	0.051	0.107	0.025	0.165	0.139	0.075	(0.853)	
Performance Scales									
9. Business performance	0.024	0.106	0.030	0.346**	0.302**	0.246*	0.248*	0.179	(0.764)

** $p < 0.01$.

* $p < 0.05$.

^aThe numbers in parentheses are Cronbach's coefficient alphas.

5.1.2. Confirmatory Factor Analysis (CFA) of sub-framework one

CFA was used to assess the overall model fit and the reliability and validity of each multi-item scale (first-order factor) (Hair et al., 2006; Shah and Goldstein, 2006). The author evaluated the overall model fit, reliability and validity of the measurement instrument for business environmental factors and operations strategy choices. In assessing model adequacy, the author used several recommended tests: the Chi-square value normalized by degrees of freedom (χ^2/df), the Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI) (Byrne, 2001; Hu and Bentler, 1999). CFI values greater than 0.90 are generally considered to indicate an acceptable fit for the data, and a value greater than 0.95 is considered as a very good model fit. An RMSEA between 0 and 0.05 indicates a good fit, and between 0.05 and 0.08 is acceptable. The Chi-square value normalized by degrees of freedom (χ^2/df) should not exceed 3 (Byrne, 2001; Hair et al., 2006).

As shown in Table 5.3, the results of CFA provided significant support for business environment conceptualizations ($\chi^2 = 36.319$; $df = 31$; $(\chi^2/df) = 1.172$; $RMSEA = 0.040$; $CFI = 0.966$). Table 5.3 also indicates that CFA results provided good fit for the four-factor (cost, quality, flexibility and delivery performance) solution for operations strategy. Hence, these results can be considered significant in statistical terms.

Table 5.3: Summary of fit statistics for sub-framework one

Variables	Variance explained (%)	Cronbach alpha
Business Environment		
<i>1. Business cost</i>	72.404	0.619
<i>2. Labour availability</i>	60.700	0.673
<i>3. Competitive hostility</i>	74.368	0.645
<i>4. Environmental dynamism</i>	62.019	0.694
Goodness of Fit Statistics: $\chi^2 = 36.319$; $df = 31$; $(\chi^2/df) = 1.172$; RMSEA = 0.040; CF1 = 0.966		
Operations Strategy		
<i>5. Cost</i>	58.572	0.644
<i>6. Quality</i>	62.783	0.591
<i>7. Flexibility</i>	60.454	0.672
<i>8. Delivery performance</i>	77.870	0.853
Goodness of Fit Statistics: $\chi^2 = 79.731$; $df = 59$; $(\chi^2/df) = 1.351$; RMSEA = 0.058; CF1 = 0.938		

Establishing reliability is necessary but not sufficient to establish construct validity (Hair et al., 2006). Hence convergent and discriminant validity were also assessed in this research. Convergent validity is concerned with similarity or convergence between individual items measuring the same underlying latent variable (Peng et al., 2008). In this research, convergent validity was assessed by the magnitude of factor loadings of business environment and operations strategy (Hair et al., 2006). The results of principal component analysis show that all factor loadings were greater than 0.50, and had positive signs ($p < 0.01$). Discriminant validity refers to the degree to which measures of different latent variables are unique and distinct from each other. In this study, discriminant validity was examined using Chi-square difference test (Hair et al., 2006; Peng et al., 2008). In accordance with Peng et al.'s (2008) work, Chi-square difference tests were undertaken as follows: 1) a model was run, whereby the covariance between a pair of latent variables was fixed to one; 2) a second model was run, whereby the covariance between the same two latent variables was free to assume any value; and 3) the significance of the χ^2 difference between the two models was computed. The results indicate that all χ^2 differences between the factors were significant ($p < 0.01$), providing evidence of discriminant validity between each measurement scale measuring business environment,

operations strategy and performance. Furthermore, to evaluate discriminant validity, the Average Variance Extracted (AVE) was used. The AVE for the constructs with multiple measures all exceeded the minimum of 0.50 suggested by Fornell and Larcker (1981), providing further evidence of discriminant validity (Flynn et al., 1990).

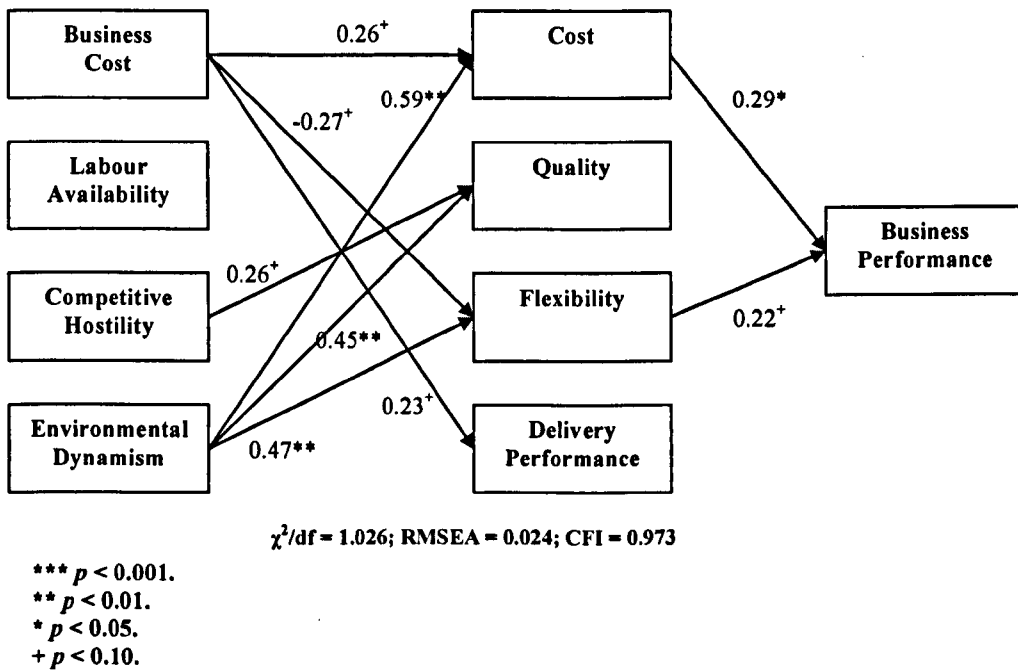
5.2. Structural Equation Modelling (SEM) of sub-framework one

The results of path analyses using AMOS 6.0 for the responding firms are reported in Figure 5.1. The fit statistics for the model show that χ^2/df (1.062) was below the suggested maximum of 3, and an RMSEA of 0.024 was less than 0.05 indicating a good fit. CFI (0.973) values above 0.95 also tend to suggest a very good fit. Overall, the fit measures indicate a good fit of the model to the population.

In Figure 5.1, the path coefficients (standardized regression coefficients) are shown on the arrows. The existence of significant paths from business environmental factors to operations strategy elements and from operations strategy elements to business performance provides evidence of a causal relationship existing between business environment and operations strategy and between operations strategy and performance. For example, the path analytic model indicates that environmental dynamism has significant positive effects on the operations strategy choices of cost ($\beta = 0.59, p < 0.01$), quality ($\beta = 0.45, p < 0.01$), and flexibility ($\beta = 0.47, p < 0.01$). The data also suggest that the predictors of quality are competitive hostility and environmental dynamism. Competitive hostility has a slightly significant impact on the choice of quality as a component of operations strategy ($\beta = 0.26, p < 0.10$). As can be seen, business cost appears to slightly influence the operations strategy choices of cost ($\beta = 0.26, p < 0.10$) and delivery performance ($\beta = 0.23, p < 0.10$), but it has a slightly negative effect ($\beta = -0.27, p < 0.10$)

on the operations strategy choice of flexibility. However, environmental concern about labour availability does not appear to have any direct effect on the operations strategy choices among retail firms in China. Similarly, two significant paths between the operations strategy choices of cost, flexibility and performance also indicate the predicted relationship between operations strategy and performance.

Figure 5.1: Path model of business environment, operations strategy and performance (sub-framework one)



Hypothesis 1a – 1d, that business environmental factors and operations strategy are related, requires that at least one path between an environmental dimension and an operations strategy choice. The severally observed positive and significant direct impacts of environmental dimensions on the operations strategy indicated that Hypotheses 1a, 1c, and 1d cannot be rejected. However, Hypothesis 1b is rejected because no path from labour availability to

operations strategy choices is significant at the 0.10 significance level. Similarly, Hypothesis 1e also requires that at least one significant path exists between operations strategy choices and business performance. The path model shows that the operations strategy choices of cost and flexibility are positively related to business performance at the 0.05 and 0.10 significance levels. Thus Hypothesis 1e is supported. The implications of these findings are discussed in the next chapter.

Sub-Framework TWO: Operations Strategy; Operations Resources (human resources and IT applications) and Performance

Similarly, PCA, CFA and path analysis were also applied to test the second sub-framework (see Figure 3.2) that examines the effects of human resources and IT applications on operations strategy and performance. The results of PCA, CFA and path analysis are reported below.

5.3. Preliminary analyses of sub-framework two

5.3.1. Principal Component Analysis (PCA) of sub-framework two

To examine the underlying dimensions of the constructs of human resources, IT applications, operations strategy, and business performance measurements, PCA with an oblique rotation was first undertaken. The PCA results reported in Table 5.4 show that all of the items had significant factor loadings. The factor analysis displays all factors with eigenvalues greater than one and factor loadings greater than 0.50 on a single factor for each of the constructs, providing support for unidimensionality (Hair et al., 2006).

As noted previously, in this research, Cronbach's alphas were calculated for each dimension of its construct and were reported in Table 5.4. From this table, it is clear that both human resources and technology applications have Cronbach's coefficient alpha values greater than 0.60, representing an acceptable significant level of internal validity (Nunnally, 1978). Alpha coefficients for the four operations strategy choices are 0.64, 0.59, 0.67, and 0.85, respectively. These values are either close to or exceed the 0.60 criterion generally considered adequate for exploratory work (Hair et al., 2006; Nunnally, 1978; Nunnally and Bernstein, 1994). In addition, Table 5.4 also shows that Cronbach's coefficient for business performance (0.76) is higher than 0.60, representing an acceptable significant level of internal validity (Nunnally, 1978).

Table 5.4: Factor loadings of human resources, IT applications, operations strategy and business performance (PCA) for sub-framework two

Variables	Mean	S.D.	Factor loadings	Cronbach alpha
1. Human resources				0.661
HR1 – Responsible leadership	4.009	0.723	0.772	
HR2 – Team working	3.952	0.785	0.760	
HR3 – Highly motivated	3.801	0.844	0.774	
HR4 – Good educational background	2.924	0.943	0.524	
2. IT applications				0.792
IT1 – Barcode technique application	4.358	1.212	0.858	
IT2 – Point-of-sale system application	4.000	1.279	0.871	
IT3 – Electronic data interchange application	3.434	1.345	0.800	
IT4 – Employees' retail work experience	3.415	0.993	0.584	
Operations Strategy				
3. Cost				0.644
COST1 – Reduce overhead costs	4.198	0.709	0.796	
COST2 – Reduce inventory level	4.198	0.695	0.800	
COST3 – Increase equipment utilization	4.103	0.702	0.622	
4. Quality				0.591
QUAL1 – Provide appropriate specification of goods/services for customers	4.311	0.735	0.780	
QUAL2 – Improve goods/services performance and reliability	4.245	0.687	0.790	
QUAL3 – Make extremely strict goods/services quality control procedures	4.103	0.872	0.657	
QUAL4 – Increase private brands (PBs) sales	3.452	1.374	0.511	
5. Flexibility				0.672
FLEX1 – Change the variety of goods/services in a given time	3.707	0.861	0.690	

Variables	Mean	S.D.	Factor loadings	Cronbach alpha
FLEX2 – Respond quickly to shift in demand, to increase/decrease operational capacity	3.877	1.039	0.813	
FLEX3 – Change planned delivery dates to meet emergent requirements	3.726	1.055	0.780	
6. Delivery performance				0.853
DEL11 – Provide fast deliveries	4.037	0.882	0.803	
DEL12 – Meet delivery promises	4.273	0.834	0.913	
DEL13 – Improve after sales service	4.245	0.766	0.908	
7. Business performance				0.764
PERF1 – Market share	3.198	1.072	0.694	
PERF2 – Sales growth	3.481	0.853	0.847	
PERF3 – Profits growth	3.132	0.862	0.801	
PERF4 – Return on investment	3.235	0.900	0.744	

The correlation matrix of the final scales is presented in Table 5.5. It includes correlation among all the scales items (human resources, IT applications, operations strategy choices and business performance) for the confirmatory factor analysis.

Table 5.5: Correlation matrix for sub-framework two

Scale	1	2	3	4	5	6	7
Operations Resources Scales							
1. Human resources	(0.661) ^a						
2. IT applications	0.052	(0.792)					
Operations Strategy Scales							
3. Cost	0.369**	-0.053	(0.644)				
4. Quality	0.414**	0.001	0.291**	(0.591)			
5. Flexibility	0.418**	0.209*	0.179	0.187	(0.672)		
6. Delivery performance	0.136	0.074	0.165	0.139	0.075	(0.853)	
Performance Scales							
7. Business performance	0.383**	0.127	0.302**	0.246*	0.248*	0.179	(0.764)

** $p < 0.01$.

* $p < 0.05$.

^a The numbers in parentheses are Cronbach's coefficient alphas.

5.3.2. Confirmatory Factor Analysis (CFA) of sub-framework two

As shown in Table 5.6, the results of CFA provided significant support for the human resources and technology applications conceptualizations ($\chi^2/df = 1.114$; RMSEA = 0.033; CF1 = 0.990). Table 5.6 also indicates a good fit for the four-factor (cost, quality, flexibility and delivery performance) solution of operations strategy. Hence, these results are considered significant in statistical terms.

Table 5.6: Summary of fit statistics for sub-framework two

Variables	Variance explained (%)	Cronbach alpha
<i>1. Human resources</i>	51.190	0.661
<i>2. IT applications</i>	61.893	0.792
Goodness of Fit Statistics: $\chi^2 = 20.045$; $df = 18$; $(\chi^2/df) = 1.114$; RMSEA = 0.033; CF1 = 0.990		
Operations Strategy		
<i>5. Cost</i>	58.572	0.644
<i>6. Quality</i>	62.783	0.591
<i>7. Flexibility</i>	60.454	0.672
<i>8. Delivery performance</i>	77.870	0.853
Goodness of Fit Statistics: $\chi^2 = 79.731$; $df = 59$; $(\chi^2/df) = 1.351$; RMSEA = 0.058; CF1 = 0.938		

Similarly, convergent and discriminant validity were also assessed for the second sub-framework. Convergent validity was assessed by the magnitude of factor loadings of human resources, IT applications, operations strategy and performance (Hair et al., 2006). As shown in Table 5.4, the results of principal component analysis show that all factor loadings were greater than 0.50, and had positive signs ($p < 0.01$). Discriminant validity was examined using Chi-square difference test (Hair et al., 2006; Peng et al., 2008). The results indicated that all χ^2 differences between the factors were significant ($p < 0.01$), providing evidence of discriminant validity between each measurement scale measuring human resources, IT applications, operations strategy, and performance. Furthermore, to evaluate discriminant validity, the Average Variance Extracted (AVE) was used. The AVE for the constructs with multiple

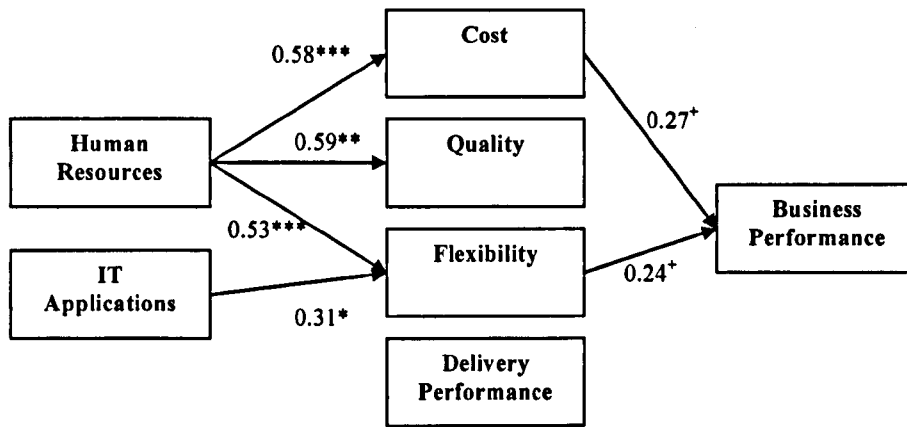
measures all exceeded the minimum of 0.50 suggested by Fornell and Larcker (1981), providing further evidence of discriminant validity (Flynn et al., 1990).

5.4. Structural Equation Modelling (SEM) of sub-framework two

The results of path analyses using AMOS 6 for the responding companies are reported in Figure 5.2. The fit statistics for the model show that χ^2/df (1.065) was below the suggested maximum of 3, and an RMSEA of 0.025 was less than 0.05, indicating a good fit. CFI (0.980) values above 0.90 also tend to suggest a very good fit. Overall, the fit measures indicate a good fit of the model to the population.

In Figure 5.2, the path coefficients (standardized regression coefficients) are shown on the arrows. The path analytic model indicates that human resources have the direct Positive and significant effects on operations strategy development of cost ($\beta = 0.58, p < 0.001$), quality ($\beta = 0.59, p < 0.01$), and flexibility ($\beta = 0.53, p < 0.001$). The data also suggest that technology application has a significant impact on flexibility ($\beta = 0.31, p < 0.05$). However, IT applications do not appear to have any direct effect on the operations strategy choices of cost, quality and delivery performance among retailers in China. Furthermore, both human resources and IT applications examined in this study have no direct impact on delivery performance. In addition, Figure 5.2 also shows that operations strategy choices of cost ($\beta = 0.27, p < 0.10$) and flexibility ($\beta = 0.24, p < 0.10$) are significantly related to business performance.

Figure 5.2: Path model of human resources, IT applications, operations strategy and performance (sub-framework two)



$\chi^2/df = 1.065$; RMSEA = 0.025; CFI = 0.980

- *** $p < 0.001$.
- ** $p < 0.01$.
- * $p < 0.05$.
- + $p < 0.10$.

Hypothesis 2a (presented in the previous section), that human resources and operations strategy are related, requires that at least one path between human resources and an operations strategy choice. The severally observed Positive and significant direct impacts of human resources on operations strategy in Figure 5.2 indicate that Hypothesis 2a cannot be rejected. Thus, human resources appear to significantly affect operations strategies developed by retail companies in China. Similarly, Hypothesis 2b cannot be rejected; application of technology has a significant direct effect on operations strategy of flexibility. In addition, Hypothesis 2c requires that a significant path exists between operations strategy choices and business performance. As shown in Figure 5.2, the paths from operations strategy choices of cost and flexibility to business performance are significant at the 0.10 level. Therefore, Hypothesis 2c is supported. The implications of these findings are discussed in the next chapter.

Sub-Framework THREE: Operations Strategy, Operations Resources (business relationships) and Performance

To investigate the links presented in the third sub-framework (see Figure 3.3) among operations strategy, business relationships and performance, PCA, CFA and path analysis are used. The results of these analyses are discussed below.

5.5. Preliminary analyses of sub-framework three

5.5.1. Principal Component Analysis (PCA) of sub-framework three

The PCA results reported in Table 5.7 show that all of the items had significant factor loadings ($p < 0.01$). The factor analysis displays all factors with eigenvalues greater than one and factor loadings greater than 0.50 on a single factor for each of the constructs, providing support for unidimensionality (Hair et al., 2006).

The values of Cronbach's alpha were also reported in Table 5.7. From this table, it can be seen that Cronbach's coefficient alpha values for the first four factors were larger than 0.60, representing an acceptable significant level of internal validity (Nunnally, 1978). The first factor that included three items was named relationship with customer. The second factor contained three items that reflected the business relationship development with supplier, and was named relationship with supplier. The next factor, competitor analysis, included two items that related to understanding market activities of main competitors as well as identifying strengths and weaknesses of major competitors. The next factor, labelled relationship with government, contained four items such as establishing long-term stable relationship with the government and

obtaining preferential treatments from the government. Since all these four factors loadings were of an acceptable significant level, the 12 questionnaire items were retained for further analysis. Other factors generated from PCA, however, indicated a low reliability (below 0.60), and were excluded from further analyses (Nunnally, 1978).

As shown in Table 5.7, the 12 items of operations strategy loaded on four factors. The alpha coefficients for the four factors were 0.644, 0.591, 0.672, and 0.853, respectively. These values are either close to or exceed 0.60 criterion generally considered adequate for exploratory work (Hair et al., 2006, Nunnally, 1978, Nunally and Bernstein, 1994). In addition, Table 5.7 also shows that Cronbach's coefficient alpha values for business performance (0.764) were higher than 0.60, representing an acceptable significant level of internal validity (Nunnally, 1978).

Table 5.7: Factor loadings of business relationships, operations strategy, and performance (PCA) of sub-framework three

Variables	Mean	S.D.	Factor Loadings	Cronbach alpha
<i>Business Relationships</i>				
Factor 1: Relationship with customer				0.689
RECU1 – Keep in close contact with customers at many levels	3.934	0.864	0.815	
RECU2 – Regularly receive and act upon customer satisfaction surveys	3.292	1.095	0.699	
RECU3 – Respond to customers' complaints and suggestions	4.094	0.774	0.749	
Factor 2: Relationship with supplier				0.680
RESU1 – Treat suppliers with honesty, fairness and respect	3.990	0.920	0.834	
RESU2 – Achieve win-win relationships with suppliers	4.245	0.870	0.792	
RESU3 – Respond to improvement suggestions from suppliers, and provide them with feedback and complaints	3.886	0.831	0.595	
Factor 3: Relationship with competitor (competitor analysis)				0.612
RECO1 – Understand market activities of main competitors	4.075	0.685	0.824	
RECO2 – Identify strengths and weaknesses of main competitors, and benchmark ourselves against them	4.367	0.694	0.780	
Factor 4: Relationship with government				0.654
REGO1 – Long-term stable relationship with the	4.235	0.811	0.644	

Variables	Mean	S.D.	Factor Loadings	Cronbach alpha
government				
REGO2 – Obtain preferential treatments from the government	3.311	1.132	0.814	
REGO3 – Influence changes to retail regulations to some extent	2.160	1.105	0.733	
REGO4 – Strictly obey laws and regulations issued by the government	3.207	1.510	0.583	
Operations Strategy				
Factor 1: Cost				0.644
COST1 – Reduce overhead costs	4.198	0.709	0.796	
COST2 – Reduce inventory level	4.198	0.695	0.800	
COST3 – Increase equipment utilization	4.103	0.702	0.622	
Factor 2: Quality				0.591
QUAL1 – Provide appropriate specification of goods/services for customers	4.311	0.735	0.780	
QUAL2 – Improve goods/services performance and reliability	4.245	0.687	0.790	
QUAL3 – Make extremely strict goods/services quality control procedures	4.103	0.872	0.657	
QUAL4 – Increase Private Brands (PBs) sales	3.452	1.374	0.511	
Factor 3: Flexibility				0.672
FLEX1 – Change the variety of goods/services in a given time	3.707	0.861	0.690	
FLEX2 – Respond quickly to shift in demand, to increase/decrease operational capacity	3.877	1.039	0.813	
FLEX3 – Change planned delivery dates to meet emergent requirements	3.726	1.055	0.780	
Factor 4: Delivery performance				0.853
DELI1 – Provide fast deliveries	4.037	0.882	0.803	
DELI2 – Meet delivery promises	4.273	0.834	0.913	
DELI3 – Improve after sales service	4.245	0.766	0.908	
Business Performance				0.764
PERF1 – Market share	3.198	1.072	0.694	
PERF2 – Sales growth	3.481	0.853	0.847	
PERF3 – Profits growth	3.132	0.862	0.801	
PERF4 – Return on investment	3.235	0.900	0.744	

The correlation matrix of the final scales is reported in Table 5.8. It includes correlation among all the scales items (business relationships and operations strategy choices) for the confirmatory factor analysis and for the single-item measure (business performance).

Table 5.8: Correlation matrix for sub-framework three

Scale	1	2	3	4	5	6	7	8	9
Business Relationships Scales									
1. Relationship with customer	(0.689) ^a								
2. Relationship with supplier	0.279**	(0.680)							
3. Relationship with competitor	0.212*	0.023	(0.612)						
4. Relationship with government	0.171	0.055	0.066	(0.654)					
Operations Strategy Scales									
5. Cost	0.186	0.147	-0.049	0.004	(0.644)				
6. Quality	0.474**	0.353**	0.199*	0.129	0.291**	(0.591)			
7. Flexibility	0.365**	0.317**	-0.041	0.163	0.179	0.187	(0.672)		
8. Delivery performance	0.037	0.015	0.344**	0.039	0.165	0.139	0.075	(0.853)	
Performance Scales									
9. Business performance	0.215*	0.101	0.054	0.346**	0.302**	0.246*	0.248*	0.179	(0.764)

** $p < 0.01$.

* $p < 0.05$.

^aThe numbers in parentheses are Cronbach's coefficient alphas.

5.5.2. Confirmatory Factor Analysis (CFA) of sub-framework three

The results of CFA are reported in Table 5.9. As shown in this table, the CFA provides significant support for the business relationships conceptualizations ($\chi^2 = 48.711$; $df = 44$; $(\chi^2/df) = 1.107$; $RMSEA = 0.032$; $CFI = 0.981$). Table 5.9 also indicates that CFA results provided good fit for the four-factor (cost, quality, flexibility and delivery performance) solution for operations strategy. Hence, these results can be considered significant in statistical terms.

Table 5.9: Summary of fit statistics for sub-framework three

Variables	Variance explained (%)	Cronbach alpha
Business relationships		
<i>1. Relationship with customer</i>	62.845	0.689
<i>2. Relationship with supplier</i>	61.199	0.680
<i>3. Relationship with competitor</i>	72.048	0.612
<i>4. Relationship with government</i>	51.903	0.654
Goodness of Fit Statistics: $\chi^2 = 48.711$; $df = 44$; $(\chi^2/df) = 1.107$; RMSEA = 0.032; CF1 = 0.981		
Operations strategy		
<i>5. Cost</i>	58.572	0.644
<i>6. Quality</i>	62.783	0.591
<i>7. Flexibility</i>	60.454	0.672
<i>8. Delivery performance</i>	77.870	0.853
Goodness of Fit Statistics: $\chi^2 = 79.731$; $df = 59$; $(\chi^2/df) = 1.351$; RMSEA = 0.058; CF1 = 0.938		

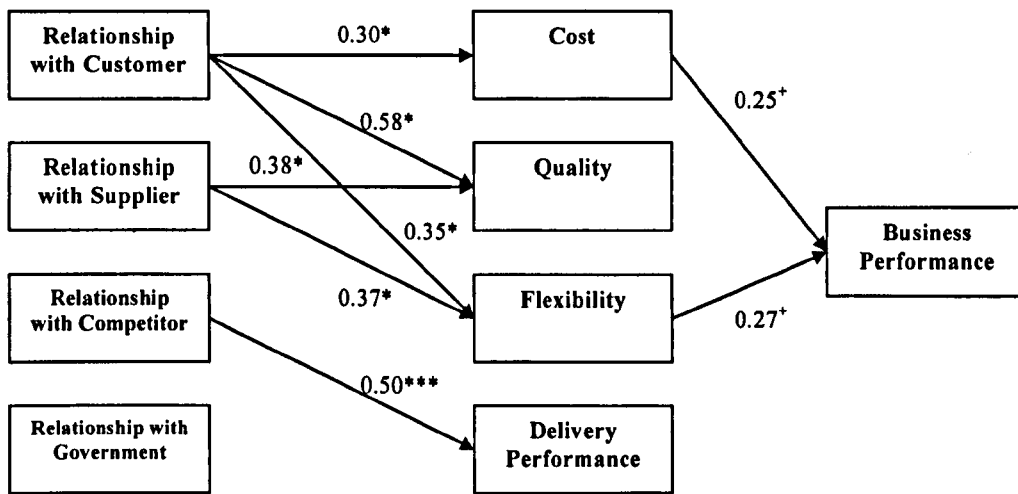
Similarly, convergent and discriminant validity were also assessed for the third sub-framework. Convergent validity was assessed by the magnitude of factor loadings of business relationships, operations strategy, and performance (Hair et al., 2006). The results of principal component analysis show that all factor loadings were greater than 0.50, and had Positive signs ($p < 0.01$). Discriminant validity was examined using Chi-square difference test (Hair et al., 2006, Peng et al., 2008). The results indicate that all χ^2 differences between the factors were significant ($p < 0.01$), providing evidence of discriminant validity between each measurement scale measuring business relationships and operations strategy. Furthermore, to evaluate discriminant validity, the AVE was used. The AVE for the constructs with multiple measures all exceeded the minimum of 0.50 suggested by Fornell and Larcker (1981), providing further evidence of discriminant validity (Flynn et al., 1990).

5.6. Structural Equation Modelling (SEM) of sub-framework three

The results of path analyses using AMOS 6 for the responding companies are reported in Figure 5.3. The fit statistics for the model show that χ^2/df (1.326) was below the suggested maximum of 3, and an RMSEA of 0.045 was less than 0.05 indicating a good fit. CFI (0.904) values above 0.90 also tend to suggest a good fit. Overall, the fit measures indicate a very good fit of the model.

In Figure 5.3, the path coefficients (standardized regression coefficients) are shown on the arrows. The path analytic model indicates that the relationship with customer has a direct Positive and significant effect on operations strategy development of cost ($\beta = 0.30, p < 0.05$), quality ($\beta = 0.58, p < 0.05$), and flexibility ($\beta = 0.35, p < 0.05$). The analysis also suggests that the relationship with supplier has a significant impact on quality ($\beta = 0.38, p < 0.05$) and flexibility ($\beta = 0.37, p < 0.05$) as the components of operations strategy. Moreover, as shown in Figure 5.3, the relationship with competitor has a significant direct effect on the operations strategy choice of delivery performance ($\beta = 0.50, p < 0.001$). However, the business relationship with government does not appear to have any direct effect on operations strategy choices among retail companies in China. In addition, Figure 5.3 also shows that operations strategy choices of cost ($\beta = 0.25, p < 0.10$) and flexibility ($\beta = 0.27, p < 0.10$) are significantly related to business performance.

Figure 5.3: Path model of business relationships, operations strategy and performance (sub-framework three)



$\chi^2/df = 1.326$; RMSEA = 0.045; CFI = 0.904

*** $p < 0.001$.

* $p < 0.05$.

+ $p < 0.10$.

Hypotheses presented above, that business relationships and operations strategy choices are related, require that at least one path between a business relationship and an operations strategy choice. The severally observed Positive and significant direct impacts of the business relationships on the operations strategy choices indicates that Hypotheses 3a, 3b and 3c cannot be rejected, but Hypothesis 3d can be rejected. Business relationships with customer, supplier and competitor appear to affect operations strategy choices developed by retail companies in China. The relationship with government has no direct significant effects on operations strategy choices. In addition, Hypothesis 3e requires that a significant path exist between operations strategy and business performance. As shown in Figure 5.3, the paths from operations strategy choices of cost and flexibility to business performance are significant at the 0.10 level. Therefore, Hypothesis 3e is partially supported. More details of these findings are discussed in the next chapter.

5.7. Summary

This chapter has reported the results and findings of questionnaire data analysis. To investigate the links among business environment, operations resources, operations strategy and business performance, three sub-frameworks were tested using the questionnaire survey data.

The *first sub-framework* was tested to investigate the links between business environment, operations strategy and performance. The path analysis of the sub-framework has indicated that environmental dimensions (business cost, competitive hostility and environmental dynamism) appear to have substantial impacts on the degree of emphasis placed on operations strategy choices. The path models presented in the research have suggested that business environmental dimensions such as business cost, competitive hostility and environmental dynamism play significant roles in operations strategy choices. In particular, environmental dynamism appears to have the most influence on the amount of emphasis placed on operations strategy choices made by retail firms in China. The operations strategy choice of cost in turn influences business performance. Hence, the first sub-framework was supported.

The *second sub-framework* linking operations resources (human resources and IT applications), operations strategy and performance was tested. This path analysis has investigated the links between human resources, IT applications, operations strategy, and business performance of retail companies in China. The results indicated that human resources appear to have substantial impacts on the operations strategy development, and the use of information and technology seems to affect a retailer's ability to improve operational flexibility. Operations strategy in turn influences business performance. The path models presented in the second sub-framework have suggested that employee competencies such as good team working,

retail experience, good educational background, and a high degree of self-motivation play significant roles in developing operations strategy of cost, quality and flexibility. The path analysis has also indicated that IT applications appear to affect a retailer's ability to increase its operational flexibility. The operations strategy choices of cost and flexibility are positively related to business performance. Thus, the sub-framework was also supported.

The *third sub-framework* examining the effects of operations resources (business relationships) on operations strategy and performance was tested. The path model has investigated the positive links among business relationships, operations strategy and business performance of retail companies in China. In general, the results have indicated that business relationships appear to have substantial impacts on the operations strategy development. Operations strategy, in turn, influences business performance. The path models presented in the last framework have suggested that businesses relationships such as the relationships with customer, supplier and competitor play significant roles in developing operations strategy of cost, quality, flexibility and delivery performance. In particular, relationship development with customer appears to have the significant impacts on operations strategy made by retailers in China. The relationship with government, however, has no direct significant effects on any of operations strategy choices. The operations strategy choices of cost and flexibility are positively related to business performance. Therefore, the sub-framework was supported.

The next chapter outlines the main findings and results of in-depth interviews with five retail firms in China, to investigate how retail managers in China develop competitive operations strategy in order to survive in a highly dynamic and complex environment through the effective management of operations resources.

CHAPTER SIX: RESULTS OF CASE STUDIES

This chapter aims to report the research results and findings of in-depth interviews with five retail companies in China, and provides the supplementary empirical evidence for the sub-frameworks that have been tested using questionnaire survey in Chapter Five.

The current chapter outlines the findings of within-case and cross-cases analyses, organized a number of themes both taken from the literature and emerging as important from the qualitative data analysis. The case study was conducted according to the dimensions outlined in the framework (see Figure 2.2). The data gathered for this case study focuses on five retail companies' operations in China. The main body of findings directly examines the current business environment of China's retail market within which retailers operate, operations resources (human resources, IT applications and business relationships) that companies developed, the operations strategies adopted by the five case companies, and their performance outcomes.

6.1. Within-case analysis

Within-case analysis is a process of data reduction and data management (Miles and Huberman, 1994). For this research there were an average of 25 pages of transcripts per case company, plus site visit notes and any publicly available information. The goal of the within-case analysis is to structure, define, reduce and make sense of this information.

6.1.1. Case 1: A-Mart

A-Mart is a multinational retailer that entered China in 2004, when it set up a joint-venture with a Chinese business partner after a three-year extensive study of China's retail market. A-Mart subsequently acquired a 50% stake from its joint venture partner. In 2006 it raised its stake to 90%, giving the group control of the entity and making the Chinese partner its subsidiary. A-Mart took its Chinese partner's 46 stores into its network. Currently, the joint venture partner just receives dividends and is not involved in retail operations. The Chinese partner offers its local knowledge and operating expertise, while A-Mart adds its supply chain, product development, and store operation prowess to improve shopping experience. A-Mart opened its first own-brand store in Beijing in 2007, with a floor space of about 10,000 square meters and 500 staff. According to A-Mart's annual report (2008), it currently operates 58 chain stores and 4 express stores in 22 Chinese cities, and employs nearly 21,000 people in China. A-Mart has set up four major operations areas in China, including the areas of Huabei (e.g. Beijing and Tianjin), Huanan (e.g. Guangzhou), Huadong (e.g. Shanghai and Hangzhou) and Great North (e.g. Dongbei and Shandong).

The results of interview data from A-Mart are reported in Table 6.1, including the business environment facing A-Mart (business cost, labour availability, competitive hostility, and environmental dynamism), operations resources (human resources, IT applications, and business relationships with customers, suppliers, competitors and government), appropriate operations strategy development, and business performance.

Table 6.1: A-Mart: business environment, operations resources, operations strategy and performance

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
Business cost			
Rising labour cost	<ul style="list-style-type: none"> ● Decrease welfare-based allowances 	<ul style="list-style-type: none"> ● Set up a distribution centre and a fresh food distribution centre in Shanghai 	<ul style="list-style-type: none"> ● To improve profit
Rising rental cost	<ul style="list-style-type: none"> ● Retail IT investments (e.g. ERP and POM) 	<ul style="list-style-type: none"> ● Set up energy-saving stores 	<ul style="list-style-type: none"> ● To improve return on investments
Rising transport cost	<ul style="list-style-type: none"> ● Improve employee competencies through training programs 	<ul style="list-style-type: none"> ● Develop self-brand products 	<ul style="list-style-type: none"> ● To improve retail efficiency and productivity
Rising utilities cost	<ul style="list-style-type: none"> ● Improve employee loyalty 	<ul style="list-style-type: none"> ● Reduce labour costs 	
Current global financial crisis		<ul style="list-style-type: none"> ● Be flexible to adapt to the Chinese retail market 	
	<ul style="list-style-type: none"> ● Focus on internal promotion 	<ul style="list-style-type: none"> ● Decrease customer waiting time in line 	<ul style="list-style-type: none"> ● To increase sales volume
Labour availability	<ul style="list-style-type: none"> ● Recruit senior managers and profession engineers from outside 	<ul style="list-style-type: none"> ● Introduce traditional Chinese foods to meet customer requirements 	<ul style="list-style-type: none"> ● To increase market share
Thousands of lay-offs and graduate students in the labour market	<ul style="list-style-type: none"> ● Recruit employees with a good understanding of China's retail market 		
Surplus managerial and administrative staff	<ul style="list-style-type: none"> ● Lay-off employees 		
Surplus clerical and related workers	<ul style="list-style-type: none"> ● Launch the China Graduate Programme 		
Shortage of skilled workers and technicians	<ul style="list-style-type: none"> ● Provide training programs 		
Shortage of senior managers	<ul style="list-style-type: none"> ● Improve employee motivation 		
China New Labour Law	<ul style="list-style-type: none"> ● Improve working environment 		
High labour turnover	<ul style="list-style-type: none"> ● Launch effective reward system (financial and non-financial awards) 		
Low employee competencies			
Competitive hostility			
Keen competition from other multinational retailers and local retailers	<ul style="list-style-type: none"> ● Effective competitor analysis 	<ul style="list-style-type: none"> ● Reduce retail operating costs 	<ul style="list-style-type: none"> ● To increase sales volume
Price competition	<ul style="list-style-type: none"> ● Understand main competitors' marketing strategies, weaknesses and strengths 	<ul style="list-style-type: none"> ● Strengthen brand image and reputation 	<ul style="list-style-type: none"> ● To increase market share
Low profit margins	<ul style="list-style-type: none"> ● Improve employee competencies 	<ul style="list-style-type: none"> ● Require all suppliers pass a formal certification of quality control and improvement system 	
More demanding quality standards	<ul style="list-style-type: none"> ● Establish win-win relationship with supplier 	<ul style="list-style-type: none"> ● Setting up a joint venture with a Chinese retailer as a entry mode 	
	<ul style="list-style-type: none"> ● Transfer operations experiences to main 	<ul style="list-style-type: none"> ● Provide the appropriate products to meet 	

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>Strict regulations of food safety and quality control</p> <p>Environmental Protection Law</p> <p>The government's role in the economy</p>	<p>suppliers</p> <ul style="list-style-type: none"> ● Develop strict rules and regulations to deal with the possible criminal behaviour in purchasing from suppliers ● Establish a good relationship with government ● Strictly obey the relevant laws and regulations ● Requires main stakeholders such as suppliers, employees and customers to join the plan of saving energy and protecting environment ● Undertake more corporate social responsibilities 	<p>customer special demands in the different season periods (e.g. national holidays and Chinese new year)</p> <ul style="list-style-type: none"> ● Decrease customer waiting time in line 	
<p>Environmental dynamism</p> <p>Changes in customer tastes and preferences</p> <p>Low customer loyalty</p>	<ul style="list-style-type: none"> ● Encourage employee to innovate through incentives ● Improve employee competencies ● Fully understand Chinese consumers' unique shopping habits and purchasing behaviour ● Launch customer loyalty scheme; ● Respond to customer complaints and suggestions ● Listen to customers 	<ul style="list-style-type: none"> ● Set up a joint venture with a Chinese retailer ● Provide imported products from home country ● Improve product/service ranges and varieties ● Introduce traditional Chinese foods to meet customer requirements ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) ● Decrease customer waiting time in line 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share

6.1.2. Case 2: B-Mart

B-Mart is a major retail chain company in the local market (Henan province); it owns 26 chain stores with an aggregate selling area of approximately 60,000 m² and employs 1,872 people. Most of its employees have a good educational background (such as the relevant qualifications and certificates in business management and retail operations) and are highly motivated. In 2002, B-Mart cooperated with the other three leading retail firms in Henan province, and set up a special procuring alliance, namely *Sifang Liancai* (four retailers purchase together). This is a voluntary grocery union. *Sifang Liancai* joined Independent Grocery Alliance (IGA) in 2006. The retailers in this alliance can share the information related to retailing experience through regular meetings of employees and senior management of firms. The four retailers regularly organize training programs for the employees and provide them the opportunities to learn from and communicate with each other. In addition, the four retailers can help order local specialties for each other at lower prices. The alliance can generate the lower costs and in turn can enable the four retailers to offer lower prices than their giant competitors. In 2006, B-Mart introduced a new retail format from one retailer of *Sifang Liancai*, and successfully founded a shopping mall, Splendid Mall, in Nanyang City. The firm began to operate in multiple retail formats.

The results of interview data from B-Mart are summarized in Table 6.2, including business environment, operations resources, appropriate operations strategy development, and business performance of B-Mart.

Table 6.2: B-Mart: business environment, operations resources, operations strategy and performance

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>Business cost Rising purchasing cost Rising rental cost Rising transport cost Rising utilities cost</p>	<ul style="list-style-type: none"> ● Establish <i>Sifang Liancai</i> with three main retailers in the local market ● Retail IT investments (e.g. EDI and POS) ● Requires all employees to join energy saving campaign 	<ul style="list-style-type: none"> ● Reduce purchasing/logistic costs and other operating costs ● Set up energy-saving stores ● Develop self-brand products ● Reduce labour costs 	<ul style="list-style-type: none"> ● To improve logistic efficiency ● To improve retail efficiency and productivity ● To improve profit
<p>Labour availability Thousands of lay-offs and graduate students in the labour market Shortage of skilled workers and technicians Shortage of senior managers High labour turnover Low employee loyalty</p>	<ul style="list-style-type: none"> ● Focus on internal promotion ● Recruit senior managers from outside ● Organize profession engineers to support and provide training programs for IT applications ● Improve employee motivation/loyalty through direct and high financial awards ● Develop strict achievement award and punishment scheme ● Effective personnel planning: be happy; team working; be professional; and be innovative ● Improve low level employees' competencies ● Appropriate roles playing in operations ● Get suggestions and feedback from low level employees ● Training programs from retail experts, old employees and the People's Liberation Army (PLA) ● Good communication between top management, senior managers and low level employees ● Share retail experiences with other members of <i>Sifang Liancai</i> 	<ul style="list-style-type: none"> ● Reduce labour cost ● Require all suppliers to pass a formal certification of quality control and improvement system ● Improve product/service ranges and varieties ● Introduce new and innovative product and service ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) ● Decrease customer waiting time in line 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share
<p>Competitive hostility</p>			

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>Increasingly keen competition</p> <p>Undeveloped laws and regulations</p> <p>Price competition</p> <p>More demanding quality standards</p> <p>Strict regulations of food safety and quality control</p> <p>The state's role in the economy</p>	<ul style="list-style-type: none"> ● Learn from other retailers' strengths and weaknesses ● Set up different targeted market from main competitors ● Avoid vicious price war ● Establish good and close relationships with suppliers ● Conduct regular meetings with main suppliers ● Effective communication with all suppliers ● Develop strict rules and regulations to deal with the possible criminal behaviour among purchasing from suppliers ● Establish a good relationship with local government departments ● Undertake more corporate social responsibilities ● Strictly obey the relevant laws and regulations ● Purchase through <i>Sifang Liancai</i> 	<ul style="list-style-type: none"> ● Reduce retail operating costs ● Organize a special team to check product quality ● Require all suppliers to pass a formal certification of quality control and improvement system ● Improve product/service ranges and varieties ● Introduce new and innovative product and service 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share
<p>Environmental dynamism</p> <p>Changes in customer tastes and preferences</p> <p>Low customer loyalty</p>	<ul style="list-style-type: none"> ● Get suggestions and feedback from employees ● Develop an innovative environment to encourage employees to innovate ● Fully understand customer needs ● Conduct marketing research through customer questionnaire ● Require employees to have a good knowledge of product characteristics 	<ul style="list-style-type: none"> ● Reduce operating costs ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) ● Launch customer return and refund policy: "no reason, just refund in five minutes" ● Provide the required products according to retail location ● Set up some specific stores on the analysis of customer information and sales volume ● The first retailer providing free parking areas in the local market 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share

6.1.3. Case 3: C-Mart

C-Mart was established in 2000, and it has grown into a major retail firm in the local market (Henan province). C-Mart owns one hypermarket and one department store with an aggregate selling area of approximately 40,000 m² and employs more than 1,200 people. The hypermarket is located in the central business district, providing customers with various daily products. The department store is the biggest department store in the local market (Nanyang City, Henan province) with a total selling floor space of 25,000 m². C-Mart aims to offer a large range of famous brand clothing, handbags, shoes, jewellery, and health and beauty products. C-Mart also seeks to undertake corporate social responsibility and establish a good relationship with the local government.

Based on the interview transcripts and notes, the findings of interview data from C-Mart are reported in Table 6.3, including business environment faced by C-Mart, operations resources (human resources, IT applications, and business relationships with principal stakeholders) and operations strategies developed by C-Mart.

Table 6.3: C-Mart: business environment, operations resources, operations strategy and performance

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
Business cost			
Rising purchasing cost	<ul style="list-style-type: none"> ● Introduce new retail IT 	<ul style="list-style-type: none"> ● Reduce purchasing/logistics costs and other operating costs 	<ul style="list-style-type: none"> ● To improve employee efficiency
Rising labour cost	<ul style="list-style-type: none"> ● Use energy-saving equipment 	<ul style="list-style-type: none"> ● Increase rental fees 	<ul style="list-style-type: none"> ● To improve retail efficiency and productivity
Rising transport cost	<ul style="list-style-type: none"> ● Improve employee competencies 	<ul style="list-style-type: none"> ● Make good use of selling spaces 	<ul style="list-style-type: none"> ● To improve profit
Rising utilities cost	<ul style="list-style-type: none"> ● Transfer some administration staff to stores 	<ul style="list-style-type: none"> ● Reduce existing counters' space and introduce more retailers into department stores 	
Labour availability			
Surplus low level employee (e.g. checkout, stock, and sales assistant staff)	<ul style="list-style-type: none"> ● Focus on internal promotion ● Recruit senior managers from outside ● Recruit university graduate students ● Provide various training programs mainly for top management, middle and senior managers 	<ul style="list-style-type: none"> ● Reduce labour cost ● Improve product/service ranges and varieties ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share
Shortage of senior managers	<ul style="list-style-type: none"> ● Encourage middle and senior managers to undertake further education 	<ul style="list-style-type: none"> ● Improve purchasing system and launch self-purchasing ● Self-produce fast and fresh foods 	
High labour turnover	<ul style="list-style-type: none"> ● Organize regular events and activities for all employees 		
China's New Labour Law	<ul style="list-style-type: none"> ● Increase employees' salaries, wages, bonus and allowances 		
Low employee loyalty	<ul style="list-style-type: none"> ● Launch effective reward system ● Improve employee motivation/loyalty through direct and high financial awards ● Organize all employees in department store including counter employees ● Set up a minimum salary standard for 	<ul style="list-style-type: none"> ● Provide fast and reliable delivery ● Decrease customer waiting time in line 	

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>all counter employees that all individual retailers in the department store must obey</p>			
Competitive hostility			
Increasingly keen competition	<ul style="list-style-type: none"> Learn from main competitors' strengths and weaknesses 		<ul style="list-style-type: none"> To increase sales volume
Undeveloped laws and regulations	<ul style="list-style-type: none"> Set up different targeted market from main competitors 	<ul style="list-style-type: none"> Extremely good retail location (central commercial district) 	<ul style="list-style-type: none"> To increase market share
Price competition	<ul style="list-style-type: none"> Avoid vicious price war 	<ul style="list-style-type: none"> Re-design and decorate stores counter every year or half year 	
More demanding quality standards	<ul style="list-style-type: none"> Establish trust-based relationships with suppliers 	<ul style="list-style-type: none"> Enhance brand image and reputation 	
Strict regulations of food safety and quality control	<ul style="list-style-type: none"> Do not squeeze suppliers' profit margins 	<ul style="list-style-type: none"> Set up a special team to visit stores acting as customer 	
Environmental protection (plastic shopping bags)	<ul style="list-style-type: none"> Pay suppliers on time 	<ul style="list-style-type: none"> Professional engineers and store staff for quality control 	
The government's role in the economy	<ul style="list-style-type: none"> Provide financial supports for main suppliers if required 	<ul style="list-style-type: none"> Set up special shelves to offer some imported products 	
	<ul style="list-style-type: none"> Sign a contract with Communication Bank of China to provide "green way" (fast loans supports) for main suppliers 	<ul style="list-style-type: none"> Provide cheaper parking 	<ul style="list-style-type: none"> Require all suppliers pass three formal "quality certificates"
	<ul style="list-style-type: none"> Strengthen effective communication with suppliers 	<ul style="list-style-type: none"> Decrease customer waiting time in line 	
	<ul style="list-style-type: none"> Develop strict rules and regulations to deal with the possible criminal behaviour among purchasing from suppliers 		
	<ul style="list-style-type: none"> Require purchasing agents and suppliers to sign formal contract to cope with the possible criminal behaviour 		
	<ul style="list-style-type: none"> Establish a good relationship with local government departments 		
	<ul style="list-style-type: none"> Undertake more corporate social responsibilities 		

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>Environmental dynamism Changes in customer tastes and preferences Low customer loyalty</p>	<ul style="list-style-type: none"> ● Strictly obey the relevant laws and regulations ● Fully understand customer needs ● Launch Diamond and Golden Club Card for different level customers 	<ul style="list-style-type: none"> ● Establish comfortable shopping environment ● Provide cheaper parking cars ● Re-design and decorate stores counter every year or half year; ● Discard those unpopular brands and introduce new brands ● Improve product/service ranges and varieties ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share

6.1.4. Case 4: D-Mart

D-Mart was originally established in 2001 as a supermarket. Today, D-Mart, through the development of several years, has grown into a leading retail company in the local market (Nanyang City). It now operates 20 chain stores, with an aggregate selling floor space of 30,000 m² and more than 1,000 full-time employees. Over the last few years, the firm has shown average annual sales growth of 200 percent. It is the fastest-growing company in the local retail sector. D-Mart puts special emphasis on human resource management. It seeks to provide a variety of training programs for the employees, motivating employees to continuously improve work outputs. Moreover, D-Mart aims to set up long-term stable relationships with suppliers to achieve mutually beneficial results. In 2005, D-Mart started to enter into the department store sector, and established a new department store in the central business district with a floor space of 25,000 m².

The results of interview transcripts obtained from D-Mart are summarized in Table 6.4, including the business environment faced D-Mart, operations resources, appropriate operations strategy development, and business performance of D-Mart.

Table 6.4: D-Mart: business environment, operations resources, operations strategy and performance

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
Business cost			
Labour cost	<ul style="list-style-type: none"> ● Lay-off employees 	<ul style="list-style-type: none"> ● Rent all selling spaces to other retailers 	<ul style="list-style-type: none"> ● Improve retail efficiency and productivity
Rising rental cost	<ul style="list-style-type: none"> ● Improve employee efficiency 	<ul style="list-style-type: none"> ● Reduce unnecessary expenditure 	<ul style="list-style-type: none"> ● Improve productivity
Rising transport cost		<ul style="list-style-type: none"> ● Develop very strict expending plan 	
Global financial crisis		<ul style="list-style-type: none"> ● Cancel outside promotion activities 	<ul style="list-style-type: none"> ● Improve profit
Rising overhead costs (e.g. water and electricity bill and administration cost)		<ul style="list-style-type: none"> ● Sending promotion posters and mobile text messages to customer instead of promotion activities 	
Labour availability			
Thousands of lay-offs and graduate students in the labour market	<ul style="list-style-type: none"> ● Get suggestions from employees; ● Improve employees' wages and salaries 	<ul style="list-style-type: none"> ● Reduce labour costs ● Improve product/service ranges and varieties 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share
Shortage of senior managers	<ul style="list-style-type: none"> ● Provide more than 60 training programs 	<ul style="list-style-type: none"> ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) 	
China New Labour Law	<ul style="list-style-type: none"> ● Training programs provided by old staff in every stores 		
High labour turnover	<ul style="list-style-type: none"> ● Retain old employees through increasing salaries, bonus, allowances and non financial awards 		
Poor competencies of low level employees	<ul style="list-style-type: none"> ● Develop effective reward system ● Provide additional bonus and allowance for employees over fulfilling targeted sales volume ● Improve communication among employees 		
Personality on top management team	<ul style="list-style-type: none"> ● Improve low level employee competencies through the relevant training programs 		
Low employee motivation and loyalty			
Competitive hostility			
Increasingly keen competition	<ul style="list-style-type: none"> ● Undertake detailed market analysis 	<ul style="list-style-type: none"> ● Require all suppliers pass a formal certification of quality control and 	<ul style="list-style-type: none"> ● To increase sales volume
Price competition			

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>The relevant policy from central government to support the growth and development of small and medium enterprise;</p> <p>Undeveloped laws and regulations</p> <p>More demanding quality standards</p> <p>Very strict regulations of food safety and quality control</p> <p>The government's effect on company business</p>	<ul style="list-style-type: none"> ● Develop different marketing strategies from main competitors ● Understand competitors' market activities and strategies ● Visit main competitors' stores ● Conduct promotion activities based on low price ● Learn from other retailers' strengths and weaknesses ● Low price and high quality are the main criterions for supplier selection ● Retail-supplier is a process of mutual selection ● Establish win-win relationships with suppliers ● Effective communication with suppliers ● Develop very strict rules and regulations to avoid the possible criminal behaviour during the purchasing ● Develop the relevant achievement award and punishment scheme ● Establish a good relationship with local governmental departments ● Get supports and approvals from the local government ● Develop an appropriate way to communicate with local government departments 	<p>improvement system</p> <ul style="list-style-type: none"> ● Set up a special area for product quality control in every store, with professional team ● Improve product/service ranges and varieties ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) ● Develop appropriate refunding rules 	<ul style="list-style-type: none"> ● To increase market share

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>Environmental dynamism Changes in customer tastes and preferences Low customer loyalty</p>	<ul style="list-style-type: none"> ● Strictly obey the relevant laws and regulations ● Get suggestions and feedback from all employees ● Establish an innovative environment to encourage employees to innovate ● Fully understand customer needs ● Listen to customer suggestions and feedback ● Develop new club card scheme 	<ul style="list-style-type: none"> ● Improve product ranges and varieties ● Provide the required products according to retail location and special periods ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) ● Develop appropriate refunding rules ● Conduct various regular promotion activities based on low price ● Enhance company brand image and reputation ● Develop convenient opening time and location 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share

6.1.5. Case 5: E-Mart

E-Mart was founded in 1998. A leading electronics retailer in the USA acquired a majority stake of E-Mart in 2006. Today, it is the fourth-largest appliance and consumer electronics retailer in China. It operates with more than 130 stores in eight provinces, including those surrounding Shanghai, along with Sichuan and Yunnan provinces. In 2008, E-Mart had sales volume of nearly US\$33.65 billion, and about 8,100 employees. Following Mergers and Acquisitions (M&A), E-Mart has introduced many advanced retail techniques and human-based management from its US partner. E-Mart emphasizes establishing good and long-term relationships with customers, suppliers and employees. E-Mart also faces tough competition from Gome and Suning Appliances, China's top two electronic retailers.

Table 6.5 summarizes the main findings of interview transcripts and notes obtained from E-Mart, including the business environment faced E-Mart (business cost, labour availability, competitive hostility, and environmental dynamism), as well as operations resources and operations strategies developed by E-Mart.

Table 6.5: E-Mart: business environment, operations resources, operations strategy and performance

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
Business cost Rising rental cost Rising transport cost Rising utilities cost	<ul style="list-style-type: none"> ● Retail IT investments (e.g. ERP) ● Improve employee efficiency 	<ul style="list-style-type: none"> ● Increase equipments utilization ● Open flagship equipped with advanced technologies ● Set up regional distribution centre ● Reduce purchasing/logistics costs and other operating costs 	<ul style="list-style-type: none"> ● Improve logistic efficiency ● Improve retail efficiency and productivity ● Improve profit
Labour availability Shortage of senior managers High labour turnover China New Labour Law Low employee loyalty	<ul style="list-style-type: none"> ● Focus on internal promotion ● Recruit senior managers from outside ● Organize profession engineers from manufacturers to support and provide training programs for IT applications ● Adopt human-based management from foreign partner ● Look after employees especially low level employees ● Provide the relevant training programs for employees 	<ul style="list-style-type: none"> ● Reduce labour cost ● Improve product/service ranges and varieties ● Provide especial service: consumer electronics consult ● Provide professional product usage instructions ● Provide customers with professional purchasing suggestions ● Expert and technicians provide detailed information about products and after sales services 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share
Competitive hostility Increasingly keen competition Decreasing profit margins Price competition More demanding quality standards Strict laws and regulations on retailing	<ul style="list-style-type: none"> ● Learn from competitors' failure and success experiences ● Analyse competitors' strengths and weaknesses ● Establish appropriate communication approach with main competitors among senior managers and low level employees ● Avoid vicious price war ● Establish different targeted markets and customers from main competitors ● Establish good relationships with suppliers: friendship is the first, and 	<ul style="list-style-type: none"> ● Conduct various promotion activities based on low price and high quality ● Be flexible to adapt to the Chinese retail market ● Require all suppliers pass the formal "quality certificates" (e.g. 3C) ● Provide professional, timely and continuous services 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share

Business environment faced	Operations resources development	Operations strategy development	Business performance targets
<p>business is the second</p> <ul style="list-style-type: none"> ● Become familiar with suppliers ● Share strategic operations planning with major suppliers ● Quality is the major criterion for supplier selection <p>Environmental dynamism</p> <p>Changes in customer tastes and preferences</p> <p>Low customer loyalty</p>	<ul style="list-style-type: none"> ● Get suggestions and feedback from sales assistant and customers 	<ul style="list-style-type: none"> ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) ● Provide free storage service for reserved products for 3 months and deliver on customer requirements ● Provide fast delivery: one hour delay in delivery, compensate customer for 10 RMB ● Enhance after sales services ● Provide professional, timely and continuous services ● Conduct various promotion activities based on low price and high quality 	<ul style="list-style-type: none"> ● To increase sales volume ● To increase market share

6.2. Cross-case analysis

Cross-case analysis is concerned with identifying patterns across the various organizations. It is facilitated by using a variety of tools to reduce the amount of data and to display the data in a meaningful fashion (Miles and Huberman, 1994; Yin, 1994). Data reduction was primarily done through categorization and pattern matching. After looking at each of the retailers separately, the five case companies were compared in order to identify potential patterns (Smaros, 2007). The comparisons are presented in Tables 6.6-6.7 and discussed in more detail below.

6.2.1. Business environment facing retail firms in China's retail market

This section provides a description of the business environment of the Chinese retail market, including the costs of doing business in China, labour availability, competitive hostility, and environmental dynamism (see Tables 6.6).

Table 6.6: Summary of cross-case pattern (business environment) and empirical evidence

	A-Mart	B-Mart	C-Mart	D-Mart	E-Mart
BC	<ul style="list-style-type: none"> ● Rising labour cost ● Rising rental cost ● Rising transport cost ● Rising utilities cost ● Current global financial crisis 	<ul style="list-style-type: none"> ● Rising purchasing cost ● Rising labour cost ● Rising rental cost ● Rising transport cost ● Rising utilities cost 	<ul style="list-style-type: none"> ● Rising purchasing cost ● Rising labour cost ● Rising transport cost ● Rising utilities cost 	<ul style="list-style-type: none"> ● Labour cost ● Rising rental cost ● Rising transport cost ● Global financial crisis ● Rising overhead costs (e.g. water and electricity bill and administration cost) 	<ul style="list-style-type: none"> ● Rising rental cost ● Rising transport cost ● Rising utilities cost
LA	<ul style="list-style-type: none"> ● Thousands of lay-offs and graduate students in the labour market ● Surplus managerial and administrative staff ● Surplus clerical and related workers ● Shortage of skilled workers and technicians ● Shortage of senior managers ● China New Labour Law ● High labour turnover ● Low employee competencies 	<ul style="list-style-type: none"> ● Thousands of lay-offs and graduate students in the labour market ● Shortage of skilled workers and technicians ● Shortage of senior managers ● High labour turnover ● Low employee loyalty 	<ul style="list-style-type: none"> ● Surplus low level employee (e.g. checkout, stock, and sales assistant staff) ● Shortage of senior managers ● High labour turnover ● China's New Labour Law ● Low employee loyalty 	<ul style="list-style-type: none"> ● Thousands of lay-offs and graduate students in the labour market ● Shortage of senior managers ● China New Labour Law ● High labour turnover ● Poor competencies of low level employees ● Personality on top management team ● Low employee motivation and loyalty 	<ul style="list-style-type: none"> ● Shortage of senior managers ● High labour turnover ● China New Labour Law ● Low employee loyalty
CH	<ul style="list-style-type: none"> ● Keen competition from other multinational retailers and local retailers ● Price competition ● Low profit margins ● More demanding quality standards ● Strict regulations of food safety and quality control 	<ul style="list-style-type: none"> ● Increasingly keen competition ● Undeveloped laws and regulations ● Price competition ● More demanding quality standards ● Strict regulations of food safety and quality control ● The state's role in 	<ul style="list-style-type: none"> ● Increasingly keen competition ● Undeveloped laws and regulations ● Price competition ● More demanding quality standards ● Strict regulations of food safety and quality control ● Environmental 	<ul style="list-style-type: none"> ● Increasingly keen competition ● Price competition ● The relevant policy from central government to support the growth and development of small and medium enterprise ● Undeveloped laws and regulations ● More demanding quality standards ● Very strict regulations of food 	<ul style="list-style-type: none"> ● Increasingly keen competition ● Decreasing profit margins ● Price competition ● More demanding quality standards ● Strict laws and regulations on retailing

A-Mart	B-Mart	C-Mart	D-Mart	E-Mart
<ul style="list-style-type: none"> ● Environmental Protection Law ● The government's role in the economy 	<ul style="list-style-type: none"> ● the economy 	<ul style="list-style-type: none"> ● protection (plastic shopping bags) ● The government's role in the economy 	<ul style="list-style-type: none"> ● safety and quality control ● The government's effect on company business 	
ED <ul style="list-style-type: none"> ● Changes in customer tastes and preferences ● Low customer loyalty 	<ul style="list-style-type: none"> ● Changes in customer tastes and preferences ● Low customer loyalty 	<ul style="list-style-type: none"> ● Changes in customer tastes and preferences ● Low customer loyalty 	<ul style="list-style-type: none"> ● Changes in customer tastes and preferences ● Low customer loyalty 	<ul style="list-style-type: none"> ● Changes in customer tastes and preferences ● Low customer loyalty

Note: BC – business cost; LA – labour availability; CH – competitive hostility; ED – environmental dynamism.

6.2.1.1. The cost of doing business in China

The rising business cost was widely cited in the interviews as a main characteristic of the Chinese retail market. The cost of doing business in China is rising. The cost of doing business in China is rising. China has been the world's factory and the anchor of the global dichotomy between rising material prices and lower consumer prices, but these halcyon days are drawing to a close. According to all of the interviewees, rising rental and transportation costs, the current global financial crisis, and fluctuating exchange rates are all adding to the cost of doing business in China (see Table 6.6). Particularly, the interviewees highlighted that China's advantage in labour costs is diminishing. The new labour contract law, which took effect in 2008, increased the costs of operating businesses in China since it brought more labour costs and risk to the employer. For example, the new law requires individual labour contracts to incorporate terms that seek to protect the rights and interests of employees. These trade union rights include minimum wages, working hours, leave and rest, scope and place of work, training, severance pay, and social insurance premiums.

In addition to the rising labour cost, there is another operating cost unique to developing countries. That is the cost of high rental. An operations manager from A-Mart especially remarked:

Compared with most of the developed countries, with high rental fees Supermarkets in China represented a modern style of retailing. People tend to shop after work and go home by public transportation or by bicycle. We have to compete for prime locations. Therefore, many supermarkets are located in prime locations with high rental fees, such as within or near the commercial centers or central business district (CBD). But, good locations usually need to pay 5-20 per cent premium on rental.

B-Mart's operations manager further highlighted:

Similarly, comfortable interior decoration, including fixtures and air conditioning, is a must. All these have driven up utilities cost and other operating costs.

6.2.1.2. Labour availability

Due to the impacts of the current global financial recession, like elsewhere in the world, hundreds of thousands of Small and Medium Enterprises (SMEs) manufacturers have been made bankrupt in China since 2008. Millions of people have lost their jobs, and at least 1 million of the 5.6 million university graduate cohort of 2008 failed to find employment as the job market shrank because of the global economic downturn (CCFA, 2009; Mofcom, 2009). Because China's economy is slowing down and unemployment is rising, people face fierce competition for jobs. The working population often has to take low-paying jobs. Currently, China is encountering serious employment challenges and is likely to create less than half the jobs needed to cope with armies of new job seekers and laid off workers. The level of surplus labour in 2009 was expected to reach 14 million (Mofcom, 2008).

However, managers we interviewed felt strongly that there has been a growing shortage of senior managers with retail experience and business knowledge. According to CCFA (2009) statistics, the Chinese retail market currently needs about 600,000 senior managers. Many retailers in China lack talented managers with rich retail management experience. As shown in Table 6.6, all five retailers reported that they face a shortage of senior managers, especially for the three local retail firms (B-Mart, C-Mart and D-Mart). Moreover, the two foreign retailers (A-Mart and E-Mart) also face the same problem. A-Mart's HR manager, for example, commented:

We [A-Mart] face a shortage of senior managers, since most visiting managers from A-Mart's global headquarters play merely supporting roles. The total period of appointment normally lasts for three years. Today, we have about 280 senior managers, 38 of whom come from A-Mart's parent country; 130 are Taiwanese, and the rest are local people.

In addition, as can be seen from Table 6.6, all five retailers reported that the retail industry in China is labour-intensive and the employee turnover is very high. In particular, the interviewees highlighted that China's retail sector is labour-intensive and the employee turnover is very high. C-Mart's HR manager, for example, remarked:

Employee loyalty to companies is not high in China, for example, sales assistants and checkout staffs have the highest level of labour turnover. Most lower-level employees in the retail sector receive the national minimum wage, workers often jumped to other companies when offered better incentives.

6.2.1.3. Competitive hostility

China's retail sector is becoming increasingly competitive. It can be seen from Table 6.6, all five retail companies face competition not only from local retailers also from multinational retailers, more demanding quality standards, intense price competition, alongside severe regulatory restrictions.

Keen competition between local and foreign retailers

Currently, there are a large number of retail companies and more than 15 million retail networks all over China. Many Chinese retailers have shown significant growth in recent years. Over the

last decades, a number of leading domestic giants have established dominating sales records and a national brand name. However, as shown in Table 6.6, all the three local retailers (B-Mart, C-Mart and D-Mart) highlighted that they face keen competition from foreign retailers. For example, B-Mart's general manager commented:

We [B-Mart] face the increasingly keen competition from foreign retailers, in terms of advanced supply chain management, product development, and store operation prowess to improve the shopping experience for customers.

On the other hand, China's entry into WTO further opened up the retail market and attracted more foreign investors (CCFA, 2009). More and more foreign retailers are looking for opportunities to expand their business in China. Prior to China's accession to the World Trade Organization (WTO) in 2001, foreign retailers had to accept a host of restrictions on their operations consciously designed to slow their rate of growth. However, since 2005 most restrictions have been eased, and the retail market has been completely opened to foreign companies. By the end of 2004, the government of China had approved 302 foreign investment companies with 3,909 chain stores. At the end of 2005, at least 35 of the global top 50 retailers had already developed a foothold in China, and some foreign retailers had been operating in China for more than 10 years (KPMG, 2005). It can be seen from Table 6.6, the interviews revealed that all two foreign retailers in China (A-Mart and E-Mart), compared to local retail firms, also face some difficulties in retail operations. E-Mart's sales and marketing manager remarked:

We [E-Mart] currently compete with the leading Chinese retailers to snatch market share. China's retail market is often likened to be a big "cake", and retailer giants rush to get a piece of this cake. Over the last few years, some leading retailers, especially

local giants, have occupied a great deal of markets in some big cities, and ate “the best” part of the cake.

A-Mart’s operations manager also remarked:

“We [A-Mart] entered China in 2004 and are now ranked among the top ten largest foreign retailers in China in terms of market share, but the market shares were “purchased” from our Chinese partner. We have a long way to go in order to catch up in terms of establishing brand awareness. Compared with local retailers, A-Mart does not have sufficient competitive advantages in brand image, customer loyalty, and close relationship with suppliers.

Intense price competition, more demanding quality standards and government regulations change

All five retailers examined in this research highlighted that the standard of living in China has drastically increased over the last decades. The rapid rise in household income has simultaneously increased the demand for consumer goods. Consumers especially in big cities are becoming more discerning and demanding with respect to quality and variety. More and more Chinese consumers have begun to pursue better quality of life through better quality products and services.

The interviewees widely highlighted that the profit margins are quite low. Particularly in the food retail sector, some daily products have zero profit margins. As shown in Table 6.6, all cases examined in this research reported that price competition is becoming more and more intense in the Chinese retail market. In particular, Chinese consumers largely emphasize the economics of their purchase and are very cost-conscious. When purchasing for home consumption, Chinese

consumers tend to focus their purchasing decisions on the price of a product and buy whatever is least expensive. For example, a general manager from D-Mart highlighted:

In China, most people do not consider store brands, and customers just shop at stores providing them with the required products at the cheapest price.

Over the last few years, a number of relevant important regulations on the retail sector have been issued by the central government, such as China's New Labour Laws, strict new food safety and quality standards, and environmental protection (see Table 6.6). C-Mart's general manager especially remarked:

Due to the melamine-contaminated baby milk powder incident in 2008, central and local governments have begun to pay much more attention on food safety and quality control than ever before. A number of relevant laws and regulations have been issued and taken effect over the last few months.

In addition, environmental sustainability is becoming one of the most important critical success factors in the Chinese retail industry today. Different stakeholder groups like the government, regulatory watchdogs, consumer awareness groups, trade unions, and media are putting pressure on the retailers to become environmentally responsible. Energy efficiency improvements, improving transport and logistics efficiency, water consumption, carbon dioxide emissions, vehicle emissions, reduction in volume and constituents of packaging, waste management, and recycling are some of the areas where retailers are innovating to become environmentally sustainable (CCFA, 2009). For example, from June 2007, all of the retail stores in China were prohibited from providing free plastic bags for customers.

6.2.1.4. Environmental dynamism

The interviewees reported that the shopping habits and lifestyles of Chinese consumers are very different from those of Western countries. Therefore, in order to compete in the Chinese retail market, it is very important to fully understand the fundamentals of Chinese consumers' unique shopping habits. As noted previously, Chinese consumers largely emphasize the economics of their purchase and are very cost-conscious. While Chinese consumers are price sensitive, they also value convenience and quality. Retail customers in China are a big and rapidly growing group with increasing buying power. Over the last few decades, the standard of living in China has drastically increased. Shopping is no longer about basic need-fulfilment; customers also want the products to have some added value in terms of quality. For example, a president from B-Mart remarked:

Chinese consumers, especially in big cities, remain conscious of food quality, particularly its freshness.

As can be seen from Table 6.6, the interviewees highlighted that Chinese consumers have become more discerning and demand higher quality products and services. People are purchasing well-known, genuine brands instead of the previously ubiquitous, counterfeit alternatives (CCFA, 2009; Mofcom, 2009). This is actually part of the same development that has changed the customer behaviour from buying from traditional marketplaces and roadside markets to supermarkets or hypermarkets. B-Mart's general manager, for example, reported:

With the increase in living standards and wealth, customers have become more conscious consumers. Shopping is no longer about basic need-fulfilment; customers also want the products to have some added value in terms of quality and variety. They are increasingly buying luxury products.

As shown in Table 6.6, the interviews revealed that the Chinese consumers are price sensitive and the quantity demanded. Since China's retail market is becoming more and more dynamic and competitive, it is very difficult to achieve and maintain strong customer loyalty. For example, C-Mart's general manager highlighted:

Customer loyalty in China's retail market is ephemeral, and customers are easily poached.

6.2.2. Operations resources (human resources, IT applications and business relationships)

This subsection aims to report the empirical evidence of current competitive operations resources developed by case companies, including human resources, IT applications and business relationships development with customers, suppliers, competitors and government (see Table 6.7).

Table 6.7: Summary of cross-case pattern (operations resources) and empirical evidence

	A-Mart	B-Mart	C-Mart	D-Mart	E-Mart
IT	<ul style="list-style-type: none"> ● Introduce new retail IT technologies (e.g. POS and EDI) ● Set up energy-saving stores with new technologies ● Set up a distribution centre and a fresh food distribution centre ● Set up energy-saving stores with new technologies 	<ul style="list-style-type: none"> ● Introduce new retail IT technologies (e.g. ERP and AOM) ● Set up energy-saving stores with new technologies 	<ul style="list-style-type: none"> ● Introduce new retail IT ● Use energy-saving equipment 	<ul style="list-style-type: none"> ● Face difficulty in introducing new retail technologies 	<ul style="list-style-type: none"> ● Emphasise on IT investments (e.g. ERP) ● Introduce new retail IT ● Open flagship equipped with advanced technologies
HR	<ul style="list-style-type: none"> ● Improve employee competencies through training programs ● Improve employee loyalty ● Focus on internal promotion ● Recruit senior managers and profession engineers from outside ● Launch the China Graduate Programme ● Improve working environment ● Launch effective reward system (financial and non-financial awards) ● Encourage employee to innovate through incentives 	<ul style="list-style-type: none"> ● Focus on internal promotion ● Recruit senior managers from outside ● Organize profession engineers to support and provide training programs for IT applications ● Improve employee motivation/loyalty through direct and high financial awards ● Develop strict achievement award and punishment scheme ● Effective personnel planning: be happy; team working; be professional; and be innovative ● Get suggestions and feedback from low level employees ● Training programs from retail experts ● Good communication between top management, senior managers and low level employees 	<ul style="list-style-type: none"> ● Transfer some administration staff to stores ● Focus on internal promotion ● Recruit senior managers from outside ● Recruit university graduate students ● Provide various training programs mainly for top management, middle and senior managers ● Encourage middle and senior managers to undertake further education ● Organize regular events and activities for all employees ● Increase employees' salaries, wages, bonus and allowances ● Improve employee motivation/loyalty through direct and high financial awards 	<ul style="list-style-type: none"> ● Get suggestions and feedback from all employees ● Provide more than 60 training programs ● Retain old employees through increasing salaries, bonus, allowances and non financial awards ● Develop effective reward system ● Improve communication among employees ● Improve low level employee competencies through the relevant training programs ● Develop the relevant achievement award and punishment scheme 	<ul style="list-style-type: none"> ● Improve employee efficiency ● Focus on internal promotion ● Recruit senior managers from outside ● Organize profession engineers from manufacturers to support and provide training programs for IT applications ● Adopt human-based management from foreign partner ● Look after employees especially low level employees ● Provide the relevant training programs for employees

A-Mart	B-Mart	C-Mart	D-Mart	E-Mart
BRCU	<ul style="list-style-type: none"> ● Require employees to have a good knowledge of product characteristics ● Fully understand customer needs ● Conduct marketing research through customer questionnaire 	<ul style="list-style-type: none"> ● Fully understand customer needs ● Launch Diamond and Golden Club Card for different level customers ● Respond to customers' requirements and complaints quickly 	<ul style="list-style-type: none"> ● Fully understand customer needs ● Listen to customer suggestions and feedback ● Develop new club card scheme 	<ul style="list-style-type: none"> ● Get suggestions and feedback from customers' ● Respond to customers' requirements and complaints in one hour
BRSU	<ul style="list-style-type: none"> ● Establish good and close relationships with suppliers ● Conduct regular meetings with main suppliers ● Effective communication with all suppliers ● Develop strict rules and regulations to deal with the possible criminal behaviour among purchasing from suppliers 	<ul style="list-style-type: none"> ● Establish trust-based relationships with suppliers ● Do not squeeze suppliers' profit margins ● Pay suppliers on time ● Provide financial supports for main suppliers if required ● Sign a contract with Communication Bank of China to provide "green way" (fast loans supports) for main suppliers ● Strengthen effective communication with suppliers ● Require purchasing agents and suppliers to sign formal contract to cope with the possible criminal behaviour 	<ul style="list-style-type: none"> ● Low price and high quality are the main criterions for supplier selection ● Retail-supplier is a process of mutual selection ● Establish win-win relationships with suppliers ● Effective communication with suppliers ● Develop very strict rules and regulations to avoid the possible criminal behaviour during the purchasing 	<ul style="list-style-type: none"> ● Establish good relationships with suppliers: friendship is the first, and business is the second ● Become familiar with suppliers ● Share strategic operations planning with major suppliers ● Quality is the major criterion for supplier selection

	A-Mart	B-Mart	C-Mart	D-Mart	E-Mart
BRCO	<ul style="list-style-type: none"> ● Set up a joint venture with a local Chinese retailer ● Effective competitor analysis ● Understand main competitors' marketing strategies, weaknesses and strengths 	<ul style="list-style-type: none"> ● Establish <i>Sifang Liancai</i> with three main retailers in the local market ● Share retail experiences with other members of <i>Sifang Liancai</i> ● Purchase through <i>Sifang Liancai</i> ● Learn from other retailers' strengths and weaknesses ● Set up different targeted market from main competitors ● Avoid vicious price war 	<ul style="list-style-type: none"> ● Learn from main competitors' strengths and weaknesses ● Set up different targeted market from main competitors ● Avoid vicious price war 	<ul style="list-style-type: none"> ● Develop different marketing strategies from main competitors ● Understand competitors' market activities and strategies ● Visit main competitors' stores 	<ul style="list-style-type: none"> ● Learn from competitors' failure and success experiences ● Analyse competitors' strengths and weaknesses ● Establish appropriate communication approach with main competitors among senior managers and low level employees ● Avoid vicious price war ● Establish different targeted markets and customers from main competitors
BRGO	<ul style="list-style-type: none"> ● Establish a good relationship with government ● Strictly obey the relevant laws and regulations ● Undertake more corporate social responsibilities 	<ul style="list-style-type: none"> ● Establish a good relationship with local government departments ● Undertake more corporate social responsibilities ● Strictly obey the relevant laws and regulations ● The previous effects of the government on business are increasingly diminishing 	<ul style="list-style-type: none"> ● Establish a good relationship with local government departments ● Undertake more corporate social responsibilities ● Strictly obey the relevant laws and regulations ● The previous effects of the government on business are increasingly diminishing 	<ul style="list-style-type: none"> ● Establish a good relationship with local governmental departments ● Get supports and approvals from the local government ● Strictly obey the relevant laws and regulations 	<ul style="list-style-type: none"> ● The previous effects of the government on business are increasingly diminishing

Note: IT – informational technology applications; HR – human resources; BRUCU – business relationship with customer; BRSU – business relationship with supplier; BRCO – business relationship with competitor; BRGO – business relationship with government.

6.2.2.1. Human resources of case companies

As noted previously, there is a growing shortage of senior managers with retail experience and business knowledge. Many retailers in China lack talented managers with rich retail management experience. As can be seen in Table 6.7, to deal with the skilled labour shortage, all case companies in this research put emphasis on internal promotion. A-Mart's HR manager, for example, commented:

To deal with the growing lack of skilled labour, we [A-Mart] attract employees mainly through internal promotions. We seek to use our training and development programmes to prepare employees for promotion.

Internal promotion is the cheapest way to recruit, and can also help companies motivate and retain existing employees. As can be seen from Table 6.7, the HR system was also applied by another four retail companies, B-Mart C-Mar, D-Mart and E-Mart. In particular, A-Mart's HR manager further reported:

To train potential managers for A-Mart China, A-Mart global headquarters launched the China Graduate Programme in 2006. We [A-Mart] believe only local people are suitable candidates to manage A-Mart operations in China. The company recruits about 10 Chinese students graduated from universities in its parent country every year. The China Graduate Programme is a 12-month Fast-Track scheme with unique opportunities in all of A-Mart business areas, from Finance and Commercial to Personnel and Marketing. Once selected, the Chinese students will join A-Mart in China during September, and then spend six to nine months on a structured development program in the parent country. This will include time in A-Mart parent country stores, where it all started and where all still happens. The candidates will then develop skills in their chosen business area,

before making a permanent move to China (Shanghai, Beijing, Guangzhou and Shenyang) to complete their programs. This program aims to introduce advanced retail planning and corporate culture into China, and to train potential managers for A-Mart China.

B-Mart's HR manager also commented:

Our [B-Mart] middle and senior managers have good retail practices, and 90% of managers are founders of the company and promoted from low level employees. They worked for the company for more than 10 years with a good understanding of our retail operations, company culture, operating model as well as company policies and regulations. All these managers were internal promoted. We regularly organized an internal recruitment event for all employees. We seek to cultivate human capital and promote new talents into our top management team through internal recruitment event such as regular assessment and observation.

A HR manager of C-Mart also pointed out:

In 2007, we [C-Mart] recruited more than 30 university graduate students in financial accounting, computer science, supply chain management, and corporate governance subjects. All of these graduate students have 6-month training periods. During the employment and vocational training periods, the candidates will be trained and supported by old employees with more than 10 years' experience to obtain retail operations and practices. These students with rich business management knowledge and techniques will improve company personnel planning, and this is to train potential managers for our company. Old and young staffs can interact together. For example, these new employees with professional knowledge will play vital roles in our company's

future growth and development. At the same time, those old employees who have rich experiences will act as consultants.

However, it takes a long time to cultivate talented managers. Due to the store expansion plans, as shown in Table 6.7, the interviewees highlighted that all cases also recruited skilled labour from outside the company, but this is very expensive. These talented managers from outside of firms need time to adapt to retailers' corporate culture and operating model. An example was cited during the interview to illustrate that A-Mart spent huge money on recruiting a financial manager in 2007, only to find him leave the company after just six months in the job. A HR manager of B-Mart also reported:

A few years ago, we [B-Mart] recruited some senior managers from labour market, but they left a few months later. There are some reasons for their leaving. First, we have our own problems on human resources management. Second, it takes time for those managers from outside to adapt to our company culture and operating model. So, we emphasize on internal promotion.

In addition, as mentioned above (see Table 6.6), labour turnover in China's retail market is very high. It can be seen from Table 6.7, all case companies examined in this research developed financial and non-financial awards systems to improve employee loyalty and to reduce high labour turnover. A HR manager from A-Mart, for example, specially acknowledged:

To improve employee motivation, we [A-Mart] aim to respect employees, recognise their achievements, give them positive feedback, give them more allowances, provide them more relevant training programs, organize public events and activities for them, and teach them how to interact with other people and communicate with managers. We give every store a sales target, and increased commissions for employees who achieve the

target sales levels. We also provide some non-financial awards, such as free attendance to the formal training programs provided by its consultant company. In a supermarket or hypermarket, a very hard job is not rolling stock maintenance but that of a cashier. To improve our checkout staff's motivation, A-Mart provides them with more financial awards depending on their performance.

As shown in Table 6.7, B-Mart also developed personnel planning and reward system. Its team has the following objectives: Be Happy, Team Working, Be Professional, and Be Innovative. B-Mart's HR manager explained it in more detail:

1) Be Happy: We seek to create a comfortable working environment for our employees. Smiling, health, enthusiasm, and motivation are very important for employees to provide high quality services for customers.

2) Team Working: It is probably obvious that team cooperation is essential in a leadership team developing organizational strategy or reviewing the success of the strategy. Employees should have a good understanding of their general duties and responsibilities, and cooperate and communicate effectively. As a result, the company objectives can be achieved through the efficient team working.

3) Be Professional: We seek to set up a professional team and improve employee competencies through the relevant training programs. Employees should have rich experience in retail operations, including good understanding of customer shopping habits, good customer service skills, good understanding of company long-term plan and current operations strategies. Those employees with more professional retail service skills will contribute more to company growth.

4) Be Innovative: We encourage employees to provide suggestions, feedback, and fresh ideas which help improve and strengthen our innovation ability. Building on employee innovation, we can introduce more innovative goods and services for customers, and build our brand identity and brand image.

In addition, B-Mart developed the attractive awards system to provide great financial and non-financial awards for employees who achieve good progress. It seeks to enhance employee loyalty and responsibility leadership. B-Mart's HR manager commented:

We [B-Mart] try to improve employee loyalty through the direct and high financial awards. In the local retail market and even in Henan province, I believe that we provide employees with the highest wages and salaries. Our store managers' salary is more than twice as much as that of other retailers in the local market.

The interviewees highlighted that B-Mart raised its employees' average salary from RMB 800 to 1800 yuan per month in 2007. B-Mart's current employee's salary is about RMB 1800 yuan per month, and their cleaners also have more than RMB 1100 yuan. It is the highest salary for cleaners in the local market, and cleaners in other retailers just have RMB 700 yuan per month. All employees working for B-Mart for more than three years can get dividends from the company.

In addition, as shown in Table 6.7, all the five retail companies developed a strict achievement award and punishment scheme. The interviewees highlighted if it finds some stores did not completely implement company strategies and policies, the store manager and other staffs will be penalized as per the relevant rules, for example cancellation of the relevant allowance, pension and bonus. If the same mistake was made twice by the same store, the store manager and the relevant staff will be dismissed. A president of B-Mart commented:

I [B-Mart] extremely support the current high salary incentives system. We seek to improve our employees' living standard. The current award system has a direct positive effect on reducing high labour turnover and improving employee productivity. Employee loyalty is vital for effective retail operations. Therefore, based on the strict achievement award and punishment system, employee motivation and loyalty have been extremely improved and strengthened. As a result, market shares and sales volumes increased.

It can be seen from Table 6.7, C-Mart's HR manager also reported:

Over the last few years, we [C-Mart] have made efforts to keep existing employees, such as improving employee benefits including social insurance, medical allowance, education and housing allowance, and holiday pay, as well as organizing free holiday travel as the bonus for employees. These awards are just for senior manager and employees who have worked for the firm for more than three years. We also conduct various trainings for the employees, including the cashiers, sale assistants, stock maintainers, and cleaners. To improve employee loyalty and motivation, we always organize middle and senior managers and top management team to visit retail companies in the big cities. We also regularly hold events and public activities (such as adventure tours and travel, outdoor and activities), in order to organize all the staffs together and improve company cohesion. We also seek to provide a good working environment for employee promotion and progress. With the development and growth of C-Mart, we would like to take more responsibilities for our employees, including looking after our employees, respecting them, providing more allowance and bonus for them, and improving their living standard. We are seeking to produce more opportunities for employees' promotion, such as inviting consulting companies to provide training programs for our employees.

In addition, as shown in Table 6.7, all five retailers employed training programs to improve employee loyalty to the company. C-Mart's general manager, for example, reported:

Previously, we [C-Mart] did not place much emphasis on training programs. Currently, we begin to emphasize on introducing and developing various training programs for employees. We also invited professional consulting companies to train our employees, including customer relationship management, inventory management, purchasing management, and store decoration and design.

A-Mart, B-Mart, D-Mart and E-Mart also recognised that training is critical for retail success. To improve employee competencies, A-Mart has developed many training programs over the last two years, mainly including leadership, general skills and operations skills. A-Mart's HR manager commented:

The leadership training program of A-Mart aims to strengthen employee competencies by 1) general skills training includes explaining and enhancing A-Mart Value, A-Mart Way, corporate culture, and major corporate strategies; and 2) operations skills training, including product knowledge, dealing with customer complaints, technology applications skills, display skills, and stocktaking.

A HR manager of E-Mart also remarked:

We [E-Mart] emphasise on providing training programs for employees; most programs are conducted by international consulting firms or retailing experts from UK and USA. Every employee, including cashiers, sales assistants and senior managers, has at least four training opportunities every year. The training programs for senior managers are usually undertaken every two months.

6.2.2.2. IT applications in case companies

According to business environment and operations requirements in China's retail market, the four retailers (A-Mart, B-Mart, C-Mart and E-Mart) made significant retail technology investments. As shown in Table 6.7, the relevant retail technologies have been used by all cases except for D-Mart. For example, E-Mart's operations manager remarked the important roles of IT on retail operations:

New retail technologies offer us [E-Mart] a chance to improve retail productivity. The obvious advantages of IT on retail operations are reducing logistics cost, improving operational flexibility, and satisfying customer demands.

As can be seen in Table 6.7, A-Mart's operations manager also stated:

We [A-Mart] introduced Enterprise Resource Planning (ERP) systems to integrate the various operational functions. The purpose of ERP is to provide A-Mart with a single-point solution, thus integrating all the core back office business activities, such as inventory, logistics, customer service, finance and human resources, into one system. We also invested about US\$1.47 million to introduce a new program of people operating model that aims to enhance personnel management. In 2007, A-Mart started implementing a new operations mode in all of the chain's stores: A-Mart Operation Model (AOM). It intends to enhance and reform the current operating system and process, and to make it in accordance with A-Mart's international standards. AOM includes innovative retail operations, self-owned products development, retail logistics, IT application, and food quality and safety control techniques. We set up a project team of Operating Model Deployment (OMD) which aims to implement AOM in the Chinese

market. This team has conducted a number of training programs to assist employees to effectively use AOM.

The informal discussions with a sales assistant of A-Mart suggested:

I found that application of AOM made my job easier. I can share information with other people in the store, and offer appropriate products and service to meet customer needs. Correct information is very important for good quality service and reliable delivery. The application of AOM improved my working efficiency. I can deliver appropriate products to respond quickly to shifts in market demand.

District operations manager of A-Mart especially remarked:

AOM can help us [A-Mart] to provide customers with the right product at the right time at least cost.

B-Mart also emphasised on investments in retail technology. B-Mart's general manager further acknowledged:

We [B-Mart] introduced the second generation of POS in 2006 when we found the first generation cannot meet the company's growth. And then in 2008 we introduced the third generation of POS. Although investment in IT would be a huge expense and effective technology applications also take time, the results of successful IT implementations are valuable for firm performance improvement.

In addition, it can be seen from Table 6.7, energy-saving stores with new technologies have been set up by all cases except for D-Mart. The energy-saving stores use new types of lighting, heating and ventilation equipment that help to reduce power losses and overall business costs. Energy saving store has an advanced energy management system that makes large-scale use of a range of energy-saving technologies, including a brand new ventilation system, electronic

expansion valves, high-efficiency energy saving draught fans, and high-efficiency electronic ballasts to help reduce the power consumption of air-conditioners and refrigerators. A-Mart's operations manager, for example, reported:

We [A-Mart] opened a new energy saving store in Tieling Guangyu. It is expected that the store can reduce energy consumption by 25% and reduce the use of electricity by 760,000 kilowatt hours and carbon emission by the equivalent of 758 tons of carbon dioxide each year.

On the other hand, the four retailers (A-Mart, B-Mart, C-Mart and E-Mart) further suggested the important factors influencing successful IT applications, including top management commitment and training programmes. B-Mart's president, for example, highlighted:

I [B-Mart] think technology investments need to get supports from top management team, which is very important for successful IT applications. First, strong top management support was associated with effective applications of technology. Second, technology should be introduced based on the company's growth. Third, effective IT applications need the relevant trainings from professional engineers, and strong supports from employees who directly employ the technologies. We invited a professional team to give training programs and supports for the new technology applications.

C-Mart's general manager further reported the factors that affect the successful applications of retail technology:

We [C-Mart] placed emphasis on retail technology and system investments. To achieve successful IT applications, we first need to undertake the relevant marketing analysis such as a good understand of technology investments and the potential advantages, and need to get strong supports from top management. But, there is a long way to go from

technology introduction to successful implementation. Effective IT applications need time and sufficient financial supports. In particular, the main users of technology and system are low-level employees (such as sales assistants, checkout and stock staff) who have the highest turnover. It is a challenge for us to obtain the successful IT applications.

With regard to the application of IT on retail operations, the exception is D-Mart. As can be seen in Table 6.7, D-Mart faced difficulty in introducing new retail technologies, although it has recognized the importance of the application of retail technology and system. D-Mart's general manager commented this in more detail:

Retailing is not a high-technology sector, but effective technology applications are important for retail success in today's dynamic and competitive business environment. A shortage of funding implies that there will be limited room for improvements on our current retail technology. This is the major difficulty for us [D-Mart] to introduce new retail technologies. Our current operating and checkout system lags far behind other leading retailers in the local market. Retail technologies applications are based on company operations resources, such as sufficient financial resources, human capital, and the relevant training programmes.

6.2.2.3. Business relationships development in case companies

6.2.2.3.1. Relationship with customer

It can be seen from Table 6.7, many efforts have been made by all five case companies to establish a close relationship with customer and improve customer satisfaction. The interviewees highlighted that retail firms in China have recognized that the success depends on their

customers, and their central mission is to provide great customer value and earn lifetime loyalty. As shown in Table 6.7, to build a close and long-term relationship with customer, the three food retailers (A-Mart, C-Mart and D-Mart) have launched various loyalty card schemes over the last few years. The interviewees from all five retail companies highlighted that a loyalty card scheme is used to collect customer information and enhance customer loyalty. The loyalty card is its way of rewarding customers for shopping with it. It allows customers to collect points on their purchases, and for retailers to reward customers with loyalty card vouchers four times a year for customers to spend in store. The customers with retail firms' loyalty cards can purchase some discount products, and regularly receive the firms' free magazines. A-Mart and D-Mart, for example, have a special marketing team to manage and analyse the customer information. The interviewees remarked that retail firms depend on the support of customers and aim to play a positive role beyond its immediate contribution of meeting customer needs.

As mentioned above, shopping habits and lifestyles of Chinese consumers are very different from those of Western countries. Therefore, to compete in the Chinese retail market, it is very important to fully understand the fundamentals of Chinese consumers' unique shopping habits. As shown in Table 6.7, all case companies have put emphasises on setting up good relationship with customer through the different ways, such as quickly responding to customer complaints and suggestions, fully understanding customer needs, and getting suggestions and feedbacks from customers. Particularly, the two foreign retailers (A-Mart and E-Mart) initially set up joint-ventures with Chinese partners to share their partners' extensive local knowledge and operating expertise and to establish a good relationship with customer. The two foreign retailers in China made great efforts to obtain a good understanding of the shopping behaviour of Chinese consumers. A-Mart's sales and marketing manager further commented:

Building and sustaining a trust relationship with customer is one of the most important reasons for our success in China's retail market.

China is a big place, and because customer needs are very different cross regions, it is impossible to run all stores from one central office. To obtain suggestions and feedbacks from regional customers, one national retailer (A-Mart) and two foreign retailers (B-Mart and E-Mart) have appointed different regional managing directors who look after different regions throughout China, such as the North and North-East region, the Eastern region, the Southern region, and the Western region. As can be seen in Table 6.7, the two regional retailers (C-Mart and D-Mart) also used different approaches to fully understand customer requirements.

6.2.2.3.2. Relationship with supplier

The cross-case patterns presented in Table 6.7 indicate that all case aimed to establish win-win relationship with suppliers. The interviewees from all five retailers highlighted the importance of suppliers in retail operations. For example, B-Mart's president remarked:

Supplier is one of the most important stakeholders for us [B-Mart], because we need to purchase high-quality products from suppliers, subsequently providing good value for customers. Generally, supplier-retailer is a traditional buyer-seller relationship.

China's retail industry is a buyer's market, and various varieties of products are on sale. The interviewees from all five retail companies commented that there is keen and even vicious competition among suppliers, and purchasers have the luxury of selecting from a number of suppliers that have a similar level of quality and price. In particular, A-Mart's operations manager remarked:

There is a very funny saying to describe the relationship between suppliers and retailers in the Chinese retail market: retailers are the “grandfather” of suppliers. Grandfather holds the highest position of authority and respect in the traditional Chinese family. This is an “underlying rule” in China’s retail market that has been generally accepted by people.

This phenomenon, an underlying rule between retailers and suppliers, stems from the practical developing situation of the Chinese retail market. The interviewees from the five retailers highlighted that, due to the existing “underlying rules” and the special characteristics of China’s retail sector, a few purchasers might receive bribes from suppliers. This “illegal action” has very negative impacts on retail operations. For example, C-Mart’s sales and marketing manager commented:

Because of the potential illegal bribes, we [C-Mart] might purchase the low-quality products from suppliers, and subsequently hurt the relationship with the supplier.

Therefore, the interviewees remarked that retailers are fully aware that if they favour suppliers in the short run in spite of their poor quality products, their business relationships not only with suppliers but also with customers will suffer in the long run. To provide customers with high quality products, as shown in Table 6.7, all cases established a special purchasing team and set very strict rules to deal with the potential bribery during the purchasing process. It can be seen from Table 6.7, the two most important criteria for selecting suppliers for all cases are quality and price. B-Mart’s purchasing manager, for example, reported:

We [B-Mart] require all suppliers to pass a formal certification of quality control and improvement system, such as QS [Quality Safety certification] and ISO9001. We also

have a special team to check product quality before the products are transported to chain stores.

An operations manager of E-Mart, a home appliance retailer, also remarked:

We [E-Mart] require all suppliers to pass a formal certification of quality control system such as "3C" which is issued by China Quality Certification Centre.

During the interviews, B-Mart, C-Mart and D-Mart provided more details of establishing a good relationship with supplier. B-Mart's purchasing manager, for example, reported:

Our [B-Mart] relationship with suppliers is based on trust, honesty, fairness and respect; the first priority is to treat all our suppliers fairly and responsibly. Moreover, we conduct regular meetings with our main suppliers, accepting their suggestions and feedback. Suppliers can provide problems and complaints to purchasing managers or directly to me. We will respond quickly to suppliers' feedback and suggestions. On the other hand, based on this effective communication, our suppliers can provide services such as free delivery service, joint advertising, sales promotional activities, and sales staff training.

In order to build good relationships with suppliers, C-Mart also developed some strategies. C-Mart's purchasing manager commented in more detail:

We [C-Mart] have established trust-based relationships with some major suppliers that have business with us for more than ten years, and seek to set up cooperative relationship based on the strong mutual trust and friendships. For some major suppliers with trust-based relationships with our company for more than 10 years, we can provide financial supports when they encounter financial shortage. For example, pay them in advance and even lend money to them. Last month [October, 2008] we [including our main suppliers, and some individual businessman renting counts in our department store] signed a

contract with the Communication Bank of China. Our company acts as guarantor. Communication Bank of China can open “green way” to provide immediate loan offers, when these suppliers or individual businessman encounter financial difficulties and shortage.

6.2.2.3.3. Relationship with competitor

As mentioned previously, retailers in China face increasingly keen competition not only from local retailers also from multinational retailers. The cross-case patterns shown in Table 6.7 indicate that competitor analysis is vital for retail operations of all cases. All five retail firms examined in this research assessed the impact of competition by benchmarking themselves against leading competitors, and by understanding main competitors' marketing strategies, weaknesses and strengths. The interviewees from the five retailers highlighted that a good understanding of major competitors has become more important than ever to make a successful business. As shown in Table 6.7, all cases provided some details about establishing good relationships with competitors through their competitor analysis in retail operations. For example, an operations manager of A-Mart, an international retailer in China, commented:

We [A-Mart] try to know more about our competitors. We currently compete with leading competitors to snatch market share. However, compared with other similar multinational retailers and local retail companies in China, A-Mart's market shares are quite low. A-Mart has a long way to go in order to catch up in terms of establishing brand awareness. A-Mart China does not have sufficient competitive advantages in brand image, customer loyalty, and close cooperation with suppliers. While some other foreign retailers have

been marketing for several years under their own names, A-Mart sat coyly behind its Chinese partner's logo.

B-Mart also aimed to set up a good relationship with competitor (see Table 6.7), its general manager remarked:

In the local market, we [B-Mart] face keen competition from another four leading food retailers, including Datton, Shijilong, Denies and Hongdu. Every retailer has its own retail operating model and market segmentation. We seek to learn from other retailers' strengths and weaknesses, and enhance our competitive advantages. We establish Sifang Liancai [four retailers purchase together] with three main retailers in the local market and share retail experiences each other. If we find other retailers' marketing strategies are effective, we will learn from them.

C-Mart's general manager also highlighted:

In the local market, our [C-Mart] strongest competitor is Hongdu department store. Its general manger was a previous sales and marketing manager of C-Mart a few years ago. To be honest, he is one of my friends. So, I think we know C-Mart very well, including its marketing strategy, weaknesses, and successes. Of course, we try to learn from Hongdu.

As can be seen in Table 6.7, D-Mart also aimed to undertake competitor analysis, its strategic planning manager highlighted:

Compared with other leading retailers in the local market, we [D-Mart] have the different targeted markets and customers. In particular, due to the different targeted market, we have different retail strategies. We seek to understand main competitors' market strategies through their posters during marketing activities. We also visit main competitors' stores to identify their retail operating models, such as product range,

brand varieties, store design, store shelving, and customer service, etc. To avoid undertaking the similar promotion activities with other retailer in the same period, we also seek to investigate the changes in major competitors' marketing strategies based on our experiences and observations.

With regard to establishing a good relationship with competitor, E-Mart's operations manager (see Table 6.7) also reported:

There are a number of leading home appliance retailers in China, including Gome, Yongle, and Suning. I [E-Mart] think we are not only competitors, also cooperation partners. We have an appropriate communication approach to our competitors, which can be made among senior managers, cashiers, and sale assistants. We do not engage in any vicious competition. We learn from competitors' failures and successful experiences, and analyze their strengths and weaknesses and benchmark ourselves against them.

6.2.2.3.4. Relationship with government

In addition to being one of the fastest growing economies, a significant aspect of China is its long cultural and national history. The interviewees from all five retailers remarked when doing business in China, it is important for companies to learn to coordinate with the local and central governments, especially establishing good relationship with government bodies to obtain competitive advantages. As can be seen in Table 6.7, all cases expect for E-Mart reported that they aimed to establish good relationships with government bodies in retail operations. Three retailers such as A-Mart, B-Mart and C-Mart further reported that they intended to undertake more corporate social responsibilities, which the Chinese government consider as main contribution of the growth of local community and economy. As a pay back, the government

bodies provide the contributors with some preferential treatments such as financial supports and tax reduction.

All the four retailers (A-Mart, B-Mart C-Mart, and D-Mart) provided more details about establishing a good relationship with government. As a foreign retailer in China, A-Mart's operations manager commented:

We [A-Mart] strive to establish a good relationship with local government. Our CEO also emphasizes setting up a close relationship with the government. He regularly visits and meets with government officials. Our top management attend some community activities in China to establish brand awareness and set up good relationship with the local government. A-Mart has a special public affairs department that is responsible for communicating with the public, such as the government and media. The public affair manager has the strong personal relationships and broad business networks in China.

A-Mart's sales and marketing manager further remarked that they aimed to undertake more corporate social responsibilities:

Support for education is a major part of A-Mart's contribution to communities. We try to undertake more corporate social responsibilities. In 2008, following the devastating earthquakes in Sichuan province, we donated about RMB 2 million in cash and foods to the earthquake-suffered regions. In addition, over the last few years, we have donated a total of RMB 2 million to over 7,000 students in poverty.

A president of B-Mart also commented the important roles of government departments in retail operations (see Table 6.7):

Yes, due to the Chinese special culture, the good relationship with the local government departments is necessary and important for retail operations. For example, to support

Nanyang City Government and the Fire Bureau's public activity, in July 2007 we [B-Mart] conducted a training exercise for fire and rescue service with Nanyang City Government and the Fire Bureau, to enhance employee and customer's consciousness on public safety, emergency services and defences. In fact, this activity is also an advertisement improving our brand image and reputation. Safety and health is also an important issue in the retail operations. We must provide a safe and healthy environment for our customers. Our customers gave us positive feedback on this activity.

It can be seen from Table 6.7, D-Mart also tries to establish a good relationship with the local government departments, including the Industry and Commerce Administration Bureau and the Local Taxation Bureau. D-Mart's general manager acknowledged:

When we conduct marketing activities such as outside promotion activity and anniversary celebration activity, we need to get support and approval from the local government. The effect will become especially plainly evident when we cannot undertake marketing activity due to lack of approval from local government, while other retailers can conduct similar activities.

C-Mart's interviewees also remarked that they seek to organize the relationships with the local government departments, such as the Local Taxation Bureau, the Bureau of Quality and Technical Supervision, and the Industry and Commerce Administration Bureau. Moreover, the cross-case patterns presented in Table 6.7 show that C-Mart has begun to take more corporate social responsibilities, for example, supporting local economic development, employing the unemployed (who have been laid-off elsewhere), and organizing public community events.

However, B-Mart, C-Mart and E-Mart commented that the previous effects of the government on business and economics are increasingly diminishing, with the growth of

economy and society (see Table 6.7). C-Mart's general manager, for example, cited some special examples:

With the development of technology and information, the administration of the government has become more open. Office administration technologies have been commonly used, for example, a taxation payment is available online instead of using handwriting.

Compared with other four retailer examined in this research, E-Mart does not seem to make efforts to establish a good relationship with government. Although the interviewees from E-Mart reported the potential impacts of local and central governments on retail operations, they highlighted that the good relationship with government is not sufficient for retail success. E-Mart's operations manager further commented:

The important roles of the government on business and economics in the 1980s are increasingly diminishing, so I think that a good relationship with government alone is not sufficient to ensure competitive advantage.

6.3. Summary

This chapter has outlined the main findings and results of in-depth interviews with five retail firms in China, and shown the current business environment of China's retail market within which the case retailers operate, operations resources (human resources, IT applications, and business relationships with customer, supplier, competitor and government) that companies developed, the operations strategies adopted by the five case companies, and their performance outcomes.

The interview data has identified the dynamic and hostile business environment (business costs, labour availability, competitive hostility and environmental dynamism) facing five retailers in China's retail market. Moreover, the in-depth interviews have investigated competitive operations resources (human resources, business relationships with principal stakeholders, and IT applications) developed by retail firms examined in this research. In addition, the operations strategies adopted by the five case companies to improve business performance also have been described.

The main findings and results of questionnaire and interview data analysis (reported in Chapter Five and this chapter) will be discussed in more detail in the following chapter, highlighting the current atmosphere of the Chinese retail market.

CHAPTER SEVEN: DISCUSSION AND CONCLUSIONS

This chapter is structured in seven sections as an attempt to summarise the whole study. Sections 7.1, 7.2 and 7.3 begin by discussing in full detail the results and findings generated from SEM analyses of questionnaire survey data. Section 7.4 aims to discuss the main findings of within and cross-cases analysis of interview data. This is followed by Section 7.5, in which a summary of the study conclusions based on the findings of the quantitative and qualitative analyses are presented. Section 7.6 discusses both the theoretical and practical contributions of the study. Finally, Section 7.7 presents the limitations of the research and provides suggestions and further directions for future research.

Discussions of SEM of Questionnaire Survey Data

The results of SEM analyses of the three sub-frameworks have been described in Sections 5.2, 5.4 and 5.6. The implications of these findings are discussed in more detail below.

7.1. Empirical support for sub-framework one

In essence, there are several notable findings in this path analytic model. The conceptual arguments linking business environment, operations strategy and business performance have been verified empirically. The implications of these findings are discussed below.

7.1.1. Business environment and operations strategy

As noted above, the first path analytic model shown in Figure 5.1 has observed several significant paths between business environmental dimensions and operations strategies made by the responding retail firms. One of the findings is that rising business cost has a direct significant impact on the operations strategies of cost and delivery performance, and a negative significant effect on operational flexibility. Currently, the cost of doing business in China is going up. China has been the world's factory and the anchor of the global disparity between rising material prices and lower consumer prices, but its meteoric advances may be coming to an end. Rising rental and transformation costs, the current global financial crisis, and exchange rates are all adding to the cost of doing business in China. Particularly, China's advantage in labour costs is diminishing. The new Labour Law, which took effect in 2008, increased the costs of operating businesses in China considerably. Therefore, retailers in China, facing the rising labour and rental costs, emphasized reducing business costs, and decreasing waiting time in line, and improving after-sales service for their customers. This finding is consistent with those of some previous studies. For example, Amoako-Gyampah and Boye (2001) found that business cost was the variable that has a significant effect on the operations strategy choices of cost and delivery performance among manufacturing firms in Ghana. Furthermore, the path analytic model suggests that a cost strategy is significantly related to business performance. Retail firms in China facing the increasing business cost responded with a greater emphasis on reducing operating costs, to achieve sales and business performance improvements. It has become widely accepted that a cost strategy in manufacturing and service industry can give a company a distinct competitive advantage in today's competitive marketplace and provide operational support for the competitive strategy.

The path analysis presented in Figure 5.1 shows that environmental dynamism has the most positive influence on operations strategy choices, affecting three out of four choices. Environmental dynamism has the strong positive significant impacts on the degree of emphasis placed on cost, quality and flexibility. The operations strategy of flexibility is significantly related to retailers' business performance. Some of the strategic responses of retail firms in China to environmental dynamism are increased emphasis on cost reduction, quality and flexibility. As environmental dynamism increases, retail firms in China face more challenges, such as an increasing need for information, innovation and quicker cycles of development, and the difficulty in forecasting customer demand. Moreover, with the development of the Chinese retail market, information technology will have an impact on the overall business efficiency of retailers and affects operations ranging from on-line shopping to procurement and supply chains. Thus, retailers that aim to achieve success in China's retail market endeavoured to respond to environmental dynamism, such as reducing operating costs through the application of retail technology, introducing high quality goods/services, and providing appropriate goods/services to meet customer demand in different seasons (such as Chinese New Year). This finding is contrary to the discovery of previous studies in a manufacturing environment (e.g. Amoako-Gyampah and Boye, 2001). Due to the closeness of the service business to customers, service operations must be extremely sensitive to customer and market requirements such as great value for money, high quality, and flexibility.

In addition, the path model also suggests that retail firms in China facing greater competitive hostility (such as more demanding quality standards and severe government laws and regulations) responded with a greater emphasis on a quality strategy. Over the last decades, the standard of living in China has drastically increased. The rapid rise in household income has

simultaneously increased the demand for consumer goods. In big cities, Chinese consumers now demand more quality. Moreover, since the melamine baby formula milk powder incident in 2008, central and local governments have placed heavy emphasis on food safety and quality control. A number of relevant laws and regulations have been issued and taken effect over the last few years. To address these concerns, retail firms in China emphasized providing customers with various varieties of high-quality products and services. The results of this study are consistent with Amoako-Gyampah and Boye's (2001) findings, who found that competitive hostility has a direct significant impact on the emphasis on quality among manufacturing firms in Ghana. However, this finding is somewhat contrary to that of Ward et al. (1995), who found that successful Singaporean manufacturing firms facing greater perceived competitive hostility responded with a greater emphasis on delivery performance rather than quality. In a retail context, delivering high quality service is one of the essential strategies for a retailer to survive in today's competitive marketplace.

However, the path model suggests that labour availability has no direct significant effects on any of the operations strategy choices among retail firms in China. This is not surprising when examining the current business environment in which retailers in China operate. Labour availability was measured by asking questions on the shortage of clerical and administrative staff, as well as a lack of skilled workers. Due to the impacts of the current global financial recession, hundreds of thousands of small and medium manufacturers in China have been made bankrupt during the last few months. Millions of people have lost their jobs, and nearly six million university graduates were attempting to squeeze into the job market in 2008. Moreover, because China's economy is slowing down and its unemployment is rising, China will face serious employment challenges this year and is likely to create less than half the jobs needed to cope

with armies of new job seekers and laid-off workers. The level of surplus labour in 2009 reached 14 million (Mofcom, 2009). This finding is contrary to several previous studies of the relationships between business environmental dimensions and operations strategy choices. For example, Ward et al. (1995) found that successful Singaporean firms respond to perceived labour shortages through a strategic emphasis on flexibility.

7.1.2. Operations strategy and performance

The paths shown in Figure 5.1 suggest that cost and flexibility strategies are significantly related to business performance.

In response to the rising cost of doing business in China, retailers seek to improve company performance (such as return on investment and profit growth) through the competitive priority of cost. This finding is consistent with the discoveries of Ward and Duray (2000) and Anand and Ward (2004) who found significant links between a cost strategy and performance outcomes. Moreover, retailers in China face growing pressure on increasing consumer awareness and profit. Surviving in today's highly competitive and rapidly changing environment often requires retail companies to develop strategies that provide the right kind of flexibility to succeed in their specific environment, thus improving business performance. Generally, flexibility is one capability that retailers can develop to cope with a dynamic and complex environment in which the behaviours of customers, suppliers and competitors are difficult to predict. As mentioned above, the path analytic model suggests that successful retailers facing greater environmental dynamism responded with a greater emphasis on operational flexibility. The competitive priority of flexibility, including introducing new goods/services, offering wide range of goods/services and providing appropriate goods/services to meet customer special demands in the different

season periods (e.g. national holidays and Chinese new year), could enable retailers to improve their performance outcomes (such as market share, sales growth, profit growth and return on investment). This finding is consistent with a number of empirical studies that suggest a positive relationship between operational flexibility and business performance (e.g. Swamidass and Newell, 1987; Anand and Ward, 2004). Swamidass and Newell (1987) found that operational flexibility was positively related to business performance in both uncertain and stable environments, but that the involvement of operations managers in strategic decision making was positively related to performance in a stable environment. Therefore, it can be noted that cost and flexibilities strategies in the manufacturing and service industries can give a company a distinct competitive advantage in today's competitive marketplace and provide operational support for the competitive strategy.

However, quality and delivery performance do not appear to influence business performance. This finding is somewhat contrary to some empirical studies that suggest a positive relationship between quality and business performance (e.g. Flynn et al., 1995; Williams et al., 1995). A possible explanation for this inconsistency is that the shopping habits and lifestyle of Chinese consumers especially in small- and medium-size cities are very different from that of western countries. To respond to the unique shopping behaviour, retailers in China are likely to place extreme emphasis (Skinner, 1985) on competitive priorities of low cost and high flexibility. In this research, some retail firms responding to questionnaires are located in small- and medium-size cities in China. Chinese consumers in small- and medium-sized cities largely emphasize the economics of their purchase and are cost conscious. As noted previously, when purchasing for home consumption, most Chinese consumers in small- and medium-sized cities tend to make their purchasing decisions based on the price rather than product quality, and buy whatever is

least expensive. Price competition is becoming more and more intense in the Chinese retail market. In addition, due to the poor living environment in small and medium-sized cities compared with those in the developed countries, many Chinese prefer to spend their weekends in the commercial centres instead in staying at home. Thus, touring around shops became part of their leisure activities. In this study, more than 70 per cent of retailers responding to our questionnaires operate their business in food, clothing & footwear and health beauty & pharmacy retailing. Delivery may not be an important concern for them comparing with electrical appliances and furniture retailing. Therefore, it can be noted that retailers in China extremely emphasize on low price and flexibility strategies, to improve performance outcomes.

7.2. Empirical support for sub-framework two

The main findings of SEM analysis of the second sub-framework have been presented in Section 5.4. This sub-section will critically analyze the links between human resources, IT applications, operations strategy, and business performance of retailers in China.

7.2.1. Human resources and operations strategy

As mentioned above, the path analytic model presented in Figure 5.2 observed several significant paths between human resources and operations strategy made by the responding retailers. Human resources such as team working, retail experience, educational background (such as the relevant qualifications and certificates in business management and retail operations) and high degree of self-motivation play important roles in developing the operations strategies of cost, quality and flexibility. Retail companies with high employee competencies have the ability to reduce costs,

provide customers with high quality goods and services, and introduce new and wide range of goods and services. In China, profit margins are quite low, and one of the biggest challenges retailers face today is management of store operating costs and flexibility while maintaining customer service levels. People are the vital resources for retail companies to survive and achieve sustainable competitive advantages in today's fiercely competitive marketplace. As described above, high levels of economic development have generated some pressures for retailers in China. Many retailers currently face a shortage of skilled labour. This is especially acute for some small- to medium-sized retail companies in China, and a lack of skilled labour has become one of the most critical constraints to their retail development (CCFA, 2009). With the growth of the Chinese retail sector, the majority of Chinese retailers realized that of all a firm's assets the most important and most difficult to manage are the human assets. Lots of efforts have been made by retailers in China to increase employee motivation and loyalty which enable companies to improve labour productivity and provide better quality and new services for customer. For instance, salespeople with product knowledge and good sales skills can be essential to retailers' competitiveness. In China's retail sector, competencies of sales staff are one of the most important factors affecting customers' purchasing decisions in supermarkets and department stores. Thus, salespeople play vital roles in providing customers with appropriate specification products/services.

According to the findings of case study reported in Section 6.2, the retail industry in China is labour-intensive and the employee turnover is very high. In particular, employees such as checkout staff and sales assistant have the highest level of labour turnover. Most retail companies seek to strengthen employee loyalty through financial and non-financial rewards systems and cross-training programmes, as a result, reducing labour cost and providing better

quality services for customers. Superior employees create superiority both in primary value chain activities (such as managing inbound logistics) and in support activities (such as development of a high-quality infrastructure). Hence, retailers with high employee competences might have the capability of reducing operating costs as well as pursuing quality and flexibility advantages. The findings are consistent with those of some previous studies about the vital roles of human resources during the strategic operations decision-making process. For instance, Santos (2000) stated that human resource management is linked to strategic choices of quality, flexibility and cost reduction by the use of a functional approach. Many total quality management theorists (e.g. Hayes et al., 1988; Deming, 1982) highlighted the important roles of employees (such as technical and problem-solving skills and team working) in quality improvement. Moreover, some research findings (e.g. Hayes et al., 1988; Upton, 1995) have indicated that flexibility depends much more on people than on technical factors per se. This is to say, if retail companies seek to successfully improve product/service ranges and varieties and to provide appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year), they must develop and maintain highly skilled, technologically competent, and adaptable workforce that can deal with both routine and exceptional circumstances requiring creativity and initiative.

7.2.2. IT applications and operations strategy

The path analysis presented in Figure 5.2 also suggests that IT applications provide retailers in China with the ability to pursue a flexibility strategy. In retail operations, much of the retail operations' functionality is driven by customized point solutions in areas such as merchandizing, supply chain management, in-store operations, seasonality and promotions planning. This means

that the underlying information technology systems to drive retail operations are equally complex. Technology applications are at the heart of retail operations and hence play a central role in alleviating pressure points in the retail sector (Mehra, 2005; Cox and Brittain, 2000). The key to the success of any large retailer is the information system that connects all stray parts and allows a company to function as a whole. Over the last few years, most leading retailers in China have made significant advances in the retail technologies. Many retailers have begun to put heavy emphasis on introducing advanced retail technologies, to reduce costs, improve product and service quality, enhance dependability, or increase flexibility. According to the findings of case study, some inventory management technologies such as POS and Electronic Data Interchange (EDI) have been broadly used among the majority of retail companies in China. Some of China's top retailers responding to the survey, including Shanghai Lianhua, Resources Vanguard Group, Beijing Hualian, and GOME Electrical Appliances, are pouring efforts into developing coordinated online supply chains and e-commerce platforms, and analyzing commodity and membership data to facilitate the decision-making process. Additionally, Radio Frequency Identification (RFID), ERP, wireless network and other cutting-edge technologies are also being used in some leading retailers. Using the relevant retail technologies, retailers could introduce new goods/services, increase ranges and varieties of goods/services, and provide appropriate goods/services to meet customer special requirements in different seasons. This finding is consistent with some previous studies' conclusions about the relationship of technology adoption with operational flexibility (e.g. Voss, 2003; Goldhar and Lei, 1995).

However, the path model indicates that IT implementation seems to have no significant direct effects on other three operations strategy choices of cost, quality and delivery performance. This means that technology applications do not provide retailers in China with the ability to reduce

operating costs, offer high quality products/services for customers, and provide fast and reliable delivery. This is not surprising when examining the current conditions of China's retail market in which retailers operate. China's retail industry is still a low-tech sector. Although some retail technologies have been introduced by some leading retailers, the trend is not true for the whole of retail companies in China, particularly in small and medium-sized retailers. Due to the shortage of funding or lack of support from top management, many small retail companies face difficulties in introducing retail information technology (CCFA, 2009; Hingley et al., 2009). Moreover, there has been much debate in the literature about whether technology applications can produce competitive advantages (e.g. Powell and Dent-Micallef, 1997; Sohal et al., 2001). For instance, Powell and Dent-Micallef (1997) argued that technology alone is not sufficient to ensure competitive advantage as its fast evolution and the ready availability of substitutes erodes any advantage a company has. The case study suggests that retailers in China still need to do a lot more to obtain more competitive advantages and greater benefits from technology applications, including getting supports from top management team, customer and supplier relationships development, sufficient financial supports, and providing relevant IT training programmes.

7.2.3. Operations strategy and performance

The paths shown in Figure 5.2 suggest that the operations strategies of cost and flexibility are significantly related to business performance. This finding is consistent with that of the first sub-framework linking business environment, operations strategy and performance.

Retailers in China could improve their performance outcomes (such as market share, sales growth, profit growth and return on investment) through the competitive priority of cost. As

discussed earlier, the path analytic model (see Figure 5.2) also indicates that human resources (such as team working and employee motivation) enable retailers to reduce business costs. Moreover, flexibility is one capability that retailers can develop to cope with a dynamic and complex environment in which the behaviours of customers and suppliers are difficult to predict (Bourgeois, 1985; Slack et al., 2010). As mentioned previously, this research found that human resources and technology applications can assist a company to improve operational flexibility. The competitive priority of flexibility can help retailers in China to improve their performance outcomes.

However, the path model shows that quality and delivery performance do not appear to influence business performance. This finding is somewhat contrary to some empirical studies that suggest a positive relationship between quality and business performance (e.g. Flynn et al., 1995; Williams et al., 1995). A possible explanation for this inconsistency has been discussed in more detail in Section 7.1.

7.3. Empirical support for sub-framework three

The main findings of SEM analysis of the third sub-framework have been presented in Section 5.6. This sub-section will discuss in more detail the effects of business relationships with principal stakeholders on operations strategy and performance of retailers in China.

7.3.1. Business relationships and operations strategy

As noted in Section 5.6, the path analytic model shown in Figure 5.3 observed that *relationship with customer* has direct significant impacts on the operations strategy choices of cost reduction,

quality and flexibility. Today, in the Chinese retail market, the majority of retailers have begun to recognize that customers are the core of their business and that a company's success depends on effectively managing relationships with them. As a result, customer relationship development has become a key to the agenda of many Chinese retailers' operations strategies. Retailers have made great efforts to establish a good relationship with customer, including responding quickly to customer requirements, considering carefully suggestions and criticisms from customers, and developing customer loyalty scheme. A good relationship with customer enables retailers to reduce operating cost, to introduce high quality goods/services, and to provide appropriate goods/services to meet customer demands in the different season periods. This finding is consistent with the discovery of Curry and Kkolou (2004), who found that effective customer relationship management enables companies to envision their preferred target position and make relevant decisions based on market and customer demands. Moreover, customer relationship management has revealed many aspects that closely resemble the Total Quality Management (TQM) approach.

The path analysis (see Figure 5.3) also suggests that retail companies in China with a good *relationship with supplier* have the ability to pursue quality and flexibility strategies. The management of supplier relationship is a vital task for retailers as it can contribute to both competitiveness and company performance (Hoetker et al., 2007). In order to achieve a "win-win" situation, both the retailer and its suppliers need to compromise and come to a set of common interests for them to get involved in the partnership (Paulraj and Chen, 2007). With the growth of China's retail market, retailers and suppliers have recognised that working together, sharing information and seeking common goals produce significant benefits to both organizations. Most retailers have begun to emphasise establishing and maintaining closed and

long-term relationship with their suppliers, including cooperative relationship based on strong trust and honesty, supplier involvement in new goods/services development activities, information sharing, and good communication with suppliers. A good partnership with suppliers enables retailers to be more efficient in meeting customers' expectations, introduce wide ranges of goods/services, and provide appropriate goods/services to meet customer needs in different seasons. The findings are consistent with the discoveries of some previous studies (e.g. Johnston et al., 2004; Martin and Grbac, 2003; Handfield et al., 1999). For instance, Handfield et al. (1999) found that in the current competitive environment, suppliers are important resources for companies, and an effective partnership with supplier has a large and direct impact on the competitive priorities of quality and flexibility.

In addition, the path model indicates that *relationship with competitor* appears to affect retailers' operations strategy. A good understanding of major competitors plays a vital role in retail success. As mentioned above, retail companies in China are facing competition not only from local retailers also from foreign retailers. In particular, price competition is becoming more and more intense in China's retail sector. To survive in such a competitive and complex marketplace, retailers have made great efforts to set up good relationship with competitor, including understanding main competitors' strengths and weaknesses and avoiding vicious price war. Effective competitor analysis permits retailers to provide fast and reliable delivery and to enhance after sales service. In the face of increasingly keen competition, most retailers have relinquished the "price war" as their main marketing strategy that might lead to similar vicious retaliatory competition. In contrast, they prefer to focus their attention on effective competitor analysis to strengthen their "fighting spirit" (Simkin and Cheng, 1997). Through interaction with

other companies, a company can develop and expand its business (Freeman, 1984; Donaldson and Preston, 1995).

However, *relationship with government* does not seem to influence operations strategy choices (see Figure 5.3). This is not surprising when examining the current conditions of China's retail market in which the responding companies operate. In the 1980s, there were many licences and approvals required from different government departments before the opening of a chain store. In addition, "regional protectionism" also hindered the expansion of the chain store operations. For example, some cities/regions would deliberately find all kinds of excuses in order to "restrict" the expansion of supermarkets from other regions to their territory. Therefore, establishing a good and close relationship with local government was necessary to obtain support from the government and to enhance operations of retail companies (CCFA, 2009; Lo et al., 2001). However, over the last few years, the conditions have improved. Since the introduction of economic reforms and the open-door policy in 1978, China's retail industry has experienced unprecedented growth. Moreover, China's entry into the World Trade Organization (WTO) created significant influence on the economy and social development. As a result, the vital role that the government played in the 1980s and 1990s has diminished gradually. Relationship with government alone will not make customers buy a retailer's products. Therefore, many retailers in China have begun to put much attention on fostering relationship-specific capability with their external and internal stakeholders (such as customer and supplier) (Donaldson and Preston, 1995; Polonsky, 1995). This finding is in accordance with that of Tsang (1998) and Li and Atuahene-Gima (2001), who suggested that the Chinese economy is being transformed from a centrally planned one to a market-oriented one. Companies have to operate in an increasingly

competitive market. It is more appropriate to treat a good relationship (*guanxi* in Chinese) network as a necessary, but not sufficient, condition for business success in China.

7.3.2. Operations strategy and performance

The paths shown in Figure 5.3 suggest that competitive priorities of cost and flexibility appear to affect retailer's business performance. This finding is consistent with that of the first and second sub-framework linking business environment, operations resources (human resources and IT applications), operations strategy and performance.

The strong link between the operations strategy choices of cost and flexibility and business performance is notable. The path analytic model suggests that companies can improve business performance through a cost strategy. As discussed earlier, a good relationship with customer enables retailers to be more efficient in cost reduction. In addition, the path analysis illustrated in Figure 5.3 suggests that good relationships with customer and supplier could assist a retailer to pursue a flexibility strategy. The competitive priority of flexibility helps retailers in China to improve their performance outcomes (such as market share, sales growth, profit growth and return on investment). However, quality and delivery performance do not appear to influence the business performance. The possible explanations for the main findings have been discussed in Sections 7.1 and 7.2.

Discussions of Interview Data

From the findings of within- and cross-cases analysis reported in Chapter Six, it can be noted that all five case companies have developed their operations strategies with the help of

operations resources development to survive in today's complex and dynamic business environment. The operations strategies developed by the five case companies are reported in Table 7.1.

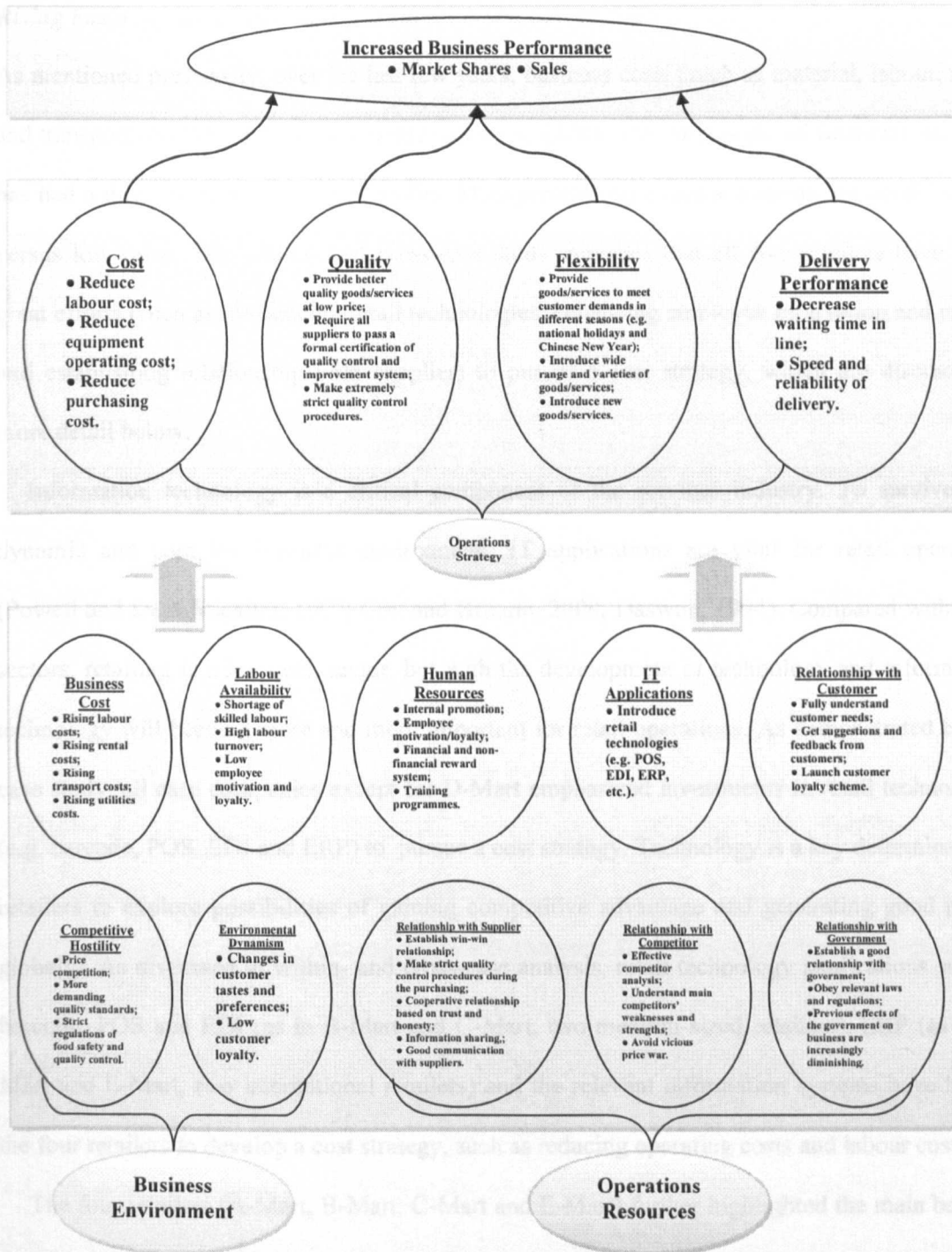
Table 7.1: Operations strategies developed by case companies and empirical evidence

	A-Mart	B-Mart	C-Mart	D-Mart	E-Mart
Cost	<ul style="list-style-type: none"> ● Set up energy-saving stores ● Develop self-brand products ● Reduce retail operating costs ● Reduce labour costs ● Improve equipment utilization 	<ul style="list-style-type: none"> ● Reduce purchasing/logistic costs and other operating costs ● Reduce labour costs ● Develop self-brand products 	<ul style="list-style-type: none"> ● Increase rental fees ● Make good use of selling spaces ● Reduce existing counters' space and introduce more retailers into department stores ● Improve purchasing system and launch self-purchasing ● Self-produce fast and fresh foods ● Use energy-saving equipment 	<ul style="list-style-type: none"> ● Rent all selling spaces to independent retailers ● Reduce unnecessary expenditure ● Develop very strict expanding plan ● Cancel outside promotion activities ● Sending promotion posters and mobile text messages to customer instead of promotion activities 	<ul style="list-style-type: none"> ● Increase equipments utilization ● Set up regional distribution centre ● Reduce purchasing/logistics costs and other operating costs
Quality	<ul style="list-style-type: none"> ● Strength brand image and reputation ● Require all suppliers pass a formal certification of quality control and improvement system ● Provide imported products from home country 	<ul style="list-style-type: none"> ● Require all suppliers to pass a formal certification of quality control and improvement system ● Organize a special team to check product quality ● Provide the required products according to retail location ● Set up some specific stores on the analysis of customer information and sales volume ● The first retailer providing free parking areas in the local market 	<ul style="list-style-type: none"> ● Extremely good retail location (central commercial district) ● Establish comfortable shopping environment ● Re-design and decorate stores ● Counter every year or half year ● Enhance brand image and reputation ● Set up a special team to visit stores acting as customer ● Professional engineers and store staff for quality control ● Set up special shelves to offer some imported products ● Provide cheaper parking areas 	<ul style="list-style-type: none"> ● Conduct various regular promotion activities based on low price ● Enhance company brand image and reputation ● Develop convenient opening time and location ● Set up a special area for product quality control in every store, with professional team ● Introduce high quality products and services ● Improve product ranges and varieties ● Provide the required products according to retail location and special periods 	<ul style="list-style-type: none"> ● Conduct various promotion activities based on low price and high quality ● Provide free mend/fix/repair/service help ● Provide especial service: consumer electronics consult ● Provide professional product usage instructions ● Provide customers with professional purchasing suggestions ● Expert and technicians provide detailed information about products and after sales services ● Provide professional, timely and continuous services

	A-Mart	B-Mart	C-Mart	D-Mart	E-Mart
Flexibility	<ul style="list-style-type: none"> ● Be flexible to adapt to the Chinese retail market ● Setting up a joint venture with a Chinese retailer as an entry mode ● Improve product/service ranges and varieties ● Introduce new product and service ● Provide the appropriate products to meet customer special demands in different seasons (e.g. national holidays and Chinese new year) ● Provide the appropriate products to meet customer special demands in the different season periods (e.g. national holidays and Chinese new year) 	<ul style="list-style-type: none"> ● Improve product/service ranges and varieties ● Introduce new and innovative product and service ● Provide the appropriate products to meet customer special demands in different seasons (e.g. national holidays and Chinese new year) 	<ul style="list-style-type: none"> ● Improve product/service ranges and varieties ● Provide the appropriate products to meet customer special demands in different seasons (e.g. national holidays and Chinese new year) ● Discard those unpopular brands and introduce new brands 	<ul style="list-style-type: none"> ● Improve product/service ranges and varieties ● Provide the appropriate products to meet customer special demands in different seasons (e.g. national holidays and Chinese new year) 	<ul style="list-style-type: none"> ● Setting up a joint venture with a Chinese retailer as an entry mode ● Be flexible to adapt to the Chinese retail market ● Provide the appropriate products to meet customer special demands in different seasons (e.g. national holidays and Chinese new year) ● Provide free storage service for reserved products for 3 months and deliver on customer requirements
Delivery performance	<ul style="list-style-type: none"> ● Provide fast and reliable delivery ● Decrease customer waiting time in line ● Set up a distribution centre and a fresh food distribution centre in Shanghai 	<ul style="list-style-type: none"> ● Provide fast and reliable delivery ● Decrease customer waiting time in line ● Launch customer return and refund policy: "no reason, just refund in five minutes" 	<ul style="list-style-type: none"> ● Provide fast and reliable delivery ● Decrease customer waiting time in line 	<ul style="list-style-type: none"> ● Provide fast and reliable delivery ● Develop appropriate refunding rules 	<ul style="list-style-type: none"> ● Provide fast delivery: one hour delay in delivery, compensate customer for 10 RMB ● Enhance after sales services

The framework presented in Figure 2.2 is supported by the supplementary empirical evidence from case studies, which are summarized in Figure 7.1. It can be seen from this figure that business environmental factors (such as business cost, labour availability, competitive hostility, and environmental dynamism) affected operations strategies developed by the case companies. On the other hand, operations resources (such as human resources, IT applications, and business relationships with customer, supplier, competitor and government) helped the case companies to develop competitive operations strategy and improve business performance. The influences of the two perspectives of business environment and operations resources on operations strategy and business performance are discussed in more detail below, and a set of managerial implications are also drawn in this section.

Figure 7.1: Business environment, operations resources, operations strategy and performance: evidence from case study



7.4. Empirical support for overall framework using interview data

Rising business costs, operations resources and a cost strategy

As mentioned previously, over the last few years, business costs (such as material, labour, rental and transport costs) have increased tremendously in China. The current global financial recession has had a direct influence on retail profits. Management often face a dilemma on good location versus low price. The within- and cross-case study indicates that all five retailers have made great efforts (such as introducing retail technologies, enhancing employee motivation and loyalty, and establishing relationship with supplier) to pursue a cost strategy, which are discussed in more detail below.

Information technology is a critical component of the services industry. To survive in a dynamic and complex business environment, IT applications are vital for retail operations (Powell and Dent-Micallef, 1997; Cox and Brittain, 2000; Daswon, 1994). Compared with other sectors, retailing is a low-tech sector, but with the development of technology and information, technology will become more and more important for retail operations. As demonstrated by this case study, all case companies except for D-Mart emphasized investments in retail technologies (e.g. barcode, POS, EDI and ERP) to pursue a cost strategy. Technology is a key determinant for retailers to explore possibilities of gaining competitive advantage and generating good profits globally. As discussed in within- and cross-case analysis, retail technology applications such as barcode, POS and EDI (as in B-Mart and C-Mart, two medium-sized retailers), ERP (as in A-Mart and E-Mart, two international retailers) and the relevant information systems have helped the four retailers to develop a cost strategy, such as reducing operating costs and labour costs.

The four retailers (A-Mart, B-Mart, C-Mart and E-Mart) further highlighted the main benefits of IT applications in retail operations. The typical advantages are decreasing business costs,

providing better quality goods and services at lower prices, introducing wider ranges and varieties of goods and services as well as providing quick and reliable delivery for customers. As a consequence, retailers could improve market shares and sales. With regard to applications of IT to retail operations, the exception is D-Mart (a medium-sized food retailer), as discussed earlier. The shortage of funding and support from senior management imply that there was limited room for D-Mart to introduce new retail technology. Furthermore, technology alone is not able to produce competitive advantages. According to the cross-case analysis (see Section 6.2), the four retail companies further suggested a number of important factors influencing successful IT applications in retail operations, such as getting support from the top management team, granting time and sufficient financial support, and providing relevant IT training programmes. This observation confirmed the previous empirical research (e.g. Powell and Dent-Micallef, 1997; Sohal et al., 2001), which argued that IT poses as many challenges as it does opportunities.

As demonstrated by within- and cross-case analysis, all case companies endeavoured to reduce labour costs through enhancing employee motivation and loyalty. All five retail companies have developed many relevant training programs and financial and non-financial incentive systems to improve employee loyalty, which influences labour productivity and financial performance. Some previous studies (e.g. Youndt et al., 1996), based on a simulation study, made similar observations concerning the impact of human resource activities (such as comprehensive training programs, interpersonal skills, and employee motivation) on cost reduction and firm performance. Moreover, as mentioned previously, retailers have also aimed to reduce purchasing and logistics costs through establishing win-win relationship with suppliers. All five retail companies aimed to establish good relationships with suppliers based on trust, responding quickly to suppliers' feedback and suggestions through effective communication. All

case companies suggested that a good and close relationship with suppliers can help them to reduce purchasing and supply chain costs in retail operations. Some studies have identified the benefit of developing close relationships with key suppliers comes in the form of reduced cost (Kannan and Tan, 2006; Christopher, 1997).

More demanding of quality, operations resources and a quality strategy

As mentioned previously, the standard of living in China has drastically increased over the last decades. The rapid rise in household income has simultaneously increased the demand for consumer goods. Consumers, especially in big cities, are becoming more demanding in terms of quality. More and more Chinese consumers have begun to pursue better quality of life through better quality goods/services. Moreover, central and local governments have issued the relevant regulations and placed heavy emphasis on food safety and quality control. Within- and cross-case analysis indicates that all five retailers have emphasized on providing customers with various varieties of high quality goods and services, to improve firm performance (such as market shares and sales). All five retail companies relied on quality control systems and operate according to structured, strict regulations. For example, products must attain a certain standard to be accepted and displayed in-store. As shown in Table 7.1, all the retailers also maintained quality testing facilities within their production bases and distribution centres to ensure high-quality products.

The current dynamic market requires employees to possess product knowledge and to provide customers with appropriate specification goods/services. In a retail context, the most important aspect for a company is the ability to educate, motivate, and retain high-quality employees. Employees have an indirect and a direct effect on customer service quality. The interview data

suggests that staffs face increased demands because many customers do not have the practice of reading product information from labels. Chinese customers always ask questions about products' composition, application and quality. Inexperienced customers ask a lot of questions as they want to be reassured, so specialist knowledge derived from company training is very important. Within- and cross-case study presented in Sections 6.1 and 6.2 suggests that all cases have undertaken the relevant training programs on operations skills for their staff, such as product knowledge, dealing with complaints, display skills and stocktaking. Moreover, keeping employee motivation up is always rewarding to retail success. To address this issue, all five retail companies also emphasized on improving employee motivation and loyalty through different human resources activities, such as launching financial and non-financial awards systems and getting suggestions and feedback from all employees (including basic-level employees such as in sales assistance and checkout). All case companies reported that high levels of employee motivation and loyalty can help them to provide high quality products and service for customers. Most total quality management theorists (e.g. Crosby, 1979; Deming, 1982) made similar observations concerning the important roles of human resources on successful quality strategy and improvement.

In addition, as reported in Sections 6.1 and 6.2, within- and cross-case study shows that building and sustaining trust relationships with customers is one of the most important reasons that retailers achieved success in providing high quality products and services for customers. All five retailers examined in this research have made great efforts to set up good relationships with customers, including responding quickly to problems and complaints reported by customers, fully understanding customer needs, carefully considering customer suggestions, developing customer loyalty scheme, and effective analysis of customer information from the loyalty card

system (see Figure 7.1 and Table 7.1). They placed heavy emphasis on obtaining a good understanding of consumers' unique shopping habits. The relationship with customer enables retailers to envision their preferred target position and make relevant decisions based on market and customer demands. All cases consequently stated that such customer relationship can help them to deliver various varieties of high quality products/services at low prices and change the variety of products in a given time. Some previous studies made similar observations that customer relationship can help companies maximize their abilities to interact with customers. This not only leads to improved quality, but also enhances response to customers' requirements (Curry and Kkolou, 2004; Nguyen et al., 2007). Customer relationship management has also revealed many aspects that closely resemble the Total Quality Management (TQM) approach (Slack et al., 2010).

On the other hand, as presented in Sections 6.1 and 6.2, China's retail industry is a buyer's market. Because of the unique cultural characteristics in China's retail sector, corrupt business practices may occur during the purchasing process. All cases reported that such "illegal action" has very negative impacts on retail operations, such as purchasing poor quality products from suppliers. Therefore, to provide customers with high quality products, all five retailers have established a special purchasing team and developed strict rules to deal with potential criminal behaviour. Within- and cross-case study indicates that all cases have made great efforts to establish good relationship with supplier, including cooperative relationship based on strong trust, information sharing, and good communication with suppliers (see Figure 7.1). All five retail companies stated that one of the most important criteria for them to select suppliers is quality. They have set up strict quality control procedures, and required all suppliers to pass a formal certification of quality control system. For example, the four food retailers (A-Mart, B-Mart, C-

Mart and D-Mart) required all suppliers to pass a formal certification of quality control and improvement system (e.g. QS and ISO9001). E-Mart, an electrical appliance retailer, also required its suppliers to pass a formal certification of quality control and improvement system, such as “3C” issued by China Quality Certification Centre. In the retail sector, information sharing and effective communication between retailer and supplier play an important role in improving product quality. Some studies have made similar observations that supplier and buyer work together could achieve benefits in quality improvement (Fram, 1995; Johnston et al., 2004).

Keen competition, operations resources and operations strategy

As mentioned previously, retailers in China are facing competition from both local and foreign retailers. There are hundreds of thousands of retail stores providing varieties of goods and services with different levels of quality and price. Today, profit margins are quite low, particularly in the food retail sector, wherein some daily products have zero profit margins. In addition, all the retail companies examined in this research highlighted that price competition is becoming more and more intense in the Chinese retail market. It is very difficult to achieve and maintain strong customer loyalty in China’s retail market. Customer loyalty is quite thin, and customers are easily lost. Retail firms are required to assess the impact of competition by benchmarking themselves against leading competitors, and by understanding the competition they face. Therefore, to survive a competitive and complex marketplace, all five retailers aimed to offer better quality products and services at lower price than their competitors. This could help them attract and maintain customers, consequently achieving greater market shares.

Within- and cross-case analysis reported in Sections 6.1 and 6.2 indicate that all five retailers aimed to establish good relationships with competitors through competitor analysis, including

learning from main competitors' strengths and weaknesses, understanding main competitors' marketing activities and strategies, and avoiding vicious price war. All case companies reported that a good understanding of major competitors plays a vital role in retail success.

To compete in China's retail market, the two foreign retailers (A-Mart and E-Mart) initially set up joint-ventures with Chinese partners to develop better connections and stronger links to local companies, consequently sharing their partners' extensive local knowledge and operating expertise. The two multinational retail companies highlighted that this entry mode (joint venture) could help them to provide high quality products and services and improve operational flexibility. In order to compete with other leading retailers in the local market, and to enhance customer satisfaction and loyalty, A-Mart set up a special marketing research team. They are responsible for checking the prices of about 50 household products every day in other supermarkets and hypermarkets, and then adjusting A-Mart's prices. It aims to ensure that A-Mart's price for these household products is the lowest among all the supermarkets and hypermarkets within a three-kilometre radius, and promised customers that it would offer double compensation if they found A-Mart's price was higher than competitors' within three kilometres of a store. B-Mart, C-Mart and D-Mart are the three leading retailers in the local market, and to achieve sustainable competitive advantages, all three are compelled to put more attention on improving their capacities to pinpoint which competitors they should compete with, and which should be avoided, through effective competitor analysis. Then they could focus their competitive strategies on taking business from weak competitors while avoiding retaliation from strong competitors. As reported in Sections 6.1 and 6.2, the interview data suggests that retailers should co-operate with one another, and that competitor analysis could help retailers to provide better quality products and services at lower price than their competitors. As a result, retail companies could improve

business performance, such as in market shares and sales (see Figure 7.1). These observations are in line with those of some previous studies examining the practical benefits arising from competitor analysis, such as improvements in service levels and more added value for customers (Kotler et al., 1996; Hingley et al., 2009).

Shortage of skilled labour, operations resources and operations strategy

As mentioned previously, there is a growing shortage of skilled labour with retail experience and business knowledge. According to the within- and cross-case analysis, all five retailers highlighted that they lack talented managers with rich retail management experience. The more unpredictable the global environment becomes, the more retailers must rely upon their employees to create the desired future. The one of the most important assets to a company or business is its employees. Therefore, to improve their competitive priorities of cost, quality, flexibility and delivery performance, all case companies have made great efforts to strengthen their human resources systems, including conducting internal promotion, developing financial and non-financial awards systems, and providing training courses (see Table 7.1 and Figure 7.1).

All five retail companies examined in this research attract employees mainly through internal promotions. On the other hand, to deal with a growing shortage of skilled labour, A-Mart, B-Mart and C-Mart also recruited university graduate students every year. All cases highlighted that senior managers' skills, abilities and knowledge of retail operations are important competitive resources for them to develop and maintain competitive capabilities. As demonstrated by the case study, the retail industry in China is labour-intensive and the employee turnover is very high. Given these market dynamics, all five retailers have recognised that training is critical to retail success. To improve employee competencies, all cases have actively

developed many training courses over the last two years. Moreover, employee motivation is very crucial for business success. In a retail context, keeping employee motivation up is always rewarding to a service business. Retail companies examined in this research have made effective steps to improve employee motivation and loyalty. They suggested that high employee motivation could help them to reduce labour costs and other business costs (such as improving equipment utilization and reducing purchasing/logistic costs), providing low prices and adding more value for customers as a result. The training programmes for staff, especially for basic-level employees (e.g. checkout, stock and sales assistant staff), enable retailers to provide customers with professional purchasing; to provide the appropriate goods/services to meet customers' special demands in different seasons (e.g. national holidays and Chinese New Year); and to reduce waiting time in checkout lines in stores (see Table 7.1 and Figure 7.1). It is widely accepted that people provide companies with an important source of sustainable competitive advantage and that the effective management of human capital may be the ultimate determinant of business performance (Pfeffer, 1994; Wright et al., 1994). Numerous studies on operations strategy have examined the important impacts of human resources on competitive priorities of cost reduction, quality improvement, and operational flexibility as well as fast and reliable delivery (Slack et al., 2010; Youndt et al., 1996; Upton, 1995).

Dynamic market, operations resources and a flexibility strategy

Retail companies, especially foreign retailers, need to adapt to Chinese culture in many ways in order to succeed. As mentioned above, the interviewees acknowledged that Chinese consumers' shopping habits are very different from those of Western countries. Today, understanding culture may be the primary problem associated with doing business in China. China has unique cultural

characteristics, different even from its immediate Asian neighbours. According to the within- and cross-case analysis (see Table 7.1), flexibility is particularly important in an increasingly volatile business, and it permits a company to respond and exploit the uncertainty over future changes in areas such as customer preference and taste, competitive moves, or government laws and regulations. The interviewees highlighted that flexibility is one capability that retailers can develop to cope with a dynamic environment in which the behaviours of customers and suppliers are difficult to predict. As discussed in the within- and cross-case analysis, to meet customer's needs, the four food retailers set up the special shelves to offer some imported products. According to the shopping habits of Chinese consumers, during the promotional period and different seasons (e.g. national holidays and Chinese New Year), all five retail companies provided a large range of products and services, free storage service for reserved electrical appliances and deliver on customer requirements. As can be seen in Table 7.1, to achieve a flexibility strategy, great efforts have been made by all retailers, including introducing relevant retail technologies, strengthening human resources systems, and setting up good relationships with customers and suppliers.

As discussed earlier, retail technologies play vital roles in developing a flexibility strategy for all five retailers. The interviewees highlighted that applications of retail technologies (e.g. barcode, POS, EDI and ERP) could provide very powerful technical support for them to pursue a flexibility strategy, such as introducing a wide range and variety of goods/services, and providing appropriate goods to meet customers' special demands in different seasons (see Figure 7.1). Moreover, to develop a flexibility strategy (see Table 7.1), great efforts have been made by all five retail companies to improve their human resources systems, such as developing a financial incentives scheme and providing training programmes.

In addition, within- and cross-case analysis shows that establishing a good relationship with customers and suppliers is evidently necessary for companies to pursue a flexibility strategy and consequently improve performance. To be flexible and agile, all five retail companies placed heavy emphasis on obtaining a good understanding of consumers' unique shopping habits. They carefully considered customer suggestions and feedback and launched customer loyalty scheme. As a result, retailers are able to introduce appropriate goods/services and change the variety of products in a given time. The interviewees reported that expanding a business in China with a non-homogenous consumer base offers a great challenge for them. In particular, the two foreign retailers in China, A-Mart and E-Mart, have sought to improve operational flexibility with the help of joint-venture with Chinese partners, and by fostering close relationships with customers and suppliers. Chinese people like to eat fresh foods, therefore A-Mart introduced hundreds of ready-to-eat, freshly-cooked foods in Chinese styles in its daily counter. In addition, A-Mart offered street-style food such as little dumplings (*mantou* in Chinese) and rice cakes in the chain stores. To meet customer's needs, A-Mart also set up the special shelves to offer some imported products.

Moreover, a close relationship with suppliers also enables all the five retailers to improve their delivery and product flexibility. As commented by retail companies, a good relationship with suppliers improves their ability to introduce new goods and services, to improve product/service ranges and varieties, to provide appropriate products to meet customer special demands in the different season periods, and to change planned delivery dates meeting customer emergent requirements. In order to achieve a "win-win" situation, both the retailer and its suppliers need to compromise and come to a set of common interests for them to get involved in the partnership. By involving suppliers in new product development activities and continuous

improvement efforts, they learn about customer requirements and decision-making patterns, which will help them to be more efficient in meeting customers' expectations. Some previous studies have made similar observations, that good buyer-seller partnership enable retailers to enhance operational flexibility, share knowledge, and improve decision-making (Hoetker et al., 2007; Sternquist et al., 2010; Chung et al., 2007).

Dynamic market, operations resources and a delivery performance strategy

As noted previously, the standard of living in China has drastically increased over the last few decades. Chinese consumers, especially in big cities, have become more demanding of higher speed and dependability. Time seems to be the factor most critical to customers' shopping experience, not just in grocery stores but in retail outlets in general. Speed of service has become a competitive weapon in retail operations. As discussed in the within- and cross-case analysis (see Table 7.1), to survive in a dynamic and competitive marketplace, all five retail companies have put greater emphasis on delivery performance improvement. All cases highlighted that providing fast and reliable delivery for customer is crucial for retail success. Studies indicating a negative relationship between long waiting time and consumer satisfaction demand that management be ever alert to strategies to decrease waiting time in line (e.g. Chebat and Filiatrault, 1993; Tom and Lucey, 1995). Some studies using questionnaire survey (e.g. Amoako-Gyampaha and Boye, 2001; Ward et al., 1995) have made similar observations concerning strong relationships between business environmental factors (such as rising business costs, labour shortage, and environmental dynamism) and delivery performance. The within- and cross-case study presented in Sections 6.1 and 6.2 suggests that all five retailers aimed to pursue a delivery

performance strategy through introducing retail technologies, enhancing human resources, and establishing good relationships with customer and supplier.

As discussed above, retail technology applications (e.g. POS, EDI, barcode and ERP) and the relevant information systems have helped the five retailers to provide reliable delivery as well as reducing waiting time in line (see Table 7.1 and Figure 7.1). Moreover, to achieve speed advantage, each of the five retail companies endeavoured to strengthen their human resources, such as providing training courses and improving employee motivation. In addition, as discussed in the within- and cross-case analysis, to provide reliable delivery for customer and reduce customer waiting time, all of the retailers aimed to strengthen their retail logistics through partnership with supplier. The four food retailers (A-Mart, B-Mart, C-Mart and D-Mart) required their suppliers to directly deliver their fresh vegetable, fruit and foods to supermarkets and hypermarkets. E-Mart, a home appliance, requires its suppliers to deliver electronics to the regional warehouse and then transfers the required products to every chain store. The four retail companies reported that this has led to low-cost, reliable and fast delivery. In particular, A-Mart and B-Mart clearly illustrated their efforts on improving fast and reliable delivery. A-Mart currently has three purchasing centres, and shares information with A-Mart global headquarters. To provide fast delivery for Chinese customers, A-Mart set up a Distribution Centre (DC) and a Fresh Food Distribution Centre (FFDC) with its own transport delivery team. B-Mart has established a special voluntary chain group, named *Sifang Liancai* in Chinese, with other three main retailers in the local market. One of the obvious advantages of this approach is lower purchasing prices and speed. According to the within- and cross-case analysis, a good understanding of customer needs has also played a vital role in improving retailers' speed and reliability of delivery (see Table 7.1 and Figure 7.1). This enables retail companies to improve

performance such as market shares and sales. Some empirical studies have examined the significant links between buyer-supplier relationship and delivery service (Paulraj and Chen, 2007; Christopher, 1997).

Relationship with government in retail operations

According to the within- and cross-case analysis (see Sections 6.1 and 6.2), all cases expect for E-Mart highlighted the importance of establishing good relationship with government bodies in retail operations. A significant aspect of China is its long cultural and national history (the result of thousands of years of continuity). In China, business relationships often start with “social relationships” and are followed by communication and business exchanges (Buttery and Wong, 1999). China is often portrayed as a relational society where concepts such as *guanxi* (relationships or connections; patronage) are the major influence on both social and business behaviour (Tseng et al., 1995). *Guanxi* implies preferential treatment to exchange partners in the forms of easy access to limited resources, increased accessibility to controlled information, preferential terms including the granting of credit and protection from external competitors (Xin and Pearce, 1996; Lee et al., 2001). Business relationships (*guanxi*) have generally been considered to be one of the most important sources of competitive advantages for companies doing business in China (Tsang, 1998; Lee et al., 2001). Over the last few years, a number of studies have identified the importance of social business relationships for doing business in China (Pressey and Qiu, 2007). As can be seen in Table 7.1, four retailers (A-Mart, B-Mart, C-Mart and D-Mart) commented that due to China’s unique culture, it is important for companies to learn to coordinate with the local government departments (such as the Taxation Bureau, Bureau of Quality and Technical Supervision, and Industry and Commerce Administration

Bureau), especially by establishing close and good relationships with government bodies to obtain competitive advantages.

B-Mart, C-Mart and E-Mart, however, highlighted that the previous effects of the government on business and economics are increasingly diminishing, with the growth of economy and technology and information. Since the introduction of economic reforms and an open-door policy in 1978, the Chinese economy has undergone extensive transformations during the last two decades. As mentioned previously, China's retail industry has been experiencing unprecedented development during a transforming process from a centrally planned economy to a market economy. Moreover, China's entry into the WTO created significant influence on the economy and social development. This is also true of the retail industry. The previous vital role that the government plays in economic activities has diminished gradually. Relationship with government alone will not make customers buy a retailer's products.

As demonstrated by this case study, all retailers examined in the research have begun to put much attention to establishing good relationships with customers and suppliers, as well as undertaking corporate social responsibility. This observation is in accordance with that of Tsang (1998). The author stated that the Chinese economy is being transformed from a centrally planned one to a market oriented one. Companies have to operate in an increasingly competitive market. It is more appropriate to treat a good *guanxi* network as a necessary, but not sufficient, condition for business success in China.

7.5. Conclusions from quantitative and qualitative studies

Drawing upon the contingency theory, the resource-based view, the resource dependence theory, and the stakeholder theory, this research has investigated the linkages between business

environment, operations resources, operations strategy, and business performance. The framework of operations strategy (see Figure 2.2) integrating business environment and operations resources was supported by both questionnaire survey data and interview data. As discussed in Sections 7.1, 7.2 and 7.3, path analysis was applied as a quantitative method to test the three sub-frameworks by conducting 106 survey questionnaires in retail firms in China. The path analytic models (see Figures 5.1, 5.2 and 5.3) have suggested significant relationships between business environment, operations resources, operations strategy and performance. The three sub-frameworks were further supported by the supplementary empirical evidence from within- and cross-case analysis of five retailers in China. According to the observations drawn from the case study, to survive in a dynamic and hostile marketplace, all five retail firms endeavoured to develop an operations strategy that integrates business environment and operations resources. Therefore, the empirical findings of both quantitative and qualitative studies support the conceptual arguments from Slack and Lewis (2008) and Thun (2008) (see Figure 2.1) who highlighted the importance of integrated operations strategy with market-based elements and resource-based aspects. The main findings of the research are now briefly summarised below.

The path analytic model reported in Figure 5.1 has indicated strong relationships between business environmental factors such as business cost, competitive hostility, and environmental dynamism and retail operations strategy. The findings have also suggested that the strongest factor influencing retail operations strategy is environmental dynamism (such as changes in retail technology and new service development). The qualitative study has investigated in more detail the impacts of business environment on operations strategy and performance. More specifically, the case study (see Table 6.6) has suggested that the costs of doing business in China (such as

labour, rental and transport costs) have increased tremendously over the last few years. Moreover, with the growth of economy and society, Chinese consumers are becoming more demanding on quality standards. More and more people are pursuing better quality of life through better quality goods and services. Also, the central and local governments have begun to devote much more attention to goods/services safety and quality control. Currently, China's retail sector is becoming more and more competitive on price and quality. Retailers in China are facing keen competition not only from domestic retailers, but also from multinational retailers. Additionally, Chinese consumers, especially in big cities, have become more demanding on speed and dependability of service. Speed of service is becoming a competitive weapon in retail operations. To address these concerns, the retailers examined in this research endeavoured to develop operations strategies such as reducing operating costs, providing customers with numerous varieties of high quality goods/services, and offering better quality goods/services at lower prices than their competitors.

To survive in such a dynamic and competitive marketplace, retail firms must formulate integrated operations strategies that are suited to the market environment, and strengthen their operations resources to support these strategies (Skinner, 1969; Hay and Wheelwright, 1984; Lawson, 2003). The path analytic models presented in Figures 5.2 and 5.3 have indicated that operations resources (such as retail technology applications, human resources, and relationships with customers and suppliers) play an important role in helping retailers develop operations strategies and improve performance. For example, the path analysis has suggested that human resources such as team working and employee motivation enable retailers to develop cost, quality and flexibility strategies, and that IT applications appear to help retailers pursue a flexibility strategy. These empirical findings were further supported by the case study. The

within- and cross-case analysis has examined in more detail the effects of operations resources on retail operations. The observations derived from the case study have suggested that IT poses as many challenges as it does opportunities, technology alone cannot enable retailers to achieve competitive advantages. Some supporting factors such as relevant IT training programmes and top management support are necessary for IT applications. While business relationships with customers and suppliers enable retailers to pursue the operations strategies of quality and flexibility, the relationship with government has no direct significant effects on operations strategy (see Figure 5.3). The case study has further indicated that currently retailers in China have to operate in an increasingly competitive market. It is appropriate to treat a good relationship with the government departments as a necessary, but not sufficient, condition for operations strategy development and retail success in China.

Based on the findings of the quantitative and qualitative analysis, this research contributes to theory and to practice as well. The following section addresses the contributions of this research in detail.

7.6. Contributions of the research

The research has extended the knowledge base of operations strategy, combining elements of the resource-based view and market-driven view (Slack and Lewis, 2008; Thun, 2008) (see Figure 2.1). On the other hand, this study has contributed to practice by recommending approaches and mechanisms which would support practitioners and managers to develop operations strategy and improve business performance. This section will present the contributions made by this research from two main angles: theoretical and practical contributions.

7.6.1. Theoretical contributions

This study investigates the links between business environment, operations resources, operations strategy, and business performance, building upon both the resource-based view and market-driven view.

Since Skinner's (1969) pioneering work providing insights into management of operations from a strategic point of view, many researchers have highlighted the importance of developing a "comprehensive" operations strategy (Fine and Hax, 1985). Some operations strategy scholars (e.g. Skinner, 1969; Hay and Wheelwright, 1984; Swamidass and Newell, 1987) suggested that firms seeking to achieve success in fierce market competition must formulate appropriate operations strategies that are suited to the external environment in which they operate, and employ resources in ways that support these strategies. The contingency theory suggests that business environment influences organizational strategy (Porter, 1980; Kim and Lim, 1988). The alignment between business environment and operations strategy is critical for firms to achieve success (Skinner, 1969; Hayes and Wheelwright, 1984). On the other hand, the resource-based view provides research in operations strategy a more finely tuned understanding of how competitive advantage is provided through the resources generated by operations (Paiva et al., 2008; St. John et al., 2001).

More recently, Slack and Lewis (2008) and Slack et al. (2010) further developed a theoretical framework of operations strategy matrix, which suggests that operations strategy can be formulated through the reconciliation of market requirements with operations resources (see Figure 2.1). However, a review of the literature shows that there are few published empirical studies attempting to test Slack and Lewis's model. Although a few studies have investigated the links between operations strategy and business environment (e.g. Swamidass and Newell, 1987;

Ward et al., 1995; Amoako-Gyampah and Boye, 2001), and the relationships between specific operations resources (such as human resources and customer relationship management) and competitive advantages (e.g. Youndt et al., 1996; Kathuria and Igarria, 1997; Voss, 2003), very few have tried to examine all those linkages in a systematic and empirical manner. This research provides, for the first time, insights into operations strategy integrating both the resource-based view and market-driven view.

As summarized above, the quantitative and qualitative studies have examined the effects of business environment (such as rising business cost, keen competition and environmental dynamism) on operations strategy. On the other hand, the path analytic models and case study have also suggested that operations resources such as human resources, retail technology, and relationships with customers and suppliers are important assets for retailers to cut down cost, improve quality, increase flexibility, or enhance speed and dependability of services. Therefore, these empirical findings support the conceptual arguments from Slack and Lewis (2008), which suggested that an operations strategy integrates both market requirements and operations resources. Previous empirical studies in operations strategy generally excluded from consideration either business environment or operations resources. The empirical findings of this research suggest that overlooking either business environment or operations resources may miscast the true relationships. Therefore, operations management researchers should assess an integrated operations strategy through the reconciliation of both business environment and operations resources.

In addition, most previous studies (e.g. Swamidass and Newell, 1987; Ward et al., 1995; Youndt et al., 1996) concentrated on operations strategy and involved samples drawn from multiple manufacturing sectors. There have been recent calls to enhance strategic thinking in

service operations (e.g. Chase and Apte, 2007; Roth and Menor, 2003; Smith et al., 2007). Some scholars and researchers (e.g. Prasad et al., 2001; Jiang et al., 2007; Amoako-Gyampah and Acquah, 2008) called for more researches that examine operations strategy development in a developing country context (such as China). To address these concerns, this research has used path analytic frameworks (see Figures 3.1, 3.2 and 3.3) to examine the effects of business environment and operations resources on operations strategy and performance for a survey of 106 retail companies in China. On the other hand, the frameworks have been investigated among the five retail firms in China using interviews. This study may well be the first to explore the research model of integrated operations strategy (see Figures 2.1 and 2.2) in developing countries in general, and in China in particular. Therefore, this contribution will offer an insight for both academics and practitioners.

The applications of path analysis and case study in this research have offered advantages by allowing the study to compare and validate the study's results and findings. Therefore, this research has added more insight into the body of knowledge in the operations strategy literatures by providing several results from retail managers' perspectives, ascertained both quantitatively and qualitatively.

7.6.2. Practical contributions

On the basis of the above discussion of quantitative and qualitative studies, the main practical contributions of this study are briefly concluded here. The empirical findings obtained from the study are valid in the Chinese context, and may also provide valuable insights for companies and policy makers in other developing countries with similar economic conditions. In particular, it is

hoped that the contributions provide insightful strategic guidance for foreign firms from the UK, EU and US that have been engaged in operations in China or plan to expand into China.

The path analysis (see Figures 5.1, 5.2 and 5.3) and within- and cross-case analysis have investigated the important roles of business environment and operations resources in developing operations strategy and improve business performance. This is to say, to pursue competitive priorities in retail operations, it is important for managers to consider both market requirements and operations resources.

The framework presented in Figures 2.1 and 2.2 offers firms some indicators of the ways in which they can develop appropriate operations strategy to compete in a competitive and dynamic market. It could help retailers clarify what they have already been doing to cope with environmental uncertainties. As the Chinese retail market continues to experience increasing keen competition, more demanding quality demands, and dynamic market needs, the business environment facing retailers in China is likely to become increasingly dynamic and hostile. Under such turbulent conditions, the development of effective operations strategies is imperative to achieve superior business performance, and perhaps even to survive. This research has suggested that it is necessary for firms to recognize the characteristics of the environment in which they operate and the appropriate configuration of operations strategies that will make them most effective in responding to this environment. More specifically, during the past three decades, China has been the world's factory. Compared with companies in Western countries, manufacturers and retailers in China have mostly competed on the basis of lower price, cheaper materials, and lower labour costs. Nevertheless, this research has found that the advances following the open-door policy may be coming to end as the Chinese market matures, and that the cost of doing business in China is going up. This study, therefore, encourages retail managers

to pay more attention to identify the potential effects of increasing business costs on operations strategy and performance.

On the other hand, this research using questionnaire survey and case study has indentified the importance of operations resources for retail success. It is necessary for retail firms to understand the roles of operations resources in developing operations strategy and improving performance. For example, information technology is a critical component of the retail sector. It is generally agreed that IT can help companies reduce costs, improve product and service quality, enhance dependability, or increase flexibility. However, this research has suggested that technology alone is not able to produce competitive advantages. It is important for companies to be aware of some important factors influencing IT applications in retail operations, such as providing relevant IT training programmes for employees. Moreover, this research provides some insight into establishing business relationships with principal stakeholders (such as customers, suppliers and competitors) in retail operations. For example, it is essential for practitioners to understand that good relationships with customers and suppliers could enable them to provide higher quality goods/services and increase flexibility. In general, a good relationship (*guanxi*) with government has been considered to be one of the most important operations resources for companies in China to achieve competitive advantages. Nevertheless, this research using questionnaire survey and interviews has suggested that companies in China currently have to operate in an increasingly competitive and hostile market. Therefore, it is necessary for retailers to establish a good relationship with the government departments, but not sufficient in itself for retail strategy development and business success in China's retail market. Companies, therefore, are likely to emphasize upon building a good relationship with other main stakeholders such as customers and

suppliers. The ways to strengthen business relationships in retail operations have been discussed in Sections 7.3 and 7.4.

In addition, this research provides a few implications for policy makers in China. This research has revealed many environmental characteristics of the Chinese retail market. These environmental dimensions should be studied carefully to create a more accommodating environment for retail firms in China, and consequently improve the development of China's retail market. The environmental concerns mainly include rising rental and labour costs, lack of skilled workers, more demanding quality standards, and rate of changes in retail technology and innovation in new service development.

Overall, this research provides a basis for modeling alternative business environment-operations resources-operations strategy to optimize firm business performance. This knowledge can assist firms in enhancing their competitiveness through the understanding of business environment and operations resources improvements. The research model could be used by top management, academics, and practitioners as an analytical instrument to help firms spot where essential progress is missing, and at the same time function as a practical method to identify processes that need to be created.

7.7. Limitations and suggestions for future research

Although the current research reported numerous insights by using various methods to understand retail operations management, like all empirical research, there are some limitations in this research that open up avenues for future studies.

First of all, one of most obvious limitations is that the data analyzed in this research is based on managers' self-perceptive answers. Although most respondents were senior executives and

the questions were articulately designed, bias arising from respondent subjectivity and misunderstanding could not be completely avoided. In future studies, more objective measures based on secondary evidence may be included as complementary information. Other limitations of the questionnaire survey study relate to single respondent bias. Each person within the company might have a different perspective of the company's buyer-seller relationships and IT applications. Having multiple respondents for each company would greatly improve the study's reliability.

Moreover, perhaps another important limitation of this research is that some variables, which the author originally thought might be relevant to business environmental factors and operations resources, had to be excluded due to low reliability (Hair et al., 2006). This may be a result of unique business culture in the Chinese retail industry, sample size, and the differing perceptions of the respondents. Moreover, there is limited published research on retail operations strategy; the survey instrument in this research was derived from prior studies that mainly focused on the manufacturing sector. Thus, future research is clearly needed to explore new instruments with external validity in the retail sector. Additionally, the low reliability of some variables should be noted. Although the reliability is acceptable for newly developed constructs (Cronbach's alpha 0.591), it is below the recommended level of established scales. Future studies should seek to refine the variables through further pilot testing with academics and practitioners, or by selecting a different set of items to represent this construct. Another obvious limitation of this research is the operational definition of business performance according to a five-point Likert scale, self-reported by the informant. The reasons for the choice of instrumentation have been explained in more detail in Section 4.3, for example, the sensitivity of performance information and the difficulty of collecting it in China. However, good models exist in the literature for collecting

performance data using multiple items and for validating the results which should be used in future research of this kind (Vickery et al., 1993; Venkatraman and Ramanujam, 1986). A more complete, multifaceted measurement of performance would allow better assessments of the reliability and validity of the construct, and therefore enhance confidence in the research findings. Multiple measures of performance or objective performance measures would also allow particular aspects of performance to be explored in the context of operations strategy, business environment and operations resources.

The business environmental dimensions explored in this research (environmental dynamism and hostility) are not exhaustive. Most notably, future efforts should include measures which capture environmental complexity (Miller and Friesen, 1983; Dess and Beard, 1984), dimensions not explored in this research. On the other hand, the term “resource” is used in a very broad sense by the theorists. Generally, resources can also be tangible and intangible. Grant (1991), for example, listed six categories of firm resources: financial, physical, human, technological, reputation, and organizational resources. By using more instruments to measure operations resources (such as physical and reputation resources), future research may discern that other operations strategy choices also serve to define the performance effects of operations resources. Although this research has investigated the impacts that business relationships with customers and suppliers on operations strategy, future research should take into account the work on loyalty in retailing and initiatives in retailer/supplier relationships such as Quick Response (QR), Collaborative Planning, Forecasting and Replenishment (CPFR), and Efficient Consumer Response (ECR). To be competitive, retailers and suppliers have to reduce cycle times, improve communications, speed the flow of merchandise and information, and ensure correct inventory

availability using strategies such as QR, CPFR and ECR (Giunipero et al., 2001; Lowson, 2001a, 2001b, 2003; Dawson, 2001).

Using a sample of 106 retailers and a case study of five retailers in China, this research has addressed the recent calls for an in-depth study of the state of affairs of service operations research (e.g. Chase and Apte, 2007; Roth and Menor, 2003; Smith et al., 2007). Although this research has provided initial insights into the factors influencing retail operations strategy and performance in the service sector, future studies are needed to identify additional characteristics of retail operations that may influence strategies and performance, including merchandise, customer service, retail format and store environment, greater convenience, and customer communications (Harris and Walter, 1992; Berry et al., 1997). Operations strategy in this research was characterized by four familiar competitive priorities of cost, quality, flexibility, and delivery performance. However, the traditional four critical success factors in operations have counterparts in service organizations (Roth and van der Velde, 1991). Future study may identify more particular critical success factors for service firms. Moreover, future research can explore the unique characteristics of service operations in other service industries (e.g. banking, insurance, tourism, and hotel and hospitality sectors) and also confirm the results obtained in this research.

In addition, although the sub-sample analysis is within the acceptable range for SEM, the sample size is relatively small. This is moderated to some extent by the approximately normal distributions of most measurement variables. While the results derived from SEM analysis are promising and exciting, the inferences should be viewed with some caution until further empirical studies confirm these findings. Moreover, in multiple industry studies, the industry composition of the sample may account for the variability in performance cross companies,

therefore industry effects should be considered (Flynn et al., 1990). Although all of the included firms are retailers, future studies should take into account the fact that the market, services and operations strategy are very different among retailers responding to the same environmental stimuli (e.g. grocery retailers versus clothing and footwear retailers). In addition, the model developed is not exclusive; future research can explore additional factors that may influence strategies and performance in the retail sector, such as firm size (big versus small company), retail characteristics (i.e. food versus non-food retail sectors), and firm nationality (local versus foreign company).

This research presents an analysis of relationships at a single point in time. Since China's market and retailers will evolve with social, cultural, and historical change, and the business environment is constantly changing, longitudinal follow-up studies should be designed to identify these changes and re-examine whether and how these relationships are changing. Also, in any model in which causality is suggested, longitudinal studies will provide for stronger inferences. Therefore, the model developed in this research could benefit from being tested in a longitudinal design, so that actual behaviour of respondents can be taken into account.

The data and results reported in this research were based on a single country, China, and in turn are applicable specifically to the Chinese context. Thus, this raises inquiries regarding the generalisability of the findings for other cultures and different contexts. Consequently, further research is needed with regard to several countries, since this would help to advance the understanding of the impacts of business environment and operations resources on operations strategy performance outcomes from different international origins in different contexts. Furthermore, since the interviewees in the current research were all at senior organizational levels, participants were all very busy, and in turn the time available for interviews was limited.

Therefore, this might have limited the research's findings and understanding of the dynamic and hostile marketplace, its antecedents, and outcomes. Accordingly, further interviews are clearly needed to explore the associations of the research's gaps.

Overall, this research was well-grounded, relying on previous theories, through the development and testing of three frameworks. Furthermore, various literatures from operations strategy, business environment and operations resources; questionnaire survey; secondary data analysis using Data Envelopment Analysis (DEA); and within- and cross-case study were employed to arrive at the final results and findings. Thus, this research has contributed to theory and to practice, based on the results obtained from qualitative and quantitative study. As mentioned earlier, although this research has established the existence of important links between operations strategy, business environmental dimensions, and operations resources, there are important limitations which have implications for future research.

REFERENCES

- Abernethy, M.A., Lillis, A.M., 1995. The impact of manufacturing flexibility on management control system design. *Accounting, Organizations and Society* 20, 241-258.
- Achrol, R.S., 1991. Evolution of the marketing organization: New forms for turbulent environments. *Journal of Marketing* 55, 77-93.
- Achrol, R.S., Stern, L., 1988. Environmental determinants of decision-making uncertainty in marketing channels. *Journal of Marketing Research* 25 (1), 36-47.
- Ackoff, R.L., 1994. *The Democratic Corporation*. Oxford University Press, New York, NY.
- Acur, N., Englyst, L., 2006. Assessment of strategy formulation: how to ensure quality in process and outcome. *International Journal of Operations & Production Management* 26 (1/2), 69-93.
- Adam, E.E., Swamidass, P.M., 1989. Assessing operations management from a strategic perspective. *Journal of Management* 15 (2), 181-203.
- Adler, P.S., 1988. Managing flexible automation. *California Management Review* 30, 34-56.
- Ahire, S.L, Goldhar, D.Y, Waller, M.A., 1996. Development and validation of TQM implementation constructs. *Decision Sciences* 27 (2), 23-57.
- Ahmed, P.K., Hardaker, G., Carpenter, M., 1996. Integrated flexibility-key to competition in a turbulent environment. *Long Range Planning* 29, 562-571.
- Aldrich, H., 1979. *Organizations and Environments*. Prentice-Hall, Englewood Cliffs, NJ.
- Alvarez-Gil, M.J., 1994. Capital budgeting and flexible manufacturing. *International Journal of Production Economics* 36, 109-128.

- Amaratunga, D., Baldry, D., Sarshar, M., Newton, R., 2002. Quantitative and qualitative research in the built environment: application of “mixed” research approach. *Work Study* 51 (1), 17-31.
- Amoako-Gyampah, K., 2003. The relationships among selected business environment factors and manufacturing strategy: Insights from an emerging economy. *Omega* 31, 287-301.
- Amoako-Gyampah, K., Acquah, M., 2008. Manufacturing strategy, competitive strategy and firm performance: An empirical study in a developing economy environment. *International Journal of Production Economics* 111 (2), 575-592.
- Amoako-Gyampah, K., Boye, S.S., 2001. Operations strategy in an emerging economy: the case of the Ghanaian manufacturing industry. *Journal of Operations Management* 19, 59-79.
- Amundson, S.D., 1998. Relationships between theory-driven empirical research in operations management and other disciplines. *Journal of Operations Management* 16 (4), 341-359.
- Anand, G., Ward, P.T., 2004. Fit, flexibility and performance in manufacturing: Coping with dynamic environments. *Production and Operations Management* 13 (4), 369-385.
- Anderson, E.T., 2002. Sharing the wealth: when should firms treat customers as partners?. *Management Science* 48 (8), 955-971.
- Anderson, J.C., Cleveland, G., Schroeder, R.G., 1989. Operations strategy: A literature review. *Journal of Operations Management* 8 (2), 133-158.
- Andrews, K.R., 1987. *The Concept of Corporate Strategy*. 3rd ed., Dow Jones-Irwin, Chicago, IL.
- Ansoff, H. I., 1965. *Corporate Strategy*, McGraw-Hill, New York, NY.
- Ansoff, H.I., 1988. *The New Corporate Strategy*. Wiley, New York.

- Aranda, D.A., 2003. Service operations strategy, flexibility and performance in engineering consultants' firms. *International Journal of Operations & Production Management* 23 (12), 1401-1421.
- Armstrong, J.S., Overton, T.S., 1977. Estimating nonresponse bias in mail surveys. *Journal of Marketing Research* 14 (3), 396-402.
- Arnold, S.J., 2002. Lessons learned from the world's best retailers. *International Journal of Retail & Distribution Management* 30 (11), 562-570.
- A.T. Kearney, 2005. The 2005 global retail developments index: destination: China. Available at: www.atkearney.com. Accessed 18th September 2008.
- Avella-Camarero, L., Fernandez-Sanchez, E., Vazquez-Ordas, C.J., 1999. The large Spanish industrial company: Strategies of the most competitive factories. *Omega* 27, 497-514.
- Badria, M.A., Davis, D., Davis, D., 2000. Operations strategy, environmental uncertainty and performance: A path analytic model of industries in developing countries. *Omega* 28, 155-173.
- Bakos, J.Y., Treacy, M., 1986. Information technology and corporate strategy: A research perspective. *MIS Quarterly* 10 (2), 107-119.
- Barney, J.B., 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17 (1), 99-120.
- Bates, K., Flynn, J., 1995. Innovation history and competitive advantage: A resource-based view analysis of manufacturing technology innovations. *Academy of Management Journal Best Paper Proceedings*, 235-239.
- Beatty, R.W., Schneier, C.E., 1997. New HR roles to impact organizational performance: from "Partners" to "Players". *Human Resource Management* 36 (1), 29-37.

- Beatty, S.E., Mayer, M.L., Coleman, J.E., Reynolds, K.E., Lee, J., 1996. Customer-sales associate retail relationships. *Journal of Retailing* 72, 223-247.
- Beesley, A., 1995. Time compression: new course of competitiveness in the supply-chain. *Logistics Focus* 3 (5), 24-35.
- Benbasat, I., Goldstein, D.K., Mead, M., 1987. The case research strategy in studies of information systems. *MIS Quarterly* 11 (3), 369-386.
- Benjamin, R., Levinson, E., 1993. A framework for managing IT-enabled change. *Sloan Management Review* Summer, 23-33.
- Bernhardt, D., 1994. I want it fast, factual, actionable: tailoring competitive intelligence to executives' needs. *Long Range Planning* 27 (1), 12-24.
- Berry, L., Seiders, K., Gresham, L., 1997. For love and money: the common traits of successful retailers. *Organisational Dynamics* 26, 207-223.
- Berry, L.L., 1995. Relationship marketing of services – growing interest, emerging perspectives. *Journal of the Academy of Marketing Science* 23, 236-245.
- Berry, L.L., Parasuraman, A., Zeithaml, V.A., 1988. The service quality puzzle. *Business Horizon* 31(5), 35-43.
- Berry, W.L., Hill, T.J., Klompmaker, J.E., McLaughlin, C.P., 1991. Linking strategy formulation in marketing and operations: Empirical research. *Journal of Operations Management* 10 (3), 294-302.
- Bettis, R.A., 1981. Performance differences in related and unrelated diversified firms. *Strategic Management Journal* 2 (4), 379-393.
- Bharadwaji, S.G., Menon, A., 1993. Determinants of success in service industries: A PIMS-based empirical investigation. *Journal of services marketing* 7(4), 19-41.

- Bitner, M.J., 1990. Evaluating service encounters: the effects of physical surroundings and employee responses. *Journal of Marketing Research* 54, 69-82.
- Bitran, G.R, Lojo, M., 1993. A framework for analyzing service operations. *European Management Journal*, 7 (3), 271-282.
- Black, J.A., Boal, K.B., 1994. Strategic resources: traits, configurations and paths to sustainable competitive advantage. *Strategic Management Journal* 15, 131-148.
- Borch, O.J., Arthur, M.B., 1995. Strategic networks among small firms: Implications for strategy research methodology. *Journal of Management Studies* 32 (4), 18-32.
- Bourgeois III, L.J., 1980. Strategy and environment: A conceptual integration. *Academy of Management Review* 5(1), 25-39.
- Bourgeois III, L.J., 1985. Strategic goals, perceived uncertainty, and economic performance in volatile environments. *Academy of Management Journal* 28 (3), 548-573.
- Bourgeois, L., Eisenhardt, K., 1988. Strategic decision processes in high velocity environments: Four cases in the microcomputer industry. *Management Science* 34, 816-835.
- Bowen, D.E., Chase, R.B., Cummings, T.G., 1990. *Service Management Effectiveness: Balancing Strategy, Organization and Human Resources, Operations and Marketing*. San Francisco: Jossey-Bass.
- Boyd, B.K., Dess, G., Rasheed, A., 1993. Divergence between archival and perceptual measures of the environment: Causes and consequences. *The Academy of Management Review* 18 (2), 204-227.
- Brauer, M., 2009. Corporate and divisional manager involvement in divestitures – A contingent analysis. *British Journal of Management* 20 (3), 341-362.
- Buffa, E.S., 1984. *Meeting the Competitive Challenge*. Dow-Jones-Irwin, Homewood, IL.

- Buttery, E.A., Wong, Y.H., 1999. The development of a guanxi framework. *Marketing Intelligence & Planning* 17 (3), 147-154.
- Byrne, B.M., 2001. *Structural Equation Modelling with AMOS: Basic Concepts, Applications, and Programming*. 2nd ed., Mahwah, NJ: Erlbaum.
- Calantone, R.J., Schmidt, J.B., Di Benedetto, C.A., 1997. New product activities and performance: the moderating role of environmental hostility. *Journal of Product Innovation Management* 14, 179-189.
- Cao, Q., Dowlatshahi, S., 2005. The impact of alignment between virtual enterprise and information technology on business performance in an agile manufacturing environment. *Journal of Operations Management* 23, 531-550.
- Cayla, J., Eckhardt, G.M., 2007. Asian brands without borders: Regional opportunities and challenges. *International Marketing Review* 24 (4), 444-456.
- CCFA (China Chain Store & Franchise Association), 2008; 2009. Available at: <http://www.chinaretail.org> (accessed 8 November 2009).
- Chakravarthy, B., 1997. A new strategy framework for coping with turbulence. *Sloan Management Review*, 69-82.
- Chambers, S., 1992. Flexibility in the context of manufacturing strategy, in Voss, C.A (Eds), *Manufacturing Strategy: Process and Content*, Chapman & Hall, London.
- Chan, K.C., 1993. World class manufacturing. *Industrial Management & Data Systems* 93 (2), 5-13.
- Chan, T.S., Lin, G.S., 1992. An empirical analysis of consumer decision processes in the People's Republic of China. *Journal of International Consumer Marketing* 4 (4), 33-47.

- Chaney, I., Gamble, J., 2008. Retail store ownership influences on Chinese consumers. *International Business Review* 17 (2), 170-183.
- Chase, R.B., Apte, U.M., 2007. A history of research in service operations: What's the big idea?. *Journal of Operations Management* 25, 375-386.
- Chebat. J.C., Filiatrault, P., 1993. The impact of waiting in line on consumers. *International Journal of Bank Marketing* 11 (2), 35-40.
- Chee, H., West, C., 2004. *Myths about Doing Business in China*. Palgrave Macmillan, London.
- Chi, T., Kilduff, P., Gargeya, V.B., 2009. Alignment between business environment characteristics, competitive priorities, supply chain structures, and firm business performance. *International Journal of Productivity and Performance Management* 58 (7), 645-669.
- Child, J., 1972. Organizational structure, environment, and performance: the role of strategic choice. *Sociology* 6, 2-22.
- Christopher, M., 1997. *Marketing Logistics*. Butterworth-Heinemann, Oxford.
- Churchill, G.A., Ford, N.M., Hartley, S.W., Walker, O.C., 1985. The determinants of salesperson performance: a meta-analysis. *Journal of Marketing Research* 22, 103-118.
- Clark, K., 1989. Project scope and project performance: the effects of parts strategy and supplier involvement on product development. *Management Science* 35 (10), 1247-1263.
- Clement, R.W., 2005. The lessons from stakeholder theory for U.S. business leaders. *Business Horizons* 48, 255-264.
- Clemons, E.K., Row, M.C., 1991. Sustaining IT advantage: the role of structural differences. *MIS Quarterly* 15 (3), 275-292.
- Cleveland, G., Schroeder, R.G., Anderson, J.C., 1989. A theory of production competence. *Decision Sciences* 20 (4), 655-668.

- Collier, D.A., 1987. *Service Management-Operating Decisions*. Englewood Cliffs, NJ: Prentice-Hall.
- Cooper, R.B., Zmud, R.W., 1990. In formation technology implementation research: A technological diffusion approach. *Management Science* 36 (2), 123-139.
- Covin, J.G., Slevin, D.P., 1989. Strategic management of small firms in hostile and benign environments. *Strategic Management Journal* 10, 75-87.
- Cox, R., Brittain, P., 2000. *Retail Management*. 4th ed., FT Prentice-Hall, London.
- Crosby, L.A, Evans, K.R, Cowles, D., 1990. Relationship quality in services selling: An interpersonal influence perspective. *Journal of Marketing* 54, 68-81.
- Crosby, P.B., 1979. *Quality Is Free-the Art of Making Quality Certain*. McGraw-Hill, New York, NY.
- Crotty, M., 2003. *Foundations of Social Research: Meaning and Perspective in the Research Process*. 2nd ed., Sage, London.
- Curry, A., Kkolou, E., 2004. Evaluating CRM to contribute to TQM improvement: A cross-case comparison. *The TQM Magazine* 16 (5), 314-324.
- Cyert, R., March, J., 1963. *A Behavioural Theory of the Firm*. Prentice-Hall, Englewood Cliffs, NJ.
- D'Aveni, R.A., 1995. Coping with hypercompetition: Utilizing the new 7S's framework. *Academy of Management Executive* 9 (3), 45-57.
- Daniels, N.C., 1994. *Information Technology The Management Challenge*. Addison-Wesley, Wokingham.
- Davis, D., Morris, M., Allen, J., 1991. Perceived environmental turbulence and its effect on selected entrepreneurship, marketing and organizational characteristics in industrial firms. *Journal of the Academy of Marketing Science* 19 (1), 43-51.

- Dawson, J., 2001. Strategy and opportunism in European retail internationalization. *British Journal of Management* 12, 253-266.
- Dawson, J., Mukoyama, M., Sang, C.C., Larke, R., 2003. *The Internationalisation of Retailing in Asia: The Reform of the Distribution System in China*. Routledge, New York, NY.
- Day, G.S., Nedungadi, P., 1994. Managerial representations of competitive advantage. *Journal of Marketing* 58 (2), 31-44.
- De Meyer, A., Nakane, J., Miller, J.G., Ferdows, K., 1989. Flexibility: the next competitive battle: the manufacturing futures survey. *Strategic Management Journal* 10 (2), 135-144.
- De Quiros, A.C.B., Aranda-Mena, G., Edwards, P., Calder, J., 2007. Research model for evaluating the impact of technology in workplace design in Australia. Working paper, RMIT University and The University of Melbourne, Australia.
- Dean, J.W., Snell, S.A., 1996. The strategic use of integrated manufacturing: An empirical examination. *Strategic Management Journal* 17, 459-481.
- Decoene, V., Bruggeman, W., 2006. Strategic alignment and middle-level managers' motivation in a balanced scorecard setting. *International Journal of Operations & Production Management* 26 (3/4), 429-449.
- Deming, W.E., 1982. *Quality, Productivity, and Competitive Position*. MIT Institute for Advanced Engineering Study, Cambridge, MA.
- Denzin, N.K., 1989. *The Research Act: A Theoretical Introduction to Sociological Methods*. 3rd ed., Englewood Cliffs, NJ: Prentice Hall.
- Dess, G.G., Beard, D.W., 1984. Dimensions of organizational task environments. *Administrative Science Quarterly* 29 (1), 52-73.

- Dess, G.G., Origer, N.K., 1987. Environment, structure, and consensus in strategy formulation: A conceptual integration. *Academy of Management Review* 12, 313-330.
- Dess, G.G., Robinson, B.Jr., 1984. Measuring organizational performance in the absence of objective measures: the case of the privately-held firm and conglomerate business unit. *Strategic Management Journal* 5, 265-273.
- Dewett, T., Jones, G.R., 2001. The role of information technology in the organization: A review, model, and assessment. *Journal of Management* 27 (3), 313-346.
- Dewhurst, F., Lorente, A., Dale, B., 1999. Total quality management and information technologies: an exploration of the issues. *International Journal of Quality and Reliability Management* 16 (4), 392-405.
- Dill, W.R., 1958. Environment as an influence on managerial autonomy. *Administrative Science Quarterly* 2, 409-443.
- Donaldson, T., Preston, L.E., 1995. The stakeholder theory of corporation: Concepts, evidence, implications. *Academy of Management Review* 20 (1), 65-117.
- Droge, C., Vickery, S., Marland, R., 1994. Sources and outcomes of competitive advantage: an exploratory study in the furniture industry. *Decision Sciences* 25 (5/6), 669-690.
- Duncan, R.B., 1972. Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly* 17, 313-327.
- Dyer, J.H., Singh, H., 1998. The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review* 24 (4), 660-679.
- Easterby-Smith, M., Thorpe, R., Lowe, A., 2002. *Management Research: An Introduction*. 2nd ed., Sage, London.

- Eisenhardt, K., Graebner, M., 2007. Theory building from cases: Opportunities and challenges. *Academy of Management Journal* 50 (1), 25-32.
- Eisenhardt, K.M., 1989. Building theory from case study research. *Academy of Management Review* 14 (4), 532-550.
- Euromonitor, 2009. *Global Retailing: Expansion Strategies of the World's Leading Retailers*. Euromonitor International.
- Fan, J.X., Xiao, J.J., 1998. Consumer decision-making styles of young adult Chinese. *Journal of Consumer Affairs* 32 (2), 275-294.
- Ferdows, K., De Meyer, A., 1990. Lasting improvements in manufacturing performance: in search of a new theory. *Journal of Operations Management* 9 (2), 168-183.
- Fernie, J., 1995. International comparisons of supply chain management in grocery retailing. *Service Industries Journal* 15 (4), 134-148.
- Fernie, J., 2000. Outsourcing distribution in UK retailing. *Journal of Business Logistics* 20 (2), 83-95.
- Fernie, J., 2004. Relationships in the supply chain. In Fernie, J., Sparks, L. (Eds), *Logistics and Retail Management*. 2nd ed., Kogan Page, London.
- Fine, C.H., Hax, A.C., 1985. Manufacturing strategy: A methodology and an illustration. *Interfaces* 15 (6), 28-46.
- Fisher, M.L., Raman, A., McClelland, A.S., 2000. Rocker science retailing is almost here: Are you ready?. *Harvard Business Review* July-August, 115-124.
- Fitzsimmons, J.A., Fitzsimmons, M.J., 2005. *Service Management: Operations, Strategy, and Information Technology*. 5th ed., McGraw-Hill/Irwin, New York, NY.

- Fletcher, K., 1995. *Marketing Management and Information Technology*. 2nd ed., Prentice Hall, London.
- Flynn, B.B., Huo, B., Zhao, X., 2010. The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management*, 28 (1), 58-71.
- Flynn, B.B., Sakakibara, S., Schroeder, R., Bates, K.A., Flynn, E.J., 1990. Empirical research methods in operations management. *Journal of Operations Management* 9 (2), 250-284.
- Flynn, B.B., Sakakibara, S., Schroeder, R.G., 1995. Relationship between JIT and TQM: Practices and performance. *Academy of Management Journal* 38 (5), 1325-1360.
- Flynn, B.B., Schroeder, R.G., Sakakibara, S., 1994. A framework for quality management research and an associated measurement instrument. *Journal of Operations Management* 11 (4), 339-366.
- Flynn, B.B., Zhao, X., Roth, A.V., 2007. The myth of the dragon: Operations management in today's China. *Business Horizons* 50 (3), 177-183.
- Ford, D., Gadde, L-E., Håkansson, H., Snehota, I., 2003. *Managing Business Relationships*. Wiley, Chichester.
- Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18 (1), 29-50.
- Forza, C., 2002. Survey research in operations management: A process-based perspective. *International Journal of Operations & Production Management* 22 (2), 152-194.
- Foster, B.D, Cadogan, J.W., 2000. Relationship selling and customer loyalty: An empirical investigation. *Marketing Intelligence & Planning* 18 (4), 185-199.
- Fram, E.H., 1995. Purchasing partnerships: the buyer's view. *Marketing Management* 4 (1), 49-55.

- Frazier, G., Gill, J.D., Kale, S.H., 1989. Dealer dependence levels and reciprocal actions in a channel of distribution in a developing country. *Journal of Marketing* 53, 50-56.
- Freeman, R.E., 1984. *Strategic Management: A Stakeholder Approach*. Pitman, Boston, MA.
- Frooman, J., 1999. Stakeholder influence strategies. *Academy of Management Review* 24 (2), 191-205.
- Galbraith, J.R., 1973. *Designing Complex Organizations*. Addison-Wesley, Reading, MA.
- Gale, F., Reardon, T., 2004. China's modernizing supermarket sector presents major opportunities for US agricultural exporters. *AgExporter* November, 4-8.
- Gamble, J., 2006. Multinational retailers in China: Proliferating "McJobs" or developing skills?. *Journal of Management Studies* 43 (7), 1463-1490.
- Ganesan, S., 1994. Determinants of long-term orientation in buyer-seller relationships. *Journal of Marketing* 58 (2), 1-19.
- Garvin, D.A., 1987. Competing on the eight dimensions of quality. *Harvard Business Review* 6, 43-52.
- Gerwin, D.A., 1987. An agenda for research on the flexibility of manufacturing processes. *International Journal of Operations & Production Management* 7 (1), 38-49.
- Giffi, C., Roth, A.V., Seal, G., 1990. *Competing in World Class Manufacturing: America's 21st Challenge*. Business One Irwin, Homewood, IL.
- Giunipero, L.C., Fiorito, S.S., Percy, D.H., Dandeo, L., 2001. The impact of vendor incentives on quick response. *International Review of Retail, Distribution and Customer Research* 11 (4), 359-376.
- Goldhar, J.D., Lei, D., 1995. Variety is free: Manufacturing in the twenty-first century. *Academy of Management Executive* 9 (4), 73-86.

- Goldman, A., 2001. The transfer of retail formats into developing economies: the example of China. *Journal of Retailing* 77, 221-242.
- Goodhue, D.L., Wybo, M.D., Kirsch, L.J., 1992. The impact of data integration on the costs and benefits of information systems. *MIS Quarterly* 16 (3), 11-34.
- Grant, R.G., 1991. The resource-based theory of competitive advantage: Implications for strategy formulation. *California Management Review* 33, 114-135.
- Größler, A., 2007. A dynamic view on strategic resources and capabilities applied to an example from the manufacturing strategy literature. *Journal of Manufacturing Technology Management* 18 (3), 250-266.
- Gulati, R., 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal* 38, 85-112.
- Gupta, Y.P., Lonial, S.C., 1998. Exploring linkages between manufacturing strategy, business strategy, and organizational strategy. *Production and Operations Management* 7 (3), 243-264.
- Gwinner, K., Gremler, D., Bitner, M.J., 1998. Relational benefits in services industries: the customer's perspective. *Journal of the Academy of Marketing Science* 26 (2), 101-114.
- Hahn, C.K., Watts, C.A., Kim, K.Y., 1990. The supplier development program: A conceptual model. *Journal of Purchasing and Materials Management* 26 (2), 2-7.
- Hair, J.F.Jr, Black, W.C., Babin, B.J., Anderson, R.E., Tatham, R.L., 2006. *Multivariate Data Analysis*. 6th ed., Pearson Education, Upper Saddle River, NJ.
- Haleblian, J., Finkelstein, S., 1993. Top management team size, CEO dominance, and firm performance: the moderating roles of environmental turbulence and discretion. *Academy of Management Journal* 36 (4), 844-863.
- Hall, R.W., 1983. *Zero Inventories*. Dow Jones Irwin, Homewood, IL.

- Hallgren, M., Olhager, J., 2006. Quantification in manufacturing strategy: A methodology and illustration. *International Journal of Production Economics* 104 (1), 113-124.
- Handfield, R.B., 1993. A resource dependence perspective of Just-In-Time purchasing. *Journal of Operations Management* 11, 289-311.
- Handfield, R.B., Ragatz, G.L., Petersen, K.J., Monczka, R.M., 1999. Involving suppliers in new product development. *California Management Review* 42, 59-82.
- Hannan, M.T., Freeman, J., 1977. The population ecology of organisations. *American Journal of Sociology* 82, 929-964.
- Harris, D., Walters, D., 1992. *Retail Operations Management: A Strategic Approach*. Prentice-Hall, Hemel Hempstead.
- Harrison, J.S., Hitt, M.A., Hoskisson, R.E., Ireland, R.D., 1991. Synergies and post-acquisition performance: Differences versus similarities in resource allocations. *Journal of Management* 17, 173-190.
- Hart, C., Kirkup, M., Rafiq, M., Preston, D., Walley, P. (Eds.), 1996. *Cases in Retailing: Operational Perspectives*. Basil, Blackwell, Oxford.
- Hax, A.C., 1985. A new competitive weapon: the human resource strategy. *Training and Development Journal* 39 (5), 76-79.
- Hax, A.C., Majluf, N., 1984. *Strategic Management: An Integrative Perspective*. Prentice-Hall, Englewood Cliffs.
- Hayes, R.H., Schmenner, R.W., 1978. How should you organize manufacturing?. *Harvard Business Review* 56 (1), 105-118.
- Hayes, R.H., Wheelwright, S.C., 1979. Link manufacturing process and product life-cycles”, *Harvard Business Review* 57, 133-140.

- Hayes, R.H., Wheelwright, S.C., 1984. Restoring our Competitive Edge: Competing through Manufacturing. Wiley, New York, NY.
- Hayes, R.H., Wheelwright, S.C., Clark, K.B., 1988. Dynamic Manufacturing: Creating the Learning Organization. Free Press, New York, NY.
- Healy, M., Perry, C., 2000. Comprehensive criteria to judge validity and reliability of qualitative research within the realist paradigm. *Qualitative Market Research: An International Journal* 3 (3), 1-9.
- Heidi, J.B., 1994. Interorganizational governance in marketing channels. *Journal of Marketing*, 58, 71-85.
- Heizer, J., Render, B., 1993. *Production and Operations Management: Strategies and Tactics*. 3rd ed., Allyn & Bacon International.
- Heskett, J.L., 1986. *Managing in the service economy*. Boston, MA: Harvard Business School Press.
- Heskett, J.L., 1987. Lessons in the Service Sector. *Harvard Business Review* 65 (2), 118-126.
- Heskett, J.L., Jones, T.O., Loveman, G.W., Sasser, W.E., Schlesinger, L.A., 1994. Putting the service-profit chain to work. *Harvard Business Review* 72 (2), 164-174.
- Heskett, J.L., Sasser, Jr., W.E., Hart, C.W.L., 1990. *Service Breakthroughs: Changing the Rules of the Game*. New York: The Free Press.
- Hill, T., 2000. *Manufacturing Strategy: Text and Cases*. 3rd ed., McGraw-Hill, New York, NY.
- Hingley, M., Lindgreen, A. Chen, L., 2009. Development of the grocery retail market in China: A qualitative study of how foreign and domestic retailers seek to increase market share. *British Food Journal* 111 (1), 44-55.

- Hoetker, G., Swaminathan, A., Mitchell, W., 2007. Modularity and the impact of buyer-supplier relationships on the survival of suppliers. *Management Science* 53 (2), 178-191.
- Hofer, C., 1975. Towards a contingency theory of business strategy. *Academy of Management Review* 18, 784-810.
- Hofer, C., Schendel, D., 1978. *Strategy Formulation: Analytical Concepts*. St. Paul: West Publishing Company.
- Holland, C., Lockett, G., Blackman, I., 1992. Planning for electronic data interchange. *Strategic Management Journal* 13, 539-550.
- Hu, L., Bentler, P.M., 1999. Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modelling: A Multidisciplinary Journal* 6 (1), 1-55.
- Huber, G.P., Power, D.J., 1985. Retrospective reports of strategic-level managers: Guidelines for increasing their accuracy. *Strategic Management Journal* 6, 171-180.
- Human, S.E., Provan, K.G., 1997. An emergent theory of structure and outcomes in small-firm strategic manufacturing networks. *Academy of Management Journal* 40 (2), 368-403.
- IGD (the Institute of Grocery Distribution), 2005a. *Global Retailing*. IGD Business Publication, Watford.
- IGD (the Institute of Grocery Distribution), 2005b. *Retailing in China*. IGD Business Publication, Watford.
- Jackson, S.E., Schuler, R.S., 1995. Understanding human resource management in the context of organizations and their environments. *Annual Review of Psychology* 46 (1), 237-264.
- Jaikumar, R., 1989. Japanese flexible manufacturing systems: Impact on the United States. *Japan and the World Economy* 1, 113-143.

- Jiang, B., Frazier, G.V., Heiser, D., 2007. China-related POM research: A literature review and suggestions for future research. *International Journal of Operations and Production Management* 27 (7), 662-684.
- Jick, T., 1979. Mixing qualitative and quantitative methods – Triangulation in action. *Administrative Science Quarterly* 24, 602-661.
- Johnson, G., Scholes, K., Whittington, R., 2005. *Exploring Corporate Strategy*. Harlow: Financial Times Prentice Hall.
- Johnston, D.A., McCutcheon, D.M., Stuart, F.I., Kerwood, H., 2004. Effects of supplier trust on performance of cooperative supplier relationships. *Journal of Operations Management* 22, 23-38.
- Johnston, R., 2005. Service operations management: from the roots up. *International Journal of Operations and Production Management* 25 (12), 1298-1308.
- Johnston, R., Clark, G., 2008. *Service Operations Management*, 3rd Ed., FT Prentice-Hall, London.
- Jonsson, A., 2008. A transnational perspective on knowledge sharing: Lessons learnt from IKEAs entry into Russia, China and Japan. *The International Review of Retail, Distribution and Consumer research* 18 (1), 17-44.
- Kannan, V.R., Tan, K.C., 2006. Buyer-supplier relationships: the impact of supplier selection and buyer-supplier engagement on relationship and firm performance. *International Journal of Physical Distribution & Logistics Management* 36 (10), 755-775.
- Kaplan, A., 1973. *The Conduct of Enquiry*. Intertext Books.
- Karami, A., Analoui, F., Kakabadse, N.K., 2005. The CEOs' characteristics and their strategy development in the UK SME sector. *Journal of Management Development* 25 (4), 316-324.

- Kasul, R., Motwani, J., 1995. Performance measurements in world-class operations. *Benchmarking for Quality Management & Technology* 2 (2), 20-36.
- Kathuria, R., Igbaria, M., 1997. Linking IT applications with manufacturing strategy: An integrated framework. *International Journal of Operations and Production Management* 17 (6), 611-629.
- Keats, B.W., Hitt, M.A., 1988. A causal model of linkages among environmental dimensions, macro-organizational characteristics and performance. *Academy of Management Journal* 31, 570-598.
- Keen, P., 1993. Information technology and the management difference: A fusion map. *IBM Systems Journal* 32, 17-39.
- Kellogg, D.L., Nie, W., 1995. A framework for strategic service management. *Journal of Operations Management* 13, 323-337.
- Kettinger, W.J., Grover, V., Guha, S., Segars, A.H., 1994. Strategic information systems revisited: A study of sustainability and performance. *MIS Quarterly* 18 (1), 31-58.
- Khandwalla, P.N., 1972. Environment and its impact on the organization. *International Studies of Management and Organization* 2, 297-313.
- Khandwalla, P.N., 1976/1977. Some top management styles, their context, and performance. *Organization and Administrative Sciences* 7 (4), 21-51.
- Kim, L., Lim, Y., 1988. Environment, generic strategies, and performance in a rapidly developing country: A taxonomic approach. *Academy of Management Journal* 31 (4), 802-827.
- Kim, Y., Lee, J., 1993. Manufacturing strategy and production systems: An integrated framework. *Journal of Operations Management* 11, 3-15.

- Kogut, B., 1985. Designing global strategies: Profiting from operational flexibility. *Sloan Management Review* 27 (1), 27-38.
- Kogut, B., Kulatilaka, N., 1994. Operating flexibility, global manufacturing, and the option value of a multinational network. *Management Science* 40, 123-139.
- Kotler, P., 1988. *Marketing Management: Analysis, Planning, Implementation and Control*. Prentice-Hall, Englewood Cliffs, NJ.
- Kotler, P., Armstrong, G., Saunders, J., Wong, V., 1996. *Principles of Marketing, European Edition*. Hemel Hempstead, Hertfordshire: Prentice Hall.
- KPMG, 2005. Retail outlook for China. The Hong Kong member of KPMG international, Hong Kong.
- KPMG, 2008. Surviving a retail downturn. KPMG, Hong Kong.
- Krajewski, L.J., Ritzman, L.P., 1990. *Operations Management: Processes and Value Chains*, Prentice-Hall, Saddle Creek, NJ.
- Krishnamurthy, R., Yauch, C., 2007. Leagile manufacturing: a proposed corporate infrastructure. *International Journal of Operations & Production Management* 27 (6), 588-604.
- Kumar, R., Kumar, U., 2004. A conceptual framework for the development of a service delivery strategy for industrial systems and products. *Journal of Business & Industrial Marketing* 19 (5), 310-319.
- La Vere, S., Kleiner, B., 1997. Practice of excellent companies in the retail industry. *Managing Service Quality* 7 (1), 34-38.
- Lashley, C., Taylor, S., 1998. Hospitality retail operations types and styles in the management of human resources. *Journal of Retailing and Consumer Services* 5 (3), 153-165.

- Lather, P., 1992. Critical frames in educational research: Feminist and post-structural perspectives. *Theory into Practice* 31 (2), 87-99.
- Lavigne, M., 1995. *The Economics of Transition: From Socialist Economy to Market Economy*. Macmillan, London.
- Law, A.K.Y., Hui, Y.V., Zhao, X., 2004. Modeling repurchase frequency and customer satisfaction for fast food outlets. *International Journal of Quality & Reliability Management* 21 (5), 545-563.
- Lawrence, P.R., Lorsch, J.W., 1967. *Organization and Environment*. Harvard University Press, Cambridge, MA.
- Leblebici, H., Salancik, G.R., 1981. Effects of environmental uncertainty on information and decision processes in banks. *Administrative Science Quarterly* 26 (4), 578-596.
- Lee, D.J., Pae, J.H., Wong, Y.H., 2001. A model of close business relationships in China (guanxi). *European Journal of Marketing* 35 (1/2), 51-69.
- Leong, G.K., Synder, D.L., Ward, P.T., 1990. Research in the process and content of manufacturing strategy. *Omega* 18 (2), 109-122.
- Letovsky, R., Murphy, D.M., Kenny, R.P., 1997. Entry opportunities and environmental constraints for foreign retailers in China's secondary cities. *Multinational Business Review* 5 (2), 28-40.
- Levitt, T., 1960. Marketing myopia. *Harvard Business Review* 38, 45-56.
- Li, C.H., 1997. *China: the Consumer Revolution*. Wiley, Singapore.
- Li, H., Atuahene-Gima, K., 2001. Product innovation strategy and the performance of new technology ventures in China. *Academy of Management Journal* 44 (6), 1123-1134.

- Liu, K., 2007. Unfolding the post-transition era: the landscape and mindscape of China's retail industry after 2004. *Asia Pacific Journal of Marketing and Logistics* 19 (4), 398-412.
- Lo, T.W., Lau, H.F., Lin, G., 2001. Problems and prospects of supermarket development in China. *International Journal of Retail & Distribution Management* 29 (2), 66-75.
- Lorenzoni, G., Lipparini, A., 1999. The leveraging of interfirm relationships as a distinctive organisational capability: A longitudinal study. *Strategic Management Journal* 19, 439-459.
- Lovelock, C., 1988. *Managing Services: Marketing, Operations, and Human Resources*. Englewood Cliffs, NJ: Prentice-Hall.
- Lovelock, C., Gummesson, E., 2004. Whither services marketing: in search of a new paradigm and fresh perspectives. *Journal of Service Research* 7 (1), 20-41.
- Lowson, R.H., 2001a. Customised operational strategies for retailers in fast moving consumer industries. *International Review of Retail, Distribution and Consumer Research* 11 (2), 201-224.
- Lowson, R.H., 2001b. Retail operational strategies in complex supply chains. *International Journal of Logistics Management* 12 (1), 97-111.
- Lowson, R.H., 2002. *Strategic Operations Management, the New Competitive Advantage*. Routledge, London.
- Lowson, R.H., 2003. The nature of an operations strategy: combining strategic decisions from the resource-based and market-driven viewpoints. *Management Decision* 4 (2), 57-61.
- Lowson, R.H., 2005. Retail operations strategies: Empirical evidence of role, competitive contribution and life cycle. *International Journal of Operations & Production Management* 25(7), 642-680.

- Luk, S.T.K., 1998. Structural changes in China's distribution system. *International Journal of Physical Distribution & Logistics Management* 28, 44-67.
- Luo, Y., 2001. Toward a cooperative view of MNC-host government relations: building blocks and performance implications. *Journal of International Business Studies* 32 (3), 401-420.
- Lynch, R., 2003. *Corporate Strategy*. 3rd ed., FT Prentice Hall.
- Machuca, J.A.D., González-Zamora, M.D.M., Aguilar-Escobar, V.G., 2007. Service Operations Management research. *Journal of Operations Management* 25, 585-603.
- Mai, L.W., Zhao, H., 2004. The characteristics of supermarket shoppers in Beijing. *International Journal of Retail and Distribution Management* 32 (1), 56-62.
- Markland, R., Vickery, S., Davis, R., 1995. *Operations Management: Concepts in Manufacturing and Services*. St. Paul, MN: West Publishing Company.
- Martin, J.H., Grbac, B., 2003. Using supply chain management to leverage a firm's market orientation. *Industrial Marketing Management* 32 (1), 25-38.
- Maruchek, A., Pannesi, R., Anderson, C., 1990. An exploratory study of the manufacturing strategy process in practice. *Journal of Operations Management* 9, 101-123.
- Mason, R.B., 2007. The external environment's effect on management and strategy: a complexity theory approach. *Management Decision* 45 (1), 10-28
- Mathe, H., Dagi, T.F., 1996. Managing technology for the globalisation of service operations. *International Journal of Technology Management* 12 (5/6), 577-607.
- Mavondo, F.T., 1999. Environment and strategy as antecedents for marketing effectiveness and organizational performance. *Journal of Strategic Marketing* 7, 237-250.

- Mavondo, F.T., Rodrigo, E.M., 2001. The effect of relationship dimensions on interpersonal and interorganizational commitment in organizations conducting business between Australia and China. *Journal of Business Research* 52 (2), 111-121.
- McCutcheon, D.M., Meredith, J., 1993. Conducting case study research in operations management. *Journal of Operations Management* 11 (3), 239-356.
- McKinsey Quarterly, 2006. The Chinese consumer: to spend or to save?. Available at: www.mckinseyquarterly.com/article (accessed 18th September 2008).
- Megicks, P., 2001. Competitive strategy types in the UK independent retail sector. *Journal of Strategic Marketing* 9, 315-328.
- Mehra, V., 2005. Retail's Complexity: the Information Technology Solution. SYNTEL.
- Meredith, J., 1998. Building operations management theory through case and field research. *Journal of Operations Management* 16, 441-454.
- Merriam, S.B., 1998. *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
- Miles, M.B., Huberman, A.M., 1994. *An Expanded Sourcebook – Qualitative Data Analysis*. 2nd, Sage, London.
- Miller, D., 1987. The structural and environmental correlates of business strategy. *Strategic Management Journal* 8, 55-76.
- Miller, D., 1992. Environmental fit versus internal fit. *Organization Science* 3 (2), 159-178.
- Miller, D., Friesen, P.H., 1978. Archetypes of strategy formulation. *Management Science* 24, 921-933.
- Miller, D., Friesen, P.H., 1983. Strategy-making and environment: the third link. *Strategic Management Journal* 4 (3), 221-235.

- Miller, D., Merrilees, B., 2000. "Gone to Gowings" – an analysis of success factors in retail longevity: Gowings of Sydney. *The Service Industries Journal* 20 (1), 61-85.
- Mills, P.K., Moberg, D.J., 1982. Perspectives on the technology of service operations. *Academy of Management Review* 3, 467-478.
- Ministry of Commerce of the People's Republic of China (Mofcom), 2007; 2008; 2009. Available at: <http://english.mofcom.gov.cn/static/column/statistic/foreigninvestment.html/1> (accessed 15th November 2009).
- Mintzberg, H., 1979. *The Structuring of Organizations*. Prentice-Hall, Englewood Cliffs, NJ.
- Mintzberg, H., 1994. The fall and rise of strategic planning. *Harvard Business Review* 72 (1), 107-114.
- Mittal, B., Lassar, W., 1996. The role of personalization in service encounters. *Journal of Retailing* 72 (1), 95-109.
- Mohr, J., Nevin, J.R., 1990. Communication strategies in marketing channels: A theoretical perspective. *Journal of Marketing* 54(4), 36-52.
- Mohr, J., Spekman, R., 1994. Characteristics of partnership success: partnership attributes, communication behaviour and conflict resolution techniques. *Strategic Management Journal* 15, 135-152.
- Morgan, R., Hunt, S.D., 1994. The commitment trust theory of relationship marketing. *Journal of Marketing* 58, 20-38.
- Mun, K.C., 1988. Chinese retailing in a changing environment. In Kaynak, E. (Ed.), *Transnational Retailing*. Walter De Gruyter & Co., Berlin.
- Murdick, R.G., Render, B., Russell, R.S., 1990. *Service Operations Management*. Allyn and Bacon, Boston.

- Murphy, B., Wang, R., 2006. An evaluation of stakeholder relationship marketing in China. *Asia Pacific Journal of Marketing and Logistics* 18 (1), 7-18.
- NBS (National Bureau of Statistics of China), 2007. *China Market Statistical Yearbook-2007*. China Statistics Press, Beijing.
- NBS (National Bureau of Statistics of China), 2009. *China Market Statistical Yearbook-2009*. China Statistics Press, Beijing.
- Neo, B.S., 1988. Factors facilitating the use of information technology for competitive advantage. *Information & Management* 15, 191-201.
- Nguyen, T.H., Sherif, J.S., Newby, M., 2007. Strategies for successful CRM implementation. *Information Management and Computer Security* 15 (2), 102-115.
- Nunnally, J.C., 1978. *Psychometric Theory*. McGraw-Hill, New York.
- Nunnally, J.C., Bernstein, I.H., 1994. *Psychometric Theory*. McGraw-Hill, New York.
- Oldfield, B.M., Schmidt, R.A., Clarke, I., Hart, C., Kirkup, M.H. (Eds), 2000. *Contemporary Cases in Retail Operations Management*. Macmillan, Basingstoke.
- Oppenheim, A.N., 2000. *Questionnaire Design, Interviewing and Attitude Measurement*. London, Continuum.
- Orlikowski, W., Gash, D., 1992. Changing frames: Understanding technological change in organizations. Centre for Information Systems Research, working paper, Massachusetts Institute of Technology.
- Paiva, E.L., Roth, A.V., Fensterseifer, J.E., 2008. Organizational knowledge and the manufacturing strategy process: A resource-based view analysis. *Journal of Operations Management* 26, 115-132.

- Pal, J.W., Byrom, J.W., 2003. The five Ss of retail operations: A model and tool for improvement. *International Journal of Retail & Distribution Management* 31 (10), 518-528.
- Palmer, M., Quinn, B., 2003. The strategic role of investment banks in the retail internationalization process: Is this venture marketing? *European Journal of Marketing* 37 (10), 1391-1408.
- Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1985. A conceptual model of service quality and its implications for future research. *Journal of Marketing* 49, 41-50.
- Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1988. SERVQUAL: A multiple item scale for measuring customer perceptions of service quality. *Journal of Retailing*, 64, 12-40.
- Parsons, G., 1983. Information technology: A new competitive weapon. *Sloan Management Review* 25 (1), 3-14.
- Parthasarthy, R., Sethi, S.P., 1992. The impact of flexible automation on business strategy and organizational structure. *Academy of Management Review* 17 (1), 86-111.
- Paulraj, A., Chen, I.J., 2007. Environmental uncertainty and strategic supply management: A resource dependence perspective and performance implications. *Journal of Supply Chain Management* 43 (3), 29-42.
- Peng, D.X., Schroeder, R.G., Shah, R., 2008. Linking routines to operations capabilities: A new perspective. *Journal of Operations Management* 26 (6), 730-748.
- Penrose, E., 1959. *The Theory of the Growth of the Firm*. New York: Oxford University Press.
- Peppers, D., Rogers, M., 1995. A new marketing paradigm: Share of customer, not market share. *Managing Service Quality* 5 (3), 48-51.
- Peritz, J., 1993. Retailers who keep score know what their shoppers value. *Marketing News* 27, 9-10.

- Perry, C., 1998. Processes of a case study methodology for postgraduate research in marketing. *European Journal of Marketing* 32 (9/10), 785-802.
- Peters, T.J., Waterman, R.H., 1982. *In Search of Excellence: Lessons from America's Best-run Companies*. Harper & Row, New York, NY.
- Pfeffer, J., 1994. *Competitive Advantage through People: Unleashing the Power of the Workforce*. Harvard Business School Press, Boston, MA.
- Pfeffer, J., Nowak, P., 1976. Joint ventures and interorganizational dependence. *Administrative Science Quarterly* 21 (3), 398-418.
- Pfeffer, J., Salancik, C.R., 1978. *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper & Row.
- Pine, B.J. II, Victor, B., Boynton, A.L., 1993. Making mass customization work. *Harvard Business Review* September-October, 108-119.
- Pinheiro de Lima, E., Gouvea da Costa, S.E., Reis de Faria, A., 2009. Taking operations strategy into practice: Developing a process for defining priorities and performance measures. *International Journal of Production Economics* 122 (1), 403-418.
- Platts, K.W., Gregory, M.J., 1990. Manufacturing audit in the process of strategy formulation. *International Journal of Operations & Production Management* 10 (9), 5-26.
- Plossl, G., 1992. Flexibility is now the key to survival for manufacturing. *APICS-The Performance Advantage* April, 37-42.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., Podsakoff, N.P., 2003. Common method bias in behavioural research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88 (5), 879-903.

- Polonsky, M.J., 1995. A stakeholder theory approach to designing an environmental marketing strategy. *Journal of Business and Industrial Marketing* 10 (3), 29-46.
- Porter, M.E., 1979. How competitive forces shape strategy. *Harvard Business Review* 57 (2), 137-145.
- Porter, M.E., 1980. *Competitive Strategy*. Free Press, New York, NY.
- Porter, M.E., 1991. Toward a dynamic theory of strategy. *Strategic Management Journal* 12, 95-117.
- Porter, M.E., Millar, V.E., 1985. How information gives you competitive advantage, *Harvard Business Review* 63 (4), 149-160.
- Powell, T., Dent-Micallef, A., 1997. Information technology as competitive advantage: the role of human, business and technology resources. *Strategic Management Journal* 18 (5), 357-387.
- Prasad, S., Babbar, S., Motwani, J., 2001. International operations strategy: Current efforts and future directions. *International Journal of Operations & Production Management* 21 (5/6), 645-665.
- Pressey, A.D., Qiu, X.X., 2007. Buyer-supplier relationship dissolution: the Chinese context. *Journal of Business & Industrial Marketing* 22 (2), 107-117.
- Pyke, D., Farley, J., Robb, D., 2002. Manufacturing technology and operations in China: a survey of state-owned enterprises, private firms, joint ventures and wholly-owned foreign subsidiaries. *European Management Journal* 20 (4), 356-375.
- Pyke, D., Robb, D., Farley, J., 2000. Manufacturing and supply chain management in China: a survey of state-, collective-, and privately-owned enterprises. *European Management Journal* 18 (6), 577-589.

- Rackoff, N., Wiseman, C., Ullrich, W.A., 1985. Information systems for competitive advantage: Implementation of a planning process. *MIS Quarterly* 9 (4), 285-294.
- Ragatz, G.L., Handfield, R.B., Scannell, T.V., 1997. Success factors for integrating suppliers into new product development. *Journal of Product Innovation Management* 14 (3), 190-202.
- Raman, A., DeHoratius, N., Ton, Z., 2001. Execution: the missing link in retail operations. *California Management Review* 43 (3), 136-152.
- Ramaseshan, B., Yip, L.S.C., Pae, J.H., 2006. Power, satisfaction and relationship commitment in Chinese store-tenant relationship and their impact on performance. *Journal of Retailing* 82 (1), 63-70.
- Rao, C.P., Kelkar, M.M., 1997. Relative impact of performance and importance ratings on measurement of service quality. *Journal of Professional Services Marketing* 15 (2), 69-86.
- Reeves, C.A., Bednar, D.A., 1994. Defining quality: Alternatives and implications. *Academy of Management Review* 19 (3), 419-445.
- Reinartz, W., Krafft, M., Hoyer, W.D., 2004. The customer relationship management process: Its measurement and impact on performance. *Journal of Marketing Research* XLI, 293-305.
- Reynolds, M., Lindstrom, G., Despres, C., 1994. Strategy, performance and the use of environmental information: Evidence from a computer simulation. *American Business Review* 12 (1), 45-52.
- Reynolds, K., Arnold, M.J., 2000. Customer loyalty to the salesperson and the store: Examining relationship customers in an upscale retail context. *Journal of Personal Selling and Sales Management* 20 (2), 89-98.
- Reynolds, K., Beatty, S., 1999. Customer benefits and company consequences of customer-salesperson relationships in retailing. *Journal of Retailing* 75 (1), 11-32.

- Richardson, P.R., Taylor, A.J., Gordon, J., 1985. A strategic approach to evaluating manufacturing performance. *Interfaces* 15 (6), 15-27.
- Roberts, R.W., 1992. Determinants of corporate social responsibility disclosure: An application of stakeholder theory. *Accounting, Organizations and Society* 17 (5), 595-612.
- Ross, J.W., Beath, C.M., Goodhue, D.L., 1996. Develop long-term competitiveness through IT assets. *Sloan Management Review* Fall, 31-42.
- Roth, A.V., Menor, L.J., 2003. Insights into service operations management: A research agenda. *Production and Operations Management* 12 (2), 145-164.
- Roth, A.V., Miller, J.G., 1990. Manufacturing strategy, manufacturing strength, managerial success, and economic outcomes. In Ettlie, J.E., Burstein, M.C., Fiegenbaum, A. (eds.), *Manufacturing Strategy: The Research Agenda for the Next Decade*, Kluwer Academic Publishers, Boston, MA.
- Roth, A.V., Miller, J.G., 1992. Success factors in manufacturing. *Business Horizon* 35 (4), 73-81.
- Roth, A.V., van der Velde, M., 1991. Operations as marketing: A competitive service strategy. *Journal of Operations Management* 10 (3), 303-328.
- Rouach, D., Santi, P., 2001. Competitive intelligence adds value: Five intelligent attitudes. *European Management Journal* 19 (5), 552-559.
- Sanchez, J. I., Brock, P., 1996. Outcomes of perceived discrimination among hispanic employees: Is diversity management a luxury or a necessity?. *Academy of Management Journal* 39 (3), 704-719.
- Sanderson, S.M., Luffman, G.A., 1988. Strategic planning and environmental analysis. *European Journal of Marketing* 22 (2), 14-27.

- Santos, F.C.A., 2000. Integration of human resource management and competitive priorities of manufacturing strategy. *International Journal of Operations & Production Management* 20 (5), 610-628.
- Santos, J., 2002. From intangibility to tangibility on service quality perceptions: A comparison study between consumers and service providers in four service industries. *Managing Service Quality* 12 (5), 292-302.
- Saraph, J.V., Benson, P.G., Schroeder, R.G., 1989. An instrument for measuring the critical factors of quality management. *Decision Sciences* 20 (4), 810-829.
- Scannell, T.V., Vickery, S.K., Dröge, C.L., 2000. Upstream supply chain management and competitive performance the automotive supply industry. *Journal of Business Logistics* 21 (1), 23-48.
- Schmitt, B., 1997. Who is the Chinese consumer? Segmentation in the People's Republic of China. *European Management Journal* 15 (2), 191-194.
- Schonberger, R., 1992. *Japanese Manufacturing Techniques: Nine Lessons in Simplicity*. New York, NY: The Free Press.
- Schroeder, B., Mavondo, F., 1994. Strategy/performance/environmental linkages in agribusiness: Conceptual issues and a developing country example. *Agribusiness* 10 (5), 419-429.
- Schroeder, R.G., Bates, K.A., Junttila, M.A., 2002. A resource-based view of manufacturing strategy and the relationship to manufacturing performance. *Strategic Management Journal* 23, 105-117.
- Schul, P, Davis P, Hartline M., 1995. Strategic adaptation to extended rivalry: Effects on organizational performance. *Journal of Business Research* 33 (2), 129-142.

- Scott, W.R., 1992. *Organizations: Rational, Natural and Open Systems*. Prentice-Hall, Englewood Cliffs, NJ.
- Scudder, G.D., Hill, C.A., 1998. A review and classification of empirical research in operations management. *Journal of Operations Management* 16 (1), 91-101.
- Shaffer, S., Meredith, S., 1998. *Operations Management: A Process Approach*. New York, NY: Wiley.
- Shah, R., Goldstein, S.M., 2006. Use of structural equation modelling in operations management research: Looking back and forward. *Journal of Operations Management* 24 (1), 148-169.
- Sharfman, M.P., Dean, J.W., 1991. Conceptualizing and measuring the organizational environment: A multidimensional approach. *Journal of Management* 17 (4), 681-700.
- Simkin, L., Cheng, A., 1997. Understanding competitors' strategies: the practitioner-academic gap. *Marketing Intelligence & Planning* 15 (3), 124-134.
- Skinner, W., 1966. Production under pressure. *Harvard Business Review* 42 (6), 139-146.
- Skinner, W., 1969. Manufacturing-missing link in corporate strategy. *Harvard Business Review*, 47 (3), 136-145.
- Skinner, W., 1974. The focused factory. *Harvard Business Review* 52 (3), 113-121.
- Skinner, W., 1985. *Manufacturing the Formidable Competitive Weapon*. Wiley, New York, NY.
- Slack, N., 1991. *The Manufacturing Advantage*. Mercury, New York, NY.
- Slack, N., 1994. The importance-performance matrix as a determinant of improvement priority. *International Journal of Operations & Production Management* 15 (5), 59-75.
- Slack, N., 2005. The changing nature of operations flexibility. *International Journal of Operations & Production Management* 25 (12), 1201-1210.

- Slack, N., Chambers, S., Johnston, R., 2006. *Operations Management*, 5th ed., FT Prentice-Hall, London.
- Slack, N., Chambers, S., Johnston, R., 2010. *Operations Management*, 6th ed., FT Prentice-Hall, London.
- Slack, N., Lewis, M.A., 2008. *Operations Strategy*, 2nd ed., Prentice Hall, Harlow.
- Smith, D.L.G., Sparks, L., 1993. The transformation of physical distribution retailing: the example of Tesco stores. *International Review of Retail, Distribution and Consumer Research* 3 (1), 35-64.
- Smith, J.S., Karwan, K.R., Markland, R.E., 2007. A note on the growth of research in service operations management. *Production and Operations Management* 16 (6), 780-790.
- Snell, S., Youndt, M., 1995. Human resource management and firm performance: Testing a contingency model of executive controls. *Journal of Management* 21 (4), 711-737.
- Snyder, C.A., Cox, J.F., Jesse, R.R., 1982. A dependent demand approach to service organization planning and control. *Academy of Management Journal* 7, 455-466.
- Sohal, A., Schroder, R., Uliana, E., Maguire, W., 2001. Adoption of AMT by South African manufacturers. *Integrated Manufacturing Systems* 12 (1), 15-34.
- Sohi, R.S., 1996. The effects of environmental dynamism and heterogeneity on salespeople's role perceptions, performance and job satisfaction. *European Journal of Marketing* 30 (7), 49-67.
- Sparks, L., 1993. The rise and fall of mass marketing? Food retailing in Great Britain since 1960, in Tedlow, R.S. and Jones, G. (Eds), *The Rise and Fall of Mass Marketing*. Routledge, London.
- Sparks, L., 1996. Investment recommendations and commercial reality in Scottish grocery retailing. *The Services Industries Journal* 16 (2), 165-190.

- Spring, M., Araujo, L., 2009. Service, services and products: Rethinking operations strategy. *International Journal of Operations & Production Management* 29 (5), 444-467.
- St. John, C.H., Cannon, A.R., Poudel, R.W., 2001. Change drivers in the new millennium: Implications for manufacturing strategy research. *Journal of Operations Management* 19 (2), 143-160.
- Stake, R.E., 2000. Case studies, in Denzin, N.K., Lincoln, Y.S. (Eds), *Handbook of Qualitative Research*. Sage, Thousand Oaks, CA.
- Stalk, G., Evans, P., Shulman, L.E., 1992. Competing on capabilities: the new rules of corporate strategy. *Harvard Business Review* 70, 57-69.
- Starbuck, W., 1976. Organizations and their environments. In Dunnette, M. (ed.), *Handbook of Industrial and Organizational Psychology*. Rand McNally, Chicago, IL.
- Staughton, R., Johnston, R., 2005. Operational performance gaps in business relationships. *International Journal of Operations & Production Management* 25 (4), 320-332.
- Sternquist, B., 2007. *International Retailing*. Fairchild, New York, NY.
- Sternquist, B., Huang, Y., Chen, Z., 2010. Predicting market orientation: Chinese retailers in a transitional economy. *International Journal of Retail & Distribution Management* 38 (5), 360-378.
- Stevenson, M., Spring, M., 2009. Supply chain flexibility: An inter-firm empirical study. *International Journal of Operations & Production Management* 29 (9), 946-971.
- Stonebraker, P.W., Leong, G.K., 1994. *Operations Strategy, Focusing Competitive Excellence*. Allyn and Bacon, Inc., Needham Heights, MA.
- Strijbosch, L., Heuts, R., Luijten, M., 2002. Cyclical packaging planning at a pharmaceutical company. *International Journal of Operations & Production Management* 22 (5/6), 549-565.

- Stuart, I., McCutcheon, D., Handfield, R., McLachlin, R., Samson, D., 2002. Effective case research in operations management: A process perspective. *Journal of Operations Management* 20 (4), 419-433.
- Suarez, F.F., Cusumano, M.A., Fine, C.H., 1996. An empirical study of manufacturing flexibility in printed circuit board assembly. *Operations Research* 44 (1), 223-249.
- Swamidass, P.M., Newell, W.T., 1987. Manufacturing strategy, environmental uncertainty and performance: A path analytic model. *Management Science* 33 (4), 509-524.
- Thompson, A.A., Strickland, A.J., 1993. *Strategic Management*. 7th ed., Irwin, Burr Ridge, IL.
- Thompson, J., 1967. *Organizations In Action*. McGraw-Hill, New York.
- Thun, J.H. 2008. Empirical analysis of manufacturing strategy implementation. *International Journal of Production Economics* 113 (1), 370-382.
- Tom, G., Lucey, S., 1995. Waiting time delays and customer satisfaction in supermarkets. *Journal of Services Marketing* 9 (5), 20-29.
- Towers, N., Knibbs, A., Panagiotopoulos, N., 2005. Implementing manufacturing resource planning in a Greek aerospace company: A case study. *International Journal of Operations & Production Management* 25 (3/4), 277-290.
- Tsang, E.W.K., 1998. Can guanxi be a source of sustained competitive advantage for doing business in China? *Academy of Management Executive* 12 (2), 64-73.
- Tseng, C., Kwan, P., Cheung, F., 1995. Distribution in China: A guide through the maze. *Long Range Planning* 28 (1), 81-91.
- Turnbull, P.W., Cunningham, M., Ford, D., 1996. Interaction, relationships and networks in business markets: An evolving perspective. *Journal of Business & Industrial Marketing* 131 (3/4), 44-62.

- Ulrich, D., Barney, J.B., 1984. Perspectives in organizations: Resource dependence, efficiency and population. *Academy of Management Review* 9 (3), 471-481.
- Uncles, M.D., 2010. Retail change in China: Retrospect and prospects. *The International Review of Retail, Distribution and Consumer Research* 20 (1), 69-84.
- Upton, D.M., 1995. What really makes factories flexible? *Harvard Business Review* 73, 74-84.
- Van Dierdonck, R., Miller, J.G., 1980. Designing production planning and control systems. *Journal of Operations Management* 1 (1), 37-46.
- Venkatraman, N., Prescott, J., 1990. Environment-strategy goal alignment: An empirical examination of its performance implications. *Strategic Management Journal* 11 (1), 5-23.
- Vickery, S.K., Droge, C., Markland, R.E., 1993. Production competence and business strategy: Do they affect business performance. *Decision Sciences* 24 (4), 435-456.
- Vickery, S.K., Droge, C., Markland, R.E., 1997. Dimensions of manufacturing strength in the furniture industry. *Journal of Operations Management* 15, 317-330.
- Voss, C., 1986. *Managing New Manufacturing Technologies*, Operations Management Association, Monograph No.1.
- Voss, C., 2003. Rethinking paradigms of service: Service in a virtual environment. *International Journal of Operations & Productions Management* 23 (1), 88-104.
- Voss, C., Tsikriktsis, N., Frohlich, M., 2002. Case research in operations management. *International Journal of Operations & Production Management* 22 (2), 195-219.
- Walker, O., Boyd, H., Larreche, J., 1999. *Marketing Strategy*. McGraw-Hill, Singapore.
- Walters, P.G.P., Samiee, S., 2003. Executive insights: marketing strategy in emerging markets: the case of China. *Journal of International Marketing* 11 (1), 97-106.

- Walton, R., 1989. *Up and Running: Integrating Information Technology and the Organization*. Harvard Business School Press, Boston, MA.
- Wang, J., 2008. *Brand New China: Advertising, Media, and Commercial Culture*. Cambridge, MA: Harvard University Press.
- Ward, P.T., Duray, R., 2000. Manufacturing strategy in context: Environment, competitive strategy and manufacturing strategy. *Journal of Operations Management* 18, 123-138.
- Ward, P.T., Duray, R., Leong, G.K., Sum, C., 1995. Business environment, operations strategy, and performance: An empirical study of Singapore manufacturers. *Journal of Operations Management* 13 (2), 99-115.
- Ward, P.T., McCreery, J.K., Ritzman, L.P., Sharma, D., 1998. Competitive priorities in operations management. *Decision Sciences* 29 (4), 1035-1044.
- Waring, T., Wainright, D., 2002. Communicating the complexity of computer-integrated operations. *International Journal of Operations & Production Management* 22 (4), 394-412.
- Wheelwright, S.C., 1978. Reflecting corporate strategy in manufacturing decisions. *Business Horizons* 21 (1), 57-66.
- Wheelwright, S.C., 1981. Japan – where operations really are strategic. *Harvard Business Review* 59 (4), 67-74.
- Wheelwright, S.C., 1984. Manufacturing strategy: Defining the missing link. *Strategic Management Journal* 5, 77-91.
- Wheelwright, S.C., Hayes, R.H., 1985. Competing through manufacturing. *Harvard Business Review* 63 (1), 99-109.

- Williams, F.P., D'Souza, D.E., Rosenfeldt, M.E., Kassaei, M., 1995. Manufacturing strategy, business strategy and firm performance in a mature industry. *Journal of Operations Management* 13, 19-33.
- Wing, C.C.K., 1996. Strategic investment, uncertainty and distribution reform in the People's Republic of China: Why a gradual reform strategy works. *Journal of Applied Business Research*, 12, 20-28.
- Wong, A., Dean, A., 2009. Enhancing value for Chinese shoppers: The contribution of store and customer characteristics. *Journal of Retailing and Consumer Services* 16, 123-134.
- Wong, A., Sohal, A., 2002. Customers perspectives on service quality and relationship quality in retail encounters. *Managing Service Quality* 12, 424-433.
- Wong, A., Sohal, A., 2003. Service quality and customer loyalty perspectives on two levels of retail relationships. *Journal of Service Marketing* 17 (5), 495-513.
- Wong, G.K.M., Yu, L., 2002. Income and social inequality in China: Impact on consumption and shopping patterns. *International Journal of Social Economics* 29 (5), 370-384.
- Wong, G.K.M., Yu, L., 2003. Consumers' perception of store image of joint venture shopping centres: First-tier versus second-tier cities in China. *Journal of Retailing and Consumer Services* 10 (2), 61-70.
- Wood, C.H., Ritzman, L.R., Sharma, D., 1990. Intended and achieved competitive priorities: Measures, frequencies and financial impact, In: Ettl, J.E., Burstein M.C., Fiegenbaum A. (Eds.), *Manufacturing Strategy: The Research Agenda for the Next Decade*. Kluwer Academic Publishers, Boston, MA.
- Wright, P.M., McMahan, G.C., 1992. Theoretical perspectives for strategic human resource management. *Journal of Management* 18, 295-320.

- Wright, P.M., McMahan, G.C., McWilliams, A., 1994. Human resources and sustained competitive advantage: A resource-based perspective. *International Journal of Human Resource Management* 5 (2), 301-326.
- Xin, K.R., Pearce, J.L., 1996. Guanxi: Connections as substitutes for formal institutional support. *Academy of Management Journal* 39 (6), 1641-1658.
- Yau, O.H.M., Lee, J.S.Y., Chow, R.P.M., Sin, L.Y.M., 2000. Relationship marketing the Chinese way. *Business Horizons* 23 (2), 109-123.
- Yeo, R.K., 2003. Linking organizational learning to organizational performance: Singapore case studies. *The Leadership & Organization Development Journal* 24 (2), 70-83.
- Yeung, J.H.Y., Selen, W., Zhang, M., Huo, B., 2009. The effects of trust and coercive power on supplier integration. *International Journal of Production Economics* 120, 66-78.
- Yin, R.K., 1994. *Case Study Research: Design and Method*, 2nd ed., London: Sage Publications.
- Yin, R.K., 2003. *Case Study Research: Design and Methods*, 3rd ed., London: Sage Publications.
- Youndt, M., Snell, S., Dean, J., Lepak, D., 1996. HRM, manufacturing strategy and firm performance. *Academy of Management Journal* 39 (4), 836-866.
- Yuen, A., Shan, A.Y., 2003. International transfer of retail know-how through foreign direct investment from Europe to China. In Dawson, J. (Eds), *The Internationalisation of Retailing in Asia*, Routledge, New York, NY.
- Zahra, S.A., Das, S.R., 1993. Building competitive advantage on manufacturing resources. *Long Range Planning* 26 (2), 90-100.
- Zhang, L., Goffin, K., 2001. Managing the transition - supplier management in international joint ventures in China. *International Journal of Physical Distribution & Logistics Management* 31, 74-95.

- Zhang, X.A., Grigoriou, N., Li, L., 2008. The myth of China as a single market. *International Journal of Market Research* 50 (3), 377-402.
- Zhao, X., Sum, C.C., Qi, Y., Zhang, H., Lee, T.S., 2006. A taxonomy of manufacturing strategies in China. *Journal of Operations Management* 24, 621-636.
- Zineldin, M., 2007. International business relationship and entry modes: A case of Swedish automotive industry Scania and Volvo in Mexico. *Cross Cultural Management: An International Journal* 14 (4), 365-386.
- Zolkiewski, J., Turnbull, P.W., 2002. Do relationship portfolios and networks provide the key to successful relationship management? *Journal of Business and Industrial Marketing* 17 (7), 575-597.

APPENDICES

Appendix 1: An Assessment of Operational Efficiency of Retail Firms in China

The paper based on the results of secondary data analysis using data envelopment analysis (DEA) has been published in *Journal of Retailing and Consumer Services*.



An assessment of operational efficiency of retail firms in China

Wantao Yu, Ramakrishnan Ramanathan *

Nottingham University Business School, Jubilee Campus, Wollaton Road, Nottingham NG8 1BB, UK

ARTICLE INFO

Article history:

Received 4 April 2008

Received in revised form

2 July 2008

Keywords:

Retailing

Efficiency

Data envelopment analysis (DEA)

Malmquist productivity index (MPI)

A bootstrapped Tobit regression model

China

ABSTRACT

This study aims to assess operational efficiency of retail firms in China. Economic efficiencies of 61 retailers working in China between 2000 and 2003 are examined in this study using three related methodologies: data envelopment analysis (DEA), Malmquist productivity index (MPI), and a bootstrapped Tobit regression model. DEA analysis shows that only seven retail firms are considered as efficient under CRS assumption in 2002, and four firms in 2003. MPI results indicate that about 37.7 percent (23 out of 61) of retail firms have registered progress in terms of MPI during 2000 and 2003. Results of the bootstrapped Tobit analysis show that retail characteristic plays a significant role influencing retail efficiency.

© 2008 Elsevier Ltd. All rights reserved.

1. Introduction

Over the past few decades, efficiency and productivity have become an important issue for managers, both in the manufacturing and service sector (Sellers-Rubio and Mas-Ruiz, 2007; Kamakura et al., 1996). In the retail industry, retail productivity has a significant impact on the control and management of retail firms, and providing vital information for a number of tactical, strategic, and policy-related decisions (Dubelaar et al., 2002; Sellers-Rubio and Mas-Ruiz, 2007). The analysis of productivity and efficiency has become an important activity in retailing (Oxford Institute of Retail Management, 2004; Barros and Alves, 2004; Lusch et al., 1995). However, it has been well recognized that attempts to measure efficiencies and productivities of retailers face a few challenges due to the difficulties in identifying the level of retail services. Previous studies in this area have presented a number of measures, models, and methods to evaluate retail productivity and efficiency, such as data envelopment analysis (DEA), regression, and stochastic frontier analysis. DEA is an operations research-based method that has been applied to assess firm/store-level retail productivity. DEA allows using multiple inputs and outputs for evaluating the performance of chain stores within a retail firms or among firms in the retail industry (Wen et al., 2003). Over the last few years, retail productivity and efficiency in several countries have been studied using DEA (e.g. Thomas et al., 1998; Ratchford, 2003; Donthu and Yoo, 1998; Keh and Chu, 2003; Barros and Alves, 2003, 2004;

Kamakura et al., 1996; Perrigot and Barros, 2008). However, to our knowledge, there seems to be no study on productivity of firms in China's retail sector.

This study aims to assess operational productivity and efficiency of retail firms in China, and then identify the driving forces that influence efficiency of retailers. While DEA results will highlight efficiency differences at a firm level, the results of Tobit regression will highlight drivers of the efficiency. This study will therefore be of interest not only to individual firms in China's retail sector but also for policy makers in formulating necessary guidelines that would induce best performance. In this study, economic efficiency of 61 retail firms operating in China between 2000 and 2003 are examined, using three related methodologies: DEA, Malmquist productivity index (MPI), and a bootstrapped Tobit regression model. DEA is used to calculate technical and scale efficiencies of retailers. The use of DEA for the analysis of comparative retail firms' efficiency can be of value in examining the competitiveness of the retail industry as a whole. Competitiveness should be based on benchmarking the retail firms that compose the sector. The retailers that achieved the highest efficiency scores are considered as benchmark and the efficiency of the other firms are evaluated relative to this benchmark. Two outputs (sales and profits before taxation) and two inputs (total selling floor space and number of employees) are introduced for efficiency measurement. MPI is applied to analyze the patterns of efficiency change over the period 2000–2003. DEA efficiencies are then used to test important hypotheses on the impact of variables, including head office location; firm nationality; years of incorporation; ownership type; and retail characteristic, on the functioning of China's retail sector using Tobit regression. To overcome the problem of the inherent dependency of DEA

* Corresponding author. Tel.: +44 115 846 7764; fax: +44 115 846 6341.
E-mail address: ram.ramanathan@nottingham.ac.uk (R. Ramanathan).

efficiency scores when used in regression analysis, a bootstrapping technique is applied. The aim of this regression is to seek out best practices that will lead to improved performance throughout the whole retail chain.

China provides a particularly interesting setting for this study. China's retail industry has been experiencing unprecedented development during a transforming process from a centrally planned economy to a market economy. The total retail sales of consumer goods have been growing in recent years. According to the statistics of Mofcom (2007), the total retail sales of consumer goods in China reached US\$1.27 trillion in 2007 with a 16.8 percent increase against the previous year. As per the statistics from the China Chain Store & Franchise Association (CCFA), currently, there are a large number of retail firms and more than 15 million retail networks all over China. The sales turnover of the top 100 retailers (both local and foreign) in 2007 increased 21 percent to US\$143.3 billion, accounting for 11.23 percent of total sales of consumer goods (CCFA, 2008). Many Chinese retailers have shown significant growth in recent years (Liu, 2007). A number of leading domestic giants have established dominating sales records and a national brand name. For example, Gome Appliance, China's largest home appliance retailer, topped CCFA's (2008) list with sales at US\$14.6 billion. It was followed by the Shanghai Brilliance and Suning Appliance, with US\$12.4 billion and US\$12.23 billion in sales, respectively. Next on the list were CR Vanguard and Dashang (CCFA, 2008). Some of these retail firms will be examined in our study. On the other hand, more and more foreign retailers are looking for opportunities to expand their business in China. By the end of 2004, the government of China had approved 302 foreign-invested firms with 3909 chain stores. By the end of 2005, at least 35 of the global top 50 retailers have already developed a foothold in China, for example, Tesco, Wal-Mart, Carrefour, and Metro, etc. (KPMG, 2005). There are 15 foreign retail firms in CCFA's (2008) list, including Wal-Mart and Carrefour, whose combined sales rose 28 percent to US\$26.1 billion in 2007. These 15 key-retailers generated sales of US\$27 billion with 3956 stores, accounting for 18 percent of the total sales generated by the top 100 retailers.

The remainder of this paper is organized as follows. At first, we provide the foundations and theoretical framework of DEA methodology. A brief literature review on the DEA applications in the retail sector follows. We then discuss the proposed DEA model, the selection of inputs/outputs and environmental variables, and data collection issues. Next, we describe an empirical study in which DEA is employed to assess the efficiencies of 61 retailers in China. Finally, managerial implications, limitations and future research are also discussed.

2. Review of DEA and its applications in the retail sector

This section makes a literature review of DEA, MPI, and bootstrapped Tobit regression analysis. For the sake of brevity of this paper, detailed discussions of these tools are not described here. Important references are provided to help the interested readers. Then applications of DEA in the retail sector over the last few years are reviewed.

2.1. Data envelopment analysis (DEA)

DEA is a mathematical programming technique that calculates the relative efficiencies of organizations (usually refers to a decision-making units (DMUs)) based on multiple inputs and outputs (Charnes et al., 1978). To calculate efficiency scores employing DEA, two different assumptions can be made, i.e. constant return to scale (CRS) and variable returns to scale (VRS).

The VRS efficiency score measures pure technical efficiency, i.e. a measure of efficiency without scale efficiency. On the other hand, the CRS efficiency score represents technical efficiency, which measures inefficiencies due to the input/output configuration and the size of operations (Cooper et al., 2007). Scale efficiency can be computed by the ratio of CRS efficiency to VRS efficiency. Hence, scale efficiency of a DMU operating in its most productive scale size is one. More details on DEA can be found in Cooper et al. (2007) and Ramanathan (2003).

2.2. Malmquist productivity index (MPI)

A special method of time series analysis in DEA is to use the results of DEA in conjunction with the MPI. The MPI was introduced as a theoretical index by Caves et al. (1982) and popularized as an empirical index by Färe et al. (1994). The MPI is defined as the product of the "catching-up" and the "frontier-shift" terms. The "catching-up" term relates to the extent by which a firm improves its efficiency, while the "frontier-shift" term reflects the change in the efficient frontier surrounding the firm between the two periods of time (Sellers-Rubio and Mas-Ruiz, 2006). This index allows changes in productivity to be broken down into changes in efficiency (deviations from the best-practice frontier) and technology change (TC) (movements of the frontier), and is defined using distance functions. MPI is the product of technical efficiency change and technology change. When DEA efficiencies are used to calculate MPI, two more efficiency changes are also computed—VRS efficiency change and scale efficiency change.

2.3. Bootstrapped Tobit regression

Tobit regression is often encountered in second-stage DEA, i.e. when the relationship between exogenous factors (non-physical inputs) and DEA efficiency scores is assessed (Hoff, 2007). However, the previous DEA studies have shown that the efficient scores obtained in the first stage are correlated with the explanatory variables used in the second term, so that the second-stage estimates will be inconsistent and biased (Xue and Harker, 1999; Simar and Wilson, 2000). Therefore, Simar and Wilson (1999) suggested that a bootstrap procedure should be employed to overcome this problem. The bootstrap is a computer-based method for assigning measures of accuracy to statistical estimates. It was first introduced by Efron (1979) and since then it has become a popular and powerful statistical tool (Casu and Molyneux, 2000). More details on truncated regression with bootstrap can be seen in Simar and Wilson (2007).

2.4. DEA applications in the retail sector

The analysis of productivity and efficiency has become an important activity in retailing (Barros and Alves, 2004; Lusch et al., 1995; Kamakura et al., 1996; Mägi and Julander, 1996). When reviewing contemporary researches in efficiency measurement that were published over the last few years (e.g. Thomas et al., 1998; Ratchford, 2003; Donthu and Yoo, 1998; Keh and Chu, 2003; Barros and Alves, 2003, 2004), it is apparent that there is an increase in the use of DEA to evaluate retail efficiency and productivity in recent years (see Table 1). However, to our knowledge, there seems to be no study on operational efficiency of firms in China's retail sector.

Sellers-Rubio and Mas-Ruiz (2006) used DEA to estimate the economic efficiency of supermarket chains in the Spanish retail industry. The empirical application was carried out on a sample of 100 supermarket chains between 1995 and 2001. The study

Table 1
Previous research into retail efficiency using DEA.

Studies	Analysis level	Inputs	Outputs
Athanassopoulos (1995)	DEA Restaurants	Adjustable inputs: the bar area (ft ²); the number of covers Uncontrollable inputs: market size (potential customers); the number of restaurants in a 1-mile radius; the number restaurants in a 3-mile radius	Food sales (in value) Sales of beverages (in value)
Barros and Alves (2003)	DEA 47 retail outlets of one of the leading hypermarket and supermarket Portugal chains, 1999–2000	Number of full-time equivalent employees Cost of labor Number of cash-out points Stock Other costs	Sales Operating results
Barros and Alves (2004)	DEA 47 retail outlets of one of the leading hypermarket and supermarket Portugal chains, 1999	Number of full-time equivalent employees Cost of labor Number of cash-out points Stock Other costs	Sales Operating results
Barros (2006)	DEA and Tobit model 22 main supermarket and hypermarket in Portugal, 1998–2003	Number of laborers Value of assets Tobit model variables: share; outlets; ownership; regulation; location	Sales Operational results Value-added
Donthu and Yoo (1998)	DEA and regression models 24 outlets of a fast-food restaurant chain	Store size Manager tenure Store location (inside a shopping mall versus free-standing) Promotion/give-away expenses	Sales (value) Customer satisfaction (a five-point scale)
Keh and Chu (2003)	DEA BCC model 13 USA stores, 1988–1997	Labor: floor staff; management wages and benefits for the number of hours worked Capital: occupancy, utilities; maintenance and general expenditure for the area of the stores	Distribution services: accessibility; assortment; assurance of product delivery; availability of information; ambience Sales revenue
Perrigot and Barros (2008)	DEA and bootstrap Tobit model 11 French generalist retailers, 2000–2004	Labor: the number of equivalent full-time workers Capital: the value of assets of the firm and costs	Turnover Profits
Ratchford (2003)	Cost efficiency, DEA USA retail food stores (SIC 54) 1959–1995	Capital Labor Intermediate services	Conventional physical output Breath of assortment Index of different services (deli, bakery, etc.)
Sellers-Rubio and Mas-Ruiz (2006)	DEA 100 supermarkets chains in Spain, 1995–2001	Number of employees Number of outlets Capital: sum of own funds (capital plus reserve); level of debt (short- and long-term debt)	Sales Profit

Table 1 (continued)

Studies	Analysis level	Inputs	Outputs
Sellers-Rubio and Mas-Ruiz (2007)	DEA–Malmquist productivity indices	Number of employees	Sales
	96 supermarkets chains in Spain, 1995–2003	Number of outlets Capital: sum of own funds (capital plus reserve); level of debt (short- and long-term debt)	Operational results
Thomas et al. (1998)	DEA AR (assurance regions), MANOVA 552 outlets of a USA multi-store, multi-market retailer	Labor: employees and wages Experience: employees, store manager, and store Location-related costs: occupancy, operating expenses, etc. Internal processes: inventory, transactions, etc.	Sales dollars Profits dollars

revealed high levels of economic inefficiency in the Spanish retailing sector. Barros (2006) analyzed a representative sample of 22 hypermarkets and supermarkets working in the Portuguese market, adopting a two-stage procedure to benchmark the retail companies. In the first-stage DEA was used and in the second stage a Tobit model was employed to estimate the efficiency drivers. The following are important conclusions from this study: (a) efficiency of hypermarket and supermarket retail companies is high compared with other sectors; (b) larger retail groups are more efficient than the smaller retailers; (c) national retailers are on average more efficient than regional retailers; (d) scale plays an important role in this market; (e) factors such as market share, number of outlets and location are important efficiency drivers; and (f) regulation has a negative effect on efficiency. Recently, Perrigot and Barros (2008) analyzed the technical efficiency of a sample of French generalist retailers by a two-step procedure. In the first step, four DEA models were used to identify the efficiency scores. In the second step, a Tobit model was bootstrapped in order to identify the drivers of efficiency. The authors concluded that efficiency derived from being a stock market-quoted company, the adoption of a mergers and acquisitions (M&A) strategy, being part of a group, and expanding into international markets.

These previous studies have evaluated cost efficiency (Ratchford, 2003), technical efficiency (e.g. Thomas et al., 1998; Donthu and Yoo, 1998; Keh and Chu, 2003; Barros and Alves, 2003) and scale efficiency (e.g. Keh and Chu, 2003; Barros and Alves, 2003). The majority of studies adopted a static perspective (e.g. Thomas et al., 1998; Ratchford, 2003; Donthu and Yoo, 1998; Keh and Chu, 2003; Barros and Alves, 2003), whereas only Barros and Alves (2004) and Sellers-Rubio and Mas-Ruiz (2007) adopted a dynamic perspective, examining the patterns of changes in efficiency using MPI. For example, Sellers-Rubio and Mas-Ruiz (2007) used the MPI for a sample of 96 supermarket chains operating in Spain between 1995 and 2003 to estimate total productivity change in these retailing firms and to decompose it into efficiency change and technical change (i.e. the consequence of innovation and adoption of new technologies). They concluded that information and technology have the capacity to alter the productive structures of retail firms, favoring their productivity. Barros and Alves (2004) estimated total productivity change and decomposed it into technically efficient change and technological change for a Portuguese retail store chain with MPI. The authors ranked the stores according to their total productivity change for the period 1999–2000, and concluded that some stores experienced productivity growth while others experienced productivity decrease. Recently, Yu and Ramanathan (2008) assessed operational

efficiency of 41 retail firms operating in the UK between 2000 and 2005, using three related methodologies: DEA, MPI, and a bootstrapped Tobit regression model. The study verified that legal form, ownership, and retail sub-sector played significant roles influencing retail efficiency in the UK.

2.4.1. Selection of input and output variables

The choice of the input and output variables is vital to the successful application of DEA. Donthu and Yoo (1998) stated that input and output variables for DEA should exactly reflect the retail firm's objectives and sales situation. Based on a review of the literature, main inputs and outputs criteria that have been used to examine retail efficiency and productivity are summarized in Table 1. Previous studies have proposed different measures of output, both in monetary units (such as sales revenue, profit volume and value added) (e.g. Thomas et al., 1998; Donthu and Yoo, 1998; Keh and Chu, 2003) and in non-monetary units (such as customer store loyalty and satisfaction, and service quality) (e.g. Donthu and Yoo, 1998; Keh and Chu, 2003).

The literature on productivity assessment in the retail sector generally differentiates two different kinds of input-controllable inputs and non-controllable inputs, according to whether the firm considers them or not in its management action plans (Donthu and Yoo, 1998; Sellers-Rubio and Mas-Ruiz, 2006). Since *controllable inputs* can be controlled by firms to gain competitive advantage, it is a common practice to use them as part of efficiency assessment. Examples of controllable inputs considered in the literature include firm managerial factors and personnel factors, such as size of firm (e.g. square feet of selling space) (Pilling et al., 1995; Lusch and Serpkenci, 1990), the number of outlets in the supermarket chain (Sellers-Rubio and Mas-Ruiz, 2006), current total assets (Doutt, 1984), and the number of employees (Thomas et al., 1998; Sellers-Rubio and Mas-Ruiz, 2006). In contrast, *non-controllable inputs* are generally considered as environmental variables since they could influence the efficiency of firms but are not directly controllable by the firms. Examples of environmental variables considered in the literature include retail structure (Goldman, 1992), retail sector conditions (Goldman, 1992), location (Donthu and Yoo, 1998), demographics of clientele in the area (Donthu and Yoo, 1998), and national economic development (Pilling et al., 1995). Normally, non-controllable inputs are ignored in the estimation of retail productivity (Donthu and Yoo, 1998). We follow a similar strategy in choosing the controllable and environmental variables for this study and the details are discussed in Section 3.

3. Methodology, variables, and data

3.1. Methodology

In this paper, three methodologies, namely DEA, MPI, and bootstrapped Tobit regression are used to study operational efficiency of retail firms in China. The conceptual framework is proposed in Fig. 1. A number of studies (e.g. Barros, 2006; Perrigot and Barros, 2008) have used a two-stage procedure to benchmark retail firms. We adopt the two-stage method in this study (see Coelli et al. (2005) for more details). In the first-stage analysis, DEA is used to calculate technical and scale efficiencies of retail firms, which includes only the conventional inputs and outputs. Two outputs (turnover and profit before taxation) and two inputs (total selling floor space and number of employees) are employed for the efficiency measurement. In this study, we use two DEA models: CCR-DEA model and BCC-DEA model. In general, any DEA study considers performance analysis at a given point time. However, extensions to the standard DEA procedures such as MPI approach have been reported to provide performance assessment over a period time (Ramanathan, 2003). Thus, MPI is used to examine the patterns of efficiency change over the period 2000–2003.

Although the results of DEA could reveal that the primary cause of efficiency is the scale economies, it does not identify the other more driving factors influencing efficiency (Barros, 2006). A bootstrapped Tobit regression allows us to investigate other efficiency drivers beyond the scale economies. Therefore, in the second-stage, the DEA efficiency scores from the first-stage are used to test important hypotheses on the impact of environmental variables, including head office location, firm nationality, years of incorporation, ownership type and retail characteristic, on the functioning of China's retail sector using bootstrapped Tobit regression (see Fig. 1). The regression aims to investigate those best practices that will generate improved performance throughout the whole retail chain. More details on the implementation of the conceptual framework in our analysis, such as the choice of inputs, outputs and environmental variables, are discussed in Section 3.2.

3.2. Selection of inputs, outputs, and environmental variables

3.2.1. Inputs and outputs

As shown in Table 1, different authors have employed different measures of output, such as sales revenue, customer satisfaction, and service quality. In our study, we use two monetary outputs. Sales revenue (Donthu and Yoo, 1998; Barros and Alves, 2003, 2004; Zhu, 2000; Sellers-Rubio and Mas-Ruiz, 2006) is the first

output. Justification for this selection is that retail firms work with a large range of products and services, which hinders the collection of disintegrated information on outputs produced (Sellers-Rubio and Mas-Ruiz, 2006). Moreover, retail firms can achieve typical income apart from their main activity, which is not included in their sales volume figures; apart from sales volumes, retailers pay special attention to results as they guarantee the viability of the firm; and considering the volume of profits allows for inclusion of the influence of other types of costs not considered as inputs (Sellers-Rubio and Mas-Ruiz, 2006). Therefore, the second output used is the profit volume of firm (Barros and Alves, 2003, 2004; Perrigot and Barros, 2008; Zhu, 2000; Sellers-Rubio and Mas-Ruiz, 2006). The correlation between sales and profit is relatively low (0.504) for the year 2002, indicating they are not similar measures of financial performance. In fact, for the year 2003, they showed negative correlation (−0.129) indicating that a firm registering higher sales need not register higher profit. Thus, we feel that these two measures could be used as output measures.

With regard to inputs, as above-mentioned literature review, the factors used to produce goods/services can be divided into controllable and non-controllable. In our study, we apply two controllable productive factors, namely, the number of employees (Thomas et al., 1998; Barros and Alves, 2003, 2004; Sellers-Rubio and Mas-Ruiz, 2006; Perrigot and Barros, 2008), and total selling floor space (Athanasopoulos, 1995; Donthu and Yoo, 1998; Lusch and Serpkenci, 1990; Pilling et al., 1995). Some details of the outputs and controllable inputs used in this study are shown in Table 2.

3.2.2. Environmental variables

In the second-stage, the technical efficiency variable return to scale index of the retail firms is regressed using bootstrapped Tobit regression methodology to identify the impact of the environmental variables listed in Table 2. The Tobit model used in our study is presented as follows:

$$\theta = \alpha + \beta(\text{Variable})$$

Here θ is VRS efficiency scores of retail firms in 2002 and 2003, we use five environmental variables (see Table 2) that could influence a retailer's operational efficiency. These factors are not the conventional inputs and output in the DEA model and are assumed not under the control of business management (Boame, 2004; Casu and Molyneux, 2000). The explanatory factors can include ownership type, legal form (public/private), location characteristics, age, industry group, and government regulations (e.g. Barros, 2006; Casu and Molyneux, 2000; Glancey, 1998; Wei et al., 2002). In our study, the following environmental variables are considered: head office location, firm nationality, years of incorporation, types of ownership, and retail characteristics. Data on these variables were independently selected and care was taken to separate controllable input factors that determine efficiencies and environmental variables that characterise the management practices of retail firms.

Head office location is a dummy variable. It is classified into seven different areas in accordance with Cui and Liu (2000) (see Fig. 3). A head office is like a large laboratory in business management, which accumulates knowledge on personnel management, new product development, quality control and operations strategy (Kono, 1999). *Firm nationality* is also a dummy variable (one for local firm and two for foreign firm), which is used to measure the advantages achieved through knowledge and experience of the local market. Evidence for the variable has been found by a number of previous studies. For example, as noted previously, Yu and Ramanathan (2008) found that foreign retailers in the UK are on average more efficient than local retailers. *Years of*

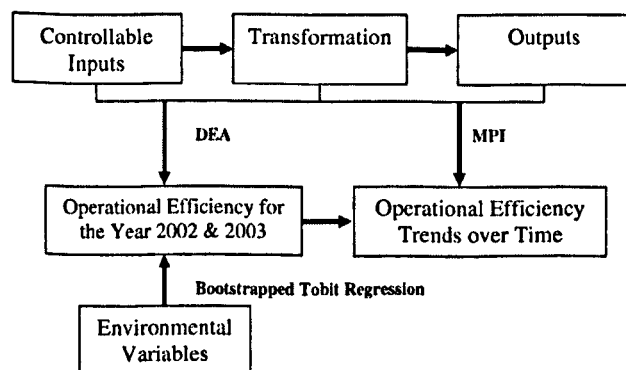


Fig. 1. Conceptual framework.

Table 2
Inputs, outputs, and regression variables (data in 2002).

Variables	Units	Minimum	Maximum	Mean	Std. deviation
<i>Outputs</i>					
Sales	Value in thousands of RMB	903,810	8,430,600	2,065,055	1,628,706
Profits before taxation	Value in thousands of RMB	107	355,280	49,286	49,777
<i>Inputs</i>					
Total selling floor space	m ²	9256	556,862	72,223	95,249
Employees	Number	262	25,119	2930	3492
<i>Environmental variables</i>					
Head office location	The location classified into seven different regional markets. Dummy variable, one for North China, two for South China, three for East China, four for Northeast China, five for Central China, six for Southwest China, and seven for Northwest China	1.0	7.0	2.7	1.7
Firm nationality	Dummy variable, one for local firm and two for foreign firm	1.0	2.0	1.2	0.4
Years of incorporation	Years of incorporation	3.0	51.0	11.1	7.6
Ownership type	Dummy variable, one for state-owned enterprise and two for private firm	1.0	2.0	1.3	0.5
Retail characteristic	Dummy variable, one for department store retailing, two for food retailing, and three for home appliances retailing.	1.0	3.0	1.4	0.7

incorporation means the time of firm forming a legal corporation. This variable is designed to evaluate operations experience that a retailer has. Experience is a major factor shaping strategic directions and collective knowledge. The impact of firm's experience on business performance has been widely discussed. A positive relationship between firm age and efficiency may be expected if old firms benefit from dynamic economies of scale by learning from experience. Old firms may also benefit from reputation effects, which allow them to achieve a higher margin on sales (Glancey, 1998).

In addition, *ownership type* stands for the legal nature of a firm, here one for state-owned enterprise (SOEs) and two for private firm. State-owned enterprise is a traditional ownership in China. In China, SOEs can obtain preferential treatments, such as financial supports and taxation remission from the government. Since the 1990s, the Chinese government has developed different policies and strategies to reform the country's SOEs systematically. SOEs therefore have benefited a lot from the profound reform. As part of the development of a market-based economic system, private firms have become an increasingly influential force within the nation's economy (Mofcom, 2007). A number of studies have examined the relationship between types of ownership and efficiency. For example, Wei et al. (2002) identified that SOEs are less profitable and productive than private firms in Chinese manufacturing industry. Finally, *retail characteristic* is another dummy variable (one for department store retailing, two for food retailing, and three for home appliances retailing), which is carried out to assess market coverage of both food and non-food retail sectors. Department store is still the main and traditional retail format in China. According to Mofcom (2007), the number of department stores increased from 700 in 1996 to some 5000 by 2005. It can be argued that distinguishing between retailers on the basis of sector groups (food and non-food retailing) is critical, since the firms in different retail sector groups have experienced different degrees of success. However, the relationships between retail sub-sector groups and organizational performance remain only at a speculative level.

3.3. Data

To estimate the production frontier, we used panel data on retail firms between 2000 and 2003. All the data required for this study are obtained and translated from China Market Statistical Yearbook (2000–2003) which are officially issued by National Bureau of Statistics of China. DEA requires that data set to be non-negative for the outputs and strictly positive for the inputs (Sarkis and Weinrach, 2001). There is no DEA model to date that can be used with negative data directly without any need to transform it (Portela et al., 2004). Since we use profits volume as one of outputs, a number of retail firms that reported negative profits during the concerned period could not be included in this study. These firms include such as Wal-Mart, Metro, Carrefour, IKEA, and B&Q. According to a study conducted by China General Chamber of Commerce, Wal-Mart China lost US\$30 million in 2002 and US\$5 million in 2003. Although it reported positive profits for the first time in 2004, its chain stores in the North China were still losing money (Huaxia Times, 2005). Carrefour China also has begun making profits from 2004, nearly of 10 years of its operations in China. In addition, owing to non-availability of appropriate archival data, a number of retail firms could not be analyzed in this study. The final sample consists of 61 retailers operating continually between 2000 and 2003 in the Chinese retail market.

Table 3 shows the profile of the 61 firms. From this table, we can see that 32.8 percent of retailers' head offices are located in North China (including Beijing, Tianjin, Hebei, and Shandong), 18 firms are in East China (including Shanghai, Zhejiang, and Jiangsu) (see Fig. 3). Only 10 out of 61 retail firms are foreign-invested retailers. It also can be seen that the ownership of state-owned enterprise (SOEs) is still the major form in China, and appropriately 67.2 percent of retailers are state-owned firms. And majority of these retailers were restructured into shareholding companies in the mid-1990s. Moreover, the table shows these retailers operate their business in several retail sectors, such as department store retailing (accounting for 67.2 percent), food

Table 3
Profile of 61 retail firms.

	Number of firms	Percent (%)
<i>Head office location</i>		
North China	20	32.8
South China	8	13.1
East China	18	29.5
Northeast China	5	8.2
Central China	5	8.2
Southwest China	3	4.9
Northwest China	2	3.3
Total	61	100.0
<i>Firm nationality</i>		
Local firm	51	83.6
Foreign firm	10	16.4
Total	61	100.0
<i>Years of incorporation</i>		
1–10	32	52.7
11–20	26	42.5
More than 20	3	4.8
Total	61	100.0
<i>Ownership type</i>		
SOEs	41	67.2
Private firm	20	32.8
Total	61	100.0
<i>Retail characteristics</i>		
Department store	41	67.2
Food	13	21.3
Home appliances	7	11.5
Total	61	100.0

retailing, and home appliances retailing. Department store is still the main and traditional retail format in China.

4. Results

The results of data analysis are presented into the following three sections. Section 4.1 analyzes the results of DEA analysis. Second, the trends in efficiency and productivity over time are discussed in Section 4.2. Finally, in Section 4.3, test important hypotheses on the impact of variables on the functioning of China's retail sector through regression analysis.

4.1. Efficiency of retail firms in 2002 and 2003 using DEA

DEA efficiency scores can be computed in several ways. We employed an output-oriented DEA model in our analysis and computed CRS, VRS, and scale efficiencies (Cooper et al., 2007; Ramanathan, 2003). Table 4 shows that the efficiency scores of 61 retailers in the year of 2002 and 2003. It can be seen from this table that the retailers with 100% CRS efficiency scores in 2002 are Beijing Urban-Rural Trade Centre; Hunan Friendship & Apollo; Intime Department Store; Parkson; Sanlian Commerce; Suning Appliance; and Xinjiang Machinery and Electronics Equipment. In 2003, only four retail firms achieved 100% CRS efficiency, and they are Beijing Cuiwei; Beijing Hualian Department Store; RT Mart (Shanghai); and Suning Appliance. These retail firms' CRS efficiency scores are all 1.00, and located on the efficient frontier. The results imply that these retailers have produced the maximum possible outputs (sales and profits before the taxation) for the given level of inputs (total selling floor space and the

number of employees). We can see that all these seven retailers in 2002 are also efficient when VRS is assumed. And among the seven efficient firms in 2002, six retailers are local firms, except Parkson, which is Malaysian-owned retailer. In 2003, three CRS efficient firms are Chinese-controlled retailers, and only one Taiwanese-owned firm, i.e. RT Mart achieved 100% CRS efficiency. We will investigate if firm nationality (local and foreign) is the driving factors influencing efficiency, DEA efficiencies will be used as indicators of performance in a Tobit regression model.

The DEA results are summarized in Table 5. It shows that the average efficiency scores under CRS assumption are equal to 0.42 in 2002 and 0.358 in 2003. Among 54 CRS inefficient retail firms in 2002, 12 retailers registered CRS efficiency between 0.5 and 1.0, and 42 retailers' CRS efficiency scores are below the score of 0.50. In DEA, VRS efficiency measures pure technical efficiency. As illustrated in Table 5, under the VRS assumption, there are 11 retail firms in 2003 that achieved 100% efficiency. But 43 retailers' VRS efficiency score are all below the score of 0.5. The average VRS efficiency in 2003 is 0.451, which reflects a high degree of inefficiency in China's retail sector. In 2003, the CRS efficiencies of some retailers are less than 1.00, but their VRS efficiencies are 1.00. This could mean that these firms could not achieve 100% CRS efficiencies since they do not operate at their most productive scale size. Scale efficiency can be calculated as the ratio of CRS and VRS efficiency. As shown in Table 5, four firms achieved scale efficiency equals to 1.0 in 2003, since their CRS and VRS efficiency scores are both equal to one. 55 retailers registered scale efficiency between 0.5 and 1.0, while two firms had scale efficiency scores less than 0.5 in 2003.

4.2. Trends of changes in efficiency scores over time using MPI

In this section, patterns of changes in efficiency of the retailers between 2000 and 2003 using the MPI approach are presented.

Based on the above analysis of efficiency scores of 61 retail firms in 2002 and 2003, we selected top seven retailers whose CRS efficiency scores were 1.00 in 2002 and then calculated their CRS efficiency during the previous 4 years, from 2000 to 2003. The CRS efficiency scores are presented in Fig. 2. The figure demonstrates the CRS efficiency of Beijing Urban-Rural Trade Centre and Sanlian Commerce kept the same scores of 1.00 during the period 2000 and 2002, and decreased to 0.414 and 0.571 in 2003, respectively. Hunan Friendship & Apollo, Intime Department Store, Parkson, Sanlian Commerce, and Xinjiang Machinery and Electronics Equipment achieved a significant progress between 2000 and 2002, but these firms experienced a decrease in 2003. For example, Intime Department Store improved from 0.148 in 2000 to 1.00 in 2001, the next year of 2002 it retained the same score of 1.00, and then it declined to 0.424 in 2003. The other two retailers of Parkson and Xinjiang Machinery and Electronics Equipment also maintained the same scores of 1.00 in both 2001 and 2002, and got a drop in 2003. However, The CRS efficiency of Suning Appliance was 0.898 in 2000, but it decreased to 0.526 in 2002, and then retained the same score of 1.00 in both 2002 and 2003.

The MPI over the previous 4 years from 2000 to 2003 is presented in Table 6. The values are geometric means of MPI for the three periods 2000–2001, 2001–2002, and 2002–2003. It shows that 23 out of 61 retail firms registered progress in terms of MPI during the period. Here we select Beijing Cuiwei as a sample that registered the highest improvement in MPI (1.783) and discuss it in more details. The MPI for this company is 1.783, which means there is an increase in improving the performance in terms of "Sales" and "Profits before taxation" for the given level of "Total selling floor space" and "The number of employees" in the year of 2003 compared with 2000. MPI is the product of technical

Table 4
DEA scores for 61 retail firms in 2002 and 2003.

Retail firm	DEA efficiency scores for 2002			DEA efficiency scores for 2003		
	CRS Effi.	VRS Effi.	Scale Effi.	CRS Effi.	VRS Effi.	Scale Effi.
Anhui Commercial Capital Co. Ltd.	0.482	0.484	0.994	0.938	1.00	0.938
Baida Group Co. Ltd.	0.472	0.537	0.879	0.263	0.394	0.669
Beijing Cuiwei Group	0.091	0.26	0.348	1.00	1.00	1.00
Beijing Hualian Department Store Co. Ltd.	0.717	0.777	0.922	1.00	1.00	1.00
Beijing Jingkelong Co. Ltd.	0.202	0.209	0.964	0.315	0.316	0.995
Beijing North Star Shopping Center	0.687	0.847	0.811	0.388	0.646	0.601
Beijing Xidan Market Co. Ltd.	0.307	0.395	0.778	0.549	0.56	0.98
Beijing Yansha Youyi Shopping City Co. Ltd.	0.822	1.00	0.822	0.407	0.55	0.741
Beijing Wangfujing Department Store Co. Ltd. (Group)	0.369	0.499	0.739	0.652	0.701	0.929
Beijing Urban-Rural Trade Centre Co. Ltd.	1.00	1.00	1.00	0.414	0.712	0.581
Binjiang Commercial Mansion Co. Ltd.	0.264	0.409	0.647	0.386	0.483	0.799
Changchun EurAsia Group Co. Ltd.	0.221	0.227	0.973	0.136	0.193	0.704
Changchun Department Store Co. Ltd.	0.17	0.174	0.975	0.134	0.162	0.831
Chaoshifa Co. Ltd.	0.092	0.148	0.623	0.255	0.365	0.699
Chengdu Department Emporium Co. Ltd. (Group)	0.697	0.702	0.993	0.438	0.443	0.989
Chengdu People's Department Store (Group) Co. Ltd.	0.131	0.243	0.539	0.157	0.249	0.631
China Shandong Silver Plaza Co. Ltd.	0.177	0.178	0.998	0.163	0.248	0.656
Chongqing Department Store Co. Ltd.	0.838	0.977	0.858	0.216	0.25	0.867
Citic Development-Shenyang Commercial Building (Group) Co. Ltd.	0.208	0.238	0.876	0.197	0.225	0.875
Dashang Group	0.248	0.29	0.855	0.181	0.235	0.77
Dazhong Electronics Co. Ltd.	0.682	0.689	0.99	0.898	1.00	0.898
Five Star Appliance	0.815	0.815	1.00	0.167	0.182	0.918
Guangzhou Grandbuy Co. Ltd.	0.466	0.664	0.703	0.341	0.575	0.594
Guangzhou Friendship Store Co. Ltd.	0.293	0.396	0.739	0.268	0.338	0.793
Hangzhou Jiebai (Group) Co. Ltd.	0.161	0.316	0.51	0.251	0.321	0.782
Hualian Supermarket Holdings Co. Ltd.	0.067	0.074	0.906	0.057	0.125	0.458
Hunan Friendship&Apollo Co. Ltd.	1.00	1.00	1.00	0.123	0.137	0.895
Jiadelu Supermarket	0.084	0.089	0.943	0.101	0.13	0.777
Junefield SOGO, Beijing	0.501	0.503	0.997	0.323	0.363	0.889
Intime Department Store (Group) Co. Ltd.	1.00	1.00	1.00	0.424	0.457	0.927
Maoye Group	0.278	0.29	0.958	0.088	0.096	0.918
Nanchang Department Store Co. Ltd.	0.267	0.269	0.991	0.123	0.147	0.834
Nanjing Xin Jie Kou department store Co. Ltd.	0.341	0.347	0.983	0.581	1.00	0.581
Nanjing Central Emporium Co. Ltd.	0.223	0.262	0.852	0.185	0.213	0.867
Nonggongshang Supermarket (Group) Co., Ltd.	0.273	1.00	0.273	0.102	1.00	0.102
Pacific Department Store Co. Ltd. (Shanghai)	0.5	0.965	0.518	0.33	0.447	0.738
Parkson	1.00	1.00	1.00	0.469	0.482	0.973
RT Mart (Shanghai)	0.94	0.959	0.98	1.00	1.00	1.00
Sanjiang Shopping Club Co. Ltd.	0.278	0.368	0.757	0.225	0.378	0.595
Sanlian Commerce Co. Ltd.	1.00	1.00	1.00	0.571	1.00	0.571
Shanghai New World Co. Ltd.	0.307	0.31	0.992	0.213	0.219	0.971
Shanghai No. 1 Department Store Co. Ltd.	0.424	0.449	0.942	0.233	0.248	0.94
Shanghai No. 1 Yaohan Co. Ltd.	0.48	0.481	0.998	0.4	0.451	0.889
Shenyang Commercial City Co. Ltd.	0.076	0.129	0.588	0.161	0.197	0.815
Shenzhen Vanguard Super Department Co.Ltd.	0.148	0.149	0.999	0.221	0.272	0.812
Shenzhen Shirble Department Store Co. Ltd.	0.246	0.296	0.831	0.154	0.161	0.961
Shenzhen Sundan(China-Store) Stock Co. Ltd.	0.624	0.626	0.995	0.218	0.316	0.691
Shijiazhuang Beiguo Renbai Group corp.	0.14	0.217	0.644	0.127	0.179	0.71
Shuangan Department Store Co. Ltd.	0.683	1.00	0.683	0.652	0.701	0.929
Suning Appliance Co. Ltd.	1.00	1.00	1.00	1.00	1.00	1.00
Suoguo Supermarket Co. Ltd.	0.147	0.148	0.996	0.113	0.13	0.871
Trust Mart (Guangzhou)	0.223	0.352	0.634	0.151	0.161	0.937
Tianjin Quanyechang (Group) Co. Ltd.	0.211	0.364	0.58	0.377	0.465	0.811
Wu Mart	0.234	0.241	0.971	0.333	0.343	0.969
Wuhan Department Store Group Co. Ltd.	0.284	0.285	0.997	0.21	0.385	0.545
Wuxi Commercial Mansion Co. Ltd.	0.234	0.311	0.752	0.431	0.44	0.979
Xinjiang Friendship (Group) Co. Ltd.	0.18	0.238	0.755	0.22	0.268	0.821
Xinjiang Machinery and Electronics Equipment Co. Ltd.	1.00	1.00	1.00	0.908	1.00	0.908
Yongle Appliance Co. Ltd.	0.311	0.313	0.994	0.579	1.00	0.579
Zhongnan Commercial (Group) Co. Ltd.	0.143	0.144	0.994	0.12	0.201	0.599
Zibo Commercial Mansion Co. Ltd.	0.173	0.203	0.854	0.189	0.221	0.856

efficiency change and technology change. It can be seen that the progress of MPI for Beijing Cuiwei was contributed by a significant increase in technical efficiency change (1.719) and a slight increase in technology change (1.037) over the time. The change in technical efficiency is the diffusion of best-practice technology in the management of the activity and is attributed to investment planning, technical experience, and management and organization in the firms. Hence, it can be concluded that the diffusion of

best-practice technology in Beijing Cuiwei improved in the period, and the improvement of MPI is contributed more by better efficiency progress than technology improvement. Moreover, for the period under analysis, we verify that there is an increase in the VRS technical efficiency change (1.47) and scale efficiency change (1.169). The improvement in pure technical efficiency implies that Beijing Cuiwei might have conducted investment in organizational factors in accordance with the company

Table 5
A summary of DEA results.

	DEA efficiency score for 2002			DEA efficiency score for 2003		
	CRS Effi.	VRS Effi.	Scale Effi.	CRS Effi.	VRS Effi.	Scale Effi.
Minimum	0.067	0.074	0.273	0.057	0.096	0.102
Maximum	1.000	1.000	1.000	1.000	1.000	1.000
Mean	0.420	0.489	0.851	0.358	0.451	0.803
Std. deviation	0.299	0.315	0.180	0.264	0.300	0.171
Number of efficient firms	7	10	8	4	11	4
Number of firms with efficiency score between 0.5 and 1.0	12	12	51	9	7	55
Number of firms with efficiency score less than 0.5	42	39	2	48	43	2
Total firms	61	61	61	61	61	61

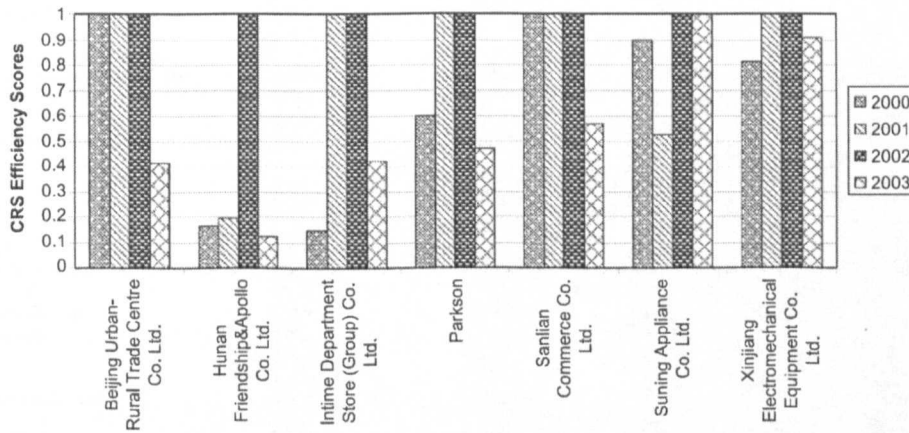


Fig. 2. The pattern of CRS efficiency scores of seven efficient firms during 2000–2003.

management, for example better balance between inputs and outputs, and efficient quality management.

As illustrated in Table 6, among 38 retailers that suffered regress in MPI, Shanghai No. 1 Department Store revealed the highest regress (0.367) during the period, and the next one is Chongqing Department Store (0.495). Technological change is the result of innovation, i.e. the adoption of new technologies, and communication system, by the best-practice firms. Table 6 shows that 16 retail retailers might have introduced the advanced and efficient retailing technologies over the previous 4 years. Let us undertake a further analysis, Zhongnan Commercial revealed the highest progress (1.128) in terms of technology change, it can be argued that Zhongnan Commercial obtained better achievements than other retailers in adopting efficient technologies for retailing operations. It is followed by Trust Mart (Guangzhou) (1.097), the retailer also seems to achieve better than others. In addition, as can be seen from Table 6, 61 retail firms considered in our study obtained various levels of improvement or regress in the terms of VRS technical efficiency change and scale efficiency change.

In the light of the above analysis, it can be concluded that 61 retailers examined in this study experienced progress, regress and no change in MPI over the previous 4 years 2000–2003. 23 out of 61 (about 38 percent) retail firms registered progress in terms of MPI during the period considered. Also, 16 retailers seem to obtain good achievements on introducing efficient technologies for retailing operations.

4.3. Drivers of efficiency using bootstrapped Tobit regression

We conducted both Tobit regression and bootstrapped Tobit regression analysis. Recent DEA literature supports using

bootstrapped Tobit regression in order to overcome the problem of inherent dependency of efficiency scores when used in regression analysis (Xue and Harker, 1999; Simar and Wilson, 2007). Hence we report the results of bootstrapped Tobit regression in this paper. The Stata software program (version 10.0) was used to carry out the bootstrapped Tobit analysis. In order to be more objective and reliable, we undertook bootstrapped Tobit analysis by considering the impact of one variable at a time instead of using a multiple regression equation. The result of analysis is presented in the Table 7. The observed coefficients, *t*-ratios, Wald χ^2 , $\text{prob} > \chi^2$, pseudo R^2 , Sigma, and Log likelihood are reported in this table. It reveals that efficiency scores are positively and statistically significant with only one variable, namely retail characteristic. It suggests retail characteristic can be considered as a driving force influencing efficiency of retailers. Other four variables, namely head office location, firm nationality, years of incorporation, and ownership types do not have significant relationship with efficiency.

This result highlights that the efficiency of department stores seem to be higher than that of the retailers in other retail subsectors in China. The efficiency, on an average, increased by about 12.22 percent when we move from home appliances retailing, to food retailing, and to department store retailing. The DEA analysis also obtained the same results (see Table 4), in 2002 there are three out of seven (43 percent) CRS efficient retailers are department stores, and three firms are home appliances, and only one firm is food retailer, i.e. RT Mart. Also, two out of four CRS efficient firms are department stores in 2003, i.e. Beijing Cuiwei and Beijing Hualian Department Store, and one firm (Suning Appliance) is home appliances retailer. And only RT Mart achieved 100% CRS efficiency in the food retail sector. Section 5 provides a discussion on this and additional results.

Table 6
MPI analysis of 61 retail firms during 2000–2003.

Retail firm	Technical efficiency change	Technology change	VRS technical efficiency change	Scale efficiency change	MPI
Anhui Commercial Capital Co. Ltd.	1.627	0.775	1.501	1.084	1.26
Baida Group Co. Ltd.	0.823	0.913	0.875	0.94	0.751
Beijing Cuiwei Group	1.719	1.037	1.47	1.169	1.783
Beijing Hualian Department Store Co. Ltd.	1.198	0.879	1.059	1.132	1.053
Beijing Jingkelong Co. Ltd.	1.404	1.028	1.328	1.058	1.443
Beijing North Star Shopping Center	0.795	0.909	0.887	0.896	0.723
Beijing Xidan Market Co. Ltd.	1.113	0.821	1.083	1.027	0.913
Beijing Yansha Youyi Shopping City Co. Ltd.	1.168	0.798	1.118	1.045	0.932
Beijing Wangfujing Department Store Co. Ltd. (Group)	1.319	0.775	1.254	1.052	1.023
Beijing Urban-Rural Trade Centre Co. Ltd.	0.745	0.842	0.893	0.834	0.627
Binjiang Commercial Mansion Co. Ltd.	1.076	0.942	1.041	1.034	1.014
Changchun EurAsia Group Co. Ltd.	0.875	1.023	0.928	0.943	0.895
Changchun Department Store Co. Ltd.	0.861	1.014	0.856	1.005	0.873
Chaoshifa Co. Ltd.	1.275	0.965	1.324	0.963	1.23
Chengdu Department Emporium Co. Ltd. (Group)	1.212	1.087	0.942	1.287	1.318
Chengdu People's Department Store (Group) Co. Ltd.	0.999	0.931	1.071	0.933	0.93
China Shandong Silver Plaza Co. Ltd.	1.038	1.008	1.175	0.883	1.047
Chongqing Department Store Co. Ltd.	0.633	0.782	0.663	0.955	0.495
Citic Development-Shenyang Commercial Building (Group) Co. Ltd.	1.366	0.936	1.148	1.19	1.279
Dashang Group	0.973	0.902	1.014	0.96	0.878
Dazhong Electronics Co. Ltd.	1.342	1.007	1.367	0.981	1.352
Five Star Appliance	0.551	1.046	0.567	0.972	0.576
Guangzhou Grandbuy Co. Ltd.	1.078	0.891	1.088	0.991	0.961
Guangzhou Friendship Store Co. Ltd.	0.644	0.888	0.696	0.926	0.572
Hangzhou Jiebai (Group) Co. Ltd.	0.942	1.029	0.932	1.01	0.969
Hualian Supermarket Holdings Co. Ltd.	0.931	0.688	1.075	0.866	0.641
Hunan Friendship&Apollo Co. Ltd.	0.905	0.911	0.905	1.00	0.825
Jiadeli Supermarket	1.012	1.023	0.989	1.023	1.035
Junefield SOGO, Beijing	1.278	0.975	1.29	0.991	1.246
Intime Department Store (Group) Co. Ltd.	1.42	0.898	1.186	1.197	1.276
Maoye Group	0.752	0.798	0.745	1.01	0.6
Nanchang Department Store Co. Ltd.	1.095	0.978	0.979	1.119	1.071
Nanjing Xin Jie Kou department store Co. Ltd.	1.118	0.862	1.295	0.863	0.964
Nanjing Central Emporium Co. Ltd.	1.062	0.936	0.995	1.067	0.994
Nonggongshang Supermarket (Group) Co., Ltd.	0.795	0.832	1.00	0.795	0.661
Pacific Department Store Co. Ltd. (Shanghai)	0.778	0.882	0.825	0.942	0.686
Parkson	0.921	0.862	0.86	1.071	0.794
RT Mart (Shanghai)	1.659	0.943	1.437	1.154	1.564
Sanjiang Shopping Club Co. Ltd.	1.006	0.995	1.044	0.963	1.001
Sanlian Commerce Co. Ltd.	0.83	1.082	1.00	0.83	0.898
Shanghai New World Co. Ltd.	0.747	1.029	0.737	1.012	0.768
Shanghai No. 1 Department Store Co. Ltd.	0.616	0.597	0.628	0.98	0.367
Shanghai No. 1 Yaohan Co. Ltd.	0.872	0.942	0.777	1.122	0.821
Shenyang Commercial City Co. Ltd.	1.159	1.035	1.159	1.00	1.199
Shenzhen Vanguard Super Department Co.Ltd	1.125	0.796	1.146	0.982	0.895
Shenzhen Shirble Department Store Co. Ltd.	0.718	0.952	0.607	1.183	0.684
Shenzhen Sundan (China-Store) Stock Co. Ltd.	0.638	0.886	0.681	0.938	0.565
Shijiazhuang Beiguo Renbai Group corp.	1.029	0.933	0.975	1.055	0.96
Shuangan Department Store Co. Ltd.	1.302	0.806	1.161	1.121	1.049
Suning Appliance Co. Ltd.	1.037	0.925	1.00	1.037	0.959
Suoguo Supermarket Co. Ltd.	0.933	0.975	0.951	0.981	0.909
Trust Mart (Guangzhou)	0.824	1.097	0.785	1.05	0.904
Tianjin Quanyechang (Group) Co. Ltd.	1.002	0.922	1.019	0.983	0.923
Wu Mart	1.23	0.946	1.196	1.028	1.163
Wuhan Department Store Group Co. Ltd.	0.594	1.072	0.727	0.817	0.637
Wuxi Commercial Mansion Co. Ltd.	1.034	0.957	1.002	1.033	0.99
Xinjiang Friendship (Group) Co. Ltd.	1.054	0.896	1.034	1.019	0.945
Xinjiang Machinery and Electronics Equipment Co. Ltd.	1.037	0.997	1.027	1.011	1.035
Yongle Appliance Co. Ltd.	1.185	0.892	1.406	0.843	1.057
Zhongnan Commercial (Group) Co. Ltd.	0.855	1.128	0.992	0.862	0.965
Zibo Commercial Mansion Co. Ltd.	1.065	0.996	0.988	1.078	1.061
Mean	0.991	0.923	0.991	1.00	0.915

Note: All Malmquist index averages are geometric means.

5. Discussion and managerial implications

In this section, we will critically analyze the DEA, MPI, and bootstrapped Tobit regression results described in Section 4. On the basis of this, managerial implications are identified.

5.1. Discussion

As noted previously, DEA analysis suggests that there seems to be a linkage between firm nationality (local and foreign) and retail efficiency. But, considering all firms (efficient and inefficient), the

Table 7

Results of bootstrapped Tobit regression with $C = 500$ samples of size 122.

Environmental variables	Observed coeff.	Wald χ^2	Prob. > χ^2	Pseudo R^2	Sigma	Log likelihood
Head office location	-0.018 (-1.03) ^a	1.06	0.304	0.022	0.304	-27.903
Firm nationality	0.028 (0.36)	0.13	0.721	0.002	0.305	-28.480
Years of incorporation	0.002 (0.76)	0.58	0.445	0.008	0.305	-28.301
Ownership type	0.059 (0.95)	0.90	0.343	0.018	0.304	-28.033
Retail characteristic	0.122* (2.94)	8.65	0.003	0.169	0.293	-23.718

Note: Dependent variable is VRS efficiency scores in 2002 and 2003;

^a Significant are at 1 percent level.^{*} The numbers in parentheses are t-ratios.

bootstrapped Tobit regression did not find any evidence that firm nationality is a significant variable. This surprising result may be due to the fact that the numbers of inefficient firms are equally distributed among foreign and local firms. Our DEA analysis indicates that about 92.6 percent of inefficient retailers are local retail firms in 2002. Thirty-three domestic retailers' CRS efficiency scores are all below the average score of 0.42, but 6 out of 10 foreign retail firms' CRS efficiency scores are above the average score. Moreover, as mentioned in Section 3.3, a number of foreign retailers reported negative profits, such as Wal-Mart, Metro, Carrefour, IKEA, and B&Q. Thus, some "true" foreign firms from EU and USA are not observed in this study. All the 10 foreign retailers examined in our study are mainly from Hong Kong and Taiwan or other East Asian countries such as Malaysia and Japan. Of the two CRS efficient retail firms, one is Taiwanese-controlled retailer, and the other is Malaysian-owned firm. Compared with "true foreigners", these Chinese investors have advantages in language, cultural traits, regulations, and ethnic links. A number of studies (e.g. O'Grady and Lane, 1996; Johanson and Vahlne, 1990) have implied that psychically close countries are more similar and, because similarities are easier to manage than differences, it is expected that businesses will achieve greater success in similar markets. Our findings are contrary to Yu and Ramanathan's (2008) study, the authors found that the local or foreign ownership is a driving factor influencing retail efficiency in the UK. Foreign retail firms are more efficient than local retailers in the UK.

Tobit analysis in our study presents that retail characteristic is a driver of efficiency, and department stores in China are on average more efficient than the firms in food and home appliances retailing. DEA analysis also indicates that near 50 percent of efficient retailers in 2002 and 2003 are department stores. And many department stores have registered progress in terms of MPI. A department store is a retail establishment that specializes in selling a wide range of products without a single predominant merchandise line. The department store is a well-established and popular retail format in China. As shown in Table 3, most retailers examined in this study are department stores. In China, department stores usually offer a wide assortment of products and services including foods, apparel, furniture, appliances, electronics, and additionally select other lines of products such as hardware, toiletries, cosmetics, jewellery, toys, and sporting goods. Many Chinese department stores were started as city government projects. Other major chains evolved from state-owned enterprises operated under the planned economy system. The Chinese government gives these retailers preferential treatment in the form of subsidized rents and reduced taxes (Sternquist, 2001).

Ownership type does not influence retail efficiency. This finding is contrary to the studies that have been done among China's state-owned manufacturers. A number of previous studies identified that state-owned manufacturing firms in China are consistently less profitable than privately owned manufacturers (e.g. Wei et al., 2002). In China, private firms emerged in the

1980s, and their number and output have since dramatically increased. The rapid expansion of non-state firms has greatly changed industrial output composition by ownership types in China. On the other hand, since the mid-1990s hundreds of thousands of small- and medium-sized SOEs have been restructured, sold off, closed down, or leased out. In particular, many have re-organized themselves as shareholding firms. SOEs have benefited a lot from the profound reform. From 1995 to 2002, the number of Chinese SOEs in the industrial sector was reduced from 77,600 to about 42,000 while total profit surged by 163.6 percent to US\$27.6 billion (People's Daily, 2003). The same phenomenon also can be seen in China's retail industry, many state-owned department stores that managed to escape bankruptcy were forced to undertake major restructuring and re-positioning of their retail operations. Particularly, a large number of state-owned department stores have been restructured into joint-stock firms, in which the Chinese government merely holds a shareholding interest. Most efficient retailers in our study have re-organized themselves as private limited or public-quoted firms from SOEs.

Head office location is not a determinant factor in a retailer's efficiency. In this study, based on economic development and consumer purchasing power, head office location in China's market is classified into seven regions, i.e. South, East, North, Central, Southwest, Northwest, and Northeast (Cui and Liu, 2000) (see Fig. 3). South and East China represent China's "growth markets". They are more advanced in economic development and have more affluent consumers than hinterland provinces (Cui and Liu, 2000), and they consist of the municipality of Shanghai, Guangzhou, and Shenzhen as well as the provinces of Zhejiang and Jiangsu. Many retailers examined in this study have established their head offices and chain stores in the areas. The "emerging markets" in North, Central and Southwest of China have become attractive to global firms. North China (Hua-bei), including Beijing, Tianjin, and the provinces of Hebei and Shandong, has been growing fast over the last few years and attracted investment from many countries. In addition, to bridge the gap between the interior and the coastal areas, central government has launched a "Fupin" (help the poor) campaign and encouraged more investment in Northwest China. Hence, this regional market such as Inner Mongolia, Shanxi, Shan'xi, Gansu, Ningxia, Xinjiang, Qinghai, and Tibet (see Fig. 3) have become increasingly attractive for subsequent roll-outs. One of the efficient retail firms in this study is located in Xinjiang.

In addition, Tobit analysis indicates that years of incorporation are not the efficiency driver. The reasons for this result may be that vast majority of the 61 retail firms were established in the 1990s, especially most state-owned department stores were restructured into listed companies in the mid-1990s. It also can be agreed that new retailers could be easier to adapt the new technology and business management, which normally generate improved performance. Yu and Ramanathan (2008) also did not find any significant relationship between years of incorporation and retail efficiency. These results contrast with the significant



Fig. 3. China's seven regional markets. Source: Cui and Liu (2000).

positive relationship found by Dobson and Gerrard (1989) and suggested that old firms have not derived advantages from reputation effects or accumulated experience. Glancey (1998) also concluded that young firms display significantly higher growth rates than old firms.

5.2. Managerial implications

On the basis of the discussion above, the main managerial implications of this study are identified. As mentioned in Section 4.2, the results of MPI suggest Beijing Cuiwei achieved the highest improvement in MPI. Beijing Cuiwei is one of the biggest department stores in Beijing. According to its report, over the last few years, Beijing Cuiwei has introduced new retailing technologies into its three chain stores. However, there were some firms suffered regression in MPI, and some retailers registered regress in terms of technology change in the period. This means that these retail firms might have not adopted or implemented effectively new technologies in their operations procedures. Technological change is one of the most important elements of future competition in retailing, and correct application of new technologies gives significant competitive advantages to firms achieving the innovation process and improving retail efficiency (Sellers-Rubio and Mas-Ruiz, 2007). Technical efficiency is a consequence of various factors such as managerial policies, company financial condition, and scale. Therefore, it can be suggested that these retailers should review the operational procedures that would improve the efficiency of operations, and adoption of new technology in retail operations.

More recently, as consumers have become more demanding of choice, the specialized retailers should proliferate their product ranges, notably the supermarkets originally specializing in food. They should provide customers with diversified products and services when competing with department stores, including discount clothes, appliances, electronics, consumer financial services, and consumer telecoms. In fact, a few international food retailers such as Tesco and Carrefour have begun diversifying their products and services in the supermarket or hypermarket.

Moreover, to secure a competitive footing in the domestic market, the retailers should open new stores or set up their head offices in the emerging markets such as Central, Southwest, and Northwest China. While the Chinese government has launched favorable policies for investing in these areas, the land, labor, and living costs are extremely rising in popular coastal investment destinations. In addition, although cultural and businesses difference might create obstacles to successful market entry and adaptation, these obstacles can be overcome over time through learning. Therefore, foreign retailers should "think local" and fit their business activities to local circumstances within China. In particular, some foreign firms that generated low or negative profits in China should assess their operational procedures that might influence operational efficiency. On the other hand, local retail firms should take full advantage of their resources in terms of their specific public relations and rich knowledge of local consumer habits. Their urgent task is undertaking self-analysis and identifying their unique advantages that enable the business to survive against competition from foreign retailers.

6. Conclusions

This study aims to investigate economic efficiency of 61 retail firms working in China between 2000 and 2003. To our knowledge, this seems to be the first study to analyze the performance efficiency of retailers in China, and consequently the whole China's retail sector. The measurements have been undertaken using a popular benchmarking tool of the data envelopment analysis (DEA), as well as Malmquist productivity index (MPI) and a bootstrapped Tobit regression model.

We have used the DEA methodology to estimate efficiency on a sample of 61 retail firms during the period considered. The results using data for the year 2002 and 2003 have shown that only seven in 2002 and four in 2003 retailers are considered as efficient under CRS assumption. The general conclusion is that the average efficiency of retail firms in China was less than 45 percent in 2002 and 37 percent in 2003. Benchmarks are provided for improving the operations of poorly performing retailers. Then, the MPI has

been computed to estimate productivity change. The results have shown that about 37.3 percent (23 out of 61) of retail firms have expressed progress in terms of MPI during 2000 and 2003, especially Beijing Cuiwei has achieved the highest improvement in MPI, while Shanghai No. 1 Department Store has suffered the highest regress in productivity during the period considered. Finally, we have carried out a bootstrapped Tobit analysis, under this the determinants of economic efficiency were investigated. The analysis has verified that retail characteristic is the potential driving force that might influence retail efficiency, and department stores seemed to be more efficient than the retailers in other retail subsectors in China. The other factors, such as head office location, firm nationality, years of incorporation, and ownership types are not the efficiency drivers.

This study has some limitations. DEA is a model that evaluates the relative efficiency of different homogeneous decision-making units (DMUs), based on linear programming techniques. However, although all the included firms are retailers, the future study should take into account that the market, services and business strategy are very different among retailers (e.g. Wu Mart vs. Five Star Appliance). Although we tried to collect data from reliable and multiple sources in this study, some information about retail firms in recent years is still not available. Most of the data/information is in Chinese, hence errors might occur in the course of translation. Moreover, owing to the special Chinese business culture, some data are not reliable. For instance, when we collected data from China Market Statistical Yearbook (2000–2003), we found that a few retailers achieved the identical sales and profits during the different 2 years. A number of foreign retailers in China that reported negative profits were not examined in our study. Therefore, the data set is short, and some factors have their own difficulties in the statistical analysis. The conclusions are limited. Reducing the number of observations in the DEA variables may increase the possibility that a given observation will be considered relatively efficient. Recently, a number of studies have developed the related models to handle negative data in DEA (e.g. Portela et al., 2004). So, further research is needed to do in this area and to also confirm the results obtained in our study.

Acknowledgement

The authors would like to thank Miss Qing Li for her support of data collection in China.

References

- Athanassopoulos, A., 1995. Performance-improvement decision aid systems (PIDAS) in retailing organizations using data envelopment analysis. *The Journal of Productivity Analysis* 6, 153–170.
- Barros, C.P., 2006. Efficiency measurement among hypermarkets and supermarkets and the identification of the efficiency drivers: a case study. *International Journal of Retail & Distribution Management* 34 (2), 135–154.
- Barros, C.P., Alves, C., 2003. Hypermarket retail store efficiency in Portugal. *International Journal of Retail & Distribution Management* 31 (11), 549–560.
- Barros, C.P., Alves, C., 2004. An empirical analysis of productivity growth in a Portuguese retail chain using Malmquist productivity index. *Journal of Retailing and Consumer Services* 11 (5), 269–278.
- Boame, A.K., 2004. The technical efficiency of Canadian urban transit systems. *Transportation Research Part E* 40, 401–416.
- Casu, B., Molyneux, P., 2000. A Comparative study of efficiency in European banking. Unpublished Working Paper, School of Accounting, Banking and Economics, University of Wales.
- Caves, D.W., Christensen, L.R., Diewert, W.E., 1982. The economic theory of index numbers and the measurement of input and productivity. *Econometrica* 50, 1393–1414.
- Charnes, A., Cooper, W.W., Rhodes, E., 1978. Measuring the efficiency of decision making units. *European Journal of Operational Research* 2, 429–444.
- China Chain Store & Franchise Association (CCFA), 2008. China's Top 100 Retail Chains in 2007. Available at <http://www.ccfa.org.cn/english/news_show_2005.jsp?id=47033> (accessed 2 July 2008).
- Coelli, T.J., Rao, P., Battese, G.E., 2005. *An Introduction to Efficiency and Productivity Analysis*, second ed. Springer, Berlin.
- Cooper, W.W., Seiford, L.M., Tone, K., 2007. *Data Envelopment Analysis: A Comprehensive Text with Models, Applications, References and DEA-Solver Software*. Springer, New York.
- Cui, G., Liu, Q., 2000. Regional market segments of China: opportunities and barriers in a big emerging market. *Journal of Consumer Marketing* 17 (1), 55–72.
- Dobson, S., Gerrard, R., 1989. Growth and profitability in the Leeds engineering sector. *Scottish Journal of Political Economy* 36 (4), 334–352.
- Donthu, N., Yoo, B., 1998. Retail productivity assessment using data envelopment analysis. *Journal of Retailing* 74 (1), 89–105.
- Doutt, J.T., 1984. Comparative productivity performance in fast food retail distributions. *Journal of Retailing* 60, 98–106.
- Dubelaar, C., Bhargava, M., Ferrarin, D., 2002. Measuring retail productivity: what really matters? *Journal of Business Research* 55 (5), 417–426.
- Efron, B., 1979. Bootstrap methods: another look at the Jackknife. *Annals of Statistics* 7, 1–26.
- Färe, R.S., Grosskopf, S., Lovel, C.A.K., 1994. *Production Frontiers*. Cambridge University Press, Cambridge, MA.
- Glancey, K., 1998. Determinants of growth and profitability in small entrepreneurial firms. *International Journal of Entrepreneurial Behavior & Research* 4 (1), 18–27.
- Goldman, A., 1992. Evaluating the performance of the Japanese distribution system. *Journal of Retailing* 68 (1), 11–50.
- Hoff, A., 2007. Second stage DEA: comparison of approaches for modeling the DEA score. *European Journal of Operational Research* 181 (1), 425–435.
- Huaxia Times, 2005. Wal-Mart: marching into downtown area. Available at <http://english.8168168.com/news/dispatch_news.asp?id=179&Class=1> (accessed 20 November 2007).
- Johanson, J., Vahlne, J.E., 1990. The mechanism of internationalization. *International Marketing Review* 7 (4), 11–24.
- Kamakura, W.A., Lenartowicz, T., Ratchford, B.T., 1996. Productivity assessment of multiple retail outlets. *Journal of Retailing* 72 (4), 333–356.
- Keh, H.T., Chu, S., 2003. Retail productivity and scale economies at the firm level: a DEA approach. *Omega* 31, 75–82.
- Kono, T., 1999. A strong head office makes a strong company. *Long Range Planning* 32 (2), 225–236.
- KPMG, 2005. Retail outlook for China. The Hong Kong Member of KPMG International, Hong Kong.
- Liu, K., 2007. Unfolding the post-transition era: the landscape and mindscape of China's retail industry after 2004. *Asia Pacific Journal of Marketing and Logistics* 19 (4), 398–412.
- Lusch, R.F., Serpkencl, R.R., 1990. Personal differences, job tension, job outcomes and store performance: a study of retail store managers. *Journal of Marketing* 54 (1), 85–101.
- Lusch, R.F., Serpkencl, R.R., Orvis, B., 1995. Determinants of retail store performance: a partial examination of selected elements of retailer conduct. In: Grant, K., Walker, I. (Eds.), *World Marketing Congress*, vol. 7, pp. 95–104.
- Mägi, A., Julander, C.R., 1996. Perceived service quality and customer satisfaction in a store performance framework: an empirical study of Swedish grocery retailers. *Journal of Retailing and Consumer Services* 3 (1), 33–41.
- Ministry of Commerce of the People's Republic of China (Mofcom), 2007. Available at <<http://english.mofcom.gov.cn/static/column/statistic/foreigninvestment.html/1>> (accessed 15 November 2007).
- National Bureau of Statistics of China, 2000. *China Market Statistical Yearbook—2000*. China Statistics Press, Beijing.
- National Bureau of Statistics of China, 2001. *China Market Statistical Yearbook—2001*. China Statistics Press, Beijing.
- National Bureau of Statistics of China, 2002. *China Market Statistical Yearbook—2002*. China Statistics Press, Beijing.
- National Bureau of Statistics of China, 2003. *China Market Statistical Yearbook—2003*. China Statistics Press, Beijing.
- O'Grady, S., Lane, H., 1996. The psychic distance paradox. *Journal of International Business Studies* 27 (2), 309–333.
- Oxford Institute of Retail Management, 2004. *Assessing the Productivity of the UK Retail Sector*. Templeton College, University of Oxford.
- People's Daily, 2003. China reforms state-owned enterprises through M&A. Available at <http://english.peopledaily.com.cn/200312/09/eng20031209_129948.shtml> (accessed 24 November 2007).
- Perrigot, R., Barros, C.P., 2008. Technical efficiency of French retailers. *Journal of Retailing and Consumer Services* 15 (4), 296–305.
- Pilling, B.K., Henson, S.W., Yoo, B., 1995. Competition among franchises, company-owned units and independent operations: a population ecology application. *Journal of Marketing Channels* 4 (1), 177–195.
- Portela, M., Thanassoulis, E., Simpson, G., 2004. Negative data in DEA: a directional distance approach applied to bank branches. *Journal of the Operational Research Society* 55, 1111–1121.
- Ramanathan, R., 2003. *An Introduction to Data Envelopment Analysis*. Sage, New Delhi.
- Ratchford, B.T., 2003. Has the productivity of retail food stores really declined? *Journal of Retailing* 79, 171–182.
- Sarkis, J., Weinrach, J., 2001. Using data envelopment analysis to evaluate environmentally conscious waste treatment technology. *Journal of Cleaner Production* 9, 417–427.

- Sellers-Rubio, R., Mas-Ruiz, F., 2006. Economic efficiency in supermarkets: evidences in Spain. *International Journal of Retail & Distribution Management* 34 (2), 155–171.
- Sellers-Rubio, R., Mas-Ruiz, F., 2007. An empirical analysis of productivity growth in retail services: evidence from Spain. *International Journal of Service Industry Management* 18 (1), 52–69.
- Simar, L., Wilson, P., 2007. Estimation and inference in two stage, semi parametric models of production processes. *Journal of Econometrics* 136 (1), 31–64.
- Simar, L., Wilson, P.W., 1999. Estimating and bootstrapping Malmquist indices. *European Journal of Operational Research* 115, 459–471.
- Simar, L., Wilson, P.W., 2000. Statistical inference in nonparametric frontier models: the state of the art. *Journal of Productivity Analysis* 13, 49–78.
- Sternquist, B., 2001. An opening door policy. *Chain store Age* 77 (1), 62–63.
- Thomas, R.R., Barr, R.S., Cron, W.L., Slocum Jr., J.W., 1998. A process for evaluating retail store efficiency: a restricted DEA approach. *International Journal of Research in Marketing* 15 (5), 487–503.
- Wei, Z., Varelab, O., Hassanb, M.K., 2002. Ownership and performance in Chinese manufacturing industry. *Journal of Multinational Financial Management* 12 (1), 61–78.
- Wen, H., Lim, B.H., Huang, S., 2003. Measuring e-commerce efficiency: a data envelopment analysis (DEA) approach. *Industrial Management & Data Systems* 103 (9), 703–710.
- Xue, M., Harker, P.T., 1999. Overcoming the inherent dependency of DEA efficiency scores: a bootstrap approach. Working Paper, Wharton Financial Institutions Center, University of Pennsylvania.
- Yu, W., Ramanathan, R., 2008. An assessment of operational efficiencies in the UK retail sector. *International Journal of Retail & Distribution Management* 36 (11), 861–882.
- Zhu, J., 2000. Multi-factor performance measure model with an application to Fortune 500 companies. *European Journal of Operational Research* 123, 105–124.

Appendix 2: Effects of Firm Characteristics on the Link between Business Environment and Operations Strategy: Evidence from China's Retail Sector

Drawing on contingency theory, this paper aims to examine the impacts of firm characteristics (such as firm size, firm age, firm nationality, legal form of ownership, and retail sub-sector) on the nature of relationships between business environmental factors and operations strategy. This paper has been published in *International Journal of Services and Operations Management*.

Effects of firm characteristics on the link between business environment and operations strategy: evidence from China's retail sector

Wantao Yu and Ramakrishnan Ramanathan*

Nottingham University Business School,
Jubilee Campus, Wollaton Road,
Nottingham NG8 1BB, UK

Fax: +44-115-846-6341

E-mail: Wantao.Yu@bucks.ac.uk

E-mail: ram.ramanathan@nottingham.ac.uk

*Corresponding author

Abstract: Drawing on contingency theory, this study aims to examine the impacts of firm characteristics on the nature of relationships between business environmental factors and operations strategy choices. This study uses a path analytic framework to understand the effects for a sample of retail firms in China. Our findings suggest that the strongest business environmental factors that influence the degree of emphasis placed on operations strategy choices is environmental dynamism (such as changes in retail technology and innovations in new service development). When faced with the same environmental stimuli, firms with different firm characteristics (such as firm size, firm age, and firm nationality) choose to emphasise different operations strategies. For instance, the impact of labour availability on operations strategy choices is different for big and small firms. The effect of environmental dynamism on operations strategy choice seems to be much stronger for local firms than foreign firms in China. Compared with old firms, new firms appear to pay much more attention to competitive market forces during their operations strategy choices.

Keywords: business environment; China; firm characteristics; operations strategy; retail.

Reference to this paper should be made as follows: Yu, W. and Ramanathan, R. (xxxx) 'Effects of firm characteristics on the link between business environment and operations strategy: evidence from China's retail sector', *Int. J. Services and Operations Management*, Vol. X, No. Y, pp.000-000.

Biographical notes: Wantao Yu is a Senior Lecturer in Operations Management, at the School of Business and Management, Buckinghamshire New University. His research interests are operations strategy, service operations, and retail logistics. He has published papers in *International Journal of Retail and Distribution Management* and *Journal of Retailing and Consumer Services*. He carried out this research as a PhD student at Nottingham University Business School.

Ramakrishnan Ramanathan has taught operations management and operations research to a variety of students in several countries, including India, Oman, Finland and the UK. His research interests include operations management, supply chains, energy, environment, transport and other infrastructure, optimisation, data envelopment analysis and the analytic hierarchy process. His

research articles have appeared in *Supply Chain Management*, *International Journal of Operations & Production Management*, *Industrial Marketing Management*, *European Journal of Operational Research*, *Omega*, *Computers & Operations Research*, *Journal of Environmental Management*, *Energy Economics*, *Transport Policy*, *Transportation Research*, *IEEE Transactions on Systems, Man and Cybernetics* and *IEEE Transactions on Power Systems*.

1 Introduction

Over the past decades, the content of operations strategy and its development have received a lot of attention in operations management literature. Today's business environment is highly dynamic, and firms are forced to constantly adapt to the fast-changing circumstances (Lowson, 2003). Contingency theory suggests that business environment influences organisational strategy (Porter, 1980; Kim and Lim, 1988). The dynamic and global competitive forces have created a need for revolution in operations strategies to help firms employ appropriate resources that enable innovative designs, production of high quality goods, and speedy responses to changes in the marketplace (Paiva et al., 2008). Therefore, firms seeking to achieve success in an environment of fierce market competition must formulate appropriate operations strategies that are suited to the external environment in which they operate, and employ firm resources in ways that support these strategies (Skinner, 1969; Hayes and Wheelwright, 1984). A few previous studies (e.g., Swamidass and Newell, 1987; Ward et al., 1995; Ward and Duray, 2000; Amoako-Gyampah and Boye, 2001; Amoako-Gyampah, 2003; Badri et al., 2000; Anand and Ward, 2004) have found evidence of a relationship between environmental factors and operations strategy. However, all these studies have concentrated on operations strategy and involved samples drawn from multiple manufacturing industries. Many authors (e.g., Adam and Swamidass, 1989; Roth and Menor, 2003; Koutouvalas et al., 2005; Maguire et al., 2006; Chase and Apte, 2007; Smith-Daniels, 2007) also suggested that operations management researchers should focus more on service firms in order to elucidate specific problems posed by the unique characteristics of services. Furthermore, within the service sector, the economically important and socially significant retail sector has been neglected (Gamble, 2006). Therefore, the purpose of this study is to examine the effects of firm characteristics on the nature of relationships between business environment and operations strategy in the retail sector.

In operations management literature, the relevant assets and skills of a firm include size advantages (Schroder and Sohal, 1999; Amoako-Gyampah and Boye, 2001), operations experience (Douglas and Craig, 1989), and resources available for operations strategy choices (Zahra and Das, 1993). The inclusion of firm size and principal ownership variables would be useful additions to the contingency framework (Amoako-Gyampah and Boye, 2001). Maruchek et al. (1990) suggested that managers indeed do consider the effect of firm size in the development of operations strategy. Amoako-Gyampah and Boye (2001) investigated the significant impacts of firm size and capital structure on operations strategy choices. The authors concluded that firm size and nature of ownership are important factors that influence operations strategy choices. Several scholars (e.g., Schroder and Sohal, 1999; Amoako-Gyampah and Boye, 2001) suggested that future operations management research should aim to include firm

characteristics such as firm size and ownership variables in a more sophisticated contingency framework of the operations practices. However, this topic has not received much attention in the operations management discipline, especially in the service sector. Therefore, research linking firm characteristics and operations strategy choices is worth pursuing.

China provides a particularly interesting setting for this study because of its high levels of economic growth. As one of the main service industries in China, the retail sector has experienced unprecedented development during the transformation process from a centrally-planned to a market economy. However, the high levels of economic development have generated pressures from a wide variety of factors, including rising business costs, increasing consumer awareness, the unpredictability of customer preferences, as well as pressures from the government, regulatory watchdogs, trade unions, and developments in information and communication technologies (Lo et al., 2001). In addition, Jiang et al. (2007) also stated that China brings new research issues and opportunities to the academic world, especially in the field of production and operations management (POM). China-related POM research provides many opportunities for researchers to apply, extend, and challenge existing POM theories and frameworks. However, a review of the literature reveals that relatively little is known about the operations strategies adopted by Chinese retailers. Furthermore, studies of how the managers of retail firms develop operations strategies to survive in a complex and dynamic marketplace have not received any significant attention from service operations researchers. Although a few studies have examined the operating practices in China's manufacturing industries (e.g., Yeung et al., 2009; Zhao et al., 2006; Flynn et al., 2007; Flynn et al., 2010), there are no such studies on the service sector.

To address the important gaps discussed above, a path analytic framework is used in this study to examine the links between business environment factors and operations strategy choices. Essentially, two issues are addressed. Firstly, it is investigated whether there is a linkage between business environment and operations strategy. Secondly, we further investigate how various firm characteristics (e.g., firm size, firm age and firm nationality) influence the choices of competitive operations strategies when a firm is facing a harsh and dynamic environment. This study will identify the roles of firm characteristics on specific relationships between business environmental dimensions (viz.: business cost, labour availability, competitive hostility, and dynamism environment) and operations strategy choices (viz.: low cost, quality, flexibility and delivery performance) in China's retail sector.

This seems to be the first empirical study to investigate how retail managers in China develop competitive operations strategy in order to survive in a highly dynamic and complex environment. This study will be of considerable interest not only to individual retail firms in China in order to help their managers develop appropriate operations strategies, but also to researchers wishing to extend the knowledge base of operations strategy. The results obtained in the study could also provide valuable insights for firms in other developing countries that have economic conditions similar to those of China.

The remainder of this paper is organised as follows. Firstly, based on previous studies, a conceptual framework is proposed. Secondly, some research hypotheses are developed. Thirdly, the design of this study and the methodological procedures are described. Fourthly, the findings of the study are presented and discussed, and a set of managerial implications are drawn. Finally, we conclude with a summary of findings and

conclusions, as well as discuss the main limitations of this study and opportunities for future research.

2 Theory

2.1 *Previous studies*

With increasing competition and advances in technology, firms are facing environments that are extremely complex and dynamic (Andersen, 2004). Environmental uncertainty, and its dimensions of dynamism and heterogeneity, has received extensive coverage in the operations strategy literature. The alignment between environment and operations strategy is critical for firms to achieve success (Skinner, 1969; Hayes and Wheelwright, 1984). Operations strategy literature suggests that it is similarly critical that the operations strategies of firms are suited to the external environments in which they operate (e.g., Skinner, 1969; Leong et al., 1990). Many researchers have stated that operations strategy focuses on developing specific capabilities called 'competitive priorities' (e.g., Wheelwright, 1984; Roth and van der Velde, 1991; Vickery et al., 1997). Despite differences in terminology, there is broad agreement that operations strategy can be expressed in terms of at least four basic competitive priorities: low cost, quality, delivery performance and flexibility (Hayes and Wheelwright, 1984; Wheelwright, 1984; Fine and Hax, 1985; Ward et al., 1998). The necessity of fit of the operations strategy with external environmental factors is supported by a few empirical studies (e.g., Swamidass and Newell, 1987; Ward et al., 1995; Ward and Duray, 2000; Amoako-Gyampah and Boye, 2001; Anand and Ward, 2004; Chi et al., 2009). These studies showed that various dimensions of the environment cause firms to react differently. The main findings of these studies are summarised in Table 1.

The most comprehensive research that postulated an explicit relationship between the environment and operations strategy is by Ward et al. (1995). They used a path analytic framework to study the effects of business environment on operations strategy and performance for a sample of 319 Singapore manufacturers. They identified strong relationships between environmental factors such as labour availability, competitive hostility, and environmental dynamism and the operations strategy choices encompassed by competitive priorities. Higher environmental dynamism sparks significantly more operations strategy emphasis on the delivery performance, flexibility, and quality competitive priorities. This finding was consistent with Swamidass and Newell's (1987) conclusion about the relationship of uncertainty with flexibility. In multiple industry studies, the industry composition of the sample may account for the variability in performance across firms, therefore *industry effects* should be considered (Flynn et al., 1990). Industry effects have been shown to be a surrogate for the effects of business environment (Dess et al., 1990). In addition to exploring substantive questions about the importance of the environment in explaining operations strategy, Ward et al.'s (1995) also demonstrated that environmental variables can provide effective controls for industry effects in multiple industry empirical studies in operations strategy.

Table 1 Summary of previous studies on business environment and operations strategy

Study	Environmental variables	Operations strategy choices	Additional factors	Country of focus	Main findings
Swarndass and Newell (1987)	Environmental uncertainty	Flexibility	Manager's decision making	USA	Environmental uncertainty influenced manufacturing flexibility and the role of manufacturing managers in strategic decision making. The manufacturing flexibility, in turn, influenced business performance.
Ward et al. (1995)	<ul style="list-style-type: none"> • business cost • labour availability • competitive hostility • environmental dynamism 	<ul style="list-style-type: none"> • flexibility • low cost • quality • delivery performance 	<ul style="list-style-type: none"> • performance measures • industry variable 	Singapore	The authors identified strong relationships between environmental factors such as labour availability, competitive hostility, and market dynamism and the operations strategy choices encompassed by competitive priorities.
Ward and Duray (2000)	Environmental dynamism	<ul style="list-style-type: none"> • flexibility • low cost • quality • delivery performance 	<ul style="list-style-type: none"> • performance measures • competitive strategy measures 	USA	The mediating effect of competitive strategy suggests that environmental dynamism has an important influence on manufacturing strategy but that influence is articulated through and modified by competitive strategy.
Badri et al. (2000)	<ul style="list-style-type: none"> • business cost • labour availability • competitive hostility • government laws and regulations • political environment • environmental dynamism 	<ul style="list-style-type: none"> • flexibility • low cost • quality • delivery performance 	Performance measures	United Arab Emirates	The authors identified strong relationships between environmental factors such as labour availability, competitive hostility, government laws and regulations, political concerns and market dynamism and the operations strategy choices encompassed by competitive priorities.

Table 1 Summary of previous studies on business environment and operations strategy (continued)

Study	Environmental variables	Operational strategy choices	Additional factors	Country of focus	Main findings
Amoako-Gyampah and Boye (2001)	<ul style="list-style-type: none"> • business cost • labour availability • competitive hostility • environmental dynamism 	<ul style="list-style-type: none"> • flexibility • low cost • quality • delivery performance 	<ul style="list-style-type: none"> • firm size • degree of foreign ownership 	Ghana	Among firms in Ghana, the two strongest factors that influence the degree of emphasis placed on operations strategy choices are perceived business costs and competitive hostility. Environmental dynamism did not have any significant effects on any of the operations strategy choices.
Amoako-Gyampah (2003)	<ul style="list-style-type: none"> • business cost • labour availability • competitive hostility • environmental dynamism 	<ul style="list-style-type: none"> • flexibility • low cost • quality • delivery performance 	<ul style="list-style-type: none"> • firm size • degree of foreign ownership 	Ghana	The competitive hostility is the factor with the strongest influence on manufacturing strategy choice made by manufacturers in Ghana. Environmental dynamism did not appear to have any significant impacts on manufacturing strategy.
Anand and Ward (2004)	<ul style="list-style-type: none"> • unpredictability of environmental dynamism • volatility of environment dynamism 	<ul style="list-style-type: none"> • mobility of flexibility • range of flexibility 	Performance measures	USA	The unpredictability or the volatility aspects of environment dynamism plays a crucial role in determining the types of flexibility strategies.
Chiu et al. (2009)	<ul style="list-style-type: none"> • environmental dynamism • environmental complexity • environmental diversity • environmental munificence 	<ul style="list-style-type: none"> • flexibility • low cost • quality • delivery performance 	<ul style="list-style-type: none"> • performance measures • supply chain structures 	USA	Results of the study reveal that the differences in both strategic and supply chain responses to business environment between high- and low-performing firms in the US textile manufacturing industry are striking. The findings provide evidence to corroborate the impact of the alignment between business environment characteristics, competitive priorities, and supply chain structures on firm business performance.

In recent years, building on the work of Ward et al. (1995), a few authors (see Table 1) specifically examined the effects of environment characteristics on operations strategy choices in developing countries such as Ghana and the UAE. Badri et al. (2000) extended the research of Ward et al. (1995) to the business environment of developing industries by adding two neglected environment variables, namely government laws and regulations and political considerations. The authors identified strong relationships between environmental factors such as labour availability, competitive hostility, government laws and regulations, political concerns and market dynamism and operations strategy choices. And, political factors had a major effect on the two operations strategies of delivery and cost. In particular, Badri et al. (2000) used three different covariance structure models to determine if the effects of three variables such as *industry type*, *number of employees (firm size)* and *amount of capital (firm nationality)* are controlled by the inclusion of environmental variables. They found that the addition of these three variables did not affect the model substantially, as no paths between them and operations strategy choice are significant at 5% level for either high or low performing firms. Some of their findings confirmed those of the earlier work by Ward et al. (1995).

In addition, Amoako-Gyampah and Boye (2001) examined the influences that specific environmental factors have on operations strategy choices among manufacturing firms in Ghana. They found that the two strongest factors that influence the degree of emphasis placed on operations strategy choices were perceived business costs and competitive hostility. Competitive hostility has direct significant effects on the emphasis placed on low cost, quality and flexibility as operations strategy choices. Particularly, they extended the study of Ward et al. (1995) by investigating the effect that firm characteristics such as *firm size* and *capital structure (firm nationality)* might have on the nature of the relationship between environmental factors and the emphasis placed on operations strategy choices. To study the effects of the two firm characteristics (firm size and capital structure) on choice of appropriate operations strategy, the manufacturing firms were partitioned into different groups, including large firms and small firms, as well as wholly local firms and jointly owned firms (i.e., firms with some foreign ownership). They finally identified that the effects of business factors on the operations strategy choices made by small firms were different from the effects that those business factors have on the strategy choices made by large firms. Similarly, they found that the nature of ownership might be important for a firm deciding on its appropriate operations strategy. More recently, Anand and Ward (2004) identified that depending on the extent and sources of dynamism, firms devise strategies to tackle them in different ways. Some of their findings were consistent with Swamidass and Newell's (1987) study. In addition, Chi et al. (2009) found that the differences in both strategic and supply chain responses to business environment between high- and low-performing firms in the US textile manufacturing industry are striking. The findings provided evidence to corroborate the impact of the alignment between business environment characteristics, competitive priorities, and supply chain structures on firm business performance.

2.2 Conceptual framework

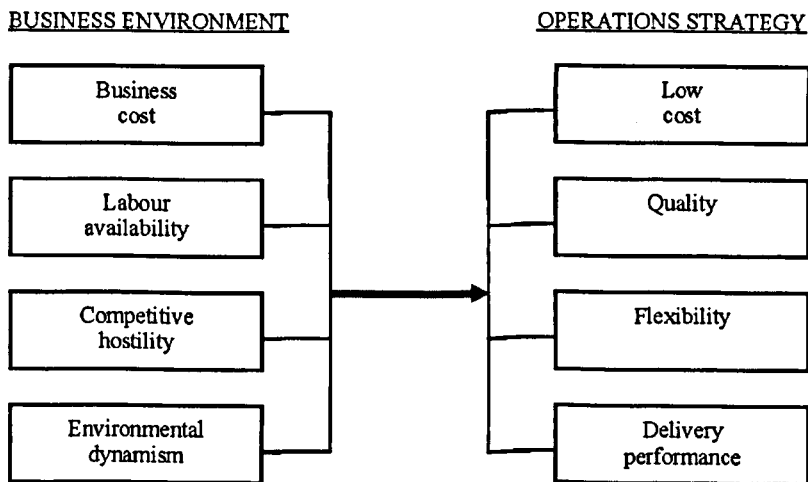
We draw upon contingency theory to provide conceptual foundations of our theoretical framework. In general, contingency theory suggests that an organisation's structure

should fit the environment in which it operates (Burns and Stalker, 1961; Lawrence and Lorsch, 1967). Structural contingency theory focuses on understanding how organisations adapt their structures because of changes in environmental and organisational contingency factors (Lawrence and Lorsch, 1967). A recent development in contingency theory appears to provide a useful methodology for developing midrange theories in strategic management (Kim and Lim, 1988). Most contingency literature also suggests that the environment influences organisational strategy (Porter, 1980).

Services, compared to manufacturing, involve the conversion of resources into an 'intangible' output (Adam and Swamidass, 1989). Service operations are distinguished by the following major characteristics: the intangible natures of output, immediate consumption of output, conversion processes that require a great deal of labour and little equipment, direct customer contact, and frequent customer participation in the conversion process (Adam and Swamidass, 1989). The distinguishing characteristics of service operations were manifested in many typological or classificatory studies of service operations (e.g., Mills and Moberg, 1982; Roth and van der Velde, 1991). Due to the closeness of the service business to customers, service operations must be extremely sensitive to customers and markets (Adam and Swamidass, 1989). Voss (1986) stated that operations strategy must be changed and adapted to maximise the market criteria for success, the strategic dimensions such as efficiency, price, effectiveness, quality, and flexibility chosen, as demanded by the market. Voss' (1986) statement on formulating operations strategy is built upon the simple idea of a customer orientation for operations (Adam and Swamidass, 1989).

Therefore, using contingency theory, we develop a conceptual framework through the reconciliation of business environment factors and operations strategy (see Figure 1). The proposed framework incorporates some key features. It suggests that the relationships between environmental dimensions and operations strategy choices are linked. In particular, the framework postulates that firm characteristics are the factors that influence the relationships between business environment and operations strategy.

Figure 1 A conceptual framework of business environment and operations strategy



The business environmental factors explored in this study are business cost, labour availability, competitive hostility and environmental dynamism (Ward et al., 1995; Amoako-Gyampah and Boye, 2001). Operations strategy here is characterised by the four familiar competitive priorities of cost, quality, flexibility, and delivery performance (Ward et al., 1995; Amoako-Gyampah and Boye, 2001). Hereafter, these four competitive priorities are referred to as 'operations strategy choices'. In addition, firm characteristics consist of firm age (old vs. young), firm size (big vs. small), and firm nationality (local vs. foreign) (Amoako-Gyampah and Boye, 2001; Amoako-Gyampah, 2003).

Although a few previous studies, summarised in Table 1, developed a conceptual model that identified a link between business environment and operations strategy, most of them did not investigate the effects that firm characteristics have on the link. Therefore, research exploring the possible impacts of firm characteristics on the nature of relationships between environment factors and operations strategy choices is evidently necessary.

3 Hypotheses development

In accordance with the conceptual framework presented in Figure 1, we are especially interested in investigating the possible effects that firm characteristics, namely firm size, firm age and firm nationality, have on the linkages between environmental dimensions and operations strategy choices. To provide evidence for the assumption, the following hypotheses are developed.

3.1 Business environment and operations strategy

Traditional contingency literature suggests that environment influences strategy (Dess and Beard, 1984; Miller and Friesen, 1983; Porter, 1980). A review of the literature reveals that the dimensions of dynamism and hostility have commonly been used to characterise business environment. Miller and Friesen (1978) stated that increases in environmental dynamism and hostility are related to specific changes in the amount of analysis which characterises strategy-making activity. Hostile environments intensify challenges to the firm, and often complicate these challenges. Environmental hostility is characterised by intense price, rising business cost, low profit margin, severe regulatory restrictions, shortages of labour or raw materials, and unfavourable demographic trends, which offer few opportunities to exploit (Miller and Friesen, 1983; Covin and Slevin, 1989). Therefore, greater analytical effort must be devoted to understanding and mastering threats (Khandwalla, 1972). On the other hand, environmental dynamism refers to the extent of the unpredictability of change within the firm's environment (Dess and Beard, 1984). This change can arise from many sources, including the rate of change and innovation in the firm's principal industries, the introduction of new products and services, and the uncertainty or unpredictability of competitors' actions and customers' preferences (Lawrence and Lorsch, 1967; Miller and Friesen, 1983). Firms operating in a dynamic environment have to contend with rapid changes in technology, customer needs and preferences, as well as competitive action (Miller and Friesen, 1983; Mintzberg, 1994). A number of empirical studies have examined the relationships between

environmental factors including hostility and dynamism and the operations strategy choices of cost, quality, flexibility, and delivery performance (see Table 1). The scholars specifically pointed out the importance of environmental factors on selecting operations strategies. As mentioned above, the arguments for the relationships between business environmental factors and operations strategy has been clearly established in the literature (see Ward et al., 1995; Badri et al., 2000).

Harris and Walters (1992) stated that the “effective management of operations is vital to the success of retail companies”. Understanding customer needs and meeting and exceeding expectations have become part of the lexicon of marketers and retailers (Pal and Byrom, 2003). Retail operations/store managers hold the key to either satisfying or disappointing customers, on whom the whole company depends. Megicks (2001) identified six retail operations clusters in his analysis: merchandise and range; service and quality lines; active marketing; low prices and incentives; local involvement; and unique products. Building on previous studies on retail operations, Pal and Byrom (2003) further developed the ‘five S’s’ (stock, space, staff, standards, and systems) of retail operations, which provides managers with a useful guiding framework that can be exploited in the retail operations process.

As described above, China’s retail market has experienced exponential growth in the last 20 years. However, the high levels of economic development have generated business environmental pressures such as increasingly keen competition, low profit margins, and high operating costs in retail sector (Lo et al., 2001). In particular, Chinese customers are becoming more demanding with respect to quality, variety, flexibility and taste (Ramaseshan et al., 2006). Therefore, it can be expected that retailers in China must develop competitive operations strategies to adapt to an increasingly dynamic marketplace.

Our first hypothesis is aimed at examining the specific nature of any relationships that exist between business environmental hostility and dynamism and operations strategy choices made by retailers in China. We are interested in knowing if direct paths exist between each of the business environmental factors and the previously identified operations strategy choices. To find out the nature of the linkages among retail firms in China, we formulate our hypothesis as follows.

- H1 Business environmental factors of business cost, labour availability, competitive hostility and environmental dynamism have significant effects on the operations strategy choices of low cost, quality, flexibility, and delivery performance.

3.2 *Firm size*

The size of a firm is important because the ability to commit resources, sustain costs and absorb risks varies significantly between small and large firms. The relationship between strategy and firm size has been broadly considered and studied in strategic management literature (e.g., Dess and Davis, 1984; Rich, 1992). Some theorists treated size as an imperative that dictated certain structural configurations, and others focused on the relationships between size, diversification strategy, and performance (e.g., Hart and Banbury, 1994; Elbanna and Child, 2007). Miller et al. (1998) found significant relationships between firm size and strategic decision processes, and the management activities of small firms were substantially different from those of large firms. Firm size is an important factor as it influences a firm’s competitive power, small firms have less

power than large firms, and hence they may find it difficult to compete with the large firms particularly in highly competitive markets. As a result, the operations strategy may vary depending on firm size and as such will influence the impact of those strategies on firm performance (Kazan et al., 2006).

Firm size has been shown to be positively related to operations strategy practices in some empirical studies (see Table I). For instance, Amoako-Gyampah and Boye (2001) identified that firm size was an important factor influencing the degree of emphasis placed on operations strategy choice. Kazan et al. (2006) investigated the effect of firm size on the manufacturing strategy among 102 manufacturing firms in Turkey. They found that the effect of the quality, cost, and flexibility on financial performance was higher for large firms compared with small and medium enterprises (SMEs). Aranda (2002) analysed the relationship between operations strategy and firm size in a sample of engineering consulting firms. The author found that there was a significant relationship between operations strategy and size in consulting engineering firms. In this context, small firms tended to follow customer-oriented operations strategies, medium-sized firms tended to follow process-oriented operations strategies and larger firms tended to follow service-oriented operations strategies. Moreover, in a case study of six manufacturing firms on the development of operations strategy, Maruchek et al. (1990) identified that the larger firms had greater staff support and more corporate resources to assist in the operations strategy formulation process. They also found that smaller firms used outside consultants in guiding their experiences with strategy. Thus, to identify whether this relationship exists in the service sector, the following hypothesis is set up.

H2 The firm size influences the nature of the relationships between environmental factors and operations strategy choices.

3.3 *Firm nationality*

Firm nationality generally reflects the differences in management styles and practices based on a country or culture of origin (Chang and Xu, 2008). A firm that is completely local with perhaps rich knowledge and experience of the local market is likely to perceive its business environment differently from a wholly foreign-owned firm. For example, a locally owned firm might perceive its competition as being just other local firms while a foreign firm might perceive its competition as coming from both within and outside the country. In addition, foreign firms seek to deal with cultural and businesses difference through the cooperation with local firms, and they are more likely to have greater access to capital and other resources. As a result, they will be expected to develop different strategies in order to react to changes occurring in the business environment (Amoako-Gyampah and Boye, 2001).

The relationship between foreign and local ownership and the development of operations strategy has been examined by a few empirical studies. For instance, Amoako-Gyampah and Boye (2001) found that the nature of ownership was important when a firm is deciding on its operations strategy. Amoako-Gyampah (2003) subsequently identified that foreign firms were more likely than locally owned firms to place more emphasis on quality when facing harsh business environmental conditions. Also, foreign firms were less likely to be concerned about rising business costs compared to wholly local firms when deciding to emphasize delivery dependability. Foreign firms, with their expected expertise and experience from similar environments, perhaps realise

the importance of quality more than locally owned firms. Thus, the following hypothesis is derived:

H3 The firm nationality influences the nature of the relationships between environmental factors and operations strategy choices.

3.4 Firm age

The age of a firm is the duration of time since it was legally incorporated and indicates its experience. Experience is a major factor shaping strategic directions, company corporate culture and collective knowledge, or common wisdom (Koch, 2001). Without sufficient, relevant experience and knowledge, there tends to be a stronger sense of risk and uncertainty involved in the development of corporate strategy (Lynch, 2003). Mohan-Neill (1995) maintained that acquisition and utilisation of marketplace information enhance survival of firms, while new firms are usually faced with constraints in their efforts to obtain relevant marketplace information the availability of which has a significant impact on the firm's decision-making process and marketing strategies.

The impact of company's experience on strategic decision making has been widely discussed. A number of empirical studies also found a close relationship between firm age and decision making. Temtime and Pansiri (2005) identified that firm experience, including ownership status, managers' experience and firm age, significantly influenced the development of competitive strategy. Both the international retailing and export literature identify the importance of a firm's international experience when determining operating strategy and organisational performance (Cavusgil and Zou, 1994) Therefore, a positive relationship between firm age and operations strategy content may be expected if older firms benefit from dynamic economies of scale by learning from experience. Older firms may also benefit from reputation effects, which allow them to develop operations strategy choices of cost, quality, flexibility and delivery. However, empirical studies directly relating to operations strategy and firm age are even scarcer. Therefore, research linking firm age and operations strategy choices in the service sector is worth pursuing. The hypothesis is as follows:

H4 The firm age influences the nature of the relationships between environmental factors and operations strategy choices.

4 Methods

There exists virtually no research examining the impacts of firm characteristics on the link between business environment and operations strategy in China's retail sector. To fill this gap, we conducted a survey study for hypothesis testing to investigate the effects of firm characteristics for a sample of retailers in China.

4.1 Sample

Data for this study were obtained from a primary survey of retail firms in China. A sample of 500 retailers was selected from *China Market Statistical Yearbook – 2007* which is the official publication of the National Bureau of Statistics of China (NBS, 2007). The sample consisted of retailers operating their business in food and non-food sectors.

4.2 Questionnaire survey

Before executing the survey, a pre-test was undertaken to ensure that the questions were clear, meaningful, relevant and easy to interpret. The pre-test was performed in two stages: academics' review and practitioners' review. Building on previous studies and an interview with a top executive of a large food retailer in China, a draft questionnaire was developed. The draft questionnaire was pre-tested by two academics to check its content validity and terminology, and was modified based on the feedback. In the second stage, to ensure proper use and interpretation of the technical language of retailing, the modified questionnaire was then pilot-tested with five experienced retail managers in China. After the five respondents had completed the questionnaires, every question was discussed with them to ensure that they had understood correctly. When there was confusion or ambiguity in the wording of the questions or scales, modifications were made. The two stages were satisfactorily completed, suggesting no major problems with the construct measures or response format. In addition, to ensure the reliability of the questionnaire, the English version was first developed and then translated into Chinese. A number of questions were reworded to improve the accuracy of the translation and to relevant to practices in China. This ensured that the questionnaire was both clear to the target Chinese respondents and accurate in reflecting the meaning of the original questions in English. The Chinese version was then translated back into English, and the translated English version was checked against the original English version for discrepancies.

The retailers were initially contacted by telephone and emails before the questionnaires were sent out. To encourage participation and improve the response rate, the respondents were promised a summary of findings of our study. A total of 318 retail companies replied and agreed to participate in the study. The initial contact revealed that lack of time and concerns about confidentiality protection were the most common reasons for non-participation. Some questionnaires and prepaid self-addressed envelopes were then posted to these retailers. For other retailers, questionnaires were sent via email. Each questionnaire was accompanied by a cover letter indicating the purpose of the study and potential contributions. The letter also assured complete confidentiality to the respondents. Follow-up calls were made to remind and encourage the retailers to complete and send back the questionnaires and to clarify any questions or concerns that the companies had.

Table 2 Respondent characteristics

<i>Position</i>	<i>% of respondents</i>	<i>Years in current position</i>	<i>% of respondents</i>
Top/senior management	37.7%	1–5 years	38.7%
Middle management	55.7%	6–9 years	33.0%
Other	6.6%	10–19 years	23.6%
		More than 20 years	5.7%

Finally, a total of 122 completed questionnaires were received, which represents a 38.4% response rate. After screening, we found that 16 of the 122 questionnaires had not been completed properly and were discarded, thus leaving 106 responses for use in the subsequent analyses. A profile of the respondents is reported in Table 2. The respondents typically carried the title of operations manager, general manager, sales manager, and

store manager in-charge of retail operations function. Most of them have been in their position for more than five years, which indicates that our informants were knowledgeable about the issues under study.

Since there was a single informant per company, the potential for common method bias was assessed (Flynn et al., 2010). Analysis of Harmon's single-factor test of common method bias (Flynn et al., 2010; Podsakoff et al., 2003) revealed nine distinct factors with eigenvalues more than one, explaining 64.9% total variance. The first factor explained 17.2% of the variance, which was not the majority of the total variance. It is acceptable for a study such as this, where the constructs are correlated, both conceptually and practically (Flynn et al., 2010). To further assess common method bias, confirmatory factor analysis (CFA) was used to Harman's single-factor model (Sanchez and Brock, 1996; Flynn et al., 2010). The model's fit indices [$\chi^2/df = 2.246$; RMSEA = 0.109; CF1 = 0.711] were unacceptable and were significantly worse than those of the measurement model. This indicates that a single factor is not acceptable, thus the common method bias is small (Flynn et al., 2010). In addition, we found no significant nonresponse bias based on responses' annual sales and number of employees (Armstrong and Overton, 1977).

4.3 *Measures*

To collect data, we designed a questionnaire by adapting the instrument and scales developed by Ward et al. (1995) and Miller and Friesen (1983). However, given the unique characteristics of services, the instruments were modified and some special measures were also introduced in this study. The measures used in this study to assess business environment, operations strategy and firm characteristics are described as follows.

4.3.1 *Measures for business environment*

As shown in Figure 2, this study included three scales which are conceptually related to environmental hostility: costs of doing business in China (business cost), labour availability, and competitive hostility. The business cost dimension consisted of concerns pertaining to the rising cost of inputs in the operations process, i.e., labour, rental, transportation, and utilities costs (Miller and Friesen, 1983; Ward et al., 1995). Labour availability referred to concerns about the potential shortages of skilled workers and technicians as well as managerial and administrative workers (Ward et al., 1995). Competitive hostility included concerns about changes in the marketplace such as increasing competition, declining demand, low profit margins, more demanding quality standards imposed by the marketplace (Ward et al., 1995), and sever government laws and regulations (Miller and Friesen, 1983).

On the other hand, the environmental dynamism items used in our study were also adapted from Miller and Friesen (1983). Respondents were asked to indicate the rate of change, from very slow to very rapid, at which goods and services become outdated, the rate of change in retail technology, the rate of innovation in new service development, as well as the rate of change in competitors' market activities and customers' tastes and preferences. High numeric scores indicated higher rates of dynamism.

4.3.2 Measures for firm characteristics

In this study, firm characteristics included firm age, firm size, and firm nationality. Based on previous studies, firm age was evaluated by the number of years of respondent firm has been involved in the retailing business (Cavusgil and Zou, 1994). The old firms were regarded as retailers with more than ten years of retail operations experience. The number of employees was used as the size metric in our study (Amoako-Gyampah and Boye, 2001; Zhu and Sarkis, 2007). Big firms were identified as retailers with more than 1,000 employees. And, firm nationality referred to whether the responding firm is a local firm, or a foreign-owned firm (Amoako-Gyampah and Boye, 2001).

4.3.3 Measures for operations strategy

For the purpose of this study, four basic competitive priorities are considered to measure operations strategy, namely low cost, quality, delivery performance, and flexibility (Hayes and Wheelwright, 1984; Fine and Hax, 1985; Ward et al., 1998). Four questions (e.g., reducing overhead costs, or inventory level, as well as increase equipment utilisation and private brands sales) were used to assess low cost (Ward et al., 1995; Amoako-Gyampah and Boye, 2001). Quality was measured by four questions. The questions focused on providing appropriate specification product/service, improving product/service performance and reliability, formulating and implementing extremely strict product/service quality control procedures, and requiring suppliers to pass a formal certification of quality control and improvement system (Ward et al. 1995; Badri et al., 2000). Flexibility measures also included four items, namely product/service flexibility, mix flexibility, volume flexibility, and delivery flexibility (Slack et al., 2004; Gupta et al., 2005; Flynn et al., 2010). Delivery performance measures consisted of providing fast and reliable delivery and improving after sales service (Ward et al., 1995; Amoako-Gyampah and Boye, 2001).

4.4 Structural equation modelling

Structural equation modelling (SEM) is a useful tool in theory development because it allows the researcher to propose and subsequently test theoretical propositions about interrelationships among variables in a multivariate setting (Hair et al., 2006; Byrne, 2001). It has more recently become one of the preferred data analysis methods among empirical operations management researchers (Shah and Goldstein, 2006). SEM includes, among others, as special cases path analysis and covariance structure analysis. Path analysis is an extension of the regression model, used to test the fit of the correlation matrix against two or more causal models which are being compared by the researcher (Hair et al., 2006). The model is usually depicted in a circle – and – arrow figure in which single arrows indicate causation. Path analysis offers some distinct advantages including the identification of direct and indirect effects in a complex system of variables, and the convenience with which intervening variables could be included in the model (Hair et al., 2006; Shah and Goldstein, 2006). A number of previous studies (e.g., Swamidass and Newell, 1987; Ward et al., 1995; Ward and Duray, 2000) have strongly advocated the appropriateness of using path analyses to examine the links between business environmental factors, operations strategy and performance. Therefore, we decided that path analysis would be an appropriate technique to use in this study.

5 Results

The results of data analysis are presented in the following three sections. The first subsection analyses the results of demographic characteristics of the responding firms. Second, the results of principal component analysis (PCA) and CFA are reported. Finally, we examine the impacts that firm size, firm age, and firm nationality have on the nature of the relationships between environmental dimensions and operations strategy.

Table 3 Respondent profile

	<i>Number of firms</i>	<i>Percent (%)</i>
<i>Retail sub-sector</i>		
Food retailing	59	55.8
Health beauty and pharmacy retailing	10	9.4
Clothing and footwear retailing	8	7.5
Electrical retailing	11	10.4
DIY home improvement and furniture	10	9.4
Others	8	7.5
Total	106	100.0
<i>Number of employees (firm size)</i>		
1–99	14	13.2
100–299	15	14.1
300–999	20	18.9
1,000–4,999	36	34.0
5,000–9,999	8	7.5
10,000 or more	13	12.3
<i>Annual sales (in million yuan, 1 US\$ = 6.84 RMB)</i>		
Below 10	4	3.8
10–50	14	13.2
50–100	16	15.1
100–500	29	27.3
500–1,000	15	14.2
1,000–5,000	18	17.0
Above 5,000	10	9.4
<i>Firm age</i>		
1–9	62	58.5
10–19	36	34.0
20–49	7	6.6
50 or more	1	0.9
<i>Firm nationality</i>		
Local firm	81	76.4
Foreign firm	25	23.6

5.1 Respondent profile

The profile of responding firms are analysed and presented in Table 3. As shown in this table, the respondent companies operate their business in the different retail sectors, including grocery retailing, clothing and footwear retailing, electrical retailing, health beauty and pharmacy retailing, and DIY home improvement and furniture retailing. The table also shows number of employees and total sales volume. In China, retailing is a labour-intensive sector; about 20% of the responding retailers had 5,000 or more employees, and about 50% of companies had fewer than 1,000 employees. About 60% of the responding firms had annual sales of below 500 million yuan (approximately US\$73.1 million) and 9.4% had annual sales of over 5,000 million yuan (approximately US\$731 million). Other demographic details can be found in Table 3.

5.2 Preliminary analyses

5.2.1 Principal component analysis

PCA with an oblique rotation was first undertaken on business environment and operations strategy measures to examine the underlying dimensions of the constructs. Hair et al. (2006) also suggested that such a within-scale PCA also provides additional evidence of convergent validity. The PCA results reported in Table 4. As shown in this table, factor analysis for the environmental factors produced four dimensions with eigenvalues greater than one and factor loadings greater than 0.50 on a single factor for each of the constructs, providing support for unidimensionality (Hair et al., 2006). Moreover, Table 4 shows the results of factor analysis for operations strategy choices encompassed by competitive priorities. As shown in Table 4, some business environmental variables used by Ward et al. (1995) and Miller and Friesen (1983) were deleted in our study because of low reliability. This might have occurred due to unique business culture in the Chinese retail sector, sample size, and perception of respondents.

Cronbach's alpha coefficient was used to examine the reliabilities among the items within each factor. A Cronbach's alpha coefficient higher than 0.60 is generally viewed as being acceptable for an exploratory study such as this one (Nunnally, 1978; Byrne, 2001). Moreover, Nunnally and Bernstein (1994) recommended a cut-off point of 0.60 for new scales. Some empirical studies that examined the link between business environment and operations strategy have used a Cronbach's alpha cut-off of 0.60 to establish scale reliability (e.g., Ward et al., 1995; Amoako-Gyampah and Boye, 2001; Anand and Ward, 2004). We consider our study as exploratory work because:

- 1 it is the first time that such a study is conducted for the retail sector
- 2 the Chinese context is new.

In this study, values of Cronbach's alpha were calculated for each dimension of its construct (Flynn et al., 1990) and reported in Table 3. From Table 3, we can see that Cronbach's coefficient alpha values for the four factors were larger than 0.60, representing an acceptable significant level of internal validity (Nunnally, 1978). The first factor including two items was entitled business cost. The second factor contained three items that reflected the availability of labour, and was named labour availability. The next factor, competitive hostility, included two items that related to demanding quality standards as well as government laws and regulations. The next factor, labelled

environmental dynamism, contained three items including rate of changes in retail technology and innovation of new service development. Since all these four factors loadings were of an acceptable significant level, the ten questionnaire items were retained for further analysis. Other factors generated from PCA, however, indicated a low reliability (below 0.60), and were excluded from further analyses (Nunnally, 1978).

As shown in Table 4, the 12 items of operations strategy loaded on four factors. The items loaded on the first factor, low cost, involved the operations strategy of reducing operations cost. The second factor, quality, included three items about providing high quality products and services for customers. The third factor captured the competitive priority of flexibility. The last factor included three items about offering reliable and fast delivery and after sales service for customers, and was named delivery performance. The alpha coefficients for the four factors were 0.644, 0.591, 0.672, and 0.853, respectively. These values are either close to or exceed 0.60 criterion generally considered adequate for exploratory work (Hair et al., 2006; Nunnally, 1978; Nunnally and Bernstein, 1994).

Because the scales are unidimensional, a single set of factor scores can be used to represent each scale. Factor scores are obtained by multiplying the observed standardised values of each variable by the corresponding standardised factor loading. The result is a set of standardised factor scores, with one score for each scale on each observation (Ward et al., 1995). The correlation matrix of the final scales is reported in Table 5. It includes correlation among all the scales items (business environment and operations strategy choices) for the CFA.

Table 4 Factor loadings of business environment and operations strategy (PCA)

<i>Variables</i>	<i>Mean</i>	<i>S.D.</i>	<i>Factor loadings</i>	<i>Cronbach alpha</i>
<i>Business environment</i>				
<i>Factor 1: Business cost</i>				0.619
ECOS1 – rising labour cost	4.273	0.834	0.838	
ECOS2 – rising rental cost	4.254	0.805	0.795	
<i>Factor 2: Labour availability</i>				0.673
ELAB1 – shortage of managerial and administrative staff	3.754	0.837	0.803	
ELAB2 – shortage of technicians	3.773	0.853	0.752	
ELAB3 – shortage of skilled workers	4.132	0.677	0.742	
<i>Factor 3: Competitive hostility</i>				0.645
ECOM1 – more demanding quality standards	3.820	0.923	0.839	
ECOM2 – sever government laws and regulations	3.226	1.148	0.853	
<i>Factor 4: Environmental dynamism</i>				0.694
EDYN1 – rate at which goods/services become outdated	3.320	0.971	0.752	
EDYN2 – rate of changes in retail technology	3.254	1.033	0.814	
EDYN3 – rate of innovation in new service development	3.471	0.864	0.709	

Table 4 Factor loadings of business environment and operations strategy (PCA) (continued)

<i>Variables</i>	<i>Mean</i>	<i>S.D.</i>	<i>Factor loadings</i>	<i>Cronbach alpha</i>
<i>Operations strategy</i>				
<i>Factor 1: Low cost</i>				0.644
COST1 – reduce overhead costs	4.198	0.709	0.796	
COST2 – reduce inventory level	4.198	0.695	0.800	
COST3 – increase equipment utilisation	4.103	0.702	0.622	
<i>Factor 2: Quality</i>				0.591
QUAL1 – provide appropriate specification of goods/services for customers	4.311	0.735	0.780	
QUAL2 – improve goods/services performance and reliability	4.245	0.687	0.790	
QUAL3 – make extremely strict goods/services quality control procedures	4.103	0.872	0.657	
QUAL4 – increase private brands	3.452	1.374	0.511	
<i>Factor 3: Flexibility</i>				0.672
FLEX1 – change the variety of goods/services in a given time	3.707	0.861	0.690	
FLEX2 – respond quickly to shift in demand, to increase/decrease operational capacity	3.877	1.039	0.813	
FLEX3 – change planned delivery dates to meet emergent requirements	3.726	1.055	0.780	
<i>Factor 4: Delivery performance</i>				0.853
DEL11 – provide fast deliveries	4.037	0.882	0.803	
DEL12 – meet delivery promises	4.273	0.834	0.913	
DEL13 – improve after sales service	4.245	0.766	0.908	

Table 5 Correlation matrix

<i>Scale</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
<i>Business environment scales</i>								
1 Business cost	(0.619) ^a							
2 Labour	0.178	(0.673)						
3 Competitive	0.116	0.042	(0.645)					
4 Environmental	-0.045	-0.035	-0.005	(0.694)				
<i>Operations strategy scales</i>								
5 Low cost	0.062	0.031	-0.094	0.351**	(0.644)			
6 Quality	-0.038	-0.033	0.229*	0.251**	0.291**	(0.591)		
7 Flexibility	-0.043	-0.050	0.033	0.358**	0.179	0.187	(0.672)	
8 Delivery	0.126	0.051	0.107	0.025	0.165	0.139	0.075	(0.853)

Notes: ** $p < 0.01$, * $p < 0.05$, ^aThe numbers in parentheses are Cronbach's coefficient alphas.

5.2.2 Confirmatory factor analysis

CFA was used to assess the overall model fit and the reliability and validity of each multi-item scale (first-order factor) (Hair et al., 2006; Shah and Goldstein, 2006). We evaluated the overall model fit, reliability and validity of the measurement instrument for the business environmental factors and operations strategy choices. In assessing model adequacy, we used several recommended tests: the Chi-square value normalised by degrees of freedom (χ^2/df), the root mean square error of approximation (RMSEA), and the comparative fit index (CFI) (Byrne, 2001; Hu and Bentler, 1999). CFI values greater than 0.90 are generally considered to indicate an acceptable fit for the data, and a value greater than 0.95 is considered as a very good model fit. An RMSEA between 0 and 0.05 indicates a good fit, and between 0.05 and 0.08 is acceptable. The Chi-square value normalised by degrees of freedom (χ^2/df) should not exceed 3 (Byrne, 2001; Hair et al., 2006).

As shown in Table 6, the results of CFA provided significant support for the business environments conceptualisations [$\chi^2 = 36.319$; $df = 31$; (χ^2/df) = 1.172; RMSEA = 0.040; CFI = 0.966]. Table 6 also indicates that CFA results provided good fit for the operations strategy choices (low cost, quality, flexibility and delivery performance) solution. All the fit measures were above the recommended cut-off points, suggesting that the specified model adequately captures the relationships among the variables.

Table 6 Summary of fit statistics

<i>Variables</i>	<i>Variance explained (%)</i>	<i>Cronbach alpha</i>
<i>Business environment</i>		
1 Business cost	72.404	0.619
2 Labour availability	60.700	0.673
3 Competitive hostility	74.368	0.645
4 Environmental dynamism	62.019	0.694
Goodness of fit statistics: $\chi^2 = 36.319$; $df = 31$; (χ^2/df) = 1.172; RMSEA = 0.040; CFI = 0.966		
<i>Operations strategy</i>		
5 Low cost	58.572	0.644
6 Quality	62.783	0.591
7 Flexibility	60.454	0.672
8 Delivery performance	77.870	0.853
Goodness of fit statistics: $\chi^2 = 79.731$; $df = 59$; (χ^2/df) = 1.351; RMSEA = 0.058; CFI = 0.938		

Establishing reliability is necessary but not sufficient to establish construct validity (Hair et al., 2006). Hence convergent and discriminant validity were also assessed in this study. Convergent validity is concerned with similarity or convergence between individual items measuring the same underlying latent variable (Peng et al., 2008). In our study, convergent validity was assessed by the magnitude of factor loadings of business environment and operations strategy (Hair et al., 2006). The results of PCA show that all factor loadings were greater than 0.50, and had positive signs ($p < 0.01$). Discriminant validity refers to the degree to which measures of different latent variables are unique and distinct from each other. In this study, discriminant validity was examined using

Chi-square difference test (Hair et al., 2006; Peng et al., 2008). In accordance with Peng et al.'s (2008) work, Chi-square difference tests were undertaken as follows:

- 1 a model was run, whereby the covariance between a pair of latent variables was fixed to one
- 2 a second model was run, where the covariance between the same two latent variables was free to assume any value
- 3 the significance of the χ^2 difference between the two models was computed.

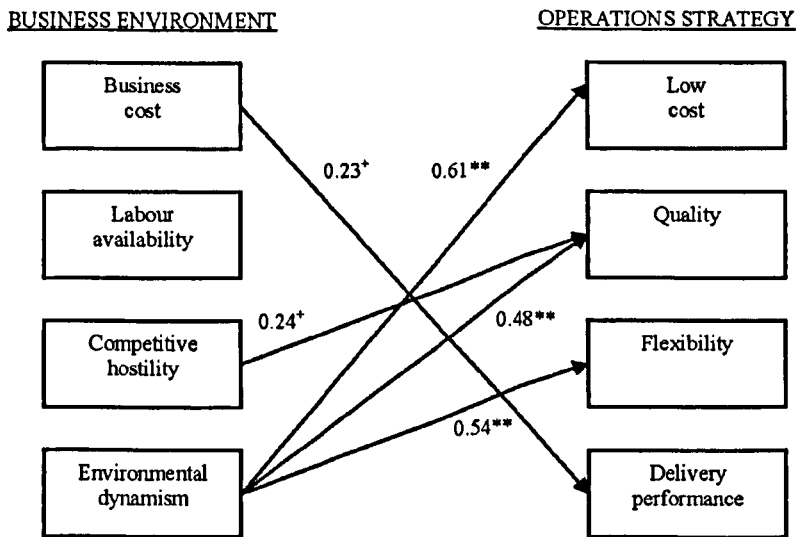
The results indicate that all χ^2 differences between the factors were significant ($p < 0.01$), providing evidence of discriminant validity between each measurement scale measuring business environment and operations strategy. Furthermore, to evaluate discriminant validity, the average variance extracted (AVE) was used. The AVE for the constructs with multiple measures all exceeded the minimum of 0.50 suggested by Fornell and Larcker (1981), providing further evidence of discriminant validity (Flynn et al., 2010).

5.3 Path analyses

5.3.1 Business environment and operations strategy

The results of path analyses using AMOS 6 for all the responding firms are reported in Figure 2. The fit statistics for the model show that χ^2/df (1.049) was below the suggested maximum of 3, and an RMSEA of 0.022 was less than 0.05 indicating a good fit. CFI (0.980) values above 0.90 also tend to suggest a good fit. Overall, the fit measures indicate a very good fit of the model.

Figure 2 Path model of business environmental factors and operations strategy choices



$\chi^2/df = 1.049$; RMSEA = 0.022; CFI = 0.980

Notes: ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

In Figure 2, the path coefficients (standardised regression coefficients) are shown on the arrows. The path analytic model indicates that the environmental dynamism has the direct positive and significant effects on the degree of emphasis placed on low cost ($\beta = 0.61, p < 0.01$), quality ($\beta = 0.48, p < 0.01$), and flexibility ($\beta = 0.54, p < 0.01$). The data also suggest that the predictors of quality are competitive hostility and environmental dynamism. Competitive hostility has a slightly significant impact on the choice of quality as a component of operations strategy ($\beta = 0.24, p < 0.10$). As can be seen, business cost appears to slightly influence the operations strategy choices of delivery performance ($\beta = 0.23, p < 0.10$). However, environmental concern about labour availability does not appear to have any direct effect on the operations strategy choices among retail firms in China.

Hypothesis 1 presented above, that business environmental factors and operations strategy are related, requires that at least one path between an environmental dimension and an operations strategy choice. The severally observed positive and significant direct impacts of the environmental dimensions on the operations strategy indicated that Hypothesis 1 can not be rejected. Business environmental factors such as business cost, competitive hostility, and environmental dynamism appear to affect operations strategy choices made by retail firms in China.

5.3.2 *Firm characteristics effects*

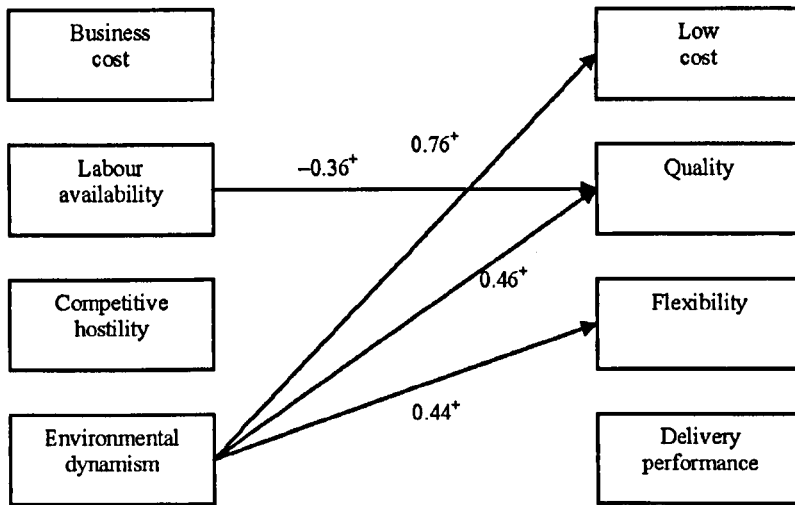
To investigate the impacts of firm characteristics on the nature of relationships between environmental factors and operations strategy choices, our sample database was divided into different groups, such as old and young firms, small and big firms, as well as local and foreign firms. The model was run separately for the different group data sets using a covariance structure model that estimates path coefficients through an iterative process which maximises the discrepancy of the model's fit. This process is similar to the one used in previous studies (e.g., Amoako-Gyampah and Boye, 2001; Badri et al., 2000) and provides the necessary criteria to test the significance of the coefficients between business environment and operations strategy to confirm the existence of this relationship.

In addition, we also examined the possible effects that other firm characteristics such as legal form of ownership and retail sub-sector (food and non-food) have on the relationships between environmental dimensions and operations strategy choices. However, the addition of these two variables did not affect the model substantially, as no paths between them and operations strategy choices were significant at 0.05 level for retail firms in China.

5.3.2.1 *Firm size effects*

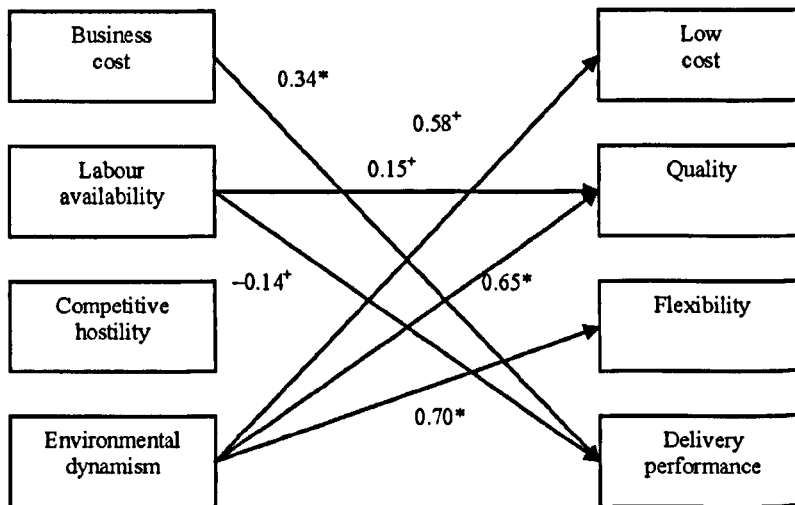
Figure 3(a) shows the relationship between the environmental factors and the operations strategy selections for small retail firms while the observed relationships for big retailers are shown in Figure 3(b). Fit measures for the small retailers model show that χ^2/df (1.167) was below the suggested maximum of 3, and an RMSEA of 0.057 was less than 0.08 indicating a marginally acceptable fit. A CFI of 0.887 was close to the recommended cutoff of 0.90. Overall, the fit statistics indicate an almost acceptable fit. Similarly, the big retailers' model also fits to the test data, with χ^2/df (1.167), RMSEA (0.073), and CFI (0.892).

Figure 3 (a) Environmental factors and operations strategy choices for small retail firms
 (b) environmental factors and operations strategy choices for big retail firms



$\chi^2/df = 1.167$; RMSEA = 0.057; CFI = 0.887

(a)



$\chi^2/df = 1.167$; RMSEA = 0.073; CFI = 0.892

(b)

Notes: ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

As shown in Figure 3(a), the predictors of quality for small firms are labour availability and environmental dynamism, but labour availability has a slightly negative effect ($\beta = -0.36$, $p < 0.10$) on the degree of emphasis placed on quality. On the contrary, for big retailers [see Figure 3(b)] labour availability has a direct positive relationship with the strategy selection of quality. The path analysis also suggests that the predictors of delivery performance for big firms are business cost and labour availability. The business cost has a significant positive impact while labour availability has a negative impact. However, for the small firms none of the business environmental factors has any effect on the degree of emphasis placed on delivery performance. The other two environmental concerns, business cost and competitive hostility, have no direct significant effects on any of the operations strategy choices made by small firms.

For both big and small firms the environmental dynamism has the direct positive impacts on operations strategy priority: low cost, quality, and flexibility. Moreover, for the two group firms, the predictors of quality are labour availability and environmental dynamism, but they indicate the different impacts on the selection of quality as a competitive priority.

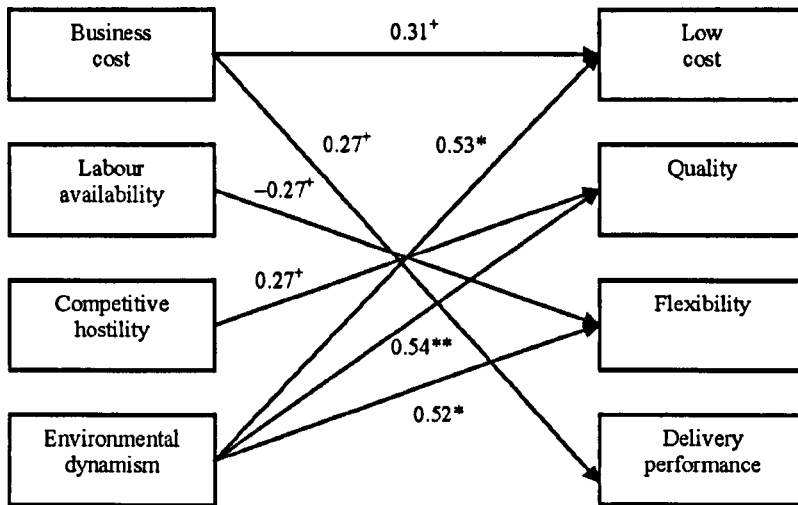
To summarise, the results in Figure 3(a) and (b) show that more significant relationships are identified among business environments and operations strategy choices for big retail firms than small retailers. Moreover, different factors have the different effects on the two groups. The Hypothesis 2 aims to identify if firm size influences the nature of the relationships between environmental factors and operations strategy choices for both small and big firms, which requires that at least one path between an environmental dimension and an operations strategy choice differ between small and big retail firms. As shown in Figure 3(a) and (b), the test of path coefficients shows significant differences between path for small and big firms, thus supporting Hypothesis 2.

5.3.2.2 *Firm nationality effects*

To investigate the effects of firm nationality, the responding firms were classified into two groups: local retailers and foreign retailers. Figure 4(a) shows the relationships between environmental factors and operations strategy for local firms. The results for foreign retailers are indicated in Figure 4(b). Fit statistics for the local retail firms model indicate the value of χ^2/df (1.167), an RMSEA of 0.054, and a CFI value of 0.889, which when considered together indicate a marginally acceptable fit model. However, the foreign retailers' model does not fit, with RMSEA of 0.171, χ^2/df of 1.700, and CFI of 0.458. A possible reason for this poor fit is the small sample size ($n = 25$).

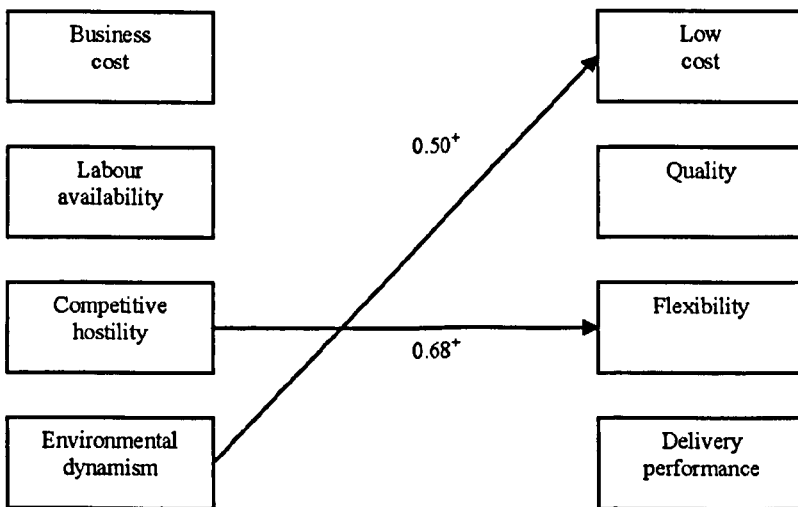
As can be seen from Figure 4(a), for local firms, environmental dynamism plays a positive significant role in operations strategy choice of low cost, quality, and flexibility. The predictors of flexibility for local firms are labour availability and environmental dynamism, but their signs are different; while the former has a negative impact, the latter has a stronger and more significant positive effect. The path coefficients presented in Figure 4(a) also show that business cost has a slightly significant effect on operations strategy choices of low cost and delivery performance. Furthermore, among the environmental dimensions, only business cost plays a positive role in the selection of delivery performance as a competitive priority. In addition, competitive hostility appears to influence the amount of emphasis placed on quality for local retail firms.

Figure 4 (a) Environmental factors and operations strategy choices for local retail firms
 (b) environmental factors and operations strategy choices for foreign retail firms



$\chi^2/df = 1.167$; RMSEA = 0.054; CFI = 0.889

(a)



$\chi^2/df = 1.700$; RMSEA = 0.171; CFI = 0.458

(b)

Notes: ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

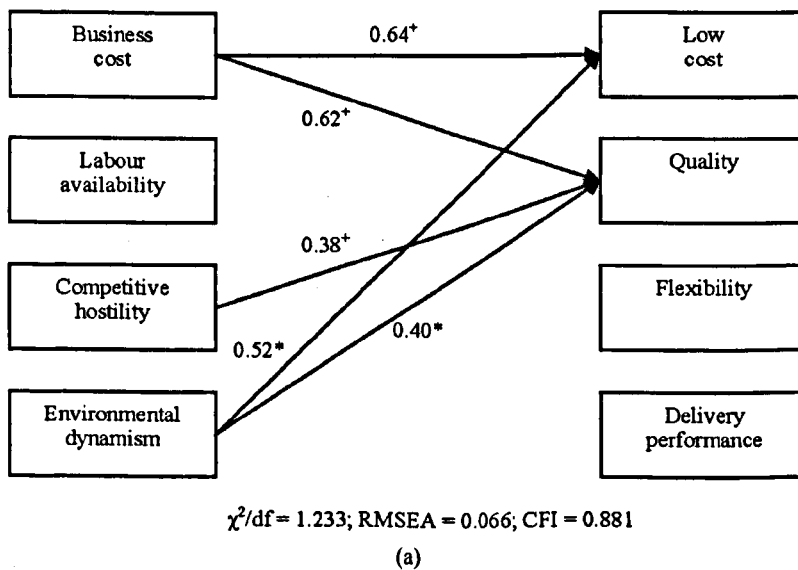
In addition, Figure 4(b) provides the path coefficients for foreign retail firms and shows some interesting findings. As can be seen, among environmental dimensions, only two factors play role in operations strategy choices. Competitive hostility has a slightly significant impact on the degree of emphasis placed on flexibility, and environmental dynamism appears to affect operations strategy choices of low cost. The other two environmental concerns, business cost and labour availability, have no direct significant effects on any of the operations strategy choices.

Hypothesis 3, that the firm nationality influences the nature of the relationships between environmental factors and operations strategy choices, requires that at least one path between an environmental dimension and a operations strategy choice differ between local and foreign retail firms. As shown in Figure 4(a) and (b), more significant relationships are identified between environmental factors and operations strategy choices for local firms than foreign retailers. Thus Hypothesis 3 can not be rejected.

5.3.2.3 Firm age effects

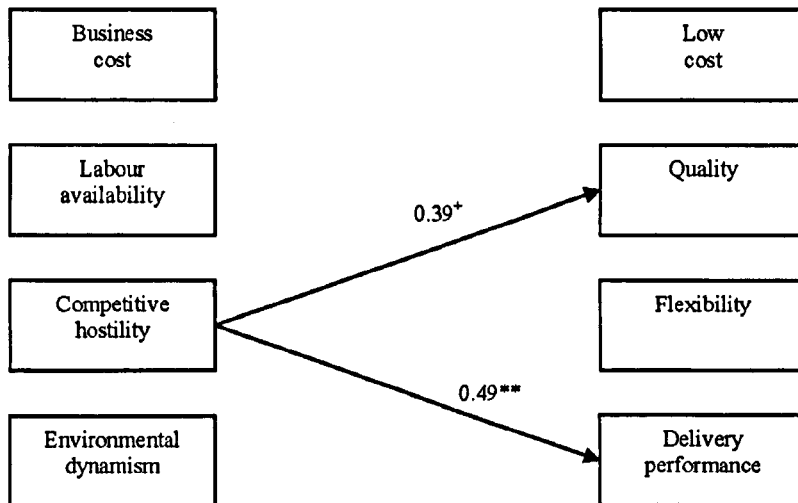
The responding firms were divided into two different groups (old firms and young firms) in order to identify the influence of firm age on the nature of relationships between environmental dimensions and operations strategy choices. Figure 5(a) shows the path coefficients between environmental factors and operations strategy for young firms. The results for old retailers are presented in Figure 5(b). Fit measures for the young retailers model imply the value of χ^2/df (1.233), an RMSEA of 0.066, CFI of 0.881, which when considered together indicate an almost acceptable fit. The old retail firms model also achieves a marginally acceptable fit, with RMSEA (0.064), χ^2/df (1.208), and CFI (0.895). Some surprising findings are evident from the results.

Figure 5 (a) Environmental factors and operations strategy choices for young retail firms
(b) environmental factors and operations strategy choices for old retail firms



Notes: ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

Figure 5 (a) Environmental factors and operations strategy choices for young retail firms and (b) environmental factors and operations strategy choices for old retail firms (continued)



$\chi^2/df = 1.208$; RMSEA = 0.064; CFI = 0.895

(b)

Notes: *** $p < 0.01$, ** $p < 0.05$, + $p < 0.10$.

As can be seen from Figure 5(a), the predictors of quality for young retail firms are business cost, competitive hostility and environmental dynamism. For young firms, both business cost and environmental dynamism positively affect low cost and quality. In addition, competitive hostility positively influences quality.

As shown in Figure 5(b), among the business environmental dimensions, only one factor of competitive hostility plays a positive role in the operations strategy choices made by old firms. Competitive hostility has a significant positive impact on the degree of emphasis placed on quality, and also influences delivery performance for old retail firms.

Similar to Hypothesis 2 and Hypothesis 3, Hypothesis 4 also requires a significant path coefficient for at least one path between an environmental dimension and an operations strategy choice differ between young and old retail firms. Figure 5(a) and (b) clearly show that differences exist in the roles that business environmental factors play in the degree of emphasis placed on operations strategy choices made by young firms and by old firms, thus supporting Hypothesis 4.

6 Discussion and managerial implications

In essence, there are several notable findings in this study. Using contingency theory, the links between business environment and operations strategy were verified empirically in the Chinese retail sector. In particular, we found that firm characteristics (such as firm

size, firm age and firm nationality) influence the links between business environment and operations strategy choices. The implications of these findings are discussed below.

6.1 Discussion

As mentioned above, we observed several significant paths between business environmental dimensions and operations strategy choices made by the responding retail firms. One of our findings is that the rising business cost has a direct significant impact on delivery performance. This effect is also present for big retailers and local retailers. Our path model also suggests that retail firms in China facing greater competitive hostility (such as more demanding quality standards and sever government laws and regulations) responded with a greater emphasis on quality, and this effect is again observed for local retailers and young retailers. For all firms, labour availability has no direct significant effects on any of the operations strategy choices. However, labour availability's direct effect on the operations strategy choice of quality is observed for big firms and small firms. In particular, for all retailers, environmental dynamism influences the degree of emphasis placed on low cost and quality as the components of operations strategy. This effect is also present for small firms, big firms, local firms and young firms. These results are further discussed below.

Our path analysis presented in Figure 2 shows that, for retailers in China, environmental dynamism has the most influence on operations strategy choices, affecting three out of four choices. Environmental dynamism has the strong positive significant impacts on the degree of emphasis placed on low cost, quality and flexibility. Some of the strategic responses of retail firms in China to environmental dynamism are: increase emphasis on cost reduction, quality and flexibility. Currently, retail firms in China face some challenges, such as an increasing need for information, innovation and quicker cycles of development, and more difficulty in predicting customer, product and service requirements (Lo et al., 2001; CCFA, 2009). Moreover, with the development of the Chinese retail market, information technology will have an impact on the overall business efficiency of retailers and affects operations ranging from online' shopping to procurement and supply chains (CCFA, 2009). Thus, retailers that aim to achieve success in China's retail market would need to consider the environmental dynamism, reducing operations cost through such as the effective applications of information and technology, creating innovative products and services and amazing results for their customers, providing high quality products for customer, and improving the ability to change the variety of products in accordance with market demands. This finding is contrary to Amoako-Gyampah and Boye's (2001) study, and they found that competitive hostility was a factor that had the most influence on operations strategy choices made by manufacturing firms in Ghana. They further explained that the economic environment of Ghana plays a very important role in the use of manufacturing management practices by firms.

As shown in Figure 3(a) and (b), our path models show that *firm size* influences the nature of relationship between business environmental dimensions and operations strategy choices. In particular, the impact of labour availability on competitive priorities changes when the retail firms are divided into big and small. For small retailers in China, labour availability has a significant negative effect on quality. The shortage of skilled workers and technicians is likely to influence a small retailer's ability to provide customers with high quality products. However, for big retail firms, labour availability

appears to positively affect the degree of emphasis on quality. The large retailers might have other resources such as better customer services and more sufficient financial resources that they can rely on to address quality issues when they face the same environmental stimulus. This finding is consistent with Amoako-Gyampah and Boye's (2001) study. In addition, our path model suggests that lack of skilled workers and technicians also has a negative impact on a big retailer's capability of providing reliable and fast deliveries for customers. Therefore, we conclude that Chinese retail firms including both big and small need to consider the labour availability in the market place, to ensure effective and efficient operations strategy. However, this finding is contrary to Amoako-Gyampah and Boye's (2001) study, who concluded that lack of skilled workers and technicians were of greater concern to small firms than to big firms in Ghana.

Our path model also indicates that *firm nationality* affects the nature of relationship between environmental concerns and operations strategy. For example, the impact of environmental dynamism on competitive priorities seems to be much stronger for local retail firms than foreign retailers in China. As mentioned previously, environmental dynamism is a strong predictor of three operations strategy choices (low cost, quality and flexibility) made by all responding retail firms (see Figure 1). But, for foreign retailers in China, environmental dynamism is a significant predictor of only low cost. The possible reason for this difference is that some of domestic retailers previously operated in an environment of price control and government subsidies. Over the last two decades, China's retail sector has experienced exponential growth during the transforming process from a centrally-planned to a market economy. For instance, since the mid-1990s, majority of state-owned department stores and shopping malls were restructured into shareholding companies (CCFA, 2009). Today firms operating in a dynamic environment have to come up with innovative and creative solutions to problems that are encountered in making a sale or in satisfying customers. They have to consider the increased market dynamism in their operations decisions. However, for foreign retailers such as Tesco, Carrefour, Wal-Mart, and Metro responding to our survey might have been accustomed to operating in the mature and dynamic markets. They have obtained more effective operating model, efficient personnel planning, and advanced technology skills than domestic retailers. Furthermore, as shown in Figure 4(b), competitive hostility has a significant effect on the degree of emphasis placed on flexibility. Foreign retailers need to adapt to the Chinese culture in many ways in order to succeed. Flexibility is particularly important in an increasingly volatile business, and it permits a company to respond and exploit the uncertainty over future changes in areas such as customer preference and taste, competitive moves, and government policy (Anand and Ward, 2004; Kogut and Kulatilaka, 1994; Tajima, 2005). Global flexibility advantages enable retailers to move resources, expertise, innovative concepts and methods across markets (Goldman, 2001).

As described above, our path model suggests that *firm age* or operations experience is also a variable that influences the nature of relationships between business environment and operations strategy choices. For old retail firms in China, only competitive hostility has a direct significant impact on the amount of emphasis placed on quality and delivery performance. The possible explanation for this finding is that old retail firms with over ten years of business experience might have accumulated rich knowledge and experience over Chinese market, especially on sufficient financial resources, personnel planning, relationship networks, and customer services. They might also benefit from reputation effects, which allow them to be used to operating in the current retail market. However,

for young retailers, only labour availability has no direct significant effects on any of operations strategy choices. New firms are usually faced with constraints in their efforts to obtain relevant marketplace information and rich experience in retail management in a short term. Thus, they have to pay much attention to competitive market forces during their decision-making process and marketing strategies. They seek to achieve success through putting the special emphasis on providing customers with high quality products and services as well as reducing business costs.

6.2 Important implications

On the basis of the above discussion, the main important implications of this study for individual firms and policy makers are concluded as follows.

The managerial implication of this study is clear. Firstly, in order to survive in a complex and dynamic environment, the appropriate environmental considerations should be undertaken when a firm develops a comprehensive operations strategy. Secondly, lack of skilled workers and technicians might influence a small firm's ability to provide customers with high quality products and services. Thus small firms should improve their personnel management through recruitment and internal promotions, and improve employee loyalty. Big firms also need to consider the impacts of the shortage of skilled labour on achieving competitive priority of delivery performance. Thirdly, local firms should extremely consider the current dynamic and hostile market environment when they develop effective and efficient operations strategies. On the other hand, since cultural and businesses difference might create obstacles to successful market entry and adaptation, foreign firms should "think local" and fit their business activities to local circumstances within China. Finally, compared with old firms, young firms should pay much attention to competitive market forces during their operations decision-making process.

Our study also provides a few implications for policy makers in China. This study has revealed that many environmental characteristics are relevant for the Chinese retail market. These environmental dimensions should be studied carefully to create a more accommodating environment for retail firms in China, and consequently enhance the development of China's retail sector. The environmental concerns mainly include rising rental and labour cost, lack of skilled workers and technicians, and more demanding quality standards.

7 Conclusions

Drawing upon contingency theory, this study has identified strong relationships between environmental factors such as business cost, competitive hostility, and environmental dynamism and the operations strategy choices encompassed by competitive priorities (low cost, quality, flexibility and delivery performance) for a sample of retailers in China. We have developed a contingency theory of strategic operations management in a developing country and that it can help identify theories unique to developing countries and increase the external validity of theories developed in industrialised countries. In particular, we have investigated the impacts of firm characteristics on the nature of the relationships between business environmental factors and operations strategy choices. Our results have demonstrated that firm characteristics such as firm size, firm age, and

firm nationality appear to influence the links between business environment and the operations strategy choices of low cost, quality, flexibility and delivery performance. For instance, the impacts of environmental factors on the operations strategy choices made by big retail firms are different from the effects that those same environmental stimulus have on the strategy choice made by small retailers. Our study also has shown that other two firm characteristics, namely firm age and firm nationality seem to be important when a retail firm develops its operations strategy in China. Thus operations management researchers should provide explicit consideration to firm characteristics. In general, our results have confirmed the findings obtained by Ward et al. (1995) and Amoako-Gyampah and Boye (2001). For instance, Amoako-Gyampah and Boye (2001) identified the effects that firm size and firm nationality have on the relationships between business environment and operations strategy choices among manufacturing firms in Ghana.

This seems to be the first study to examine the effects that firm characteristics have on the relationships between environmental factors and operations strategy choices made by firms in China's retail sector. As noted above, most previous studies examined the impacts of business environment on operations strategy choices in a manufacturing context. Thus, our study provides, for the first time, insights into operations strategy choices in the service sector. In summary, our study makes a contribution to the understanding of operations strategy on the two fronts. On a theoretical front, this study fills a gap in the existing literature. As mentioned above, there is very limited work on the impacts of firm characteristics on the link between business environment and operations strategy, particularly in China's service sector. This study has shown that firm characteristics appear to play important roles on the nature of linkage between environmental dimensions and operations strategy. On a practical front, the findings of our study have a number of managerial implications presented above. These implications also raise questions that have potential for future research. For example, the factor of firm characteristics should be considered for both substantive and methodological justifications.

This study has some limitations. Perhaps an important limitation of this research is that some variables were excluded that we had originally thought might be relevant to business environment, due to the low reliability. This may be a result of unique business culture in the Chinese retail sector, sample size, and different perception of the respondents.

Acknowledgements

The author would like to thank the anonymous reviewers and the editor for their constructive comments on the previous version of the paper.

References

- Adam, E.E. and Swamidass, P.M. (1989) 'Assessing operations management from a strategic perspective', *Journal of Management*, Vol. 15, No. 2, pp.181–203.
- Amoako-Gyampah, K. (2003) 'The relationships among selected business environment factors and manufacturing strategy: insights from an emerging economy', *Omega*, Vol. 31, pp.287–301.
- Amoako-Gyampah, K. and Boye, S.S. (2001) 'Operations strategy in an emerging economy: the case of the Ghanaian manufacturing industry', *Journal of Operations Management*, Vol. 19, pp.59–79.
- Anand, G. and Ward, P.T. (2004) 'Fit, flexibility and performance in manufacturing: coping with dynamic environments', *Production and Operations Management*, Vol. 13, No. 4, pp.369–385.
- Andersen, T.J. (2004) 'Integrating decentralized strategy making and strategic planning processes in dynamic environments', *Journal of Management Studies*, Vol. 41, pp.1271–1299.
- Aranda, D.A. (2002) 'Relationship between operations strategy and size in engineering consulting firms', *International Journal of Service Industry Management*, Vol. 13, No. 3, pp.263–285.
- Armstrong, J.S. and Overton, T.S. (1977) 'Estimating nonresponse bias in mail surveys', *Journal of Marketing Research*, Vol. 14, No. 3, pp.396–402.
- Badri, M.A., Davis, D. and Davis, D. (2000) 'Operations strategy, environmental uncertainty and performance: a path analytic model of industries in developing countries', *Omega*, Vol. 28, pp.155–173.
- Burns, T. and Stalker, G.M. (1961) *The Management of Innovation*, Tavistock Publications, London.
- Byrne, B.M. (2001) *Structural Equation Modelling with AMOS: Basic Concepts, Applications, and Programming*, 2nd ed., Erlbaum, Mahwah, NJ.
- Cavusgil, S.T. and Zou, S. (1994) 'Marketing strategy-performance relationship: an investigation of the empirical link in export market ventures', *Journal of Marketing*, Vol. 58, No. 1, pp.1–21.
- CCFA (China Chain Store & Franchise Association) (2009) Available at <http://www.chinaretail.org> (accessed on 17 July 2009).
- Chang, S. and Xu, D. (2008), 'Spillovers and competition among foreign and local firms in China', *Strategic Management Journal*, Vol. 29, No. 5, pp.495–518
- Chase, R.B. and Apte, U.M. (2007) 'A history of research in service operations: what's the big idea?', *Journal of Operations Management*, Vol. 25, pp.375–386.
- Chi, T., Kilduff, P. and Gargeya, V.B. (2009) 'Alignment between business environment characteristics, competitive priorities, supply chain structures, and firm business performance', *International Journal of Productivity and Performance Management*, Vol. 58, No. 7, pp.645–669.
- Covin, J.G. and Slevin, D.P. (1989) 'Strategic management of small firms in hostile and benign environments', *Strategic Management Journal*, Vol. 10, pp. 75–87.
- Dess, G.G. and Beard, D.W. (1984) 'Dimensions of organizational task environments', *Administrative Science Quarterly*, Vol. 29, No. 1, pp.52–73.
- Dess, G.G. and Davis P.S. (1984) 'Porter's (1980) generic strategies as determinants of strategic group membership and organizational performance', *Academy of Management Journal*, Vol. 27, pp.467–488.
- Dess, G.G., Ireland, R.D. and Hitt, M.A. (1990) 'Industry effects and strategic management research', *Journal of Management*, Vol. 16, No. 1, pp.7–27.
- Douglas, S.P. and Craig, C.S. (1989) 'Evolution of global marketing strategy: scale, scope and synergy', *Columbia Journal of World Business*, Vol. 24, No. 3, pp.47–60.
- Elbanna, S. and Child, J. (2007) 'Influences on strategic decision effectiveness: development and test of an integrative model', *Strategic Management Journal*, Vol. 28, No. 4, pp.431–453.

- Fine, C.H. and Hax, A.C. (1985) 'Manufacturing strategy: a methodology and an illustration', *Interfaces*, Vol. 15, No. 6, pp.28–46.
- Flynn, B.B., Huo, B. and Zhao, X. (2010) 'The impact of supply chain integration on performance: a contingency and configuration approach', *Journal of Operations Management*, Vol. 28, No. 1, pp.58–71.
- Flynn, B.B., Sakakibara, S., Schroeder, R.G., Bates, K.A. and Flynn, E.J. (1990) 'Empirical research methods in operations management', *Journal of Operations Management*, Vol. 9, No. 2, pp.250–284.
- Flynn, B.B., Zhao, X. and Roth, A.V. (2007) 'The myth of the dragon: operations management in today's China', *Business Horizons*, Vol. 50, No. 3, pp.177–183.
- Fornell, C. and Larcker, D.F. (1981) 'Evaluating structural equation models with unobservable variables and measurement error', *Journal of Marketing Research*, Vol. 18, No. 1, pp.29–50.
- Gamble, J. (2006) 'Multinational retailers in China: proliferating 'McJobs' or developing skills?', *Journal of Management Studies*, Vol. 43, No. 7, pp.1463–1490.
- Goldman, A. (2001) 'The transfer of retail formats into developing economies: the example of China', *Journal of Retailing*, Vol. 77, pp.221–242.
- Gupta, O.K., Jantan, M. and Ndubisi, N.O. (2005) 'The moderator effect of supplier management on the relationship between supplier selection and manufacturing flexibility', *International Journal of Services and Operations Management*, Vol. 1, No. 2, pp.147–167.
- Hair, J.F. Jr., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006) *Multivariate Data Analysis*, 6th ed., Pearson Education, Upper Saddle River, NJ.
- Harris, D. and Walters, D. (1992) *Retail Operations Management: A Strategic Approach*, Prentice-Hall, Hemel Hempstead.
- Hart, S. and Banbury, C. (1994) 'How strategy-making processes can make a difference', *Strategic Management Journal*, Vol. 15, No. 4, pp.251–269.
- Hayes, R.H. and Wheelwright, S.C. (1984) *Restoring our Competitive Edge: Competing through Manufacturing*, Wiley, New York, NY.
- Hu, L. and Bentler, P.M. (1999) 'Cut-off criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives', *Structural Equation Modelling: A Multidisciplinary Journal*, Vol. 6, No. 1, pp.1–55.
- Jiang, B., Frazier, G.V. and Heiser, D. (2007) 'China-related POM research: a literature review and suggestions for future research', *International Journal of Operations and Production Management*, Vol. 27, No. 7, pp.662–684.
- Kazan, H., Ozer, G. and Certin, A.T. (2006) 'The effect of manufacturing strategies on financial performance', *Measuring Business Excellence*, Vol. 10, No. 1, pp.14–26.
- Khandwalla, P.N. (1972) 'Environment and its impact on the organization', *International Studies of Management and Organization*, Vol. 2, pp.297–313.
- Kim, L. and Lim, Y. (1988) 'Environment, generic strategies, and performance in a rapidly developing country: a taxonomic approach', *Academy of Management Journal*, Vol. 31, No. 4, pp.802–827.
- Koch, A.J. (2001) 'Factors influencing market and entry mode selection: developing the MEMS model', *Marketing Intelligence & Planning*, Vol. 19, No. 5, pp.351–361.
- Kogut, B. and Kulatilaka, N. (1994) 'Operating flexibility, global manufacturing, and the option value of a multinational network', *Management Science*, Vol. 40, pp.123–139.
- Koutouvalas, D.K., Siomkos, G.J. and Mylonakis, J. (2005) 'Perceived service quality management and loyalty in public versus private banks operations: some empirical evidence', *International Journal of Services and Operations Management*, Vol. 1, No. 2, pp.101–122.
- Lawrence, P.R. and Lorsch, J.W. (1967) *Organization and Environment*, Harvard University Press, Cambridge, MA.
- Leong, G.K., Synder, D.L. and Ward P.T. (1990) 'Research in the process and content of manufacturing strategy', *Omega*, Vol. 18, No. 2, pp.109–122.

- Lo, T.W., Lau, H.F. and Lin, G. (2001) 'Problems and prospects of supermarket development in China', *International Journal of Retail & Distribution Management*, Vol. 29, No. 2, pp.66–75.
- Lowson, R.H. (2003) 'The nature of an operations strategy: combining strategic decisions from the resource-based and market-driven viewpoints', *Management Decision*, Vol. 41, No. 6, pp.538–549.
- Lynch, R. (2003) *Corporate Strategy*, 3rd ed., FT Prentice Hall.
- Maguire, S., Koh, S.C.L. and Huang, C. (2006) 'Managing customer satisfaction through efficient listening tools: an evaluation of best practice in four world-class companies', *International Journal of Services and Operations Management*, Vol. 2, No.1, pp.22–41.
- Marucheck, A., Pannesi, R. and Anderson, C. (1990) 'An exploratory study of the manufacturing strategy process in practice', *Journal of Operations Management*, Vol. 9, pp.101–123.
- Megicks, P. (2001) 'Competitive strategy types in the UK independent retail sector', *Journal of Strategic Marketing*, Vol. 9, pp.315–328.
- Miller, C.C., Burke, L.M. and Glick, W.H. (1998) 'Cognitive diversity among upper-echelon executives: implications for strategic decision processes', *Strategic Management Journal*, Vol. 19, No. 1, pp.39–58.
- Miller, D. and Friesen, P.H. (1978) 'Archetypes of strategy formulation', *Management Science*, Vol. 24, pp.921–933.
- Miller, D. and Friesen, P.H. (1983) 'Strategy-making and environment: the third link', *Strategic Management Journal*, Vol. 4, No. 3, pp.221–235.
- Mills, P.K. and Moberg, D.J. (1982) 'Perspectives on the technology of service operations', *Academy of Management Review*, Vol. 3, pp.467–478.
- Mintzberg, H. (1994) 'The fall and rise of strategic planning', *Harvard Business Review*, Vol. 72, No. 1, pp.107–114.
- Mohan-Neill, S.I. (1995) 'The influence of firm's age and size on its environmental scanning activities', *Journal of Small Business Management*, Vol. 33, No. 4, pp.10–21.
- National Bureau of Statistics of China (NBS) (2007) *China Market Statistical Yearbook-2007*, China Statistics Press, Beijing.
- Nunnally, J.C. (1978) *Psychometric Theory*, McGraw-Hill, New York.
- Nunnally, J.C. and Bernstein, I.H. (1994) *Psychometric Theory*, McGraw-Hill, New York.
- Paiva, E.L., Roth, A.V. and Fensterseifer, J.E. (2008) 'Organizational knowledge and the manufacturing strategy process: a resource-based view analysis', *Journal of Operations Management*, Vol. 26, pp.115–132.
- Pal, J.W. and Byrom, J.W. (2003) 'The five Ss of retail operations: a model and tool for improvement', *International Journal of Retail & Distribution Management*, Vol. 31, No. 10, pp.518–528.
- Peng, D.X., Schroeder, R.G. and Shah, R. (2008) 'Linking routines to operations capabilities: a new perspective', *Journal of Operations Management*, Vol. 26, No. 6, pp.730–748.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003) 'Common method bias in behavioural research: a critical review of the literature and recommended remedies', *Journal of Applied Psychology*, Vol. 88, No. 5, pp.879–903.
- Porter, M. E. (1980) *Competitive Strategy*, Free Press, New York, NY.
- Ramaseshan, B., Yip, L.S.C. and Pae, J.H. (2006) 'Power, satisfaction and relationship commitment in Chinese store-tenant relationship and their impact on performance', *Journal of Retailing*, Vol. 82, No. 1, pp.63–70.
- Rich, P. (1992) 'The organizational taxonomy: definition and design', *Academy of Management Review*, Vol. 17, No. 4, pp.758–781.
- Roth, A.V. and Menor, L.J. (2003) 'Insights into service operations management: a research agenda', *Production and Operations Management*, Vol. 12, No. 2, pp.145–164.

- Roth, A.V. and van der Velde, M. (1991) 'Operations as marketing: a competitive service strategy', *Journal of Operations Management*, Vol. 10, No. 3, pp.303–328.
- Sanchez, J.I. and Brock, P. (1996) 'Outcomes of perceived discrimination among hispanic employees: is diversity management a luxury or a necessity?', *Academy of Management Journal*, Vol. 39, No. 3, pp.704–719.
- Schroder, R. and Sohal, A. (1999) 'Organizational characteristics associated with AMT adoption: towards a contingency framework', *International Journal of Operations & Production Management*, Vol. 19, No. 12, pp.1270–1291.
- Shah, R. and Goldstein, S.M. (2006) 'Use of structural equation modelling in operations management research: looking back and forward', *Journal of Operations Management*, Vol. 24, No. 1, pp.148–169.
- Skinner, W. (1969) 'Manufacturing – missing link in corporate strategy', *Harvard Business Review*, Vol. 47, No. 3, pp.136–145.
- Slack, N., Chambers, S. and Johnston, R. (2004) *Operations Management*, 4th ed., FT/Prentice Hall.
- Smith-Daniels, V.L. (2007) 'Special section of the Journal of Service Research: service operations: theory, practice, and future research', *Journal of Service Research*, Vol. 9, No. 4, pp.388–389.
- Swamidass, P.M. and Newell, W.T. (1987) 'Manufacturing strategy, environmental uncertainty and performance: a path analytic model', *Management Science*, Vol. 33, No. 4, pp.509–524.
- Tajima, M. (2005) 'Adaptability and achieving supply chain agility', *International Journal of Services and Operations Management*, Vol. 1, No. 2, pp.134–146.
- Temtime, Z.T. and Pansiri, J. (2005) 'Managerial competency and organizational flexibility in small and medium enterprise in Botswana', *Problems and Perspectives in Management*, Vol. 1, pp.25–36.
- Vickery, S.K., Droge, C. and Markland, R.E. (1997) 'Dimensions of manufacturing strength in the furniture industry', *Journal of Operations Management*, Vol. 15, pp.317–330.
- Voss, C.A. (1986) *Managing New Manufacturing Technologies*, Operations Management Association, Monograph No. 1.
- Ward, P.T. and Duray, R. (2000) 'Manufacturing strategy in context: environment, competitive strategy and manufacturing strategy', *Journal of Operations Management*, Vol. 18, pp.123–138.
- Ward, P.T., Duray, R., Leong, G.K. and Sum, C. (1995) 'Business environment, operations strategy, and performance: an empirical study of Singapore manufacturers', *Journal of Operations Management*, Vol. 13, No. 2, pp.99–115.
- Ward, P.T., McCreery, J.K., Ritzman, L.P. and Sharma, D. (1998) 'Competitive priorities in operations management', *Decision Sciences*, Vol. 29, No. 4, pp.1035–1044.
- Wheelwright, S.C. (1984) 'Manufacturing strategy: defining the missing link', *Strategic Management Journal*, Vol. 5, pp.77–91.
- Yeung, J.H.Y., Selen, W., Zhang, M. and Huo, B. (2009) 'The effects of trust and coercive power on supplier integration', *International Journal of Production Economics*, Vol. 120, pp.66–78.
- Zahra, S.A. and Das, S.R. (1993) 'Building competitive advantage on manufacturing resources', *Long Range Planning*, Vol. 26, No. 2, pp.90–100.
- Zhao, X., Sum, C.C., Qi, Y., Zhang, H. and Lee, T.S. (2006) 'A taxonomy of manufacturing strategies in China', *Journal of Operations Management*, Vol. 24, pp.621–636.
- Zhu, Q. and Sarkis, J. (2007) 'The moderating effects of institutional pressures on emergent green supply chain practices and performance', *International Journal of Production Research*, Vol. 45, Nos. 18/19, pp.4333–4355.

Appendix 3-a: Interview Guide in English

Interview Guide

Two terms should be defined before conducting the interview:

1. Operations Strategy

Here operations strategy is defined as the total pattern of decisions which shape the long-term capabilities of any type of operation and their contribution to overall strategy, through the reconciliation of market requirements and operations resources. Operations strategy can be expressed in terms of at least four basic components: cost, quality, delivery performance, and flexibility, for example:

- Reduce business cost
- Provide high quality product and service
- Provide fast and reliable delivery
- Improve operational flexibility

2. Business Performance

Here business performance can be measured in market share, sales growth, profit growth, and return on investment.

General Information

Your name: _____

Your position in the company: _____

Number of years you have worked for the company: _____ years

Number of years' work experience you have in retail industry: _____ years

Section 1: Business Environment

1. Do you think the current **Rising Business Costs** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed to reduce this effect.
2. Do you think the **Shortage of Skilled Labour** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed to reduce this effect.
3. Do you think **Competitive Hostility (such as keen competition, low profit margins, and high quality demands)** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed to reduce this effect.

4. Do you think the **Changes in Customer Taste and Preference** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed to reduce this effect.
5. Do you think the **Changes in Retail Technology** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed to reduce this effect.

Section 2: Operations Resources

1. Do you think **Human Resources** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed.
2. Do you think the **Relationship with Customer** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed.
3. Do you think the **Relationship with Supplier** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operation strategies your company has developed.
4. Do you think **Competitor Analysis** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed.
5. Do you think the **Relationship with Government** affect the *development of operations strategy* of your company? If Yes, please explain **how** it affects and **what** operations strategies your company has developed.

Section 3: Operations Strategy and Performance

1. Which competitive operations strategies (such as cost, quality, flexibility, and fast and reliable delivery) can help your company to achieve superior performance?
2. What are the driving forces influencing your company's business performance?

Appendix 3-b: Interview Guide in Chinese

公司面试提纲

在面试开始之前有两个概念需要定义：

1. 运营策略

在这里，运营策略定义为公司通过对其商业运营环境和运营资源两方面的统一协调来提高公司的长期运营能力，从而实现公司的运营目标。公司的运营策略一般包括四个方面：运营成本，质量，灵活性和配送。例如：

- 降低运营成本
- 提高商品和服务质量
- 提供快速可靠的配送
- 提高企业灵活性

2. 公司业绩

在这里，公司业绩的评估标准包括：市场占有率和投资回报率，以及销售额和利润增长率。

个人信息

您的姓名： _____
您在公司的职位： _____
您在公司的工龄： _____ 年
您在零售行业的工作经验： _____ 年

公司运营环境和运营策略

1. 您认为零售业**运营成本的增长**是否影响公司运营策略的制定？如果有影响，请指出它如何影响，以及您公司采取了哪些策略来消除这种影响。
2. 您认为零售业**高级管理人才短缺**是否影响公司运营策略的制定？如果有影响，请指出它如何影响，以及您公司采取了哪些策略来消除这种影响。
3. 您认为零售业**行业竞争的日益激烈**（例如行业利润率的降低和质量标准的日益提高）是否影响公司运营策略的制定？如果有影响，请指出它如何影响，以及您公司采取了哪些策略来消除这种影响。
4. 您认为零售业**顾客喜好性的变化**是否影响公司运营策略的制定？如果有影响，请指出它如何影响，以及您公司采取了哪些策略来消除这种影响。

5. 您认为零售业**商品和服务所需技术的更新**是否影响公司运营策略的制定? 如果有影响, 请指出它如何影响, 以及您公司采取了哪些策略来消除这种影响.

公司运营资源和运营策略

1. 您认为**公司员工**的竞争力是否影响公司运营策略的制定? 如果有影响, 请指出它如何影响, 以及您公司采取了哪些策略.
2. 您认为**公司和顾客**的关系是否影响公司运营策略的制定? 如果有影响, 请指出它如何影响, 以及您公司采取了哪些策略.
3. 您认为**公司和供应商**的关系是否影响公司运营策略的制定? 如果有影响, 请指出它如何影响, 以及您公司采取了哪些策略.
4. 您认为**公司和主要竞争者**的关系是否影响公司运营策略的制定? 如果有影响, 请指出它如何影响, 以及您公司采取了哪些策略.
5. 您认为**公司和政府部门**之间的关系是否影响公司运营策略的制定? 如果有影响, 请指出它如何影响, 以及您公司采取了哪些策略.

公司运营策略和业绩

1. 您认为什么**运营策略** (例如降低运营成本, 提高商品和服务质量, 提高企业灵活性和提供快速可靠的配送) 会影响您公司的业绩? 如果有影响, 请指出它如何影响, 以及您公司是否采取了此策略.
2. 您认为影响您公司业绩的**主要因素**是什么?

Appendix 4: Profiles of Case Companies

A-Mart

A-Mart is a multinational retailer that entered China in 2004, when it set up a joint-venture with a Chinese business partner after a three-year extensive research on China's retail market. A-Mart subsequently acquired a 50% stake from its joint venture partner. In 2006, it raised its stake to 90%, giving the group control of the entity and making the Chinese partner as its subsidiary. A-Mart took its Chinese partner's 46 stores into its network. Currently, the joint venture partner just gets dividend and is not involved in retail operations. The Chinese partner offers its local knowledge and operating expertise, while A-Mart adds its supply chain, product development, and store operation prowess to improve the shopping experience for customers. A-Mart opened its first own-brand store in Beijing in 2007, with a floor space of about 10,000 square meters and 500 staff. According to A-Mart's annual report (2008), it currently operates 58 chain stores and 4 express stores in 22 Chinese cities, and employs almost 21,000 people in China. A-Mart has set up four major operations areas in China, including Huabei area (e.g. Beijing and Tianjin), Huanan area (e.g. Guangzhou), Huadong area (e.g. Shanghai and Hangzhou) and Great North (e.g. Dongbei and Shandong) (data mainly from the A-Mart website and company report).

B-Mart

B-Mart is a major retail chain company in the local market (Henan province); it owns 26 chain stores with an aggregate selling area of approximately 60,000 m² and employs 1,872 people. Most of its employees have the good educational background (such as the relevant qualifications and certificates in business management and retail operations) and are highly motivated. In 2002,

the manager of B-Mart cooperated with the other three leading retail companies in this province, and set up a special procuring alliance, namely “*Sifang Liancai*”. This is a voluntary grocery union. “*Sifang Liancai*” joined in IGA (Independent Grocery Alliance) in 2006. The retailers in this alliance can share the information about the related retailing experience through the regular meeting among employees and top management of the companies. The four companies always organize training programs for the employees and provide them the opportunities to learn and communicate each other. In addition, the four retailers can help order local specialties for each other at lower prices. The unity can generate the lower costs, in turn, enables the four retailers to offer lower prices than their giant competitors. In 2006, B-Mart introduced a new retail format from one retailer of “*Sifang Liancai*”, successfully founded a shopping mall, Splendid Mall, in Nanyang City. The company began to operate in multiple retail formats.

C-Mart

C-Mart was established in 2000, and today it has grown into a major retail firm in the local market (Henan province). C-Mart owns one hypermarket and one department store with an aggregate selling area of approximately 40,000 m² and employs more than 2,000 people. The hypermarket is located in the central business district, providing customers with various varieties of daily products. The department store is the biggest store in the local market (Nanyang City, Henan province) with a total selling floor space of 25,000 m². C-Mart aims to offer a large number of famous brand clothing, handbags, shoes, jewellery, and health and beauty products. C-Mart also seeks to undertake corporate social responsibility and set up the good relationship with the local government (data mainly from C-Mart website and company report).

D-Mart

D-Mart was established in 2001 originally as a supermarket. Today, D-Mart, through the development for several years, has grown into a leading retail company in the local market (Nanyang city, Henan province). It now operates 20 chain stores, with an aggregate selling floor space of 30,000 m² and 3,000 full-time employees. Over the last few years, the company has shown average annual sales growth of 200 per cent. It is the fastest-growing company in the local retail industry. D-Mart put special emphasis on human resource management. It seeks to provide a variety of training programs for the employees, motivating employees to continuously improve work outputs. Moreover, D-Mart aims to set up long-term stable relationship with suppliers to achieve win-win result. In 2005, D-Mart started to enter into the department store sector, and establish a new department store in the central business district. The department store has a floor space of 25, 000 m² (data mainly from D-Mart website and company report).

E-Mart

E-Mart was founded in 1998. A leading electronics retailer in the USA acquired a majority stake of E-Mart in 2006. Today, it is the fourth-largest appliance and consumer electronics retailer in China. It operates with more than 130 stores in eight provinces, including those surrounding Shanghai, along with Sichuan and Yunnan provinces. In 2005, E-Mart had revenue of nearly \$700 million, and about 12,000 employees. After the mergers and acquisitions (M&A), E-Mart has introduced many advanced retail techniques and human-based management from its US partner. E-Mart emphasizes on setting up good and long-term relationship with customers, suppliers and employees. E-Mart also faces tough competition from Gome and Suning

Appliance, the China's top two electronic retailers (data mainly from E-Mart website and company report).

Appendix 5-a: Questionnaire in English



Nottingham University
Business School

Nottingham University Business School

Questionnaire on Retail Operations

I am currently a PhD student at Nottingham University Business School, and the topic of my research is “Retail Operations”. This study aims to empirically investigate the functional drivers of operations strategy development and business performance and assess their impacts with case studies of retail firms in China. I hope that this study cannot only contribute to the academic field but also provide valuable insights on the functional drivers of the retail industry. After completing the research, I shall be happy to send you a summary of findings of my study.

This questionnaire includes five sections: firm characteristics, operations resources, business environment, operations strategy, and business performance. Please answer all of the questions, and express your considered opinions on this questionnaire. Your accurate and objective responses will be valuable. Please indicate your choice with a cross “x” in the appropriate box. Only one choice in each question is required. All answers will be treated confidentially.

My Contact Detail

Name: Wantao Yu
Correspondence Address: Research Scholar, B26, South Building, Nottingham University Business School, Jubilee Campus, Wollaton Road, Nottingham, NG8 1BB, UK
Tel.: +44(0)11584 67751
Fax: +44(0)11584 66341
E-mail: lixwy2@nottingham.ac.uk

General Information

Name of the firm: _____
 Your position in the firm: _____
 Number of years' work experience you have in the retail industry: _____ years

Section One: Firm Characteristics

1.1. Number of employees in your firm

- | | | | |
|---------------|--------------------------|-------------|--------------------------|
| 1 – 99 | <input type="checkbox"/> | 100 – 199 | <input type="checkbox"/> |
| 200 – 499 | <input type="checkbox"/> | 500 – 999 | <input type="checkbox"/> |
| 1000 – 4999 | <input type="checkbox"/> | 5000 – 9999 | <input type="checkbox"/> |
| 10000 or more | <input type="checkbox"/> | | |

1.2. Total sales volume (in **MILLION** Yuan) of your firm

- | | | | |
|-------------|--------------------------|-------------|--------------------------|
| Below 10 | <input type="checkbox"/> | 10 – 50 | <input type="checkbox"/> |
| 50 – 100 | <input type="checkbox"/> | 100 – 500 | <input type="checkbox"/> |
| 500 – 1000 | <input type="checkbox"/> | 1000 – 2000 | <input type="checkbox"/> |
| 2000 – 5000 | <input type="checkbox"/> | Above 5000 | <input type="checkbox"/> |

1.3. Which retail sector does your firm belong to?

- | | | | |
|----------------------------------|--------------------------|------------------------------------|--------------------------|
| Food retailing | <input type="checkbox"/> | Health beauty & pharmacy retailing | <input type="checkbox"/> |
| Clothing and footwear retailing | <input type="checkbox"/> | Electrical retailing | <input type="checkbox"/> |
| DIY home improvement & furniture | <input type="checkbox"/> | | |
| Others (please specify) _____ | | | |

Section Two: Operations Resources

2.1. Please evaluate your firm's *employees* (evaluate your answer where **1=Strongly Disagree**, and **5=Strongly Agree**).

Our employees are responsible leadership	1	2	3	4	5
Our employees work well with colleagues in teams	1	2	3	4	5
Our employees are highly motivated	1	2	3	4	5
Our employees are fully trained for the work they perform	1	2	3	4	5
Our employees have related experience in retailing	1	2	3	4	5
Our employees have good educational background	1	2	3	4	5
Our employees play role in formulating plans	1	2	3	4	5

2.2. Please indicate your firm's *external relationships* with your customers, suppliers, competitors, and government (evaluate your answer where **1=Strongly Disagree**, and **5=Strongly Agree**).

<i>CUSTOMERS</i>					
We keep in close contact with our customers at many levels	1	2	3	4	5
We regularly receive and act upon customer satisfaction surveys	1	2	3	4	5
We respond to customer complaints and suggestions	1	2	3	4	5
We develop various loyalty card schemes for our customers	1	2	3	4	5
<i>SUPPLIERS</i>					
We treat our suppliers with honesty, fairness and respect	1	2	3	4	5
We strive to achieve win-win relationships with our suppliers	1	2	3	4	5
We respond to improvement suggestions from suppliers, and provide them with feedback and complaints	1	2	3	4	5

We share strategic operations planning with our major suppliers	1	2	3	4	5
COMPETITORS					
We understand action and strategies of our competitors	1	2	3	4	5
We identify strengths and weaknesses of our competitors, and benchmark ourselves against them	1	2	3	4	5
We have an appropriate communication approach to our competitors	1	2	3	4	5
GOVERNMENT					
We seek long-term stable relationship with the government	1	2	3	4	5
We obtain preferential treatments from the government	1	2	3	4	5
We influence changes to retail regulations to some extent	1	2	3	4	5
We strictly obey laws and regulations issued by the government	1	2	3	4	5

2.3. Please indicate the level of *information technology* used in your firm (evaluate your answer where **1=Never Use It, and 5=Very Frequently Use It**).

Barcode technique	1	2	3	4	5
Radio Frequency Identification (RFID) technology	1	2	3	4	5
Geographical Information Systems (GIS)	1	2	3	4	5
Point of Sale (POS) system	1	2	3	4	5
Electronic Data Interchange (EDI)	1	2	3	4	5
Retail management software	1	2	3	4	5
Self-service technology (SSTs)	1	2	3	4	5
Internet connectivity and e-retailing	1	2	3	4	5

Section Three: Business Environment

3.1. Please indicate the degree of hostility in the following environmental factors your firm faces (evaluate your answer where **1=Very Low Extent, and 5=Very High Extent**).

Rising labour cost	1	2	3	4	5
Rising rental cost	1	2	3	4	5
Rising transport cost	1	2	3	4	5
Rising utilities cost	1	2	3	4	5
Shortage of managerial and administrative staff	1	2	3	4	5
Shortage of technicians	1	2	3	4	5
Shortage of skilled workers	1	2	3	4	5
Shortage of clerical and related workers	1	2	3	4	5
Keen competition in the retail industry	1	2	3	4	5
Declining demand in the retail market	1	2	3	4	5
Low profit margins	1	2	3	4	5
More demanding quality standards	1	2	3	4	5
Severe government laws and regulations	1	2	3	4	5

3.2. Please indicate the rate of changes in the following environmental factors your firm faces (evaluate your answer where **1=Very Slow, and 5=Very Rapid**).

Rate at which goods/services become outdated	1	2	3	4	5
Rate of changes in retail technology	1	2	3	4	5
Rate of innovation in new service development	1	2	3	4	5
Rate of changes in tastes and preferences of customers	1	2	3	4	5
Rate of changes in your key competitors' market activities	1	2	3	4	5

Section Four: Operations Strategy

4. Please indicate the degree of emphasis which your firm put on the following activities to remain competitive (evaluate your answer where **1=No Emphasis, and 5=Extreme Emphasis**).

<i>COST</i>					
Reduce overhead costs	1	2	3	4	5
Reduce inventory level	1	2	3	4	5
Increase equipment utilization	1	2	3	4	5
Increase private brands (PBs) sales	1	2	3	4	5
<i>QUALITY</i>					
Provide appropriate specification of goods/services for customers	1	2	3	4	5
Improve goods/services performance and reliability	1	2	3	4	5
Make extremely strict product quality control procedures	1	2	3	4	5
Require suppliers to pass a formal certification of quality control and improvement system	1	2	3	4	5
<i>FLEXIBILITY</i>					
Improve the ability to introduce new product/service or modify existing ones	1	2	3	4	5
Improve the ability to change the variety of product/service in a given time	1	2	3	4	5
Improve the ability to respond quickly to shift in demand, to increase or decrease operational capacity	1	2	3	4	5
Improve the ability to change planned delivery dates meeting customers' or chain stores' emergent requirements	1	2	3	4	5
<i>DELIVERY PERFORMANCE</i>					
Provide fast deliveries	1	2	3	4	5
Meet delivery promises	1	2	3	4	5
Improve after sales service	1	2	3	4	5

Section Five: Business Performance

5. *Compare to your competitors*, please indicate your firm's position on the following financial measures over the last three years (evaluate your answer where **1=Significantly Lower, and 5=Significantly Higher**).

Market share	1	2	3	4	5
Sales growth	1	2	3	4	5
Profit growth	1	2	3	4	5
Return on investment	1	2	3	4	5

Thanks a lot for giving your time to complete this questionnaire!

Appendix 5-b: Questionnaire in Chinese



问卷调查

我是诺丁汉大学商学院的在读博士学生, 我的研究课题是“零售商的运营管理”。这项课题以在中国经营的零售公司为案例分析, 通过运营管理的角度来探究影响公司运营策略和公司业绩的主导因素。我希望这项研究不但有利于相关理论的发展, 而且能够为中国零售业的发展和壮大提供有益的探索。在完成这项研究后, 我会把最终的研究报告副本寄发给你们。

问卷填写说明

1. 问卷分为四个部分, 第一部分是有关您公司的基本信息; 第二部分是评估您公司的运营资源; 第三部分是评估您公司所处的运营环境; 第四部分是评估您公司的运营策略; 第五部分是评估您公司的运营业绩;
2. 数字从 1 到 5 是一个强度渐变的过程, 您可以选择 1 到 5 中的任何一个数字。这里没有所谓正确或错误的答案;
3. 请不要连续选择同一个答案, 客观地选择符合贵公司实际状况的表述。这样, 最终的研究结果才可能有针对性地帮助贵公司制订运营策略和提高运营效益。否则只能被作为无效问卷处理;
4. 请回答所有的问题, 以保持问卷的完整性;
5. 每个问题只需选择一个答案, 请用“√”标注您的答案。

您正确和客观的回答将对这项研究具有很大价值。所有的数据和信息都会被保密。

联系方式

姓名:	Wantao Yu
通讯住址 (英国):	B26, South Building, Nottingham University Business School, Jubilee Campus, Wollaton Road, Nottingham, NG8 1BB, UK
电话:	+44(0)115 8467 751
传真:	+44(0)115 8466 341
电子邮件:	lixwy2@nottingham.ac.uk

个人信息

公司名称: _____
 您在公司的职位: _____
 您在零售行业的工作经验: _____年

第一节: 您公司的基本信息

1.1. 您公司的员工人数

- | | | | |
|---------------|--------------------------|---------------|--------------------------|
| 1 - 99 人 | <input type="checkbox"/> | 100 - 199 人 | <input type="checkbox"/> |
| 200 - 499 人 | <input type="checkbox"/> | 500 - 999 人 | <input type="checkbox"/> |
| 1000 - 4999 人 | <input type="checkbox"/> | 5000 - 9999 人 | <input type="checkbox"/> |
| 10000 人或更多 | <input type="checkbox"/> | | |

1.2. 您公司 2007 的销售总额

- | | | | |
|-------------|--------------------------|-------------|--------------------------|
| 低于 1 千万 | <input type="checkbox"/> | 1 千万 - 5 千万 | <input type="checkbox"/> |
| 5 千万 - 1 亿 | <input type="checkbox"/> | 1 亿 - 5 亿 | <input type="checkbox"/> |
| 5 亿 - 10 亿 | <input type="checkbox"/> | 10 亿 - 20 亿 | <input type="checkbox"/> |
| 20 亿 - 50 亿 | <input type="checkbox"/> | 高于 50 亿 | <input type="checkbox"/> |

1.3. 您公司所在的零售行业

- | | | | |
|----------------|--------------------------|-----------|--------------------------|
| 食品行业 | <input type="checkbox"/> | 洗涤保健和药品行业 | <input type="checkbox"/> |
| 服装和鞋类行业 | <input type="checkbox"/> | 电器行业 | <input type="checkbox"/> |
| DIY 和家具建材行业 | <input type="checkbox"/> | | |
| 其它 (请注明) _____ | | | |

第二节: 公司运营资源

2.1. 请评估您公司的员工, (1 表示完全不同意, 2 表示不同意, 3 表示不确定, 4 表示同意, 5 表示完全同意).

员工富有责任感	1	2	3	4	5
员工具有团队工作能力	1	2	3	4	5
员工对工作具有积极性	1	2	3	4	5
员工能够得到相应的培训	1	2	3	4	5
员工具有相关的零售业经验	1	2	3	4	5
员工具有较好的教育背景	1	2	3	4	5
员工能够在公司计划的形成中扮演重要角色	1	2	3	4	5

2.2. 请评估您公司与顾客, 供应商, 竞争者和政府之间的关系, (1 表示完全不同意, 2 表示不同意, 3 表示不确定, 4 表示同意, 5 表示完全同意).

顾客					
我们能够和顾客保持紧密的联系	1	2	3	4	5
我们经常收到并及时反馈顾客满意度的问卷调查	1	2	3	4	5
我们及时反馈顾客的投诉和建议	1	2	3	4	5
我们为顾客设计不同种类的会员卡	1	2	3	4	5
供应商					
我们诚实, 公平, 尊重地对待供应商	1	2	3	4	5

我们寻求和供应商之间建立双赢的关系	1	2	3	4	5
我们认真听取来自供应商的意见,同时向供应商提供相关的反馈信息	1	2	3	4	5
我们同主要供应商分享公司的运营计划	1	2	3	4	5
竞争者					
我们深入了解竞争者的活动和策略	1	2	3	4	5
我们分析竞争者的优势和劣势,并且通过与竞争者的对比来评估自己	1	2	3	4	5
我们和竞争者有适当的沟通途径	1	2	3	4	5
政府					
我们寻求和政府之间建立长期稳定的关系	1	2	3	4	5
我们能够从政府获得优待,例如财政支持和税务减免等	1	2	3	4	5
我们在某种程度上能够影响行业法律法规的制定和修改	1	2	3	4	5
我们严格遵守政府部门颁布的行业法律法规	1	2	3	4	5

2.3. 请评估您公司对以下技术资源的运用程度, (1 表示从未使用, 2 表示很少使用, 3 表示有时使用, 4 表示经常使用, 5 表示总是使用).

条形码技术 (Barcode)	1	2	3	4	5
无线射频识别技术 (RFID)	1	2	3	4	5
地理信息系统 (GIS)	1	2	3	4	5
销售时点信息管理系统 (POS)	1	2	3	4	5
电子数据交换 (EDI) 系统	1	2	3	4	5
零售业的相关软件,例如企业资源计划系统 (ERP)和商业智能 (BI)软件等	1	2	3	4	5
自助服务技术 (SSTs)	1	2	3	4	5
互联网和电子商务	1	2	3	4	5

第三节: 公司运营环境

3. 公司商业环境的敌对性:

请评估您公司所面临商业环境敌对性的状况, (1 表示完全不同意, 2 表示不同意, 3 表示不确定, 4 表示同意, 5 表示完全同意).

劳动力成本的增长	1	2	3	4	5
房租费用的增长	1	2	3	4	5
交通费用的增长	1	2	3	4	5
公用设施费用的增长	1	2	3	4	5
管理层人员的短缺	1	2	3	4	5
专业技术人员的短缺	1	2	3	4	5
高级管理人才的短缺	1	2	3	4	5
文书工作人员的短缺	1	2	3	4	5
行业竞争力度的加大	1	2	3	4	5
市场需求的下降	1	2	3	4	5
行业利润率的降低	1	2	3	4	5
质量标准的提高	1	2	3	4	5
严格的行业法律法规的推行	1	2	3	4	5

4. 公司商业环境的动态性:

请评估您公司所面临商业环境多变性的状况, (1 表示非常慢, 2 表示比较慢, 3 表示一般, 4 表示比较快, 5 表示非常快).

零售业商品和服务淘汰过时的速度	1	2	3	4	5
零售业商品和服务所需技术的改变	1	2	3	4	5
零售业新商品和服务的创新速度	1	2	3	4	5
顾客喜好性的改变	1	2	3	4	5
竞争者营销策略的变化	1	2	3	4	5

第四节: 运营策略

5. 请评估您公司对以下策略的重视程度, (1 表示毫不注重, 2 表示不太注重, 3 表示一般, 4 表示比较注重, 5 表示非常注重).

<i>成本</i>					
降低营业间接成本	1	2	3	4	5
减少库存量	1	2	3	4	5
提高设备的利用率	1	2	3	4	5
增加自有品牌的销售	1	2	3	4	5
<i>质量</i>					
提供高标准的产品和服务	1	2	3	4	5
提高商品和服务的使用性能以及可靠性	1	2	3	4	5
制定非常严格的质量控制程序	1	2	3	4	5
要求供应商通过正式的质量认证体系	1	2	3	4	5
<i>灵活性</i>					
提高引进新产品和改进现有商品和服务的能力	1	2	3	4	5
提高在特定时间内改变商品和服务种类的能力	1	2	3	4	5
提高快速应对市场需求的变化, 及时增加或减少其营业额度的能力	1	2	3	4	5
提高应对连锁分店或顾客的临时需求, 及时改变或重新安排配货计划的能力	1	2	3	4	5
<i>配送能力</i>					
提高配送的速度	1	2	3	4	5
提高配送的可靠性	1	2	3	4	5
提高售后服务质量	1	2	3	4	5

第五节: 公司运营业绩

6. 与同行业的**主要竞争者相比**, 请评估您公司在过去 3 年内以下几个财务指标的状况, (1 表示非常低, 2 表示比较低, 3 表示相当, 4 表示比较高, 5 表示非常高).

市场占有率	1	2	3	4	5
销售额增长率	1	2	3	4	5
利润增长率	1	2	3	4	5
投资回报率	1	2	3	4	5

非常感谢您能够抽时间完成这份问卷调查!