

THE IMPACT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON SUPPLY
CHAIN MANAGEMENT PERFORMANCE IN CHINESE MANUFACTURING
INDUSTRIES

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A thesis submitted in partial fulfilment of the
requirement for the award of the degree of
Master of Management (Technology)

Faculty of Management
Universiti Teknologi Malaysia

MAY, 2015

To my beloved parents, family members, and lecturer

ACKNOWLEDGEMENTS

I would like to express my gratitude to those who helped and supported me in my thesis writing to fulfill the needs for the certification of the Master in Management (Technology).

First of all, I would like to express my sincere appreciation and gratefulness to my respectable supervisor, Dr. Inda Sukati, Assoc. Prof. Mohd Shoki Md. Ariff for their knowledge, time and absolutely their morale support along the progress of completing my thesis. I attribute the level of my Master degree to their encouragement and effort and without them this thesis would not have been completed or written.

Secondly, I would like to thank to my friend Mohsen Gol Zardian, he had provided me with a lot of useful opinions, instructions and relevant information in completing this research.

Furthermore, I wish to extend my sincere appreciation to all the respondents of this research. They were so kindness to spend their valuable time for answering the questionnaire. I am truly thanked to their willingness to participate in this survey.

I shall also acknowledge the extended assistance from the Faculty of Management (FM) administration team whom supported me all through my research experience and simplified the challenges I faced.

Last but not least, I would like to express my gratitude to my parents for their patience and love that encouraged me so much.

ABSTRACT

This study attempts to investigate the impact of supply chain management practices on supply chain management performance in Chinese manufacturing industries. A total of 112 respondents from manufacturing industries of Lanzhou the capital city of Gansu is selected and data is analyzed based on the questionnaires. Customer-supplier relationship, information systems and technology, quality management, corporate culture and material flow management are considered as practices and independent variables and only supply chain management performance is assigned as dependent variable. Descriptive analysis, Pearson correlation analysis and multiple regression analysis are utilized to analyze the data and satisfy the objectives of this research as well. The findings reveal that prediction of supply chain management performance is feasible by customer-supplier relationship in which possess highest correlation (r value is 0.809) and linear relationship (β value is 0.281) with supply chain management performance, whereas information systems and technology has lowest correlation (r value is 0.639) and linear relationship (β value is 0.091) with supply chain management performance.

ABSTRAK

Kajian ini bertujuan untuk mengkaji impak pengurusan rantaian bekalan terhadap prestasi sektor pembuatan terhadap orang Cina. Sebanyak 112 responden dari industri pembuatan di Lanzhou, sebuah ibu negeri Gansu telah dipilih dan data dianalisis berdasarkan borang soal selidik yang diperolehi. Hubungan antara pelanggan-pembekal, sistem maklumat dan teknologi, pengurusan kualiti, budaya korporat dan pengurusan aliran bahan yang dianggap sebagai amalan dan pembolehubah bebas dan hanya prestasi pengurusan rantaian bekalan ditugaskan sebagai pembolehubah bersandar. Analisis deskriptif, korelasi, Pearson dan analisis regresi berganda digunakan untuk menganalisis data dan juga untuk memenuhi objektif kajian. Hasil kajian menunjukkan bahawa ramalan prestasi pengurusan rangkaian bekalan boleh dilaksanakan menggunakan hubungan pelanggan-pembekal yang mempunyai korelasi paling tinggi (r nilai adalah 0.809) dan hubungan linear (β nilai adalah 0.281) dengan prestasi pengurusan rantai bekalan, manakala sistem maklumat dan teknologi mempunyai nilai korelasi terendah (r nilai adalah 0.639) dan hubungan linear (β nilai adalah 0.091) dengan pengurusan rantaian bekalan.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGEMENTS	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xii
	LIST OF FIGURES	xiv
1	INTRODUCTION	1
	1.1 Introduction	1
	1.2 Background of the Study	3
	1.3 Problem Statement	5
	1.4 Research Questions	9
	1.5 Research Objectives	9
	1.6 Significance of the Study	9
	1.7 Scope of the Study	10
	1.8 Limitation of Study	11
	1.9 Definition of Terms	11
	1.9.1 Supply Chain Management	12
	1.9.2 Supply Chain Management Performance	12
	1.9.3 Supply Chain Management Practices	12
	1.9.3.1 Customer - Supplier Relationships	13
	1.9.3.2 Information Systems and	13

	Technology	
	1.9.3.3 Quality Management	13
	1.9.3.4 Corporate Culture	14
	1.9.3.5 Material Flow Management	14
2	LITERATURE REVIEW	15
2.1	Introduction	15
2.2	Overview of Supply Chain Management (SCM)	16
	2.2.1 Supply Chain Management (SCM)	16
	2.2.2 SCM Practices	18
2.3	SCM Performance	20
	2.3.1 Measures for Supply Chain Management Performance	20
2.4	Relationship between the Dimensions and SCM Performance	21
	2.4.1 Customer-Supplier Relationship	22
	2.4.2 Information Systems and Technology	25
	2.4.3 Quality Management	28
	2.4.4 Corporate Culture	29
	2.4.5 Material Flow Management	31
2.5	Previous Studies on Relationship between the Dimensions and SCM Performance	32
	2.5.1 Customer-Supplier Relationship	33
	2.5.2 Information Systems and Technology	35
	2.5.3 Quality Management	35
	2.5.4 Corporate Culture	36
	2.5.5 Material Flow Management	37
2.6	Research Framework	38
3	RESEARCH METHODOLOGY	40
3.1	Introduction	40
3.2	Research Design	41
3.3	Population and Sampling Method	43

3.4	Data Collection	45
3.4.1	Primary Data	45
3.5	Research Instrument	46
3.5.1	Section A: Company Background	46
3.5.2	Section B: Respondents Background	47
3.5.3	Section C: Supply Chain Management Practices	47
3.5.4	Section D: Supply Chain Management Performance	47
3.6	Data Analysis	53
3.6.1	Reliability Analysis	53
3.6.2	Examining the Data of the Variables	54
3.6.2.1	Normality Test	54
3.6.2.2	Linearity Test	55
3.6.2.3	Multicollinearity Test	55
3.6.3	Descriptive Statistics	55
3.6.4	Inferential Statistics	56
3.6.4.1	Correlation Analysis	56
3.6.4.2	Multiple Linear Regression	57
3.7	Non-Parametric Test	58
3.8	Pilot Study	58
4	RESEARCH ANALYSIS	59
4.1	Introduction	59
4.2	Return and Usable Rate	60
4.3	Company Background	60
4.3.1	Number of Employees	61
4.3.2	Total Investment	61
4.3.3	Area of Business	62
4.3.4	Market Network	63
4.4	Respondents Background	64
4.4.1	Gender	64
4.4.2	Age	65

4.4.3	Position	65
4.4.4	Year of Working Experience	66
4.4.5	Level of Education	67
4.4.6	Department	67
4.5	Reliability Analysis	71
4.6	Examining the Data of the Variables	72
4.6.1	Normality Test	72
4.6.2	Linearity Test	73
4.6.3	Multicollinearity Test	73
4.7	Descriptive Statistics	74
4.7.1	SCM Practices	74
4.7.1.1	Customer-Supplier Relationship	75
4.7.1.2	Information Systems and Technology	76
4.7.1.3	Quality management	78
4.7.1.4	Corporate Culture	79
4.7.1.5	Material Flow Management	81
4.7.2	SCM Performance	82
4.8	Pearson Correlation Analysis	83
4.9	Multiple Linear Regression	85
4.10	Non-parametric Test	88
4.11	Summary	89
5	DISCUSSION, RECOMMENDATION AND CONCLUSION	93
5.1	Introduction	93
5.2	Discussion of Key Findings	94
5.2.1	Objective 1: To Define the Impact of SCM Practices on SCM Performance	94
5.2.2	Objective 2: To Identify the Most Dominant SCM Practice Toward SCM Performance	95
5.2.3	Objective 3: To Investigate the Level of	96

Each Item Across SCM Practices and SCM Performance		
5.3	Recommendations for Organizations	97
5.4	Recommendations for Further Studies	98
5.5	Conclusion	100
REFERENCES		102
APPENDIX A		115
APPENDIX B (1-5)		122

LIST OF TABLES

TABLE NO.	TITLE	PAGE
3.1	Required Sample Size of A Given Finite Population	44
3.2	Details of Questionnaire	48
3.3	Likert Scale	53
3.4	Cronbach's Alpha Reliability Range	54
3.5	The Correlation Range	57
4.1	Return and Usable Rate of Questionnaire	60
4.2	Frequency and Percentage Distribution of the Number of Employees	61
4.3	Frequency and Percentage Distribution of Total Investment of Companies	62
4.4	Frequency and Percentage Distribution of Business Area	63
4.5	Frequency and Percentage Distribution of Market Network	64
4.6	Frequency and Percentage Distribution of Respondents by Gender	64
4.7	Frequency and Percentage Distribution of Respondents by Age	65
4.8	Frequency and Percentage Distribution of Respondents by Position	66
4.9	Frequency and Percentage Distribution of Respondent by Year of Working Experience	66
4.10	Frequency and Percentage Distribution of Respondents by Highest Academic Qualification	67

4.11	Frequency and Percentage Distribution of Respondents by Departments	68
4.12	Summary of Company's Background	69
4.13	Summary of Respondents' Profile	70
4.14	Cronbach's Alpha Scores of Variables	72
4.15	Normality Test	73
4.16	Descriptive Statistics of Questionnaire Items on Customer-Supplier Relationship	76
4.17	Descriptive Statistics of Questionnaire Items on Information Systems and Technology	77
4.18	Descriptive Statistics of Questionnaire Items on Quality Management	79
4.19	Descriptive Statistics of Questionnaire Items on Corporate Culture	80
4.20	Descriptive Statistics of Questionnaire Items on Material Flow Management	82
4.21	Descriptive Statistics of Questionnaire Items on SCM Performance	83
4.22	Correlation between "SCM Practices" and "SCM Performance"	84
4.23	Multiple Regression Result of SCM Practices and SCM Performance	86
4.24	Kruskal-Wallis Test	89
4.25	Summary of Result for Research Hypotheses	92

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
1.1	China GDP Growth Rates 2011-2014 (%)	4
1.2	Regional Map of China	8
2.1	Proposal Research Framework	39
3.1	Overall Research Design Flowchart	42

CHAPTER 1

INTRODUCTION

1.1 Introduction

Before the 1960s traditionally, almost all manufacturing industries were based on the concept of maximum production at the lowest cost, but they suffered from the lack of the flexibility in production that caused the speed of producing new products for market became slow with huge investments in inventory process (Farmer et al., 1997). In 1980s, the focus was transferred to the products with best quality and high reliable goods. Benton (2007) pointed out that Total Quality Management (TQM) and Just-In-Time (JIT) have enabled industries to reduce their production cycle time in order to improve their efficiency.

In 1990s, manufacturing industries faced rapid and unpredictable changes in technology due to globalization in the economy. Traditional business models could not adapt to these new alteration. Thus to survive a lot of business enterprises used advanced techniques. However, the majority of manufacturing did not reach to the substantial changes (Scott, 2009).

Today, the new requirement is focused on providing customers with the right products, sufficient quantities in the most appropriate time and with ability to reduce

the cost and improve the service levels (Wing, 2008). More and more industries have begun to realize that the relationship between customers and suppliers are very important to their business strategy. They tried to construct the processing system to ensure that their team spirit and technical skill have value for consumers. Supply chain management (SCM) is recognized widely and highly regarded by a lot of companies as a strategy to achieve business goals in the market effectively (Altekar, 2005).

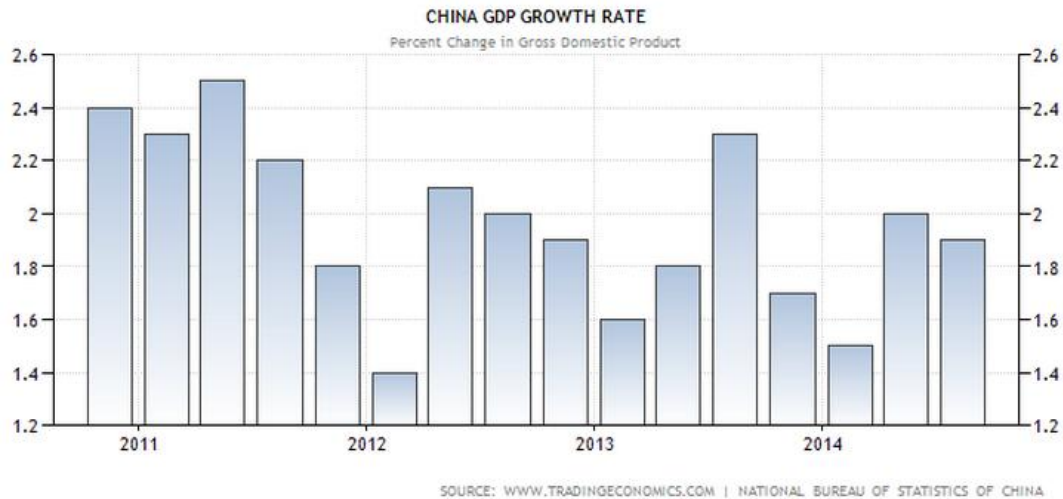
Since 1980, the manufacturing industries have attracted more attention of investors throughout the world. Consequently, SCM has become very important to those industries (Zhou and Benton, 2007). There have been major changes in the SCM during last the 30 years, such as a shift to a customer-driven model from exclusive logistic-driven model. Moreover, the focus on logistics and inventory management regarded as great help for the manufacturing industries by encompassing material flow and information control from an organization and supply channels (Baddeley and Font, 2011). However, industries still lacks from new tools and technology. Thus, in order to cope with these potential shortages in the manufacturing industry, supply chain management has been considered in the next level of evolution and also currently it is pursued by researchers in order to facilitate and utilize SCM in practice (Yan and Yin, 2008).

SCM has been greatly affected by global competition. The Deloitte consulting report showed that 91% of North American manufacturers have realized how SCM is important in determining the success of their industries (Thomas, 1999). McGrath research shows that manufactures implementing the strategy of SCM have a superior profit around 40% higher than other manufacturers (Ellram, 2006). As a matter of fact, it is highly expected that from 10 years ago the manufacturing industries have been applying SCM that will make more profit than any other sector not using SCM.

1.2 Background of the Study

According to Chinese International Monetary Fund (2014), the Chinese economy is the second largest and fastest growing major economy in the world. Its nominal gross domestic product (GDP) and purchasing power parity (PPP) is second only with respect to the United States. GDP is defined as total expenditures for all final goods and services produced within the country in a stipulated period of time in which GDP measures the national income and output for a given country's economy. On the other hand, PPP is a criteria used to determine the relative value of different currencies. PPP exchange rates avoid misunderstanding of international market exchange rates. As reported by China international monetary fund, 2013 (Selected Countries and Subjects), for the past 30 years, the market economy has recorded an average growth rate of 10% and more growth is expected in the future. Currently, China is the largest manufacturer, largest exporter of goods and second largest importer of primitive goods that make it as a global hub for manufacturing and trading China plays a significant role in international trade. It also has the fastest growing consumer market in the world. Since 1978, the Chinese economy is undergoing fundamental changes by an orienting system from central planning. In recent years, its engagements with organizations and treaties have greatly increased by involving in the World Trade Organization (WTO) from 2001 that also entered into a trade agreement with the ASEAN nations. According to the new statistical Yearbook of China (2014), since 2011 the cut off point of project investment has changed from 500,000 Yuan to 5 million Yuan along with changing the published coverage of investment in fixed assets in urban area into investment in fixed assets including rural households. Indicators such as gross national income, gross domestic product, value-added are calculated at the fixed prices for three strata of the industry.

According to National Bureau of Statistics of China the expansion of gross domestic product (GDP) in China is experiencing 1.90 percent for the third quarter in 2014. Also, GDP growth rate in China is 1.97 percent from 2010 until 2014, reaching an all time high of 2.50 Percent in the second quarter of 2011 and a record low of 1.40 Percent in the first quarter of 2012." see Figure 1.1.



(Sources: The National Bureau of Statistics, China Statistical Yearbook, 2014)

Figure 1.1: China GDP Growth Rates 2011-2014 (%)

GDP gross rate indicates the change in the seasonally fixed value of goods in China economic services during the quarter. Since China economic is altered from a central system to a more market-oriented the drastic growth in the private sector is seen. Basically, China exporting growth characterized by the rapid economic growth.

Zheng (2003) studied that SCM is a new theory in China and its execution is still in the initial stage. There is a great distance in the practices of an SCM between China and other foreign economies (Zhang et al., 2006; Zhou and Benton, 2007). With rising foreign trade and outsourcing China's manufacturing industries have taken more notice to implement customer-supplier relationship, mostly on short-term relationship when true partnership is being formed (Jiang, 2006). According to Yan and Yin (2008), the lack of connection between production and purchasing departments causes a huge inventories and consumption of much liquidity. Despite the introduction and acceptance of SCM in China over the past 10 years, no much significant progress has been achieved (Yan and Yin, 2008). Most manufacturing industries in China are making changes to reduce costs and maximize profits. As a matter of fact, the effective implementation of SCM obtains a great success for these industries.

1.3 Problem Statement

SCM performance measurement is defined as the process through an organization sets up parameters to quantify the efficiency and effectiveness of its action (Neely et al., 1995). The improvement of SCM performance has played significant role in achieving competitive advantages for manufacturing industries (Cai et al., 2009). Industries are constantly seeking for better ways to achieve superior supply chain management performance in order to surpass their competitors. However, there are several challenges are faced with applying effective supply chain for their organization.

The first challenge is the poor relationships with customer and supplier. Customers demand product in a short-time frame and without alignment with manufacturing industry over these increasing demands. Lummus et al. (1999) concluded that the changes in demand are difficult to predict; moreover, it brings stress to the purchasing team because of misalignment between demand and supply that disrupts the achievement to the customer demand. As a result, it influences the relationship among customers and manufacturing by losing reputation of manufacturing industries among customers that cause customer control supplier selections. As a matter of fact, High trust produces high cooperation in the organization (Mastrangelo et al., 2009).

Subsequently, there is a need to point the relationship among suppliers and supplier dominance. Supplier dominance imposes price, quality, term and condition to the buyer without discharging of power to the purchaser (Cox et al., 2003). In the lack of flexibility in power and negotiation between manufacturing and some suppliers they dictate conditions to manufacturing. And, customer order cancellations cause high inventory and high material unfolding as the manufacturing is not able to cancel, reschedule and return inventory to the suppliers (Chin et al., 2004).

The second challenge is lack of information systems and technology. Today, the majority Chinese manufacturing industries know that information systems and technology are very important for successful operation of their organization (Zhang et al., 2006). They have started using advanced technology and are seeing the benefits. Nevertheless, the high cost of these information technologies and systems have proven to be a major challenge for many small to medium-size companies (Xia and Zhang, 2007). For this reason, those companies are more and more focused on how to increase productivity rather than looking for suitable technology. The development of information system is still at a low level (Xia and Zhang, 2007). Industries suffer from a lack of information sharing that has resulted greatly in non-value clerical activities and more time is required for the processing of orders.

The third challenge is ignorance in quality management. Some Chinese manufacturing industries focus on their own internal quality problems (Zhou and Benton, 2007). Because of the inefficient and inaccurate process of communication between procurement and its internal customers, purchasing rarely has any useful suggestions to make a support of supplier selection and negotiation by evaluating supplier product and process performance capabilities. The result is poor quality raw materials from low quality supplier. Consequently, the negative effects are significant by hampering final-products and industries' performance, even tarnished the reputation of industries.

The fourth challenge is customers tend to reduce orders during market crisis when the availability of raw material or raw material flows and supplier delivery reliability is concerned (Van, 2005). Supplier cannot successfully deliver raw materials at the specified time to meet production schedule. Because the company depends on its supplier for timely shipments, the late deliveries would eventually result, delays in shipment for its customers, reduction or cancellation order by customer. Every functional department knows customer requirements and makes provisions for higher profitability. However, there is a shortage of commitment and cooperative efforts among departments. The issues of material's default location, traceability, identification and inaccurate records of actual values of inventories have

directly affected the timely production and performance of other departments in the organization (Altekar, 2005).

The fifth challenge is the shortage of shared values in corporate culture in terms of cooperation and commitment (Mello and Stank, 2008). The shared goal of Chinese manufacturing industries is to deliver products to customers on time. The purchasing team strives for full material to build and fulfill the manufacturing goal. However, team in material handling is not fully committed to the common goal. Materials are missed and handled improperly. This is the issue of material's default location, identification and traceability (Altekar, 2005). In addition, the production of material team does not adjust the system quantity with the stock actual quantity.

Another challenge also could be mentioned as inappropriate collaboration between academic phase and industry. Supply chain management is a new concept in Chinese academic research. According to Zheng (2003), the academic research is still in its infancy, but it is being the focus of more and more attention in Chinese academic circle. There are a lot Chinese literature cover supply chain management areas, although some of them are lacking combination with China's concrete practices of Chinese manufacturing industries. The same is true for supply chain major education in Chinese universities, lack of communication and knowledge sharing between academic and industries restricts cultivate talents which are suitable for industry development.

According to some previous studies such as Zhang (2010) and Chin et al (2004) in which the implementation of SCM in industries and organization in China is taken into account. The authors have already realized most of research and academic consideration decline toward high-developed and median-developed industrial region in China. In these studies most of SCM factors evaluated regarding to the industries and organization requirements. As it is illustrated in Figure 1.2 SCM in the developed area such as, north, northeast, south eastern coast has been performed elaborately. However, less study devotes the SCM principals to the

developing regions of China where they are experiencing booming and rapid economic growth these days. Gansu is known as one of the potential province in sources located in the developing region, so a sever study on SCM is a vital especially for capital of this province, Lanzhou. By observing all above explanation, this study dedicates the essential dimensions of SCM practices as the independent variables for evaluating their effect on SCM performance as the dependent variable for manufacturing industries of Lanzhou.

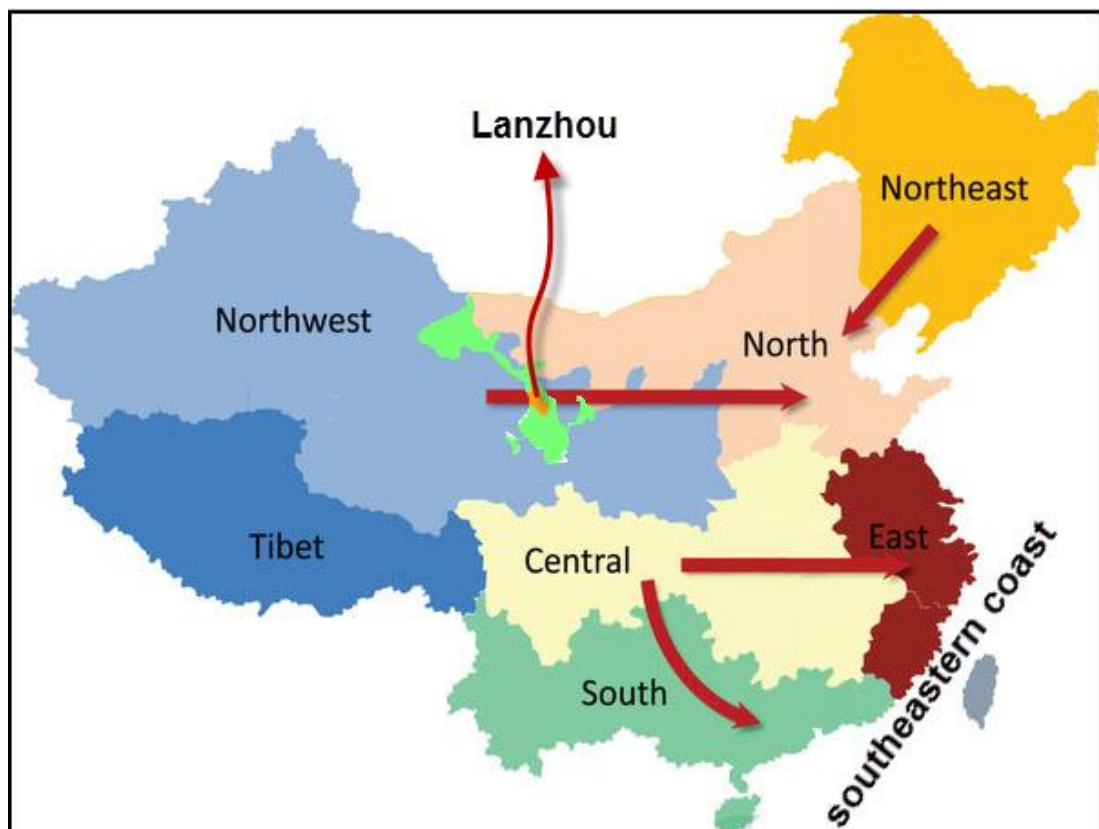


Figure 1.2: Regional Map of China

1.4 Research Questions

The research questions are listed as follows:

1. Is there any correlation between SCM practices and SCM performance in manufacturing industries in Lanzhou?
2. Which supply chain management practice is dominant to predict the SCM performance in manufacturing industries in Lanzhou?
3. How SCM performance level change across SCM practice?

1.5 Research Objectives

The research objectives are stated as follows:

1. To define the impact of SCM practices on SCM performance.
2. To identify the most dominant SCM practice toward SCM performance.
3. To investigate the level of each item across SCM practices and SCM performance.

1.6 Significance of the Study

Firstly, the result of this study will contribute greatly to the body of knowledge associated with five prime dimensions of SCM practices of Chinese manufacturing industries in improving on SCM performance by recognizing appropriate SCM practices in order to be implemented in the manufacturing industries in Lanzhou and

consequently improve the SCM performance of those companies. This study will also create awareness to assist future researchers to conduct further study into supply chain management.

To achieve desired objectives, it is necessary to carry out research to examine the contribution of five main dimensions of SCM practices on SCM performance in Chinese manufacturing industries. Manufacturing industries can enhance the SCM performance by improving the current practices and current strategies. The expected finding of this study will provide a variety of benefits for both manufacturing industries and academic perspective. It will provide meaningful resources for academic communication of supply chain management.

The findings of this study can be regarded as a guideline for Chinese manufacturing industries to investigate elaborately the dimensions of SCM practices on SCM performance. Furthermore, this study will show the competitive strength achieved by improving the SCM performance. This study also can be used as a closer paradigm for other province's manufacturing industries of China that interested to apply SCM practices.

1.7 Scope of the Study

This research is conducted in Lanzhou manufacturing industries, Lanzhou is the capital and largest city of Gansu Province in Northwest China. See, Figure 1.2. This research does not cover other province's manufacturing industries of China.

The questionnaire is prepared for senior managerial level from planning, purchasing, logistics and operation department because these departments have the most significant functions to be integrated within the SCM paradigm.

This study only evaluates the five dimensions of SCM practices such as customer-supplier relationship, information systems and technology, quality management, corporate culture and material flow management as independent variables influencing only one dependent variable, namely, SCM performance in Chinese manufacturing industries. moreover, this study does not cover the disciplines of SCM; for instance, the strategies of SCM, the other factors of SCM practice and the implementation of SCM.

1.8 Limitation of Study

This study focused on SCM practices on SCM performance in Chinese manufacturing industries, but because of time and financial resource limitation, the questionnaire cannot cover the whole China, only limited in Lanzhou of Gansu province, China. The data accuracy depends on the answers given by the respondents in the questionnaires. The level of reliability and accuracy of this study may be affected by dishonest respondents who may have answered the questions in ways that are beneficial to the reputation of their industries.

1.9 Definition of Terms

For the purpose of this study, the definition of items such as, supply chain management, supply chain management performance and supply chain management practices (customer - supplier relationship, information systems and technology, quality management, material flow management and corporate culture) is explained in the following subsections.

1.9.1 Supply Chain Management

Supply chain management is considered as a systematic activity aims to make a linkage among component in the chain network in order to achieve customer satisfaction with obtaining high performance and outcome. Its performance is measured based on entire system efficiency (Yan and Dolley, 2014).

1.9.2 Supply Chain Management Performance

SCM performance is defined as the process through an organization setting up parameters to quantify the efficiency and effectiveness of its action. Efficiency is a measure of how well a firm's resources are utilized to provide a desired or the intended level of customer satisfaction, whereas, effectiveness is the degree in which the needs of the customer are met (Neely et al., 1995).

1.9.3 Supply Chain Management Practices

SCM Practices are interpreted as a whole set of actions in organizations to enhance the effectiveness of the in-house supply chain in order to obtain the desired performance.

1.9.3.1 Customer - Supplier Relationship

As customer satisfaction is considered as a one of the prominent aim of supply chain management, the mutual and effective cooperation between customer and supplier can be manifested by sharing the both sides thought from demand to supply to achieving a high performance.

1.9.3.2 Information Systems and Technology

Performing each factor of SCM for organizations and manufacturing industries is obtained through sharing data and information among component, Therefore, information system and technology make a vital role for entire network by transferring data and information from one point to the point.

1.9.3.3 Quality Management

Quality is defined as the overall blends of product and service aspects of marketing, engineering, manufacturing and maintenance that product or service in use will match or surpass the customer anticipation (Aljian, 1984).

1.9.3.4 Corporate Culture

Corporate culture is a qualitative definition in SCM that refer to the written and unwritten discipline that observed by employees in the organization following the unified and common goals in order to reach to the satisfying performance level.

1.9.3.5 Material Flow Management

Material flow management is a management method in the SCM that controls material from raw pace to the finishing configuration in order to satisfy the investment in the inventory level, shipment and customer delivery.

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