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The Impact of Culture on Performance Measurement in the Context of Supply Chain Management: A Systematic Review

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ABSTRACT

This paper conducts a systematic literature review on the literature body of performance measurement and cultural study in the context of supply chain management with two review purposes. Firstly, this paper aims to examine the key ideas, concepts, theoretic arguments, and methodologies existing in this research field. The second aim of this paper is to record and reflect the whole process of the systematic literature review on the topic. Using the review protocol to direct and audit the process, this paper tries to justify the transparency of and the traceability to the researcher's actions, decisions and selected criteria in the progress of the literature review.

The outcome of the systematic review is twofold. Through a systematic approach, the literature review first contributes a research knowledge structure to analyze the critical elements in supply chain performance measurement. Then based on this conceptual framework, the cultural factors affecting supply chain performance are comprehensively recognized and evaluated. Thus an in-depth understanding of the potential impact of culture on supply chain performance measurement is a second contribution.

The dissertation is composed of five chapters. Chapter I introduces the background of the topic, the research questions, and the review objectives of this paper based on what needs to be reviewed in the literature. Chapter II explains the methodology applied in this paper, with the emphasis on the rationale and the process of the review. Chapter III uses an evidence-based approach to report the findings from the descriptive and thematic analysis. Chapter IV continues to cross-examine these finding and answer the research questions raised in the first chapter. The conclusion and implications of this paper are presented in Chapter V.

ACKNOWLEDGEMENTS

I could not finish this paper without the help from many people. First of all, I would like to show my great gratitude to my supervisor, Dr Chris Morgan. Across the whole progress of this dissertation project, we kept very close contact regarding the review direction and process, and I received many important suggestions and guidance from this valuable supervision process. I also received great support from other academics and specialists, especially from Dr David Partington, Senior Lecturer in Cranfield School of Management, Dr David Denyer, Lecturer in the Centre for Customised Executive Development in Cranfield, Dr Michael Dickmann, Senior Lecturer in Cranfield School of Management, Professor Andy Neely, Chairman for the Centre for Business Performance in Cranfield, Ms. Heather Woodfield, Information Specialist for Social Sciences in Cranfield University Library, and Ms. Wendy Habgood, Ph.D. Administrator of Cranfield School of Management. Last, but not least, the same great gratitude also goes to my family and friends for their unconditional love, moral support, and positive vibrations.

NOTATION

The abbreviations used in the text are listed as below:

CRM	Customer Relationship Management
HRM	Human Resource Management
MNC	Multinational Company
MNE	Multinational Enterprise
PM	Performance Measurement
PMS	Performance Measurement System
SLR	Systematic Literature Review
SCM	Supply Chain Management

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PART I - INTRODUCTION

1.1 OVERVIEW

In today's world, supply chain management (SCM) is recognized as a key strategic factor for increasing organizational effectiveness and for better realization of organizational goals such as enhanced competitiveness, better customer care and increased profitability (Chen and Paulraj, 2004). Many companies realize that, in order to manage supply chain efficiently and effectively, it needs to be assessed for its performance. As a response to this pressing need, performance measurement in supply chain becomes a relatively recent thinking in management literature. However, although the research interest in supply chain performance measurement is growing, scholarly materials in this field remain scattered and disjointed, and little research has been directed towards a systematic identification of the potential impact of culture on performance measurement in supply chain (Gunasekaran *et al.*, 2001). To address this issue, this study conducts a comprehensive review and analysis of the multidisciplinary, wide-ranging academic literature.

The first part of this paper is an overall introduction of the research topic and purposes. It is presented under the following structure. Section 1.2 illustrates the research background, explaining why the research topic in this paper is important. Section 1.3 defines the research scope. Because the research topic covers multiple fields, the positioning and scope of the research are explained in detail. The research questions are also presented in this section which can be regarded as the research guidance for the following literature review. To help the reader understand more the topic, Section 1.4 provides basic concepts and a broad picture as to what has been known in this area. The review purposes of the paper are outlined in Section 1.5.

1.2 IMPORTANCE OF THE TOPIC

Nowadays, market globalization has profoundly transformed the business landscape by enabling firms to get access to potential customers and resource across the world. The accompanying intensified competition, however, also requires firms to be more cost-efficient and more responsive to the changing customer demand. Against this background, firms are trying to integrate their business processes and functions from end user through original supplier into a supply chain, in order to quickly deliver added value for customers at a lowest possible cost. In fact, to a large degree, the level on which current business competition takes place is at a supply chain rather than individual organizational basis (Christopher and Peck, 2004). How to manage supply chain for their collective business success, therefore, has become a major challenge to every stakeholder in this complex business network.

In supply chain management (SCM), the measurement of supply chain performance is a central consideration because it provides performance indicators for management to measure, monitor, control, and improve the effectiveness and efficiency of the whole supply chain (Bhagwat and Sharma, 2007). Meanwhile, the performance measurement systems for individual organizations receive more challenges in SCM because the traditionally clear boundaries of business processes and functions between supply chain members become blurred due to the supply chain integration. New dimensions need to be integrated to expand the perspective from a narrow focus on cost and competition to a more broad focus on supply chain relationships and SCM for achieving cumulative competitive capabilities (Flynn and Flynn, 2005).

In supply chain performance measurement, the potential impact of culture on supply chain performance cannot be neglected. Although supply chain with high performance is characterized by high levels of trust, coordination and interdependence (Monczka *et al.*, 1998), the cultural differences among supply chain partners have been found to be the single most common block in establishing such a cooperative relationship

(Smyrlis, 2004). Moreover, these cultural differences are magnified when business partners from different nations are involving in a global supply network.

However, the cultural issue in supply chain and its impact on supply chain performance measurement are only slightly addressed and short of comprehensive consideration in the previous literature (Gunasekaran *et al.*, 2001). Part of the reason is that the cultural factors tend to influence supply chain performance through several intermediate processes or variables. Without a coherent pre-understanding of the causal relationships between culture and these variables, the impact of these cultural elements on supply chain performance is notoriously difficult to clarify and measure.

Therefore, the purposes of this paper can be described as twofold. The first is to contribute a research framework to analyze all critical elements for successful management of supply chain performance. Then based on this analytical structure, the cultural factors affecting supply chain performance measurement are comprehensively recognized and evaluated. Thus an in-depth understanding of the potential impact of culture on supply chain performance measurement is a second contribution.

1.3 SITUATION AND QUESTIONS OF THE RESEARCH

The systematic review is conducted in three literature fields: SCM, performance measurement, and culture study. Specifically, while using SCM as the research context, this paper concentrates on the research of performance measurement in supply chain, and regards the related culture studies as a special focus. This initiative is graphically illustrated in Figure 1.1.

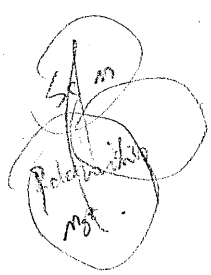
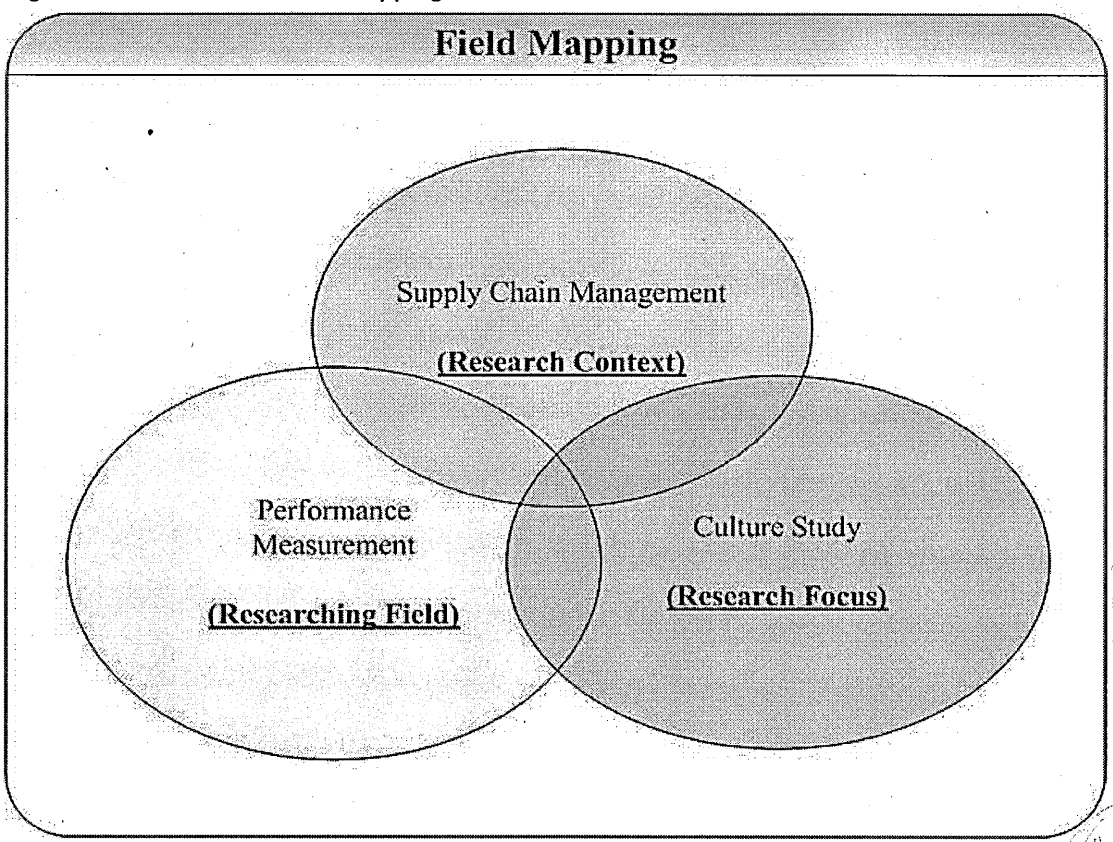


Figure 1. 1 - Research Field Mapping



As indicated in the previous section, current studies in supply chain performance measurement are carried out in various isolated areas, lacking systematic thinking for overall performance optimization of supply chain system. But taken together, they have many of the critical elements necessary for successful measurement of supply chains. Therefore, this systematic literature review first contributes a coherent presentation and classification of current literature body of performance measurement in the context of supply chain management. Their core initiatives and constructs then are integrated into a conceptual framework to facilitate further understanding of the cultural issue in supply chain management and measurement.

Apart from the scholarly materials regarding supply chain performance measurement, the second literature source of this paper is the culture studies in the context of SCM. Through cross-examining these studies with those culture-related findings identified in the literature on supply chain performance measurement, the critical cultural elements in supply chain can be systematically recognized, and then how and to what

extent they influence supply chain collaboration and performance can be better understood.

Although both cultural and performance measurement issues have been extensively discussed in management literature, most of the studies are concentrated only on the scope of individual organizations and not directly related to supply chain. For this reason this literature review uses supply chain management as the research context to delineate its research scope. Also, because various subject areas are involved in SCM, such as purchasing and supply, logistics and transportation, marketing, and operational management, the main findings in these subject areas regarding SCM and their connections are briefly reviewed and mapped in the review, whereby the current research can be better positioned and carried out.

To guide its research journey, this paper proposes three research questions as follows:

1. *What are the key elements constructing performance measurement in the context of supply chain management?*

By answering this question, the critical constructs in the relevant literature can be identified and conceptualized as the key elements in performance measurement in supply chain.

2. *How are these elements related and interacted?*

Through answering this question, the above-mentioned elements can be systemized into a meaningful research framework.

3. *How and to what extent do cultural factors impact the performance measurement in the context of supply chain management?*

By answering this question, the impact of culture on supply chain performance measurement can be clarified and further analyzed.

1.4 CONCEPTS AND KNOWLEDGE STRUCTURE IN TRADITIONAL LITERATURE

Before undertaking the main discussion, a brief introduction to several important concepts and constructs related to this research can provide the readers necessary knowledge to better understand the topic. Because this research examines the literature body in three areas: supply chain management, performance measurement in supply chain, and culture study in SCM. The essential concepts and constructs in these areas are discussed here.

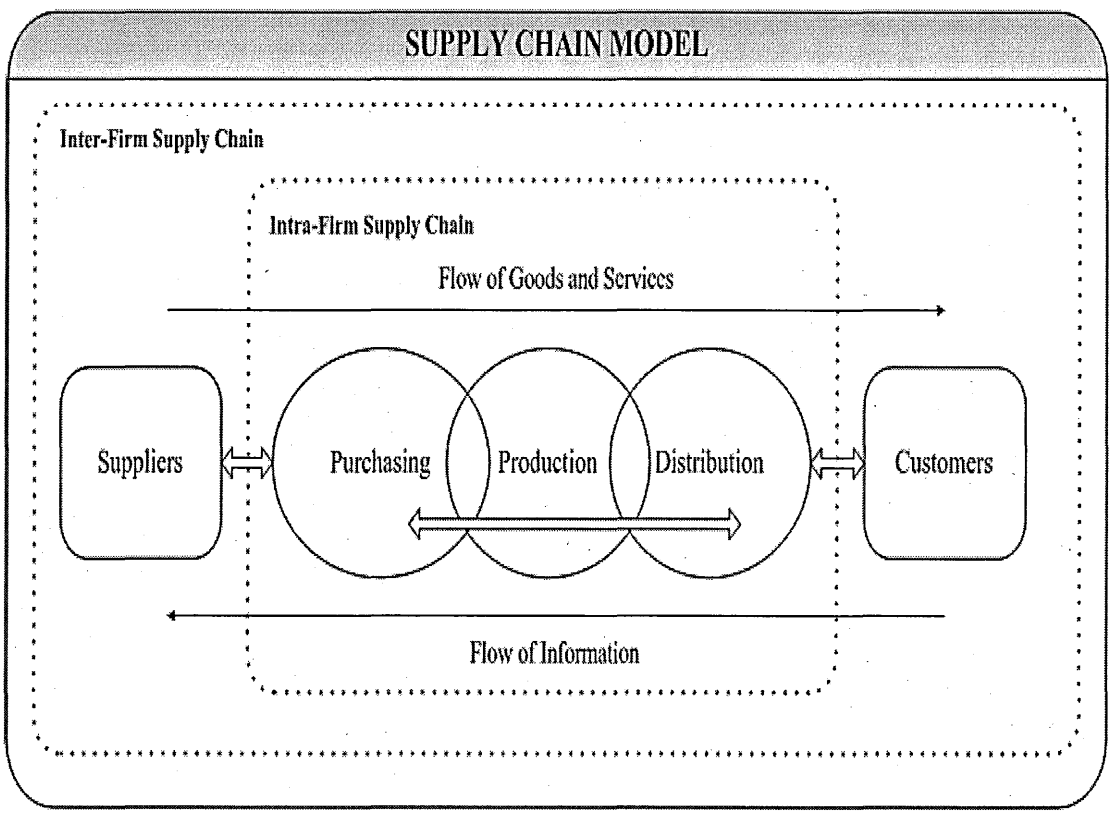
1.4.1 Supply Chain and Supply Chain Management

As a notion emerging from the literature in transportation and logistics management, the term "supply chain" can be defined as a "network of materials, information and services processing links with the characteristics of supply, transformation, and demand" (Chen and Paulraj, 2004: 132). But this description is not exclusive and other scholars still contribute to this definition from various perspectives. For example, by stressing its dynamic nature, Surana *et al.* (2005: 4235) term supply chain as "a complex network with an overwhelming number of interactions and inter-decencies among different entities, processes and resources". Also, a supply chain can still be conceptualized as "an alignment of firms that brings products or services to the market" (Chandra and Tumanyan, 2005: 245). In this case the physical attributes of supply chain are the defining characteristics.

Collectively, these interpretations share several common features. Firstly, they all claim that supply chain is a complex demand-driven network in which its members

interrelate and interact with each other. Secondly, a supply chain is characterized by a forward flow of goods and service and a backward flow of information between various suppliers, manufacturers, distributors, retailers and customers (Surana *et al.*, 2005). Thirdly, a supply chain comprises two major business processes: material management and physical distribution (Min and Zhou, 2002). To graphically represent the typical structure and characteristics of a supply chain, Figure 1.2 gives a basic model of a supply chain. In this integrated chain all materials and information are processed from acquisition of raw materials to delivery to end user.

Figure 1. 2 - Supply Chain Model

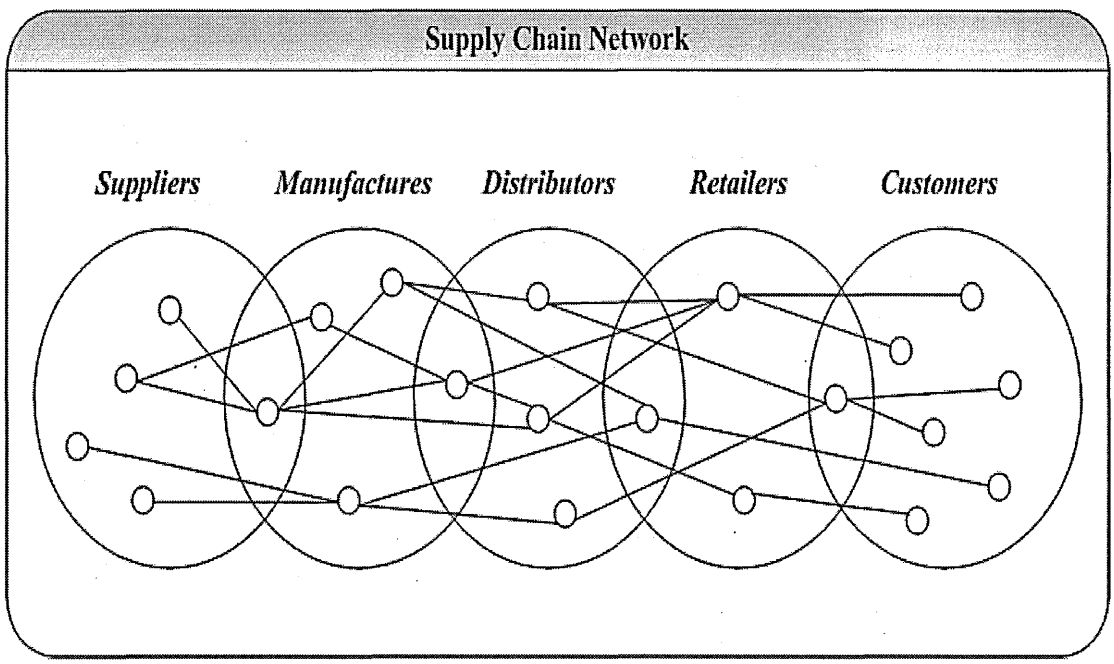


Adapted from Chen and Paulraj (2004)

However, it needs to be noted that such a model is just an oversimplified reflection of the real world. Because most firms face multiple supply and customer bases, the reality of supply chain is much more complicated. As showed in Figure 1.3, a typical supply chain is a complex network with an overwhelming number of interactions and inter-dependencies among different entities, processes and resources spanning several

scales (Surana *et al.*, 2005: 4235).

Figure 1. 3 - Supply Chain Network



Surana et al. (2005: 4241)

Along with the evolution of supply chain, new ideas and understandings on SCM are constantly emerging from various supply chain-related fields, such as logistics, purchasing, and operation management. As a result, there is a lack of SCM definition consensus. Some of the definitions focus on strategy, while others emphasize more on activities, processes, or the combination of the two (Gibson *et al.*, 2005).

After re-examining the previous SCM definitions, Gibson *et al.* (2005: 22) offer a more complete SCM definition: "SCM encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, SCM integrates supply and demand management within and across companies." From this interpretation, two central concerns of SCM are revealed: process integration and supply chain collaboration.

1.4.2 Supply Chain Performance Measurement

Supply chain performance measurement is overall described as the process of quantifying the effectiveness and efficiency of supply chain operation. Effectiveness is the extent to which a customer's requirements are met and efficiency measures how economically a firm's resources are utilized when providing a pre-specified level of customer satisfaction (Neely, 2005).

This measurement process can be further divided into five sub-parts: plan, source, make, deliver, and return or customer satisfaction (Shepherd and Günter, 2006). According to the role of their applicability to these five sub-processes, numerous measures are formulated and channeled into various performance measurement systems (PMS). Although the critical elements in supply chain measurement will be investigated in Chapter III and IV in great detail, suffice to say here that the characteristics of supply chain performance can be concluded as follows:

1. Connection with strategy (Gunasekaran *et al.*, 2001);
2. Focus both cost and non-cost indicators (Beamon, 1999);
3. Focus on customers and competitors (Beamon, 1999);
4. Emphasizing supply chain context, thereby encouraging overall optimization of supply chain performance (Beamon and Chen, 2001); and
5. Focus on system thinking (Beamon, 1999; Shepherd and Günter, 2006)

1.4.3 Cultural Studies for SCM

Compared with the previous two research areas, the cultural studies for SCM is the least addressed field. Most studies in this research field are concentrated only on the relationship management of supply chain partners. For instance, one research focus is

the study of supply chain cultural orientation. Supply chain cultural orientation, or SCO, is a collective managerial philosophy shared by supply chain members. It helps espouse the management of intra- and inter-firm supply chain flows in a synchronized way to create customer value by viewing the supply chain as a whole rather than as a set of fragmented parts performing their own function (Schuler, 1991; Walkman, 2005; Ryu and Cook, 2005).

Some scholars have also noticed the impact of national culture on the relationship management of global supply chain. They claim that the cultural distance between supply chain partners negatively influences the building of their mutual trust, which will subsequently impede their long-term coordination. Because the national boundaries broaden the cultural distance between supply chain members in different countries, the supply chain members increasingly need to develop effective cross-cultural skills to narrow such a distance (Smyrlis, 2004; Smagalla, 2004).

Although the cultural issues in supply chain have not been fully explored, their potential impact on supply chain performance and SCM cannot be overlooked and are explored thoroughly in Chapter III and IV.

1.5 REVIEW PURPOSES

Based on the previous discussion, the review objectives of this paper are clarified and concluded as follows:

1. *Identifying important academic literature on culture study and performance measurement in supply chain, and SCM regarding the research topic through a systematic approach.*

2. *Finding out main themes in the research areas, analyzing different methodologies*

used in research to date, and providing insights into supply chain performance measurement and how effective it has been in cross-cultural environments.

3. *Identifying the direction of development and applicable methodologies in performance measurement in cross-cultural supply chain managements.*

To monitor the review process and ensure that the results of the review are in line with its strategic objectives, a set of key reviewing targets are also formulated in advance. These targets can be divided into five major parts and described clearly in Table 1.1.

Table 1. 1 - Targets of the Review

No.	Targets of The Review	Achieved or not
1	To identify and reduce large quantities of knowledge for meaningful digestions of the mapped fields of research	
2	To integrate critical pieces of research themes from different aspects to guide directions of considerations for future studies	
3	To prove the review as an scientific technique with support of different research skills	
4	To assure multiple reviewed studies are covered and meanwhile consistency is assessed for the research direction	
5	To establish a process replicable, transferable, and flexible to assure researching effort continuative to knowledge	

Source: Adapted from Murlow (1994)

To reach these targets, the protocol and methodology of the systematic literature review is designed and adopted, which is discussed in detail in Chapter II.

PART II – METHODOLOGY

2.1 OVERVIEW

This literature review adopts a systematic methodology to make the reviewing process structured, transparent, replicable, and as exhaustive as possible. The characteristics and procedures of this methodology are presented in this chapter,

Section 2.2 introduces the main features of the systematic literature review, and explains why this review approach is more applicable for the proposed topic. Section 2.3 demonstrates the review process and the corresponding results, as well as the rationale for key decisions made to guide the review. In Section 2.4, the method for data synthesis is outlined.

2.2 SYSTEMATIC LITERATURE REVIEW

A literature review is "the selection of available documents (both published and unpublished) on the topic, which contains information, ideas, data, and evidence written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents relation to the research being proposed" (Hart, 1998: 13).

Two approaches can be applied to a literature review: the traditional narrative review and the newly emerged systematic one. To perform a review over a large, fragmented literature body dispersed across many disciplines, the latter is more appropriate in that it adopts a systematic, explicit, and well-balanced approach to facilitating the inclusion and investigation of all main themes in specific literature fields (Tranfield and Denyer, 2002). More importantly, this systematic approach helps to assess the consistency among studies of same direction or pursue an explanation of inconsistencies and conflicts among different studies (Mulrow, 1994).

The main attributes of this review philosophy are as follows: explicit protocol is set upfront; possible replication and quality assessment are made with clear criteria; and the researcher's bias is minimized by explaining the values, assumptions and steps followed during the review (Tranfield and Denyer, 2002).

2.3 THE PROCESS OF SYSTEMATIC LITERATURE REVIEW

To conduct a robust systematic review, a review protocol is initiated and agreed with the supervisors in advance. The whole procedure structured in this protocol is presented in Figure 2.1.

1) Step One – Planning / Protocol: In this step, the key ideas and constructs relevant to the research field of this paper are initially mapped and structured through scoping study, reference searching, and the suggestions from the supervisor and other contributors. In addition, the review protocol is initiated as a research guidance document.

2) Step Two – Keyword Search: In this stage, two steps are carried out. Firstly, according to the literature field mapping, all keywords are identified and the search strings are formulated subsequently. Secondly, the potentially relevant papers are selected through keyword searching from the selected journal databases and other sources.

3) Step Three – Title Screening: In this step, the searching results of step two – the potentially relevant articles are evaluated and reduced through topic reviewing and eliminating papers repetitively found in more than one database.

4) Step Four –Abstract Screening: In this step, the relevant papers are selected

against the selection criteria.

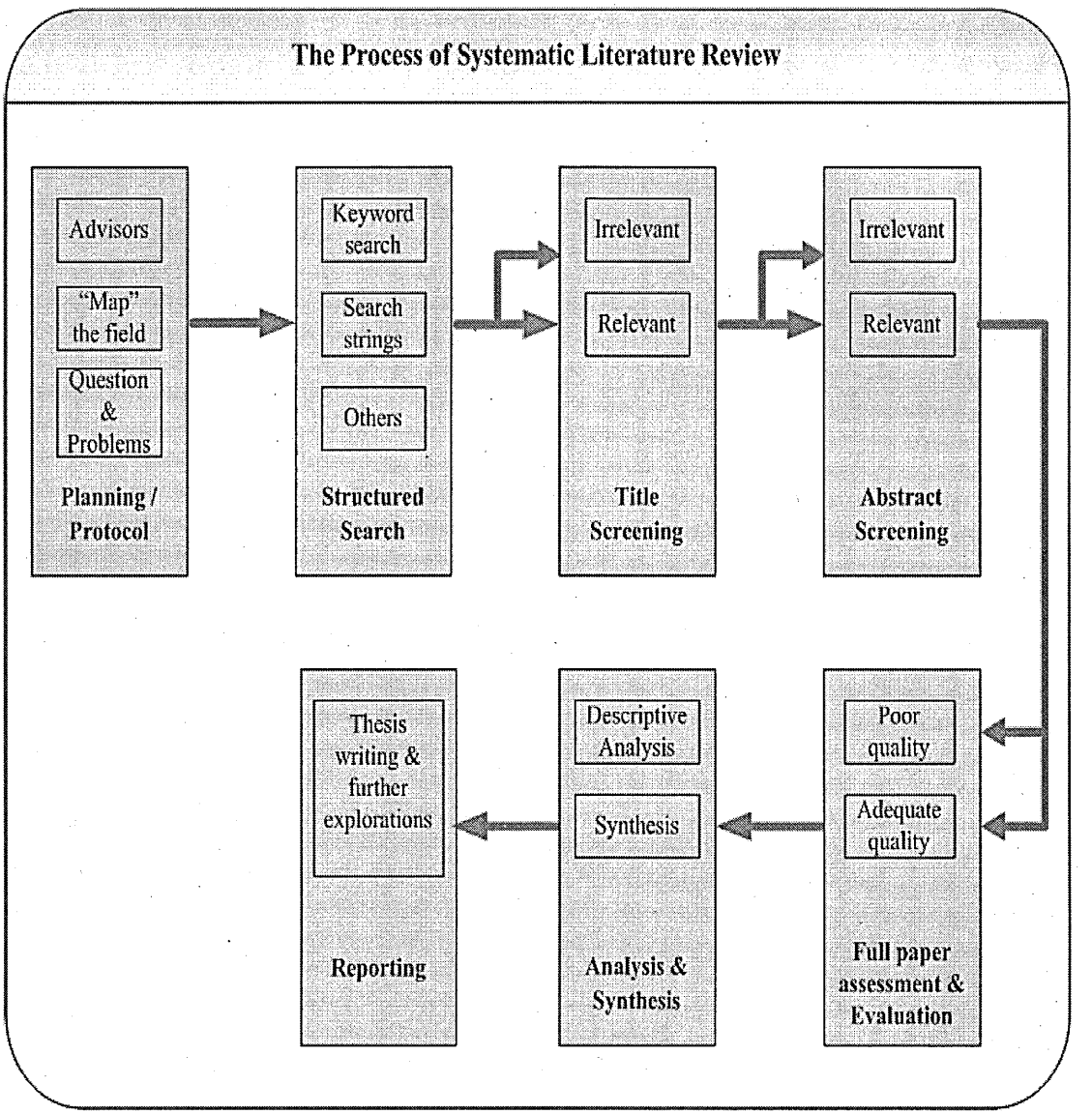
5) Step Five –Full paper Assessment & Evaluation: In this step, the quality of the selected full-text articles is evaluated against quality assessment criteria, and the high quality ones are selected for final analysis.

6) Step Six – Analysis & Synthesis: This step includes the analysis and final synthesis. The analysis aims to extract key ideas, theories, concepts and methodological assumptions from the selected papers. And the synthesis recasts the information into a new or different arrangement, so as to show connections and patterns that have not been produced previously (Tranfield and Denyer, 2002).

7) Step Seven – Final Report: In this step, the final writing is structured, in which all the findings are analyzed and illustrated in a systematic way, limitations of the review are checked, and further possible research implications are given.

According to these steps, the following sections describe how this literature review is carried out with its corresponding results. The key elements of the review protocol are also discussed, which include the formation of the review panel, the field mapping process, keyword searching, source of information, and the criteria for inclusion, exclusion and quality assessment.

Figure 2. 1 - The Process of Systematic Literature Review



Adapted from Tranfield and Denyer. (2002)

2.3.1 Review Panel

Because the targeted literature in this review spread across multiple disciplines, many academics and experts in the relevant areas were welcomed into this review. The review panel is finally formed by six members: Dr Chris Morgan, Dr David Partington, Dr David Denyer, Professor Andy Neely, Dr Michael Dickmann, and Ms. Heather Woodfield (see Table 2.1).

Table 2.1 - Review Panel

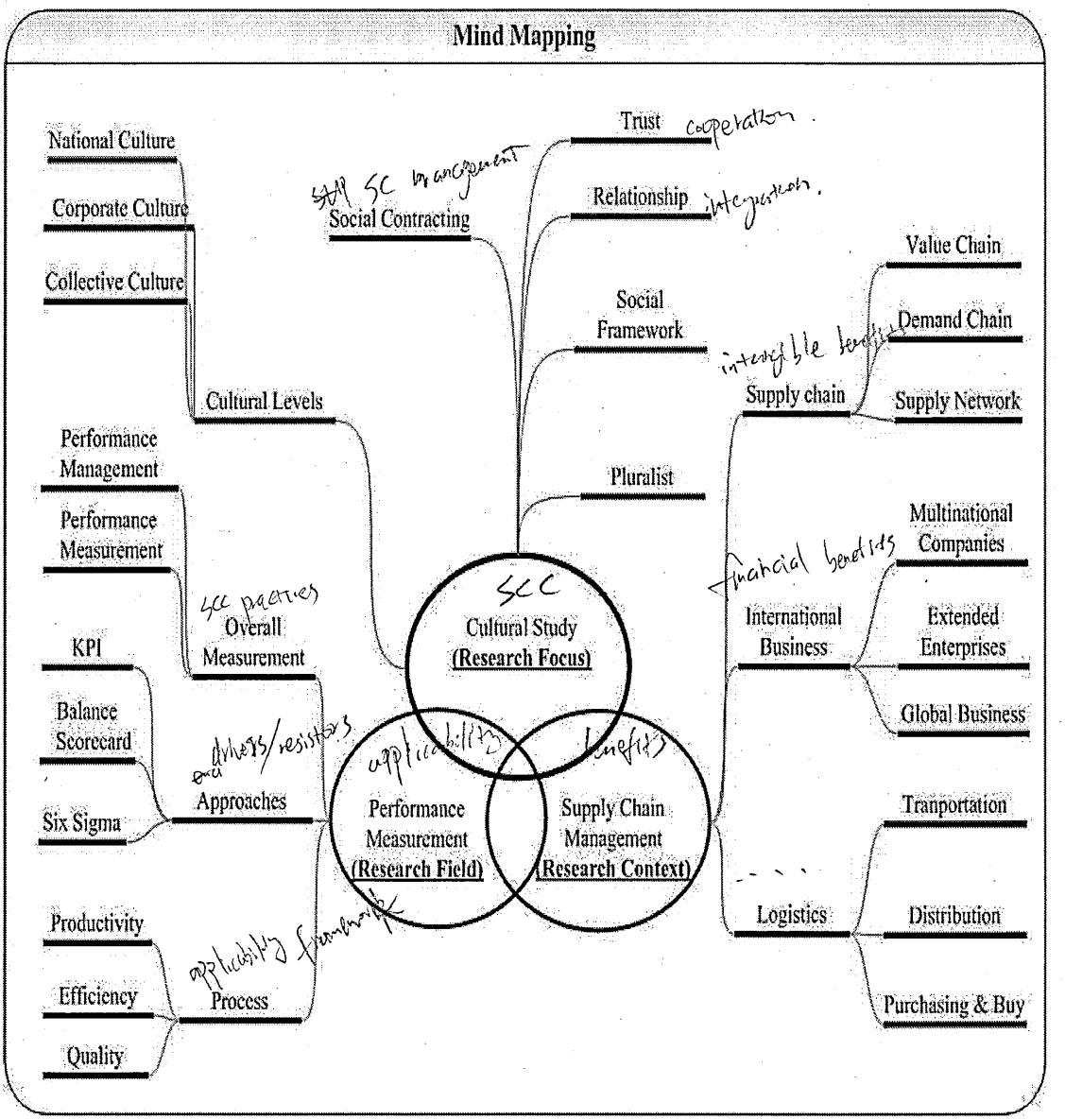
Name	Title	Organization
Dr Chris Morgan	Lecturer	Cranfield Centre for Logistics and Supply Chain Management
Dr David Partington	Senior Lecturer	Cranfield School of Management
Dr David Denyer	Lecturer	Centre for Customised Executive Development
Dr Michael Dickmann	Senior Lecturer	Cranfield School of Management
Professor Andy Neely	Chairman, Centre for Business Performance	Centre for Business Performance
Ms. Heather Woodfield	Information Specialist for Social Sciences	Cranfield University Library

As the direct supervisor, Dr Chris Morgan provided strategic guidance for this literature review. He not only gave important suggestions about the research scope and objectives of the review, but also offered possible paths and other important considerations for the review. Dr David Partington, as an expert in culture and management research studies, provided important suggestions in initiating this review. He also introduced some publications in the relevant areas for the researcher to review. In addition, Dr David Denyer and Ms. Heather Woodfield offered valuable advices on review process design and keyword generation respectively. Finally, Professor Andy Neely, master in the field of performance measurement, and Dr Michael Dickman, expert in international human resource management, both provided useful academic materials in their own fields for this review.

2.3.2 Mind Mapping

After the scoping study and the extensive consultation with the above-mentioned advisors, the researcher brainstormed the key concepts in three research fields: performance measurement, SCM, and culture study. As illustrated in Figure 2.2, the detailed structure of this field mapping is the basis on which the keywords, and search strings are initiated.

Figure 2. 2 - Mind Mapping



2.3.3 Keyword Search

Keyword search is a fundamental step in the systematic literature review: a substantial number of relevant papers to be included in the searching process may be identified through keyword searching in citation databases. These keywords were initiated through brainstorming in field mapping, recommended by the supervisors, or found by scoping study and cross-reference checking. Table 2.2 separates these keywords into three categories: supply chain performance measurement, SCM, and cultural

study for SCM.

Table 2. 2 - Keywords

Category	keywords
Supply Chain Performance Measurement	Performance measurement / performance management
	Productivity/ efficiency/ effectiveness/ quality/ balanced scorecard
SCM	supply chain/ supply network/ demand chain/ value chain/ value pipeline
	Transportation/ logistics/ purchasing/ buying
	Supply chain management
Cultural Study (in the context of supply chain)	Culture/ relationship/ trust / commitment/ coordination

These keywords were then linked together to form meaningful search strings, with the aim to search as widely as possible the literature regarding the research topic. Table 2.3 lists all possible searching strings.

Table 2. 3 - Proposed Search Strings

No.	Proposed Search Strings
1	(performance measure* OR performance management) AND (supply chain OR supply network OR demand chain OR value chain OR value pipeline)
2	(performance measure* OR performance management) AND (logistics OR trans* OR purchas* OR buy*)
3	(performance measure* OR performance management) AND (supply chain management)
4	(Productivity OR efficiency OR effectiveness OR quality OR balanced scorecard) AND (supply chain OR supply network OR demand chain OR value chain OR value pipeline)
5	(Productivity OR efficiency OR effectiveness OR quality OR balanced scorecard) AND (logistics OR trans* OR purchas* OR buy*)
6	(Productivity OR efficiency OR effectiveness OR quality OR balanced scorecard) AND (supply chain management)
7	(supply chain OR supply network OR demand chain OR value chain OR value pipeline) AND (Cultur* OR relation OR trust OR commitment OR coordination)
8	(logistics OR trans* OR purchas* OR buy*) AND (Cultur* OR relation OR trust OR commitment OR coordination)
9	(supply chain management) AND (Cultur* OR relation OR trust OR commitment OR coordination)

However, the pilot searching proved that some of the searching strings produced a large number of results. For example, the searching string "(Productivity OR efficiency OR effectiveness OR quality OR balanced scorecard) AND (logistics OR trans* OR purchas* OR buy*)" returned 29491 results in search engine ProQuest. Therefore, to keep the number of the targeted papers down to a manageable level, and also to reach the most potential literature resource, these search strings were refined and finalized as showed in Table 2.4.

Table 2. 4 - Final Search Strings

No.	Final Search Strings	Rationale
1	(performance measure* OR performance management) AND (supply chain OR supply network OR demand chain OR value chain OR value pipeline)	To allocate the potential literature regarding performance measurement in supply chain.
2	(performance measure* OR performance management) AND logistics	
3	(performance measure* OR performance management) AND supply chain management	
4	(performance measure* OR performance management) AND Cultur*	To allocate the targeted papers regarding cultural issues in performance measurement
5	(supply chain management) AND Cultur*	To allocate the targeted papers regarding cultural issues in SCM

2.3.4 Source of Information

To allocate the potential relevant literature scattered in various areas, the keyword search was performed on five citation databases. From these databases, ProQuest and EBSCO were selected as the major source of information because of their satisfactory availability of full-text, high-quality papers, and their flexible function for structured searching. However, for some journals, these two databases only provided links to the abstracts of the targeted articles. Another two databases, EMERALD and INTENGA were therefore included in this review to allocate some articles in their full-text versions. Additionally, PsycINFO, a citation database focusing on behavioral science, such as culture study, was also included to identify some culture-related papers.

Hence only the searching strings 4 and 5 were applied to the PsycINFO because these two search strings are the culture-related ones. The following table gives the introductory information of these citation databases.

Table 2.5 - Databases Identified for the Systematic Literature Review

Database	Information Capacity
ProQuest	Provides 1000 premier worldwide business periodicals; information for 60,000+ companies.
EBSCO	Provides 2950+ full text scholarly publications; 900 peer-reviewed journals; 5000 world's company profiles; 75 US regional business news journals.
EMERALD	Provides world's widest range of management journals; 40000+ search articles from 100 management journals; archive back to 1989.
INGENTA	Provides most comprehensive access to 5400+ full text online publications and 27,600+ publications.
PsycINFO	Provides access to 2226 online journals.

Most relevant papers were identified through the keyword search in these five citation databases. In ProQuest the search was carried out on all databases except ProQuest Newspapers and ProQuest Medical Library, and limited to peer-reviewed articles. In EBSCO and PsycINFO the search was performed in default fields and all sub-databases available, but still limited to peer-reviewed papers. When the potential relevant articles could not be allocated in these databases in their full text versions, the researcher turned to other journal databases for the results, such as INGENGA and EMERALD. For some papers which are not kept in electronic form in these databases, the researcher resolved to Cranfield University' inter library loan system and on-shelf journals to find them. In addition, several articles were also recommended for the review by the supervisor and other academic consultants.

After the keyword search, 2848 potentially relevant papers were identified. EBSCO and ProQuest databases contributed 62% and 34% of the results respectively, with PsycINFO accounting for another 4% (see Table 2.6).

Table 2. 6 - Keyword Search Results

Search Strings	Citation Databases		
	EBSCO	**ProQuest**	**PsycINFO**
(performance measure* OR performance management) AND (supply chain OR supply network OR demand chain OR value chain OR value pipeline)	471	186	n/a
(performance measure* OR performance management) AND logistics	318	113	n/a
(performance measure* OR performance management) AND supply chain management	190	152	n/a
(performance measure* OR performance management) AND Cultur*	648	401	16
(supply chain management) AND Cultur*	133	121	99
Total:	1760	973	115
Percentage:	62%	34%	4%

(*) Including overlaps between databases

However, the total number of articles to be reviewed was lower than the sum result obtained from these databases, because some papers were included in more than one of them and need to be eliminated. After eliminating these repetitive papers, some articles can still be excluded by the title screening without the risk of rejecting the relevant ones. For example, titles like "Learning in the new business school setting: A collaborative model", or "Strategic human resource development in public libraries in Botswana", clearly showed that the papers are concerned with the issues in educational system, and have no connections with the research topic of this thesis. After title screening and eliminating the papers found in more than on database, the total number of the potentially relevant papers dropped to 754.

Another important source is the academic materials recommended by the members of review panel and other researchers. They suggested 42 papers. Thus, combined together, totally 796 papers were included for further selection and assessment

2.3.5 Selection and Quality Assessment

In order to identify the most relevant papers of high quality, the pre-selected papers were further reviewed and evaluated against certain criteria. The abstracts of these papers were firstly evaluated against exclusion criteria, in order to rule out the irrelevant or less qualified papers. Table 2.7 illustrates the exclusion criteria established for the review.

Table 2. 7 - Exclusion Criteria

No.	Criteria	Exclusion	Rationale
1	Peer-Reviewed	Articles not peer-reviewed will be excluded.	Restriction on peer-reviewed articles focuses the review only on qualified academic articles.
2	Language	Articles in other languages will be excluded.	English is the only official language in this review.
3	Type of Coverage	Magazines, news, and business reports or statistics will be rejected.	Restriction on type of coverage focuses the review only on the papers in academic journals.
4	Sector Focus	Articles focus on public or service sector, such as government, civil service, education, finance, hospitality, etc., will be excluded.	The review is concentrated on non-service business sector.

Because criterion 1 and 2 were already been set as the selection terms in keyword searching, only criterion 2 and 4 were applied on this selection stage. 97 papers were rejected against criterion 3 and another 127 articles were excluded against criterion 4. Hence the number of papers left to be further evaluated was reduced to 572.

Subsequently, these 572 articles were reviewed against the inclusion criteria. Table 2.8 gives the inclusion criteria and their rationale. It is worth noting that, although the inclusion criterion 4 is not directly related to the research topic, the papers selected against this criterion may offer useful hints to the research topic from other viewpoints.

Table 2. 8 - Inclusion Criteria

No.	Inclusion Criteria	Rationale
1	Studies regarding supply chain performance measurement and management	The current paper considering supply chain performance measurement as its research field
2	Studies concerning the cultural issue in performance measurement or management in the context of supply chain, or other related areas, such as logistics, international business, extended enterprises, etc.	The current paper considering the impact of culture on supply chain performance measurement as its research focus
3	Studies focusing on overall supply chain management, or supply chain design	These studies helping the researcher identify the scope of, and the critical elements in SCM as the research context.
4	Studies concerning the cultural issue in supply chain, or in other related areas, such as logistics, international business, extended enterprises, etc.	The culture-related studies in supply chain or other relevant areas throwing light on the research focus of this paper from other perspectives.

The resulting number of the papers selected against inclusion criteria was 73. Table2.9 gives the number breakdown of the articles which were included under each of the inclusion criterion. On the other side, the other 499 papers were rejected because of their less relevance to the research topic. This result is very interesting, but not particularly surprising, because as previously mentioned, performance measurement study for SCM is a recent thinking, the use of terminology in this field is not unambiguous, and a number of subjects are more or less related to it. This is why the search strings were kept as broad as possible, and why many papers proved not to be strongly related to this field. For example, a number of articles, even whose titles or abstracts showed them seemingly relevant, turned out to only focus on the functioning of accounting agencies or organizations, rather than the issues concerning SCM.

Table 2. 9 - Search Results against Inclusion Criteria

No.	Inclusion Criteria	Number of the Papers Included
1	Studies regarding supply chain performance measurement or management	36
2	Studies concerning the cultural issues in performance measurement or management in the context of supply chain, or other related areas, such as logistics, international business, extended enterprises, etc.	14
3	Studies focusing on overall supply chain management, or supply chain design	11
4	Studies concerning the cultural issues in supply chain, or in other related areas, such as logistics, international business, extended enterprises, etc.	12

After the relevance selection, the left 73 papers were further full-text assessed against quality assessment criteria (see Table 2.10), in order to eliminate the less qualified articles. In this process, the quality of the studies was considered by answering three questions: 1) has the idea been discussed thoroughly and can be applied to key research methods in the study? 2) are the findings well presented and meaningful? and 3) how useful are the findings to the topic? These questions represent concerns on the rigor, credibility and relevance of the study. The following quality matrix table illustrates the detailed terms for quality evaluation of the relevant articles.

Table 2. 10 - Quality Assessment Criteria

Quality Assessment Criteria					
Elements to consider	**N/A 0-Absence**	**1-Low**	**2-Medium**	**3-High**	**N/A 4-Not applicable**
Theory Robustness	The article does not provide enough information to assess this criteria	Literature review is inadequate; failure to motivate study with practical implication; no underlying economic story	Theoretical base is acceptable; having practical rationale for study to some extent	Excellent review of prior literature; Strong theoretical basis; study has important implication for practitioners or professionals	This element is not applicable to this paper
Implication for Practice	The article does not provide enough information to assess this criteria	Very difficult to implement the concepts and ideas presented; not relevant for practitioners or professionals	There is a potential for implementing the proposed ideas, with minor revision or adjustments	Significant benefits may be obtained if the ideas being discussed are put into practice	This element is not applicable to this paper
Methodology / Data Analysis	The article does not provide enough information to assess this criteria	The idea of study is poorly executed; failure to justify proxies for economic variables; data inaccurate and not related to theory	Justified research design; Acceptable proxies for economic variables; data is related to the arguments, though there are some gaps	Research design adequately examine the theoretical argument; proxies are adequately defined; Data strongly supports the arguments	This element is not applicable to this paper
Generalisa-bility	The article does not provide enough information to assess this criteria	Only to population studied	Generalisable to organizations of similar characteristics	High level generalisability	This element is not applicable to this paper
Contribution	The article does not provide enough information to assess this criteria	The paper adds little body of knowledge in this field	Contribution to knowledge is trivial in importance and significance	Significant addition to current knowledge; filling an important theory gap	This element is not applicable to this paper
Citation	No citation	Citation scare	Well referred	Richly and comprehensively referred	This element is not applicable to this paper

Source: Adapted from Morgan (2006)

In the full-text quality examination, 12 articles were excluded and the final number of papers selected for the further analysis Chapter III was 62. As a conclusion, Table 2.11 gives the reviewing results in keyword searching, title screening, abstract screening, and the final full-text quality assessment.

Table 2. 11 - The Final Keyword Search Result

The Final Keyword Search Result	
The Number of Papers Allocated by Keyword Search	2848 (*)
The Number of Papers after Title Screening and Eliminating Duplicate Papers in Multiple Citation Databases	796
The Number of Papers after Abstract Screening against Exclusion Criteria	572
The Number of Papers after Abstract Screening against Inclusion Criteria	73
The Number of Papers after Full-Text Quality Assessing	62

(*) Including overlaps between databases

2.4 DATA SYNTHESIS

After the relevance selection and quality assessment, the finally selected papers are going to be further analyzed and synthesized. This process allows the findings obtained from different sources to be combined together through the classification and categorization of the data according to main characteristics and key concepts found in the selected papers. It is crucial in bridging different bodies of literature identified in the scoping study. In fact, the synthesis process contributes a lot in finding out the internal relations and possible gaps between the major themes in the literature field, and pointing out the future directions for the academic research development.

The data synthesis reflects collective methods of summarizing, integrating, and cumulating the findings referred to different studies on a topic (Mulrow, 1994). Among several main types of research synthesis methods for master theses – narrative summary, meta-analysis, meta-ethnography, and realist synthesis, the simplest and the best-known form of research synthesis is narrative summary synthesis (Tranfield and Denyer, 2002). However, it only attempts to identify what has been written on a

subject of topic, but it does not seek to provide an average effect size (Boaz, Ashly and Young, 2002). As to the other two methods, the meta-analysis requires a large collection of analysis to allow more quantitative estimate of effect size, and the meta-ethnography needs to develop further the original version. Both of them are also not appropriate for this review.

The realist synthesis approach is found applicable to this review. According to Pawson (2001), realist synthesis normally seeks to identify the interplay between contexts, mechanisms and outcomes; it also facilitating theory building by accumulating understanding across a wide range of different contexts. The aim of the realist synthesis is to produce a transferable theory in the form of what works for whom in which circumstance. Accordingly the realist synthesis approach is applied following the evidence-based principle for the analysis in Chapter III.

PART III – FINDINGS AND ANALYSIS

3.1. OVERVIEW

The emphasis of this chapter is to classify the selected papers, and investigate their main constructs and arguments, from which the core contributions regarding the research focus of this paper are identified and integrated into meaning knowledge structures.

To this end, this chapter continues the evidence-based approach to report the descriptive and thematic findings derived from the full-text reviewed articles. In Section 3.2, the background information of the selected articles is extracted, classified, and analyzed. In Section 3.3, the findings from the thematic analysis on these papers are reported, which outlines what is known and established on core themes and contributions.

3.2 DESCRIPTIVE ANALYSIS

The descriptive analysis is composed of three parts: publication information, time span analysis, and context analysis.

3.2.1 Publication Information

The publication information of the selected papers are described here in terms of who published and where published.

Table 3.1 lists the journals that contribute more than one paper for this review. An interesting point of this list is that the selected papers are sparsely distributed in a number of journals; the highest number of the papers provided by one journal is only six. This in part reflects the reality that the scholarly materials pertaining to the topic

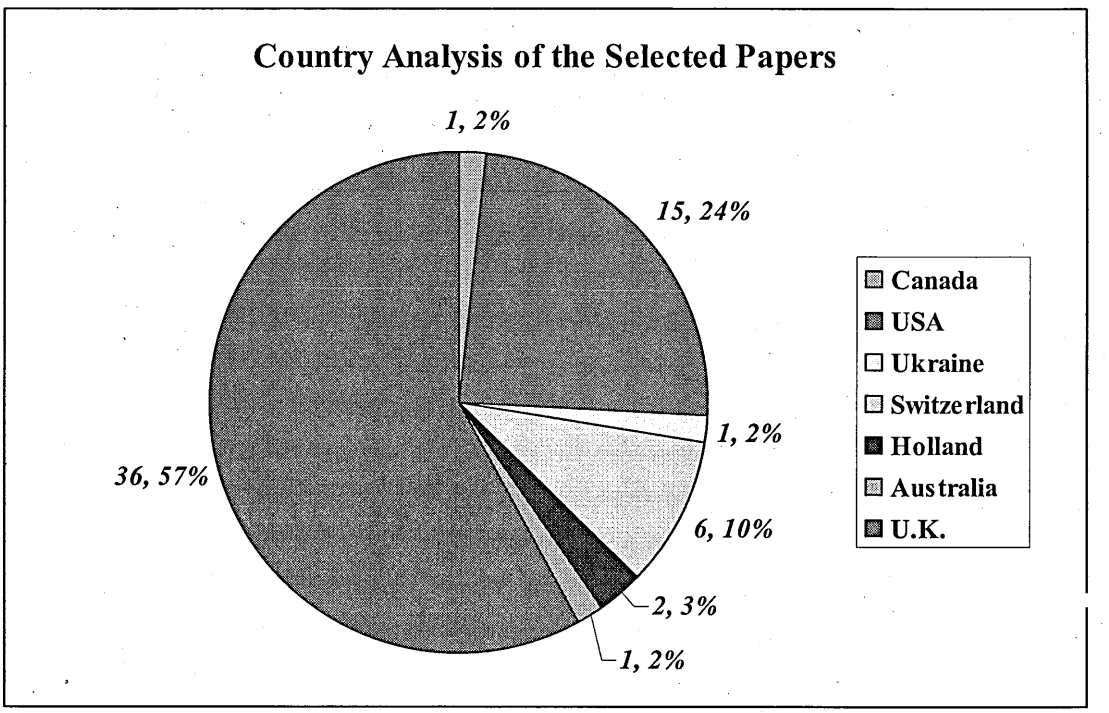
of this paper remain scattered in various disciplines. According to Appendix I, The finally selected 62 papers are from 41 journals, with the most of the journals contributing only one paper. In addition, these journals cover various management research areas such as supply chain management, human resource management, operation management, marketing, and the like.

Table 3. 1 - The Most Cited Journals

Journal Title	**Number of Papers**
International Journal of Production Research	6
International Journal of Operations & Production Management	5
International Journal of Logistics Management	3
International Journal of Production Economics	3
Benchmarking: An International Journal	2
International Journal of Agile Management Systems	2
International Journal of Logistics: Research & Applications	2
International Journal of Manpower	2
Journal of Management	2
Supply Chain Management Review	2
Total Quality Management & Business Excellence	2
International Journal of Business Performance Management	2

Of the 62 selected papers, nearly 40% were published in the UK, with another 15% in USA (see Figure 3.1). This shows that the theoretical leaders and industry practitioners in these two countries may lead a dominant research trend in the relevant research areas of this paper. In addition, most of the papers are also published in industrialized countries. The reason for this phenomenon is partly because new thinking in performance measurement in supply chain is more urgently needed in industrialized countries and in more advanced business environment. However, because English is the only official language in this literature review, this imbalanced situation may be also due to the language restriction.

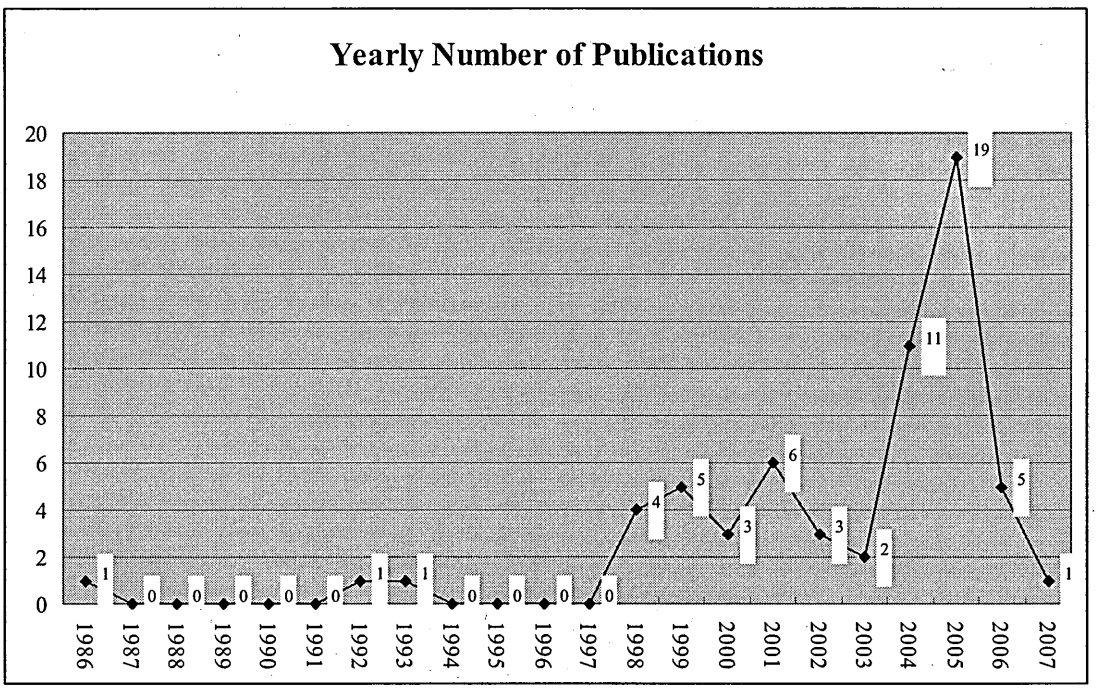
Figure 3. 1 - Country Analysis of the Selected Papers



3.2.2 Time Span Analysis

Figure 3.2 shows a noticeable uptrend in the yearly number of the publications in the selected journals after 1998, which can be seen as a response to the pressing need for the advancement of the research in the fields of supply chain performance measurement and SCM. It is anticipated that both practitioners and academics will continue their effort in exploring these fields.

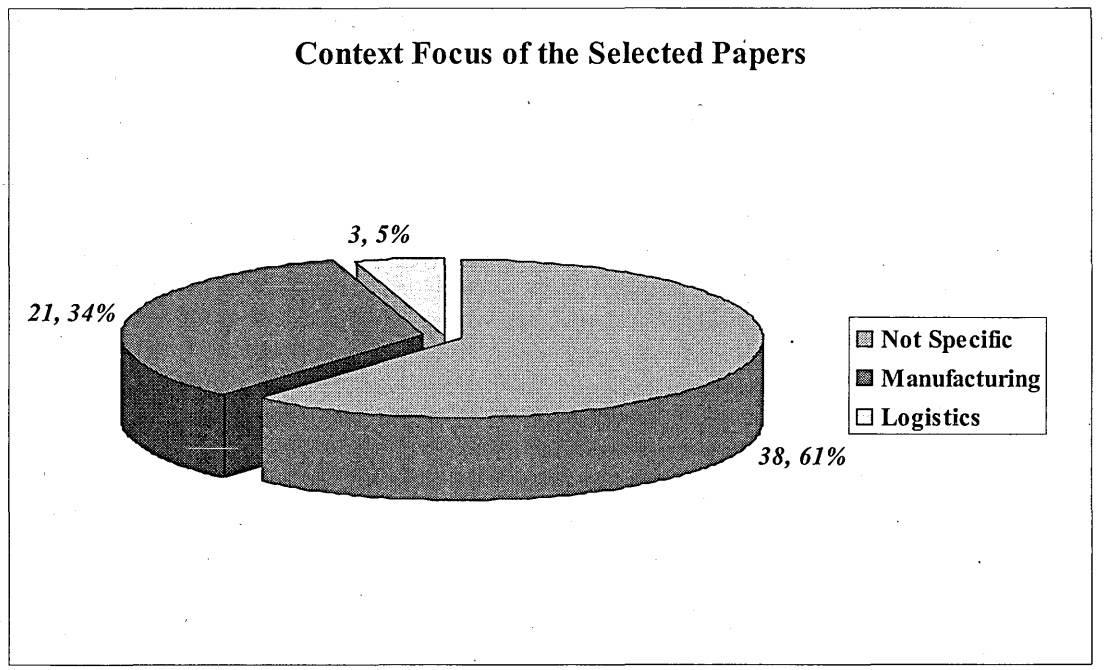
Figure 3. 2 - Yearly Number of Publications



3.2.3 Context Analysis

Context analysis concerns the specific industrial sectors from which the empirical data are collected or theoretical reflections are made in the selected papers. By doing so, it is possible to see how the specific contexts have received particular attention. Figure 3.3 indicates that the number of the studies without any particular industrial sector focus occupies the highest percentage. This reflects a deep research gap that a dominant proportion of the studies in supply chain performance measurement and SCM is mainly about the general illustration and has no strong empirical linkage for practical use. In addition, most of the empirical studies are only concentrated on the manufacturing sector and lack a research balance across different sectors. For example, supply chain balanced scorecard approach, a popular concept in supply chain performance measurement, is only intensively discussed in the context of manufacturing industry, and lacks enough attention from other industrial sectors.

Figure 3. 3 - Context Focus of the Selected Papers



3.3 THEMATIC ANALYSIS

The objective of thematic analysis is to systematically interpret the main themes existing in the selected papers. In the analysis, the emphasis is not on a detailed description and explanation of the content of individual studies (their detailed information are illustrated in the Appendix II, III, and IV), but rather a coherent evaluation and understanding of the theoretic base, methodologies, conclusions, and the practical implications of the selected papers. These papers are classified according to their research focus on the following three areas: SCM, performance measurement in supply chain, and the impact of culture on supply chain performance.

3.3.1 Supply Chain Management

As indicated in Chapter I, the research in SCM is a disjointed literature spreading across different subject areas. Hence the best approach to understanding the essence of SCM is to carry out a comprehensive and multidisciplinary review on the huge,

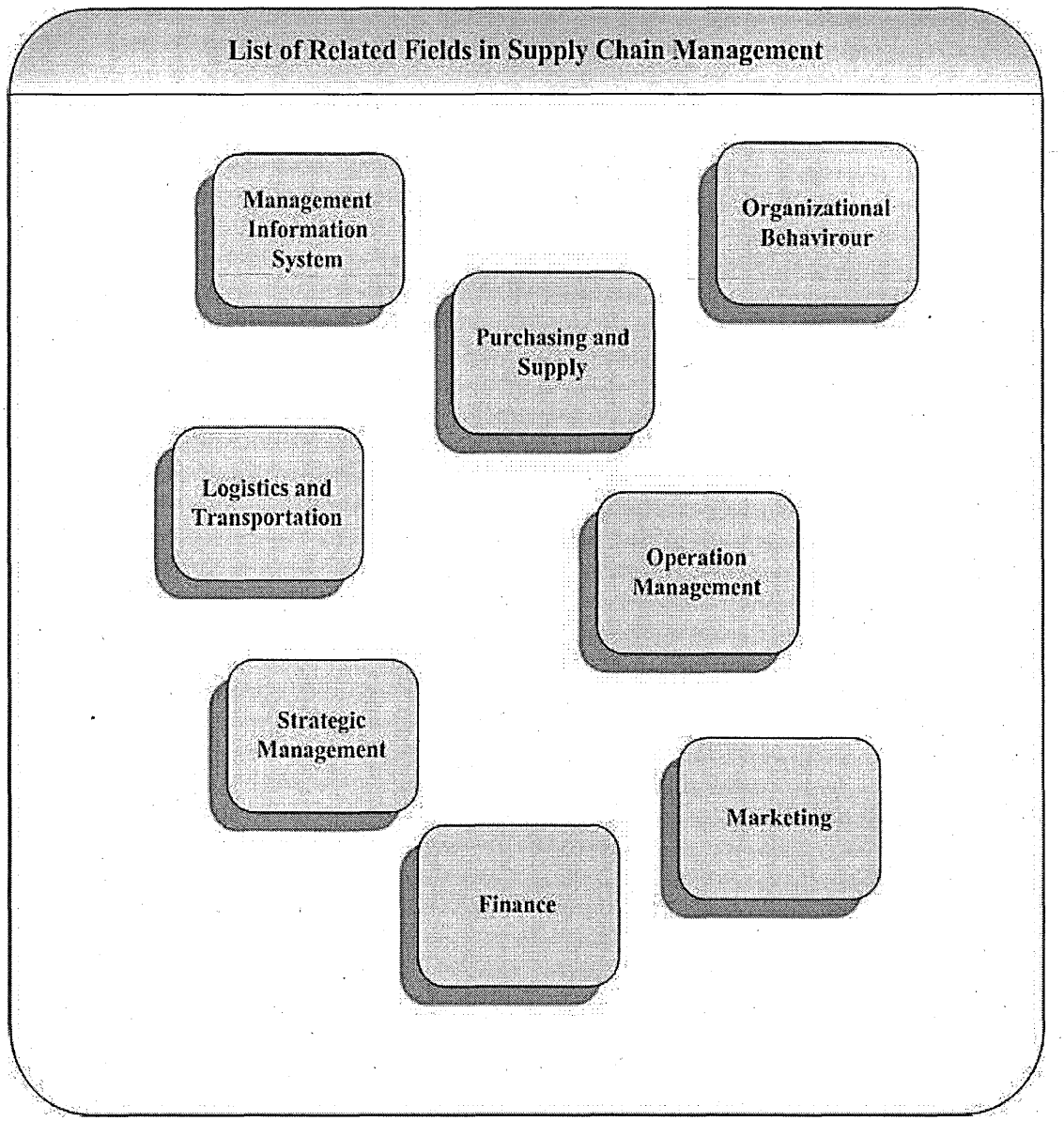
multidisciplinary literature body spreading various subject areas. However, because SCM is not the research focus of the current paper, this study chooses not to extensively investigate the myriad of research in SCM, but refers the readers to a number of key articles regarding the scope of, and the core initiatives and constructs in SCM.

After examining these articles, the key driving forces to the development of SCM are identified and discussed first. Then the core initiatives and constructs in the field of SCM are synthesized into five streams and carefully examined. Finally, the linkage between SCM and performance measurement in supply chain are highlighted.

Customer focus, environmental uncertainty, and information technology are recognized as the key driving forces to the development of SCM (Chen and Paulraj, 2004; Mehta, 2004; Mehra, 2005). Today the increased global competition requires companies to pay more attention to the customer changing need. Such a changing demand, together with the inconsistency in manufacturing and supply performance, contributes to an uncertain business environment. Under this increased uncertain condition, organizations are more likely to engage into a collaborative supply chain to respond rapid and unpredictable change (Chen and Paulraj, 2004). Meanwhile, modern information technology makes the management of supply chain possible by facilitating two-way, real-time information sharing between supply chain partners (Surana, 2005).

Because the operation in supply chain involves all activities in sourcing and procurement, processing, and all logistics management activities within and across companies (Gibson *et al.*, 2005), a myriad of studies in various subject areas have contributed to SCM, such as purchasing and supply, logistics and transportation, marketing, and the like (see Figure 3.4).

Figure 3. 4 - List of Related Fields in Supply Chain Management



The literature body in the above-mentioned subject areas covers various core aspects of SCM, as showed in Table 3.2. Although some studies only concentrate on single aspect of SCM, the majority covers more than one. Especially, four subject areas, finance, management information system, organizational behavior, and strategic management, are involved in all facets of SCM.

Table 3. 2 - Core Aspects of SCM and the Related Research Areas

Core Aspects of SCM and the Related Research Areas				
Supply Management	Intra-Firm Process Re-Engineering	CRM & Demand Management	Logistics Integration	Supply Chain System Design
Purchasing and Supply	Operation Management	Marketing	Logistics and Transportation Operation Management	Operation Management
Organizational Behavior				
Strategic Management				
Management Information Systems				
Finance				

Collectively, the critical elements in SCM are 1) supply management, 2) supply chain process re-engineering, 3) customer relationship management (CRM) and demand management, 4) logistics integration, and 5) supply network design (Chen and Paulraj, 2004; Surana, 2005; Gibson *et al.*, 2005; Helou and Caddy, 2006).

1) Supply management emphasizes the management of buyer-supplier relationship. It broadens the traditional boundary of purchasing function by incorporating the supplier involvement in new product development, process re-engineering, and quality control (Chen and Paulraj, 2004).

2) The concept of process re-engineering is a special consideration in SCM. It is an integration of a series of approaches to optimize the design, operation and maintenance of production, procurement, and distribution processes (Helou and Caddy, 2006). It involves demand forecast, supply chain system design, and production and distribution scheduling (Chen and Paulraj, 2004; Surana, 2005).

3) Customer relationship management (CRM) and Demand management involves the establishment of long-term, strategic business partnership with the customers. It is much more than the buyer-seller relation. By constantly engaging in evaluating and managing the customer requirement, suppliers can achieve excellent customer

satisfaction. Moreover, the closer relationship with their customers benefits suppliers in obtaining or predicting customer demand more accurately and timely (Backhouse and Burns, 1998; Mehra, 2005).

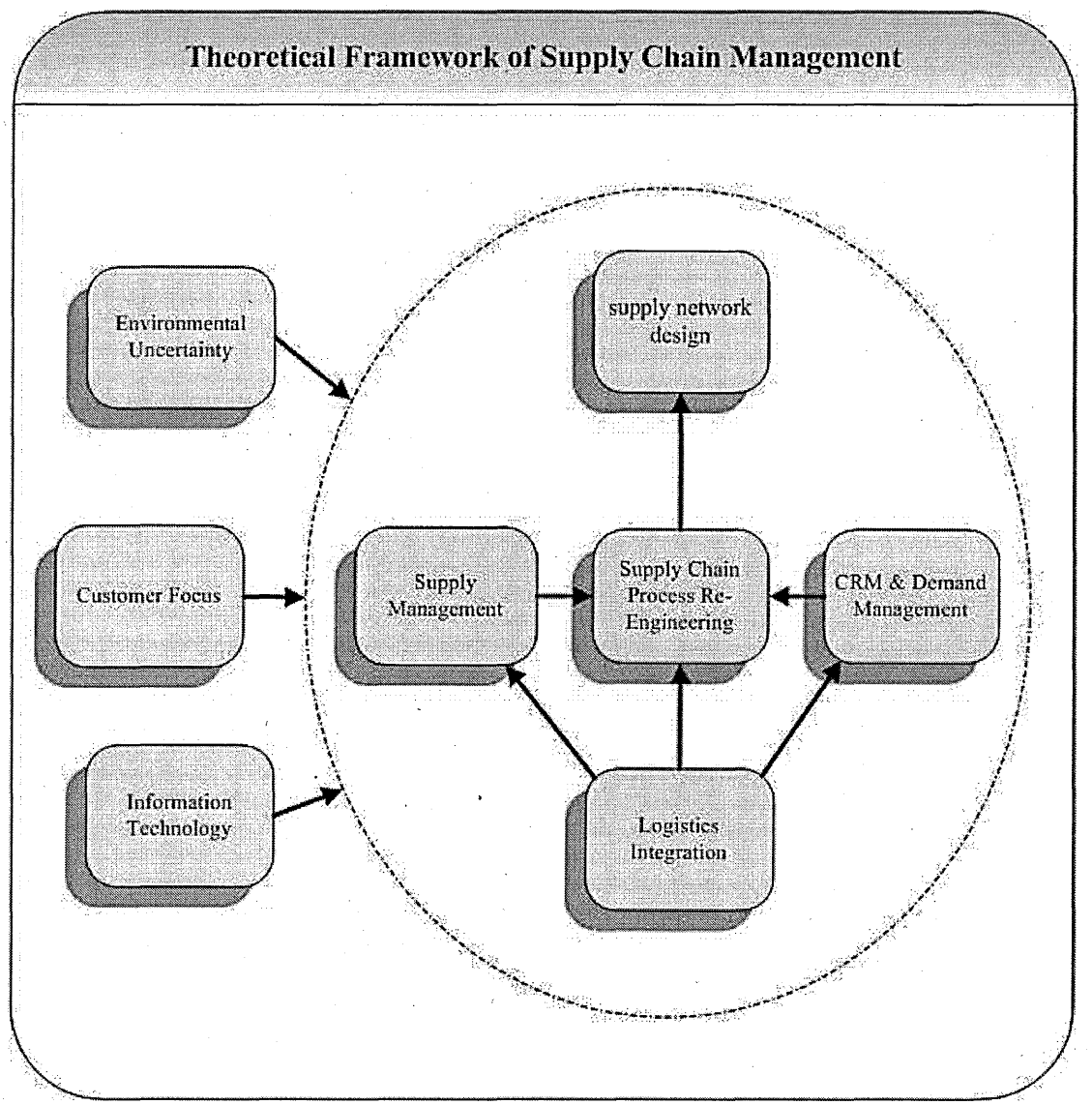
4) Logistics integration includes not only transportation function, but also warehousing and distribution. The aims is to accomplish the completion of delivery of goods in right quantity, right time, and right place by logistics functional integration and intensive information exchange between supply chain partners (Chen and Paulraj, 2004; Rogers and Leuschner, 2004).

5) By viewing supply chain as an adaptive system, some research in operation management adopts mathematical models to design a generic supply chain network (Li and Kumar, 2005; Surana, 2005; Helou and Caddy, 2006). These models can be divided as heuristic, stochastic, or simulation ones. Although suffering from restrictive assumptions and clearly insufficient in real supply chain situations (Chen and Paulraj, 2004), these approaches still provide insight into the nature of supply chain from a systematic perspective.

Intrinsically, the above-mentioned aspects of SCM are interrelated. As illustrated by Figure 3.5, three driving forces, customer focus, environmental uncertainty, and information technology are identified as instrumental to the development of SCM (Chen and Paulraj, 2004). Accordingly, the research in various fields contribute a number of initiatives, theoretical assumptions, and methodologies concerning SCM, which can be separated into five major inter-linked parts: supply management, process re-engineering, customer relationship management (CRM) and demand management, logistics integration, and supply network design. Specifically, from the upstream and downstream of a supply chain respectively, supply management and CRM & demand management facilitate re-engineering supply chain process by intensive information sharing and close collaboration between supply chain partners. In addition, numbers of the approaches developed in the research regarding supply

chain process re-engineering, take turns to provide both theoretical guidance and empirical evidence for the advance in the studies of supply chain network design. Finally, an integrated, inter-firm logistics network is viewed as the physical infrastructure imperative for the success of SCM.

Figure 3. 5 - Theoretical Framework of Supply Chain Management



Adapted from Chen and Paulraj (2004)

Performance measurement is essential for evaluating the efficiency and effectiveness of SCM. Its traditional emphasis is on measuring the financial performance of supply chain (Chen and Paulraj, 2004). However, the above analysis reveals that, Apart from

the traditional resource-based (cost) measures, effective supply chain performance measurement should incorporate new dimensions, such as output measures and flexibility measures, so as to measure a number of diversified functions, processes, and activities involving in supply chain management (Beamon, 1999). Based on the context analysis of SCM, the following section turns to the main research area of this study: performance measurement in supply chain.

3.3.2. Performance Measurement in Supply Chain

It is argued that performance measurement is a vital task in SCM because it can help to monitor the progress, identify weak areas, enhance motivation, and strengthen accountability (Chan *et al.*, 2006). However, although performance measurement in supply chain has already received tremendous attention from both academics and practitioners, the study in this field is far from reaching its mature state. Three prominent characteristics of the research in supply chain performance measurement are revealed by the literature review. Firstly, a number of measures are initiated and grouped for assessing various processes and activities in supply chain. But some of them are inconsistent, overlapped, or contradictory (see Table 3.4). Secondly, many approaches are proposed to synthesize these measures into an effective performance measurement system. Thirdly, how to measure the whole supply chain performance still lacks comprehensive consideration.

Apart from the traditional financial measures, a myriad of non-financial measures have been initiated for evaluating the supply chain performance. However, because of the complexity of supply chain, few attempts are made to systematically classify these measures. In addition, there is lack of consensus on how to collate and delineate the measures of supply chain performance in an appropriate way (Shepherd and Günter, 2006). For example, as showed in Table 3.3, they can be categorized according to:

What to Measure: financial or non-financial (Chen and Paulraj, 2004); resource, output, and flexibility (Beamon, 1999; Beamon and Chen, 2001; Lohman *et al.*, 2004); quality, resource, utilization, trust, flexibility and innovativeness (Chan *et al.*, 2006); and, input, output, and composite measures (Chan and Qi, 2003).

The process of supply chain they relate to: plan, source, make, delivery, and return (Gunasekaran *et al.*, 2001; Stephens, 2001; Bititci, *et al.*, 2005).

Their perspectives: financial, customer, internal process, and learning and growth (Basu, 2001; Park *et al.*, 2005); and, internal, supplier, customer, and extended enterprise (Folan and Browne, 2005).

Their strategic, operational, and tactic focus (Gunasekaran *et al.*, 2001; Park *et al.*, 2005)

Table 3. 3 - Classification of Performance Measures in SCM

Classification of Performance Measures in SCM			
What to Measure	Process-Based	Focus-Based	Perspective-Based
financial or non-financial resource, output, and flexibility quality, resource, utilization, trust, flexibility and innovativeness input, output, and composite measures	plan, source, make, delivery plan, source, make, delivery and return	strategic, operational, and tactic	financial, customer, internal process, and learning and growth internal, supplier, customer, and extended enterprise

However, these taxonomic groups are a hybrid mix. Just as indicated in Table 3.4, a performance measure can be categorized both as non-financial and customer perspective-based. But, this grouping method may be overlapping or even contradictory. For example, the measure "capacity utilization" appears in both internal business perspective, and the innovation & learning one. Also, in some cases, the

measures "capacity utilization" and "flexibility to meet particular customer needs" apparently do not comply with each other because the agility of a supply chain requires more redundancies and flexibility in lean manufacturing, thus reducing capacity utilization. In fact, excessiveness in the choices of performance measures make firms difficult to incorporate proper measures into a systematic measurement structure adopted for a given set of conditions; and effective management of supply chain performance requires simpler performance measurement system (Morgan, 2005).

Table 3. 4 - A Framework of Metrics for the Performance Evaluation in SCM

Perspectives	Performance Metrics	Financial	Non-Financial
Financial Perspective	Rate of Return on Investment	√	
	Information Carrying Cost	√	
	Delivery Reliability		√
Customer Perspective	Delivery Performance		√
	Buyer-Supplier Partnership Level		√
	Cost per Operation Hour	√	
Inter Business Perspective	Total Supply Chain Cycle Time		√
	Total Inventory Cost	√	
	Flexibility to Meet Particular Customer Needs		√
	Capacity Utilization		√
Innovation & Learning Perspective	Capacity Utilization		√
	Order Entry Modes		√
	Product Development Cycle Time		√

Adapted from Gunasekaran et al. (2001)

In response to the call for using the most appropriate measures to evaluate the overall performance of supply chain, many research efforts have been made towards designing a well-balanced, robust performance measurement system adaptive in the context of supply chain management. Collectively, three main themes are identified from this review: the process-based view, the balanced view, and the hybrid view. The

consensus of these themes is that an effective performance measurement system in supply chain should incorporate both the cost and non-cost performance indictors, link with consistent strategic objectives for both individual organizations and the whole supply chain, and emphasize the systematic thinking to encourage overall optimization of supply chain performance (Beamon, 1999; Beamon and Chen, 2001; Gunasekaran *et al.*, 2001; Lambert *et al*, 2001; Gunasekaran, 2004; Morgan, 2004; Balasubramanian and Tewary, 2005; Defee and Stank, 2005; Shepherd and Günter, 2006).

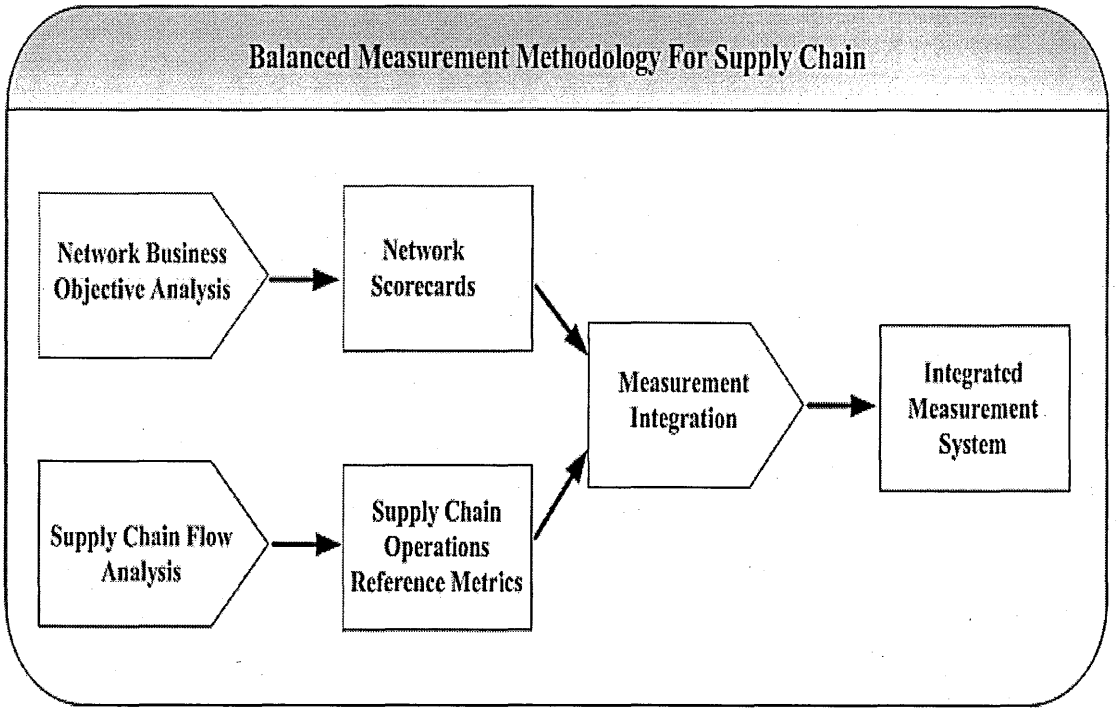
The process-based view focuses on delineating the process of supply chain operation into several major parts: plan, source, make, deliver, and return (Dreyer, 2000; Stephens, 2001; Gunasekaran *et al.*, 2001). These five management processes can be further decomposed into several sub-level processes. By doing so, the key activities in supply chain operation can be presented in detail. Meanwhile, a set of measures linked to these processes are provided from various dimensions, and are arranged hierarchically on strategic, operational, and tactic levels (Gunasekaran *et al.*, 2001; Gunasekaran *et al.*, 2004). Through the use of this approach, a process-based, cascade system of performance measurement is established to monitor the progress, identify weak areas, enhance motivation, and strengthen accountability in accordance with consistent supply chain strategies (Chan *et al.*, 2006).

The balanced view emphasizes using new perspectives to overcome the limitations in relying only on financial measures to evaluate supply chain performance. The assumption is that, by considering different perspectives for the value creation process in supply chain, the balanced measurement method can offer a holistic approach to facilitate comprehensive evaluation of the supply chain performance. For example, in balanced scorecard framework for SCM, three different perspectives – customer perspective, internal process perspective, and learning and growth perspective are introduced together with the financial perspective. These perspectives are not separated, but interact with each other as an integrated whole to evaluate the supply

chain performance comprehensively (Bhagwat and Sharma, 2007). Additionally, the balanced measurement framework is also an open system. Along with the development of supply chain, new perspectives can be introduced to address previously unexplored aspects of supply chain performance. For instance, the supplier perspective can be initiated for monitoring the collaboration level between supply chain partners (Folan and Browne, 2005). Also, the environmental perspective is advocated for the measurement of changing commercial and cultural situations (Harrison and New, 2002).

The objective of hybrid view is to integrate the process-based measurement approach with the balanced measurement method into a hybrid, generic performance measurement system. According to Bullinger *et al.* (2002), the process-based approach is a bottom-up metric system which lacks forward-looking perspective towards potential opportunities for improvement. It thus requires adding a top-down measurement system to align the performance of day-to-day activities in supply chain to the business strategies and continuous improving goals of the supply chain. This can be achieved by the adoption of a balanced supply chain scorecard system. Figure 3.6 illustrates how this hybrid methodology is developed. It is also argued that this hybrid measurement structure can be extended into a generic system applicable in diversified supply chain contexts (Bullinger *et al.*, 2002).

Figure 3. 6 - Balanced Measurement Methodology for SCM



Adapted from Bullinger et al. (2002)

Unlike the empirical research reviewed in the above sections, there are still several articles focusing on designing mathematical models for measuring supply chain performance. Their assumption is that supply chain performance can be more effectively evaluated if various processes and entities in supply chain can be measured on a common scale and benchmarked against world-class standards (Dasgupta, 2003; Lin *et al.*, 2005; Smith *et al.*, 2005). These mathematical models include deterministic analytical models (Chen *et al.*, 2005), stochastic analytical models (Fogarty, 1992; Chiang and Monahan, 2005), economic models (Wu, 2005), simulation models (Hwarng *et al.*, 2005; Reiner, 2005), and Six Sigma DMAIC (define, measure, analyze and improve) methodology (Knowles *et al.*, 2005). Although the mathematical approaches avoid producing too many measures, they rely heavily on restrictive assumptions and lack generality to real situations.

3.3.3 The Impact of Culture on Supply Chain Performance

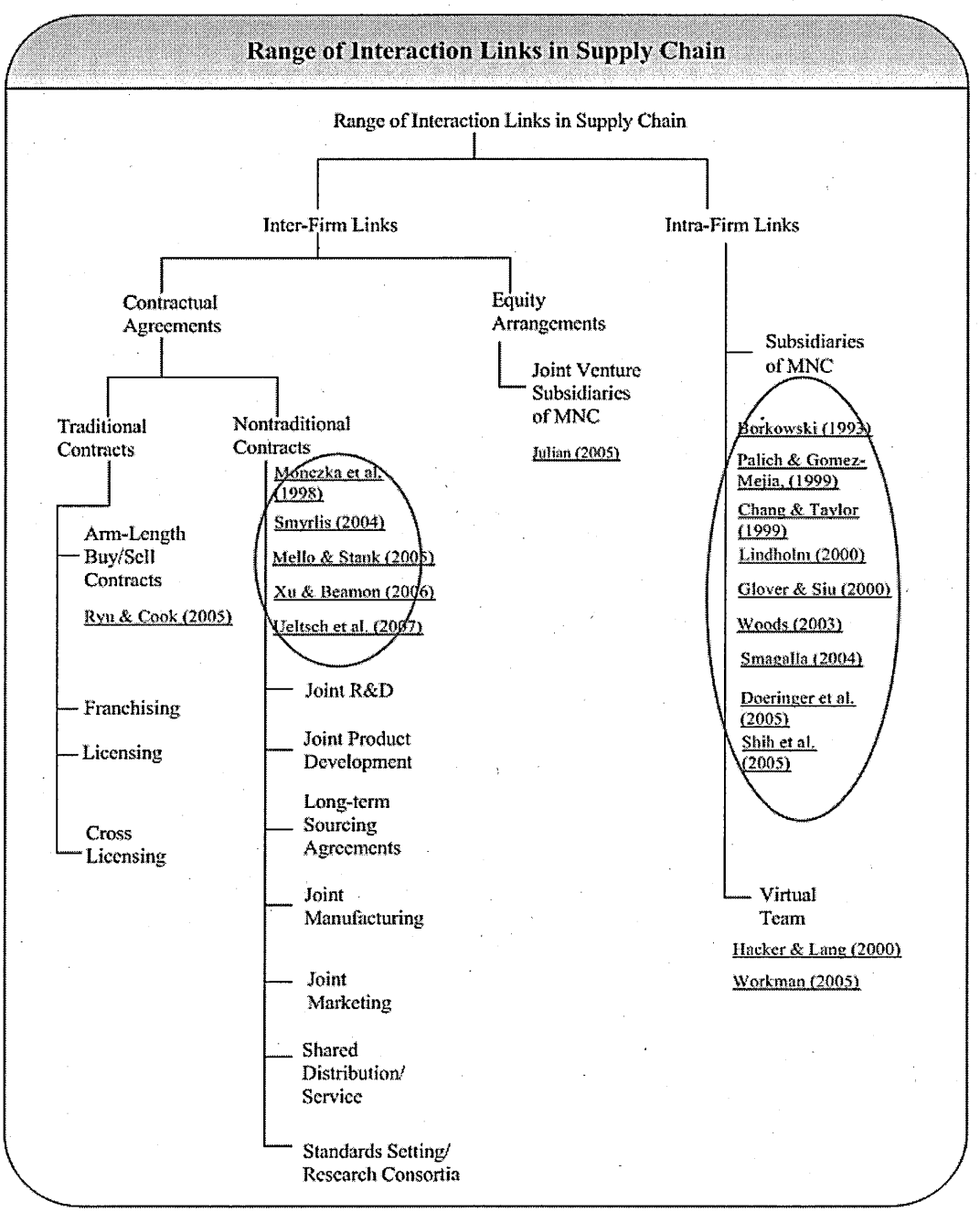
Mello and Stank (2005) highlight the importance of cultural consistency in supply chain cooperation and performance. They argue that, in order for the supply chain to be most effective, there must be a high degree of cultural consistency both within and between firms in a supply chain. However, such a consistency cannot be easily reached because of the cultural differences existing in supply chain partners. These cultural differences are even magnified when the business partners from different nations are involved in a global supply network. As a result, the cultural dynamics in supply chain, especially the impact of culture on supply chain performance, becomes an increasing important topic in research communities.

In the literature review, 18 papers are identified as related to this topic. These studies discuss various cultural issues arising from the interactions between different business units in a supply network. These business units can be independent business organizations, departments within an organization, and even functional teams. Figure 3.7 maps out the major interaction linkages of the business units in a supply chain. Based on this linkage map, the 18 papers identified in the review are tapped into different classifications of interaction linkages according to their research focus. It is showed that an emerging research focus is on the impact of cultural diversity on inter-firm supply chain cooperation and alliances. Because these inter-organizational relationships go beyond the traditional contract boundary to include closer functional or process integrations, such as outsourcing, joint manufacturing planning, joint product development, and the like, it requires the supply chain partners to commit more trust and resources to achieve mutual benefits to each other (Monczka *et al.*, 1998). Therefore, their cultural difference, as a potential factor hindering their efforts to cooperation, need to be carefully examined.

Another important research topic is the potential cultural conflicts in multinational business environment. When a multinational company enlarges its operations globally,

its corporate culture may be challenged by the local cultures and traditions in the host-countries (Palich and Gomez-Mejia, 1999). These cultural conflicts have to be managed well to avoid their negative impact on the business performance of the company. Apart from these two research focus, the cultural issues in virtual team management, traditional contracting relationships, and inter-firm equity arrangement, are also analyzed by some papers.

Figure 3. 7 - Range of Interaction Links in Supply Chain

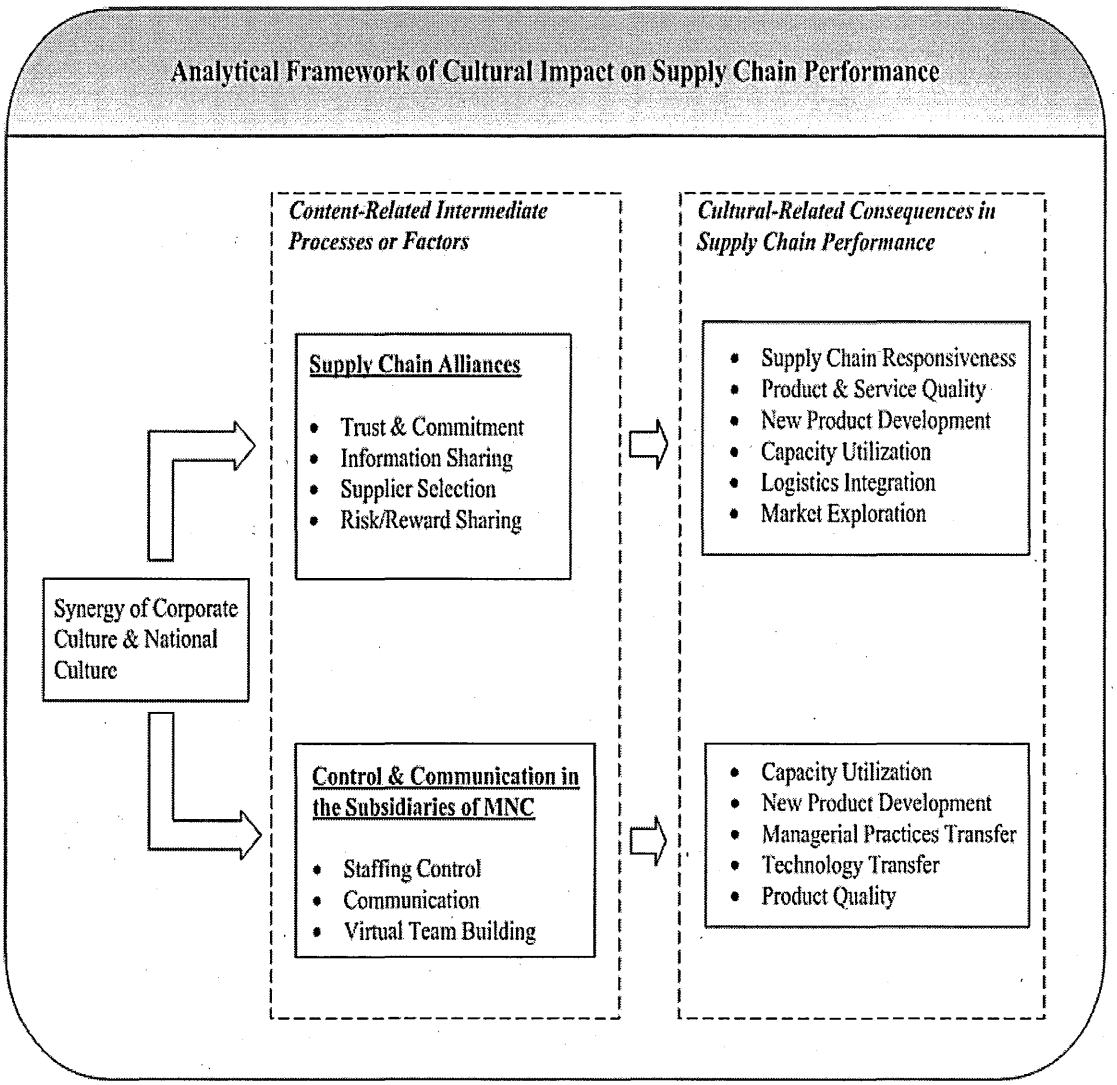


Adapted from Yoshino and Rangan (1995: 8)

Theoretically, the cultural conflicts in a supply chain root in the incompatibility in the values, beliefs, and norms held by different supply chain members. As indicated by Deshpande and Webster (1989: 4), organizational culture is "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them norms for behavior in the organization". By this definition, it is expected that the members of an organization are guided by shared values and beliefs and behave in a similar way (Mello and Stank, 2005).

These values and norms, however, vary greatly from one organization to another, As a result, the actions and practices of different members in a supply chain may be conflicting because of their diversified managerial philosophies. This can be defined as inter-firm cultural conflicts in a supply chain. Furthermore, cultural incompatibility may also be found in the workforces of different nationalities within a global organization, because these employees are exposed and influenced by local cultures and traditions (Lindholm, 2000). The cultural incompatibility of this kind can be interpreted as intra-firm cultural conflicts in a supply chain. All these conflicts and incompatibility may lead to the declined performance level of the whole supply chain. Nevertheless, the impact of cultural diversity on supply chain performance is not straightforward: it intends to impact some intermediate processes or variables first, and these processes and variables, in turn, may impact the supply chain performance eventually. In another word, it is difficult to disentangle or interpret the direct impact of cultural diversity on supply chain performance without additional information as to what happened in the intermediate "black box" (Palich and Gomez-Mejia, 1999). Fortunately, through reviewing the above 18 papers, these intermediate dependent factors are outlined and synthesized into an analytical framework (see Figure 3.8). By doing so, how and to what extent the cultural factors impacts supply chain performance can be explained clearly.

Figure 3. 8 - Analytical Framework of Cultural Impact on Supply Chain Performance



The cultural dynamics in supply chain might be derived from cultural difference existing in different countries, organizations, departments, business functions, and even individuals. It can be described as a synergic effect. On one hand, the corporate culture of an organization is gradually formed in accordance with the need of its external environment. In this formation process, various culture-related perspectives and dimensions are introduced by the above-mentioned agencies and coexist together. Therefore, to some extent, the corporate culture of the organization features certain cultural characteristics of the external environment in which it locates. On the other hand, in a global supply chain, the potential cultural diversity and conflicts increase and become more explicit as numerous business entities in different nations are involved in this complex network. This synergic effect interacts with a set of

intermediate processes or factors in two contexts: supply chain alliances, and communication and control in subsidiaries of multinational companies.

In supply chain alliances, the compatibility of cultural orientations of different supply chain members profoundly influences their preferences in selecting appropriate cooperative partners (Xu and Beamon, 2006; Ueltschy *et al.*, 2007), and eventually determines whether their mutual trust and commitment can be successfully achieved (Monczka *et al.*, 1998; Mello and Stank, 2005; Ueltschy *et al.*, 2007). Trust and commitment between supply chain partners are the precondition for the success of supply chain cooperation (Ueltschy *et al.*, 2007). Mutual trust in supply chain members facilitates open and intensive information exchange between them (Monczka *et al.*, 1998; Mello and Stank, 2005; Ueltschy *et al.*, 2007). It also ensures the establishment of a fair risk and reward sharing mechanism in supply chain alliances (Mello and Stank, 2005).

Closer cooperation between supply chain partners can yield a number of benefits: 1) reduced total cycle time of supply chain; 2) intensified logistics integration; 3) shortened new product development time; 4) improved service quality; 5) increased capacity utilization (Palich and Gomez-Mejia, 1999; Ueltschy *et al.*, 2007); and 6) more synergic effort in market exploration. Ultimately, all these benefits lead to the overall improvement of supply chain responsiveness to customer need (Ueltschy *et al.*, 2007).

In the process of control and communication in subsidiaries of a multinational company, the potential impact of culture on staffing control and communication, and virtual team building can not be neglected. Firstly, Empirical evidence shows that, in overseas subsidiaries of a global enterprise, the cultural differences between the local workforce and the expatriate managers result in their misunderstandings and insufficient communication (Glover and Siu, 2000; Smagalla, 2004). Thus the expatriate managers should receive enough training, in order to improve their cultural

awareness (Lindholm, 2000; Woods, 2003; Shih *et al.*, 2005). Additionally, headquarter of the global enterprise also needs to put more effort to investigate the job attitudes of its local employees (Mello and Stank, 2005), and adjust its managerial criteria and practices to fit the local norms and conventions (Chang and Taylor, 1999). Secondly, in global business management, virtual functional team is an emerging business operation form, which is composed of several team members who are based in different nations. Although it is assumed that global virtual team can improve business performance by breaking the space and time constraints, such an effort may be impeded by the cultural conflicts arising from the interactions between the team members from different countries – the cultural diversity of these team members may lead to their insufficient communications and less commitment to the cohesion of the team (Hacker and Lang, 2000; Workman, 2005). To deal with these cultural challenges, it is necessary to encourage the team members to initiate formal and informal joint activities of various forms, so as to improve their mutual understanding and tighten their relationships (Hacker and Lang, 2000).

The advance in cultural awareness of global supply chain business can also improve its performance. The cultural consistency across the business units in a global enterprise helps to create a sound habitat in which advanced technologies or managerial practices can be transferred smoothly from one nation to another (Palich and Gomez-Mejia, 1999; Glover and Siu, 2000). This directly results in the improvement of the product and service quality (Glover and Siu, 2000), the reduction of new product development time (Palich and Gomez-Mejia, 1999; Hacker and Lang, 2000; Workman, 2005), and the better capacity utilization (Monczka *et al.*, 1998; Palich and Gomez-Mejia, 1999).

As indicated in the above paragraphs, the impact of culture on supply chain performance is an increasingly important issue. Because of its complexity and indirectness, the research focus should be on the intermediate processes and variables which are directly influenced by culture dynamics. If their interactions with culture

can be traced thoroughly and better managed, the performance of the whole supply chain will be better measured, managed, and improved.

PART IV – DISCUSSIONS

4.1 OVERVIEW

This chapter continues with cross-theme analysis to discuss the links across various core contributions of the main themes as discussed in Part III. In the previous chapter, the main themes of these key studies are analyzed, re-mapped, and summarized. However, the development progresses of these themes, and the connections and gaps between them have not been examined. Hence the purpose of this chapter is to carry on a synthetic analysis in terms of what ideas can be transferred, and what has been reconfigured, revisited or further developed.

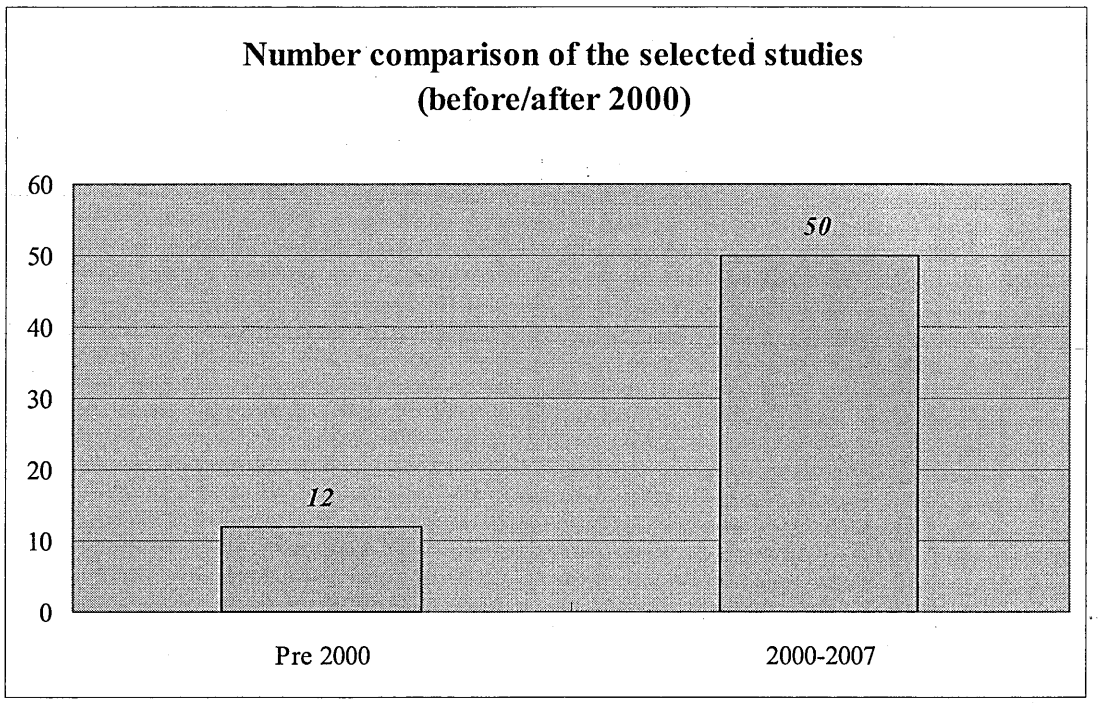
Section 4.2 focuses on the classification matrix analysis. The matrix analysis consists of two parts. Firstly, the focuses and number of the selected studies in different periods are compared, and the possible reasons are analyzed and concluded subsequently. Secondly, the structured research imbalance of the selected papers in the review is highlighted, concluded, and explained.

Section 4.3 presents the total scenario of the research field in this review. The emphasis is on what key lessons have been learned, where the gaps in the research field are, and what novel ideas and implications can be found for future research.

4.2 CLASSIFICATION MATRIX ANALYSIS

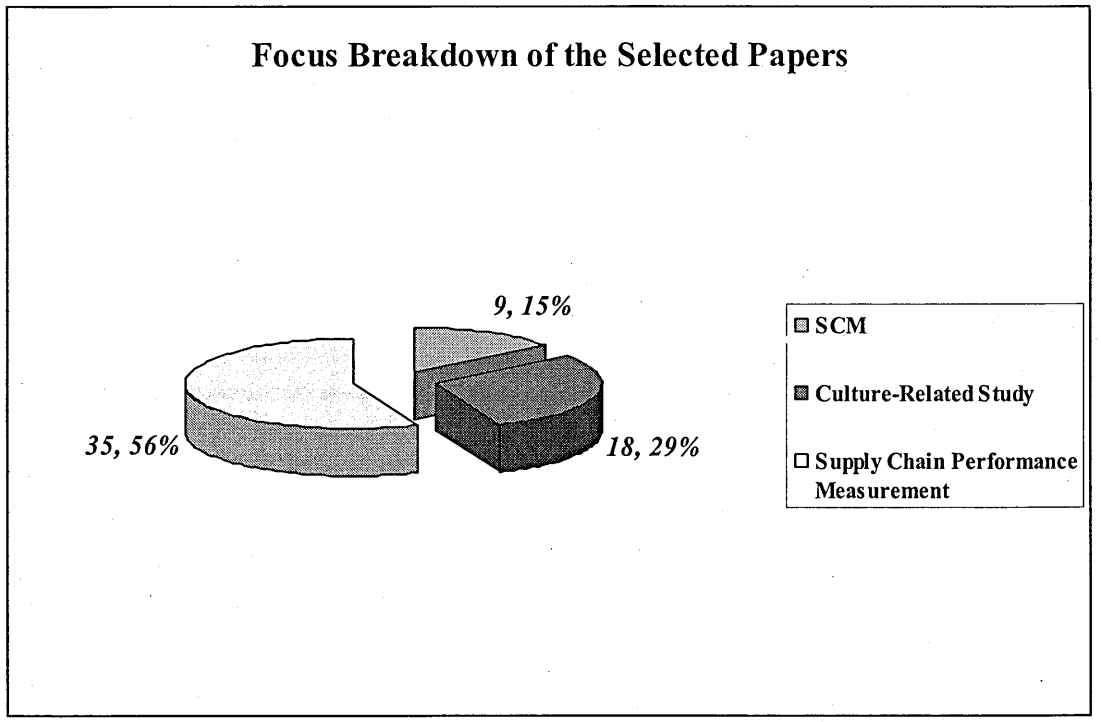
SCM and performance measurement in supply chain have received tremendous research interest today. Figure 4.1 shows that, the number of the relevant literature in these areas increased dramatically. In the literature review, the number of the selected papers which were published before 2000 is only 10. To the contrary, more than 50 papers selected by the review were published from 2001 to 2007. It is anticipated that this uptrend will continue in the future.

Figure 4. 1 - Number Comparison of the Selected Studies (before/after 2000)



In these selected papers, 56% is regarding to performance measurement in supply chain. Another 29% contributes to the culture-related study in SCM, performance measurement in supply chain, and other related fields, such as international business. The last 15% goes to the field of SCM, just as indicated in Figure 4.2. Such a distribution reflects the research focus and preference of this study. Because performance measurement in supply chain is the concentrated research field of this paper, more papers in this field are included. More considerations are also given to the cultural research in the related fields because it is the special research focus of this paper. However, it needs to be noted that although only 9 papers in SCM is included in this study as the research context, this does not mean that the research in SCM is more limited compared with the studies in the above two areas. To the contrary, the reviewing process shows that both the scope and depth of the research in SCM are far more advanced in these three areas.

Figure 4. 2 - Focus Breakdown of the Selected Papers



The following three tables give matrix analysis on the selected studies concentrating on the three research fields. A close examination on them reveals some interesting and important information.

For the research in SCM, the empirical and theoretic studies are well-balanced distributed. However, the research of these two kinds does not focus on individual industrial sectors, but prefers to carry out more comprehensive research (see Table 4.1). However, because the literature pool is limited in this field, quite possibly this is just a chance event.

Table 4. 1 - Matrix Analysis for the Selected Studies in Supply Chain Management

Supply Chain Management	Empirical Study	Theoretic Study
Manufacturing Sector	1	0
Not Specific	3	4
Logistics	0	0

For the culture-related studies, an obvious feature is that most of the research efforts are given to the empirical investigation rather than the theoretic analysis (see Table 4.2). Even within the empirical studies, more research is carried out on the general discussion of the cultural issues, and not intentionally concentrated on specific sectors. Such a research imbalance is reasonable considering the complexity of theoretic inquiry in culture study. Therefore, it is argued that, more research effort should be given to develop a reliable conceptual basis in order for offering theoretic guidance for the development of cultural research in SCM and performance measurement in supply chain.

Table 4. 2 - Matrix Analysis for the Selected Culture-Related Studies

Culture Study in SCM, Performance Measurement in Supply Chain, and Other Related Fields	Empirical Study	Theoretic Study
Manufacturing Sector	5	0
Not Specific	11	1
Logistics	1	0

Contrary to those culture-related studies, the research in supply chain performance measurement is carried out intensively on both the theoretic and empirical focus. However, as indicated in Table 4.3, although the theoretic studies in this field are carried out more on a general manner, most of the empirical studies in this field only concentrate on the manufacturing sector. This reflects the fact that the performance of business activities in manufacturing sector is more explicit, and hence easier to be measured. However, it does not necessarily mean that the performance in other sectors, such as service industry, is not important and can be neglected. Rather, it is anticipated that along with the development of the research in supply chain performance, the studies in this field will be more balanced across various industrial sectors.

Table 4. 3 - Matrix Analysis for the Selected Studies in Performance Measurement in Supply Chain

Performance Measurement in Supply Chain	Empirical Study	Theoretic Study
Manufacturing Sector	10	5
Not Specific	4	14
Logistics	1	5

4.3 CROSS-THEME ANALYSIS

The aim of the cross-theme analysis is to bridge links between the reviewed studies in different categories, and also find out the possible research gaps between them, so as to respond to the central research inquiry of this paper and identify the possible directions for future research.

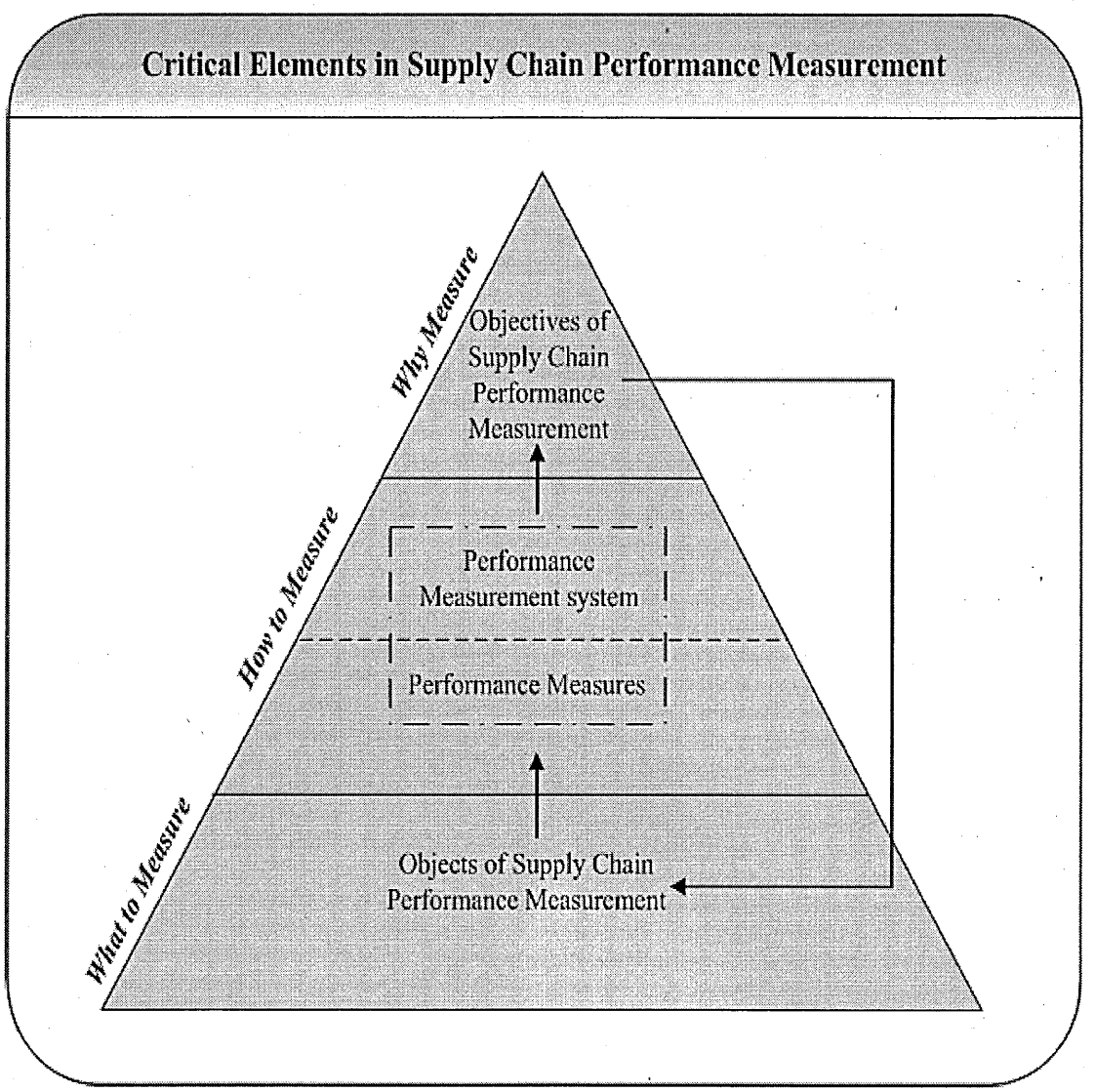
During this section, the research questions raised in the first chapter are used to steer the route of discussion.

1. *What are the key elements constructing performance measurement in the context of supply chain management?*

As Figure 4.3 depicts, the essence of supply chain performance measurement is concentrated on the "why measure", "what to measure" and "how to measure" questions which respectively stand for the concerns on the ends, objects, and means of performance measurement in supply chain. The "why measure" question regards to the establishment of overall objectives in supply chain performance measurement. These objectives should be in line with the strategic ends of supply chain management. Once established, these objectives are then used to address the "what to measure" question, in order to ensure that the right objects of measurement are included. These objects can be activities, processes, or functional capabilities in supply chain

operation. After the objectives and objects are both set in supply chain performance measurement, the next step is to develop a measurement mechanism to align the performance of the day-to-day operations in supply chain with the strategic objectives in SCM. This "how to measure" problem can be solved by designing an adaptive performance measurement system with simple but effective measures. Following this logic, the performance objectives and objects, and the performance measures and performance measurement system in supply chain are identified by the selected literature as the critical elements for successfully measuring the supply chain performance.

Figure 4. 3 - Critical Elements in Supply Chain Performance Measurement



2. How are these elements related and interacted?

In the context of SCM, the relationships and interactions of the above-mentioned key elements are complex, dynamic, and contingent. A supply chain involves numerous entities that are exposing to the constantly changing environment. Although the theoretic assumption is that these entities should follow a unified strategy to ensure the optimization of the overall supply chain performance, in practice their business objectives are often disjointed and even contradictory with each other. The incongruity in their strategic, tactic, and operational pursuits directly leads to an explosion of performance measures. Hundreds of measures have since been created by both academics and practitioners for evaluating the performance of various activities, processes, or functional capabilities in supply chain operation. In addition to the traditional cost-related measures, a myriad of non-financial measures, such as output measures, flexibility measures (Beamon, 1999), and composite measures (Chan and Qi, 2003) are continuously added to the increasingly clumsy measurement pool. Even further, some of these measures are inconsistent, overlapped, or contradictory.

To collate the right performance measures and integrate them into an effective measurement system, many attempts have been made by researchers from divergent perspectives. These attempts are identified in this review and classified into three main approaches: the process-based performance measurement system (Dreyer, 2000; Stephens, 2001; Gunasekaran et al., 2001), the balanced scorecard performance measurement system (Bhagwat and Sharma, 2007), and the hybrid or cascade performance measurement system (Bullinger et al., 2002). However, despite their intensions to design a generic model for measuring the supply chain performance, these approaches are mainly derived from theoretic analysis and lack empirical support. In fact, it is quite possible that no "one-fit-for-all" solution really exists towards measuring countless variables in supply chain operation. In another word, the fundamental issue in supply chain performance measurement is not on the

measurement itself, but on the understanding of the measurement and management objectives of supply chain. Just as stated by Backhouse and Burns (1998), a robust supply chain performance measurement system should be contingent upon its business environment and support its distinctive development strategy. For example, in a lean supply chain, the performance measurement system needs to focus on cost, time, and capacity utilization to support the pursuit for operational excellence. To the contrary, a customer-focused performance measurement system should be developed in an agile supply chain to satisfy its requirement for quick responsiveness to changing customer demand.

3. *How and to what extent do the cultural factors impact the performance measurement in the context of supply chain management?*

The discussion in the Chapter III indicates that the cultural factors do not impact supply chain performance directly but by way of other intermediate proxies, such as trust or communication between supply chain partners. Then these proxies may in turn affect the supply chain performance eventually. This means that the impact of culture have already taken place before the correlated variance of supply chain performance can be observed and evaluated. Therefore, to predict and measure the above-mentioned cultural impact in a timely manner, the ex-ante perspectives should be introduced to the supply chain measurement system to accommodate new measures on the intermediate proxies. The literature review reveals that some researchers have already noticed this issue and suggested that the measurement of overall supply chain performance should include the intensity of information exchange between supply chain partners, and the extent to which supply chain relationships are based on mutual trust, etc. (Monczka *et al.*, 1998; Chen and Paulraj, 2004; Mello and Stank, 2005; Ueltschy *et al.*, 2007).

However, because the impact of culture on supply chain performance is complex and implicit, it is difficult to be quantified precisely. To fully understand the extent to

which the cultural factors impact supply chain performance, more research effort is still need to make the hidden causal relations between cultural impact and supply chain performance more explicit.

PART V – CONCLUSIONS

5.1 OVERVIEW

The conclusive chapter reflects the insights gained through the systematic literature review. Section 5.2 states the understanding of the research outcome through this literature review, particularly regarding the importance of the alignment of the research result, perspective, and design. The checklist designed to evaluate the objectives achieved in the literature review is used to guide the conclusion. Section 5.3 concludes the understanding of research process, with the emphasis to justify the design of protocol and research methodology. Section 5.4 summarizes the limitations, personal reflections, and the learning points in the systematic literature review, and also suggests possible directions for future studies.

5.2 UNDERSTANDING OF THE RESEARCH RESULT

The literature review examines all important literature from diverse disciplines regarding the research focus of this paper, revealing that the current research in this area has made great progress. In terms of their research scope, the selected papers cover performance measurement in supply chain, SCM, and the related culture study. The research content of the selected papers includes the plan, implementation, management, control, and system design of performance measurement in supply chain. For the research design, various methodologies are applied in the selected studies, including the theoretic test, qualitative and quantitative analysis, comparative study, empirical survey, and case study. Moreover, modeling the reality with or without empirical data is widely performed in some studies. And the modeling design is also subjective to the availability and validity of the empirical data available.

In addition, a variety of less conventional ideas and concepts are also advocated by some studies. And important contributions are also made towards the understanding of

the cultural impact on supply chain performance.

However, the review also reveals that the number of the studies directly linking to the research focus of this paper is limited, despite their possible contributions to better explain and understand a wide variety of issues. This shows that the studies of performance measure in the context of SCM are far from reaching their mature state. Especially, the current research contributes little to the establishment of a real inter-organizational performance measurement system which can be practically applied across various independent supply chain participants.

The literature review also identifies a research gap between the culture-related studies and performance measurement studies in the context of SCM. It is not argued that which of these mind streams is more or less important, however, what is argued for is the convergence of these two themes. As it stands, these two streams of literature are almost isolated, and few authors managed to build connections between them. It is believed that by creating new knowledge that is firmly grounded in theoretical basis, and at the same time relevant to practice, these two streams can be better bridged for deeper understanding of this field.

As commented by Craig and Hannes (2006), the research purpose of a performance measurement literature review is to go some way towards addressing the dearth of research into performance measurement systems and metrics of supply chains by critically reviewing the contemporary literature and suggesting possible avenues for future research. According to this assertion, the overall objectives of the literature review are believed to be achieved as shown in Table 5.1.

Table 5. 1 - Results of Achievement on the Overall Objectives

No.	General Objectives	Achieved or not
1	To identify and reduce large quantities of knowledge for meaningful digestions of the mapped fields of research	Y
2	To integrate critical pieces of research themes from different aspects to guide directions of considerations for future studies	Y
3	To prove the review as an scientific technique with support of different research skills	Y
4	To assure multiple reviewed studies are covered and meanwhile consistency is assessed for the research direction	Y
5	To establish a process replicable, transferable, and flexible to assure researching effort continuative to knowledge	Y

Source: Adapted from Murlow (1994)

5.3 UNDERSTANDING OF THE RESEARCH PROCESS

Following the review protocol, the literature review conducts a systematic searching. Nearly 3000 articles are screened by title reading, 796 selected studies are reviewed by abstract skimming, and finally around 60 papers are studied in full text.

In the review process, various approaches are adopted to prevent biases or deviations, and justify the searching procedure and results. The research field is initially defined and mapped through various ways including scoping study, cross referencing, searching, and considering the suggestions from the supervisor and the academic consultants. Based on the scope mapping, the keywords and search strings are initiated and revised according to the suggestions from the supervisor and the information specialists. In addition, the review protocol is designed and agreed as an important guidance document. During the searching process, the selection and quality criteria are applied to justify the searching results. Then subjective analysis and synthesis of the selected studies are given to provide descriptive findings and in-depth theme discussion.

Table 5.2 lists the categorized implementation results of these strategic approaches. It

indicates that, although the overall result is satisfactory, some deficient points still exist in the literature, which are discussed in detail in the next section.

Table 5. 2 - Results of Strategic Approaches Implemented

No.	Strategic approach	Achieved or not
1	Field mapping, and Structured design of keyword and search strings	Y
2	Selection of appropriate information source for searching	Y/with limitation
3	Selection of appropriate selection criteria	Y
4	Selection of appropriate quality assessment criteria	Y
5	Transparency of the researcher's procedures and justification for all decisions taken and the conclusions drawn	Y/with limitation
6	Reasonable analysis of the selected studies	Y
7	Reasonable synthesis of the selected studies	Y

5.4 LIMITATIONS, PERSONAL REFLECTIONS, AND THE CONTRIBUTIONS TO FURTHER RESERCH

5.4.1 Limitations and Personal Reflections

Several limitations are associated to this study. To conduct a systematic literature review successfully, the researcher needs to have the relevant theoretical base, in order to evaluate and find out the most significant academic papers. Understanding, analyzing, and synthesizing the theoretical ground and empirical implications of the relevant academic literature, all these research activities require the author continuously refer not only to the fundamental articles and books in the relevant subject areas, but also to other outside reference resources. Although the author is confident that a well-balanced, systematic academic research will be carried out if a systematic review approach is performed properly, limitations still may come from the short time span, limited data and reference resources, and personal or intellectual bias.

The limited time span is the first constraint on the review. To carry out the research in a manageable way, the research databases are restricted in the business search engines which provide information with relatively high credibility and quantity, such as

ProQuest or EBSCO. Therefore, the search results may not be exhaustible and some practitioner studies may be lost.

Apart from these external limitations, the author's personal or intellectual bias may also influence the way the systematic literature review is designed and performed. With a background in business field, the author lacks theoretical knowledge in other disciplines, such as psychology and human resource management. As a result, in the review process, the author turns to the review consultants in the field of human resource management for the relevant knowledge. In addition, in the literature reviewing process, the author has to resolve to other official reference to justify the theory robustness of some studies in some unfamiliar research areas.

5.4.2 Contributions to Further Research

The systematic literature review contributes a lot to the understanding of what needs to be done for the future research. This paper constructs a theoretical basis and identifies a substantial number of gaps and possibilities for the further research in the author's PhD study. The literature review makes the process transparent, allowing the reader to assess the reviewing result from a more informed perspective. The bias that the researcher unavoidably introduced in the review is also kept under a reasonable level. Hence this systematic literature review provides a well-balanced theoretic background for the author to carry out further research in this field when empirical data is collected. In this sense, the reflections regarding methods and methodologies adopted in this paper are also very valuable.

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APPENDIX I – List of Journals Included

Location	Journal name
U.K.	Benchmarking: An International Journal
U.K.	Business Process Management Journal
Canada	Canadian Transportation & Logistics
USA	Decision Sciences
U.K.	European Journal of Information Systems
Holland	European Journal of Operational Research
U.K.	European Planning Studies
USA	Human Resource Development Quarterly
USA	Human resource management
Holland	Human Systems Management
USA	Information Systems Frontiers
U.K.	International Journal of Agile Management Systems
Switzerland	International Journal of Business Performance Management
U.K.	International Journal of Human Resource Management
U.K.	International Journal of Logistics Management
U.K.	International Journal of Logistics: Research & Applications
U.K.	International Journal of Manpower
U.K.	International Journal of Operations & Production Management
Switzerland	International Journal of Production Economics
U.K.	International Journal of Production Research
U.K.	International Journal of Productivity and Performance Management
Switzerland	International Journal of Technology Management
USA	International Studies of Management & Organization
USA	Journal of Applied Business Research
USA	Journal of Business Logistics
U.K.	Journal of Management
USA	Journal of Marketing Theory & Practice
U.K.	Journal of Supply Chain Management: A Global Review of Purchasing & Supply
USA	Management Accounting
USA	Manufacturing & Service Operations Management
U.K.	Measuring Business Excellence
USA	MIT Sloan Management Review
Ukraine	Problems & Perspectives in Management
U.K.	Proceedings of the Institution of Mechanical Engineers -- Part B -- Engineering Manufacture

Location	Journal name
U.K.	Production Planning & Control
U.K.	Supply Chain Management
USA	Supply Chain Management Review
U.K.	The International Journal of Accounting
U.K.	The Journal of the Operational Research Society
USA	Total Quality Management & Business Excellence

APPENDIX II – Selected Papers Regarding Performance Measurement in Supply Chain

Title	Descriptive Information	
Performance measurement for green supply chain management	*Author*	Aref A Hervani; Marilyn M Helms; Joseph Sarkis
	Date	2005
	Who Published	Benchmarking: An International Journal
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To introduce and provide an overview of the various issues related to environmental (green) supply chain management performance measurement
	Industry/Sector	Not Specific
	Methodology	Theoretic discussions on the approaches to integrating environment-related measures to the existing performance measurement system in supply chain.
	Main Arguments	• The basic purposes of Green SCM/PM are: external reporting, internal control, and internal analysis. • A major concern within green supply chain management is concerned with inter-organizationally sharing responsibility for various aspects of environmental performance.

Title	Descriptive Information	
Performance measures and metrics in a supply chain environment	***Author***	A. Gunasekaran, C. Patel, and E. Tirtiroglu
	Date	2001
	Who Published	International Journal of Operations & Production Management
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	Developing a framework for measuring the strategic, tactical and operational level performance in a supply chain.
	Industry/Sector	Not specific
	Methodology	Literature review
	Main Arguments	• The metrics discussed in this framework are classified into strategic, tactical and operational levels of management. • Metrics are aligned to the four basic links that constitute the supply chain: (a) plan; (b) source; (c) make; and (d) deliver. • There is a shift in focus from the traditional cost accounting method to a technique which takes into account the cost of activities and its impact on other functions such as customer service, asset utilization, productivity and quality in order to encompass and emphasize the overall supply chain performance. • Quite often, companies have a large number of performance measures to which they keep on adding based on suggestions from employees and consultants, and fail to realize that performance measurement can be better addressed using a good few metrics. • One perspective is that of a single enterprise trying to achieve internal agility through its own modular structure. The second is the "external" view, where a single enterprise identifies agility as being within the extended enterprise, with itself being one of the modules.

Title	Descriptive Information	
Agile value chains for manufacturing - implications for performance measures	*Author*	Backhouse,C.J.; Burns,N.D.
	Date	1999
	Who Published	International Journal of Agile Management Systems
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To design an agile performance measurement system in response to the requirement of supply chain for agility and responsiveness.
	Industry/Sector	Manufacturing
	Methodology	An empirical agile supply chain performance measurement system is designed and its applicability in manufacturing sector is tested.
	Main Arguments	• Companies have to develop new skills and capabilities, but it is complicated by market forces demanding reduced product life cycles in an environment of growing uncertainty. • Agility is the ability of an enterprise to adapt to unpredicted changes in the external environment. This is in contrast to flexibility, which is taken to mean the ability of companies to respond to a variety of customer requirements which exist within defined constraints.

Title	Descriptive Information	
New criteria of performance management: A transition from enterprise to collaborative supply chain	***Author***	Basu, Ron
	Date	2001
	Who Published	Measuring Business Excellence
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	Theoretically initiating a six-stage performance management process to meet the new criteria and convert challenges to opportunities.
	Industry/Sector	Manufacturing
	Methodology	Theoretical modeling design
	Main Arguments	• The internet enabled integrated supply chain or E-supply chain has extended the linear flow of supply chain to an Eco system of supply web. • The collaborative culture of the integrated supply chain has triggered the emergency of new measures, especially in five areas: external focus, power to consumer, value-based competition, network performance, and intellectual capital.

Title	Descriptive Information	
Performance analysis of conjoined supply chains	***Author***	Beamon,B.M.; Chen,V.C.P.
	Date	2001
	Who Published	International Journal of Production Research
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	Using mathematical models to test the performance effects of various operational factors on conjoined supply chains.
	Industry/Sector	Not specific
	Methodology	Experimental design and simulation analysis
	Main Arguments	• Supply chain structures will be classified as: convergent (assembly), divergent (arbores cent), conjoined or general. • The performance measure framework utilized in this analysis is based on resource, output and flexibility, three performance measures as vital components to a supply chain measurement system. • Statistical results indicate that inventory system stock-out risk, the probability distribution of the demand, and the transportation times are the most important in determining the effectiveness of the chain.

Title	Descriptive Information	
Measuring supply chain performance	*Author*	Beamon, Benita M.
	Date	1999
	Who Published	International Journal of Operations & Production Management
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To identify the generic measures necessary for any supply chain performance measurement system.
	Industry/Sector	Manufacturing
	Methodology	Theoretical framework with quantitative analysis to test its validity
	Main Arguments	• The categorization of supply chain performance measures resulted in the identification of three types of performance measures that are necessary components in any supply chain performance measurement system: resource, output and flexibility. • The importance of a supply chain system is to achieve simultaneously a high level of efficiency, a high level of customer service and the ability to respond effectively to a changing environment. • However, a generally applicable systematic approach to performance measurement has not been developed.

Title	Descriptive Information	
Measuring and managing performance in extended enterprises	***Author***	Bititci, Umit. S.; Mendibil, Kepa; Martinez, Veronica; Aibores, Pavel.
	Date	2005
	Who Published	International Journal of Operations & Production Management
	Star Rating	2 *
	Where Published	U.K.
	Other Information	
	Objective of Work	Re-adjusting the existing performance measurement approach to measure and manage performance in extended enterprises.
	Industry/Sector	Not specific
	Methodology	Theoretical framework with case study to test its validity
	Main Arguments	• The research found that due to structural differences between traditional and extended enterprises, the systems required to measure and manage the performance of extended enterprises, whilst being based upon existing performance measurement frameworks, would be structurally and operationally different. • Supply chain management has gained significant acceptance in industry whereas others, such as extended enterprises and virtual enterprises, have remained as academic concepts with no real industrial and commercial application. • Because the strategy of each business unit is deployed from two different sources, i.e. enterprise and extended enterprise, there is a potential source of conflict that needs to be managed. • The performance measurement systems of virtual enterprises identified that each individual enterprise has its own performance measurement system, part of which relates to its activities related to the virtual enterprise, which tends to be coordinating type measures to ensure that the necessary level of coordination and synchronization is achieved between individual enterprises.

Title	Descriptive Information	
Analyzing supply chain performance using a balanced measurement method	***Author***	Bullinger,Hans-Jörg; Kühner,Michael; Van Hoof,Antonius
	Date	2002
	Who Published	International Journal of Production Research
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To propose a generic, hybrid balanced measurement model for supply chain management.
	Industry/Sector	Not specific
	Methodology	Literature review and theoretic analysis
	Main Arguments	• Opportunities are derived from suboptimal inner- and cross-organizational business processes and the related material, information and capital flows. • The paper describes a supply chain analysis approach and proposes a measurement methodology integrating bottom-up and top-down performance measures as a hybrid balanced measurement approach. • The hybrid measurement approach integrates SCOR metrics into the supply network scorecards to form an integrated measurement system. • The following developmental stages of supply chains have been used: Functional excellence, Process excellence, Supply chain integration.

Title	Descriptive Information	
A fuzzy basis channel-spanning performance measurement method for supply chain management	***Author***	Chan,F T S.; Qi,H J.
	Date	2002
	Who Published	Proceedings of the Institution of Mechanical Engineers -- Part B -- Engineering Manufacture
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To develop an generic performance measurement model for supply chain management and benchmarking
	Industry/Sector	Not specific
	Methodology	Mathematical modeling
	Main Arguments	• The objective of this article is to outline a PMS for SCM with a cross-organizational method from a system-thinking perspective. • Critical dimensions of performance measures are discussed from three areas i.e. input measures, output measures and composite measures. • Fuzzy method addresses the real situation of human judgment activity without losing important information.

Title	Descriptive Information	
A review of performance measurement systems for supply chain management	***Author***	Chan, Felix T S.; Chan, H .K.; Qi, H J.
	Date	2006
	Who Published	International Journal of Business Performance Management
	Star Rating	n/a
	Where Published	Switzerland
	Other Information	
	Objective of Work	To identify the critical elements in performance measurement in supply chain
	Industry/Sector	Not specific
	Methodology	Literature review
	Main Arguments	• The conceptual framework of SCM consists of three major and closely related elements: business processes, management components, and the structure of the supply chain. • PM is a vital task in SCM because it can help to monitor the progress, identify weak areas, enhance motivation, and strengthen accountability.

Title	Descriptive Information	
Using the six-sigma metric to measure and improve the performance of a supply chain	***Author***	Dasgupta, Tirthankar
	Date	2003
	Who Published	Total Quality Management & Business Excellence
	Star Rating	4 *
	Where Published	USA
	Other Information	
	Objective of Work	To apply the six-sigma approach in performance measurement in supply chain
	Industry/Sector	Not specific
	Methodology	Quantitative framework with case studies to triangulate calculations
	Main Arguments	• It is recognized that the six-sigma approach is more effective if the performances of various processes and entities can be measured on a common scale and benchmarked against world-class standards. • Further motivation behind the integration of six-sigma and SCM follows from the fact that both have been strongly recognized as process approaches.

Title	Descriptive Information	
Applying the strategy-structure-performance paradigm to the supply chain environment	***Author***	Defee, C Clifford; Stank, Theodore P.
	Date	2005
	Who Published	International Journal of Logistics Management
	Star Rating	U.K.
	Where Published	3 *
	Other Information	
	Objective of Work	To establish a measurement framework to link the performance with business strategy in supply chain
	Industry/Sector	Not specific
	Methodology	Literature review and theoretic analysis
	Main Arguments	• Effective supply chains require members to have either consistent or complementary supply chain strategies. • SSP (strategy-structure-performance) foundational principles are linked to supply chain management concepts, and synthesized into an explanatory framework, which proves that strategy and structure have important implications to the supply chain performance.

Title	Descriptive Information	
Synergies between supply chain management and quality management: emerging implications	***Author***	Flynn,B B.; Flynn,E J.
	Date	2005
	Who Published	International Journal of Production Research
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To test the relationships between quality management and performance measurement in supply chain
	Industry/Sector	Manufacturing
	Methodology	Qualitative framework with case studies to test its validity
	Main Arguments	• The results of this study indicated that organizations with stronger quality management practices achieved better supply chain performance. • An existing foundation in quality management can be leveraged into the development of close and cooperative relationships with suppliers. Conversely, effective supply chain management will reap benefits in terms of quality improvement.

Title	Descriptive Information	
Development of an extended enterprise performance measurement system	***Author***	Folan, P.; Browne, J.
	Date	2005
	Who Published	Production Planning & Control
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To initiate a generic system to measure the performances in extended enterprises
	Industry/Sector	Manufacturing
	Methodology	Qualitative framework with case studies to test its validity
	Main Arguments	• The extended enterprise balanced scorecard offers a four-perspective framework, implemented at each node, that provides a generic structure for the management of performance measures in the extended enterprise; while the procedural framework operates at both the local and holistic levels, to provide a step-by-step generic process towards performance measure selection and implementation. When combined, the two frameworks produce the basic extended enterprise performance measurement (EEPM) system. • The development of two distinct performance measurement frameworks—of a structural and procedural nature—is given, which, when combined, produce the basic EEPM system.

Title	Descriptive Information	
A framework for supply chain performance measurement	***Author***	Gunasekaran,, A.;·Patel, C.; McGaughey, Ronald E.
	Date	2004
	Who Published	International Journal of Production Economics
	Star Rating	n/a
	Where Published	Switzerland
	Other Information	
	Objective of Work	To develop a framework to promote a better understanding of the importance of SCM performance measurement and metrics.
	Industry/Sector	Manufacturing
	Methodology	Qualitative framework with quantitative survey and qualitative analysis to test its validity
	Main Arguments	• The metrics and measures are discussed in the context of the following supply chain activities/processes: (1) plan, (2) source, (3) make/assemble, (4) delivery/customer 5) deliver. • These metrics were classified at strategic, tactical and operational to clarify the appropriate level of management authority and responsibility for performance. • To bring about improved performance in a supply chain and move closer to attainment of the illusive goal of supply chain optimization, performance measurement and improvement studies must be done throughout the supply chain. All participants in the supply chain should be involved and committed to common goals, such as customer satisfaction throughout the supply chain and enhanced competitiveness.

Title	Descriptive Information	
The role of coherent supply chain strategy and performance management in achieving competitive advantage: An international survey	***Author***	Harrison, A.; New, C.
	Date	2002
	Who Published	The Journal of the Operational Research Society
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To test the relationships between supply chain strategy, performance measurement, and technology
	Industry/Sector	Manufacturing
	Methodology	Quantitative survey and analysis
	Main Arguments	• The supply chain strategy was currently important or very important in achieving competitive advantage. • There is a close link between supply chain strategy and supply chain technology. • supply chain strategy is more important than corporate strategy, supply chain is more important in achieving competitive advantage, and it is needed to invest more in supply chain infrastructure and IT support more formal means of assessing their supply chain performance.

Title	Descriptive Information	
A framework for designing the balanced supply chain scorecard	***Author***	Jong Han Park; Jae Kyu Lee; Jung Soo Yoo
	Date	2005
	Who Published	European Journal of Information Systems
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To design a supply chain balanced scorecard measurement system for supply chain management
	Industry/Sector	Manufacturing
	Methodology	Case study and empirical framework design
	Main Arguments	• The internal business process perspective should be expanded to include the inter-organizational process for the communication and collaboration of SCM between suppliers and customers. • Three types of performance measures are suggested: resources, output, and flexibility. And a framework for measuring the performance of a supply chain consists of three levels: strategic, tactical and operational. • Supply chain solutions which have been developed to meet the goals that must be measured are as follows: EDI, CPFR, reverse auctions and tendering, desktop purchasing, supplier relationship management, and product lifecycle management.

Title	Descriptive Information	
On Measuring Supplier Performance Under Vendor-Managed-Inventory Programs in Capacitated Supply Chains	***Author***	Ki-Seok Choi; Dai,J.G.; Jing-Sheng Song
	Date	2004
	Who Published	Manufacturing & Service Operations Management
	Star Rating	4 *
	Where Published	USA
	Other Information	
	Objective of Work	To explore the impact of suppliers performance on the buyers performance in a vendor-managed-inventory program in supply chain
	Industry/Sector	Manufacturing
	Methodology	Case study
	Main Arguments	• Our findings have direct implications to supply chain metrics in general: The local service levels are insufficient measures to guarantee the system wide performance. Alternative local measures and/or coordination mechanisms should be employed to achieve desired system performance. • The supply contract can be designed as a menu of different combinations of stock out rate and average component backorders along a linear function.

Title	Descriptive Information	
A conceptual model for the application of Six Sigma methodologies to supply chain improvement	***Author***	Knowles, Graeme; Whicker, Linda; Femat, Javier Heraldez; Canales, Francisco del Campo
	Date	2005
	Who Published	International Journal of Logistics: Research & Applications
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To develop a two-level supply measurement framework integrating the Balanced Scorecard, SCOR model (Supply Chain Reference model) and Six Sigma DMAIC (define, measure, analyze and improve) methodology.
	Industry/Sector	Not specific
	Methodology	Literature review and conceptual framework design
	Main Arguments	• The model integrates the Balanced Scorecard, SCOR model (Supply Chain Reference model) and Six Sigma DMAIC (define, measure, analyze and improve) methodology in a two-level framework. This is a strategic-level cycle, developing focused projects to generate maximum business benefit, and an operational-level cycle, applying Six Sigma and lean tools in a DMAIC cycle to deliver supply chain improvements. • The SCOR model integrates the well-known concepts of business process re-engineering, benchmarking and process measurement by integrating these techniques into a cross-functional framework. • It is believed that supply chain performance is impaired because of different variation causes, such as: demand fluctuations, supplier deliveries quantities and quality, people and equipment inconsistencies. • Six Sigma thinking offers the potential to refine current approaches to supply chain improvement. It offers likely benefits in delivering reduced variation over and above the elimination of waste and non-value-added activity delivered by existing approaches.

Title	Descriptive Information	
Developing a performance measurement system for world-class distribution logistics by using activity-based costing and management: Case: basic metal industries	***Author***	Koota, Pasi; Takala, Josu
	Date	1998
	Who Published	International Journal of Technology Management
	Star Rating	n/a
	Where Published	Switzerland
	Other Information	
	Objective of Work	To develop a performance measurement system for global logistics using activity-based costing approach
	Industry/Sector	Logistics
	Methodology	Empirical framework with case studies to test its validity
	Main Arguments	• The use of performance measures in practice for strategic and operative business management requires a limited set of measures to ensure the top corporate performance. • Activity Based Costing and Management (ABI/ABM) is introduced as a tool for producing relevant information for performance measurement. • To ensure the competitiveness, organizations must develop continuously. Performance measurement must also be able to change with the operation at the same pace in order to produce relevant information.

Title	Descriptive Information	
Supply Chain Metrics	***Author***	Lambert, Douglas M.; Pohlem, Terrance L.
	Date	2000
	Who Published	International Journal of Logistics Management
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To design a framework for developing supply chain metrics that translates performance into shareholder value
	Industry/Sector	Not specific
	Methodology	Qualitative framework with quantitative analysis to test its validity
	Main Arguments	• Many measures identified as supply chain metric are actually measures of internal logistics operations opposed to measures of supply chain management. • Implementing a supply chain strategy requires metrics that align performance with the objectives of other members of the supply chain. • By maximizing profitability at each link, supply chain performance migrates towards management objectives and maximizes performance for the whole.

Title	Descriptive Information	
Designing a performance measurement system: A case study	***Author***	Lohman, Clemens; Fortuin, Leonard; Wouters, Marc
	Date	2004
	Who Published	European Journal of Operational Research
	Star Rating	n/a
	Where Published	Holland
	Other Information	
	Objective of Work	To design a supply chain performance measurement system for multinationals
	Industry/Sector	Manufacturing
	Methodology	Case study and empirical framework design
	Main Arguments	• Better synchronization is not only important across functional boundaries, but also across national boundaries. • Our findings point to the central role of a shared set of standardized performance metrics as a tool for achieving such coordination. • Relevant aspects of performance are resources, output and flexibility. • Implicit in many approaches for designing performance measures is a "green field approach" that does not pay explicit consideration to existing measures. • In a way, the supply chain-level scorecard would be a combination of the functional scorecards enriched with measures that would be pertinent at the supply chain-level.

Title	Descriptive Information	
Logistics performance measurement and greening supply chains: Diverging mindsets	***Author***	McIntyre, Kristie; Smith, Hugh A.; Henham, Alex; Pretlove, John
	Date	1998
	Who Published	International Journal of Logistics Management
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To evaluate the environmental implication of the global logistics operation
	Industry/Sector	Logistics
	Methodology	Literature review and theoretical analysis
	Main Arguments	• This is an alarming prospect for the environment, which has no place in future supply chain performance measurements, thus running the risk of being increasingly side-lined; and for performance measurement, which is unconcerned with longer-term sustainability in terms of the environment. • Environmental performance metrics need to be strategic in orientation, able to adapt to changing commercial and cultural situations. • It should be apparent that there are advantages and disadvantages of these two aspects in improving overall supply chain performance either from a financial or an environmental perspective. It is suggested that the advantages of both be combined to meet increasing expectations from a wide range of stakeholders including the environment.

Title	Descriptive Information	
An investigation of supply chain performance measurement in the Indian automotive sector	***Author***	Mohammed Saad; Bhaskar, Patel
	Date	2006
	Who Published	Benchmarking: An International Journal
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To investigate the development of supply chain performance measurement in Indian automotive sector
	Industry/Sector	Manufacturing
	Methodology	Case study
	Main Arguments	• There is still a lack of significant study of supply chain practices and its performance in developing countries. • The objective of this paper is to investigate the relevance of supply chain performance measurement in developing nations based on the case of the Indian automobile sector. It also attempts to highlight the main enablers and inhibitors to the implementation of both concepts, namely, SCM and performance measurement in India. • One major difficulty relevant to the concept of SCM and its performance measurement is the limited availability of literature and research on the application of these concepts in the context of developing nations. • The research reveals that although there is awareness about the need to measure and continuously improve performance, this is essentially carried out through traditional models of performance measurement based on tangible factors.

Title	Descriptive Information	
Structure, speed and salience: performance measurement in the supply chain	***Author***	Morgan, Chris
	Date	2004
	Who Published	Business Process Management Journal
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To conclude the pitfalls in the existing supply chain performance measurement and explore the possible directions in this field
	Industry/Sector	Not specific
	Methodology	Literature review and analytical framework design
	Main Arguments	• The design of PM should be driven on one hand by what the strategy defines as good in terms of corporate direction, and on the other hand by managers and operators within the system who have to make the measures work in a proactive and practical sense. • PM must be linked with the strategy of an organization, be part of an integrated control system, have internal validity and enable proactive management. • The PMS must be dynamic, intra-connectable, focused and usable.

Title	Descriptive Information	
Supplier logistics performance measurement: Indications from a study in the automotive industry	***Author***	Schmitz,J.; Platts,K W.
	Date	2004
	Who Published	International Journal of Production Economics
	Star Rating	4 *
	Where Published	Switzerland
	Other Information	
	Objective of Work	To investigate the impact of suppliers performance on the overall performance of supply chain
	Industry/Sector	Manufacturing
	Methodology	Case study
	Main Arguments	• In this paper we offer a brief discussion of the literature on inter-organizational performance measurement and contrast existing concepts of intra-organizational performance measurement with the concepts of performance measurement within a supply chain. • For performance measurement study, there is a clear lack of relevant respective empirical research. • We think that qualitative, case-based studies provide the best route to this and propose the perspective on the functions of performance measurement as a sensible framework for the empirical analysis of performance measurement and management systems in industry

Title	Descriptive Information	
Measuring supply chain performance: current research and future directions	***Author***	Shepherd, Craig; Günter, Hannes
	Date	2006
	Who Published	International Journal of Productivity and Performance Management
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To examine the academic development in the field of supply chain performance measurement
	Industry/Sector	Not specific
	Methodology	Literature review and theoretic analysis
	Main Arguments	• A generally applicable systematic approach to performance measurement has not been developed. • A supply chain performance measurement system that consists of a single performance measure is generally inadequate since it is not inclusive, ignores the interactions among important supply chain characteristics, and ignores critical aspects of organizational strategic goals. Strategic goals involve key elements that include the measurement of resources, output and flexibility. • The categorization of supply chain performance measures resulted in the identification of three types of performance measures that are necessary components in any supply chain performance measurement system: resource, output and flexibility.

Title	Descriptive Information	
The contribution of performance measurement to the expansion of third party logistics alliances in the supply chain	***Author***	Van Hoek, Remko I.
	Date	2001
	Who Published	International Journal of Operations & Production Management
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To explore the impact of performance measurement on the development of third-party logistics alliances
	Industry/Sector	Logistics
	Methodology	Empirical survey
	Main Arguments	• Findings indicate that development of measurement systems contributes significantly to the expansion of third party logistics alliances in the supply chain. • Manufacturers will become increasingly dependent on third parties for the operation of their supply chain and will want to assure performance through horizontal control mechanisms.

Title	Descriptive Information	
PERFORMANCE MEASUREMENT: A Practitioner's Perspective	***Author***	Dreyer, Dennis E.
	Date	2000
	Who Published	Supply Chain Management Review
	Star Rating	n/a
	Where Published	USA
	Other Information	
	Objective of Work	To conclude the critical factors for successfully measuring the supply chain performance
	Industry/Sector	Manufacturing
	Methodology	Empirical framework with qualitative analysis to verify its robustness
	Main Arguments	• New metrics in supply chain performance measurement should focus more on the overall performance of the supply chain rather than the individual functional areas. • The new metrics in supply chain performance measurement should focus on monitoring the processes that present important high-level information on a regular basis, accompanied by access to detailed data.

Title	Descriptive Information	
Work in process: performance measures	***Author***	Fogarty, Donald W.
	Date	1992
	Who Published	International Journal of Production Economics
	Star Rating	2 *
	Where Published	Switzerland
	Other Information	
	Objective of Work	Using mathematical modeling to test the effectiveness of the traditional measures in the manufacturing cycle efficiency
	Industry/Sector	Manufacturing
	Methodology	Mathematical modeling
	Main Arguments	• Traditional measures are inefficient in measuring the manufacturing cycle efficiency.

Title	Descriptive Information	
The HIERARCHY of SUPPLY CHAIN METRICS	***Author***	Hofman, Debra
	Date	2004
	Who Published	Supply Chain Management Review
	Star Rating	n/a
	Where Published	USA
	Other Information	
	Objective of Work	To design an empirical model to measure the important indicators in supply chain performance
	Industry/Sector	Not Specific
	Methodology	Empirical framework with case studies to test its validity
	Main Arguments	• While superior perfect-order performance is good, excelling at both cost and service is even better. • Good demand forecasting yields tangible benefits in operational performance. • Key financial and market indicators are important measurement objects in supply chain performance measurement.

Title	Descriptive Information	
The evolution of performance measurement research: Developments in the last decade and a research agenda for the next	***Author***	Neely, Andy
	Date	2005
	Who Published	International Journal of Operations & Production Management
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To examine the academic development in the field of performance measurement
	Industry/Sector	Not specific
	Methodology	Literature review and theoretical analysis
	Main Arguments	• People have begun to call for more robust empirical and theoretical analysis of performance measurement frameworks and methodologies. • The published performance measurement literature can be classified into five broad phases. • Related developments emphasize that it is not just within the organization the future research efforts need to focus. Given increasing tendencies to outsource.

Title	Descriptive Information	
Supply Chain Operations Reference Model Version 5.0: A New Tool to Improve Supply Chain Efficiency and Achieve Best Practice	***Author***	Stephens, Scott
	Date	2001
	Who Published	Information Systems Frontiers
	Star Rating	1 *
	Where Published	USA
	Other Information	
	Objective of Work	To develop an generic system for measuring
	Industry/Sector	Not specific
	Methodology	Theoretical framework with empirical studies to verify its applicability in real situations
	Main Arguments	• The SCOR model links process description and definition with metrics, best practice, and technology. • The framework of the model is based on process description. • The model can be used to: identify and implement supply chain improvements, evaluate and select off-the-shelf software, select and manage consulting and system integration service, promote and manage change within organizations, and provide a basis for education and training in the area of supply chain management.

Title	Descriptive Information	
"Measuring the unmeasurable" - measuring and improving performance in the supply chain	***Author***	van Hoek, Remko I.
	Date	1998
	Who Published	Supply Chain Management
	Star Rating	3 *
	Where Published	USA
	Other Information	
	Objective of Work	To examine the challenges in supply chain performance measurement and offer a systematic approach to address these issues
	Industry/Sector	Not specific
	Methodology	Literature review and theoretic analysis
	Main Arguments	• Supply chain management is no longer based on direct ownership and control, but rather based on integration across interfaces between functions and companies. • Traditional measurement approaches may have to be abolished and a supply chain measurement system developed. Traditional performance measures may limit the possibilities to optimize supply chains, as management does not "see" supply chain wide areas for improvement. • In a supply chain approach to performance measurement, the content of a measurement, system may differ, depending on the supply chain operating format and the strategy approach or the evolution of strategies.

APPENDIX III – Selected Papers Regarding Culture in SCM or Supply Chain Performance Measurement, or Other Related Fields

Title	Descriptive Information	
Change the Environment or Change the System	***Author***	Abdallah, Wagdy M.
	Date	1986
	Who Published	Management Accounting
	Star Rating	2 *
	Where Published	USA
	Other Information	
	Objective of Work	To examine the impact of external factors in the global context on the performance measurement system in MNCs
	Industry/Sector	Not Specific
	Methodology	Empirical framework with case studies
	Main Arguments	• The performance evaluation systems now used by MNCs do not respond to the environmental challenges and changes. • The environmental factors are interrelated, so to understand one environmental factor, management must examine all other factors and their relations as they affect the performance of foreign subsidiaries.

Title	Descriptive Information	
International versus domestic managerial performance evaluation: Some evidence	***Author***	Borkowski, Susan. C.
	Date	1993
	Who Published	The International Journal of Accounting
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To test the validity of traditional practices of performance measurement in the environment of global business.
	Industry/Sector	Not specific
	Methodology	Literature review and case study
	Main Arguments	• The difference between domestic and international environments requires the use of different standards for evaluation. • Multinational enterprises may have relatively little influence and no direct control over their environmental factors. Therefore, an MNE needs a separate set of measurements for planning, control and evaluation of its internal performance, one which is substantially different from the set utilized by domestic enterprises. • The findings indicate that evaluation process do differ for domestic and international managers.

Title	Descriptive Information	
Management cultures and regional development: High performance management and the location of new manufacturing plants	***Author***	Doeringer, Peter; Evans-klock, Christine; Terkla, David
	Date	2005
	Who Published	European Planning Studies
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To compare the preferences on location settings between different MNCs with diverse cultures and performances
	Industry/Sector	Manufacturing
	Methodology	Case study
	Main Arguments	• Difference in management practices and cultures translate into different location criteria. • While the standard model of industrial location provides a good approximation of the location decisions of new domestic factories that mostly operate under traditional management cultures, it is not a good predicator of the location decisions of foreign industries that adopt high performance management practices and culture. • The environmental differences and physical/cultural distances make control at the parent-subsidiary level a great problem for MNCs. • The geographical and cultural distance between headquarters and subsidiaries in MNC relationships increases the complexity of the underlying agency relationship. Accordingly, more diverse types of control may be used by MNCs, including strategic control or informal control, in order to obtain more subjective and subtle information about the foreign subsidiaries.

Title	Descriptive Information	
Control in Multinational Corporations (MNCs): The Case of Korean Manufacturing Subsidiaries	***Author***	Eunmi Chang; Taylor, M. Susan.
	Date	1999
	Who Published	Journal of Management
	Star Rating	2 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To compare the differences of managerial practices between different MNCs with diverse cultures
	Industry/Sector	Manufacturing
	Methodology	Case study
	Main Arguments	• The linkage between a headquarters and a foreign subsidiary can be appropriately compared to the agency relationships between principal and agent in that the parent company invests funds and resources in the subsidiaries, and the subsidiaries, in turn, are expected to work for the benefit of the parent headquarters.

Title	Descriptive Information	
The human resource barriers to managing quality in China	***Author***	Glover, Linda; Siu, Noel
	Date	2000
	Who Published	International Journal of Human Resource Management
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To explore the impact of culture on the quality management in overseas subsidiaries of MNCs
	Industry/Sector	manufacturing
	Methodology	Case study
	Main Arguments	• Quality management in the West has become synonymous with increased employee involvement and developing customer-orientated cultures. • However, Knowledge of Chinese organizational dynamics and of the needs and aspirations of Chinese employees is lacking.3) Western models of quality management are based upon certain assumptions about employees that do not transfer easily to the Chinese context.

Title	Descriptive Information	
Designing a performance measurement system for a high technology virtual engineering team - a case study	***Author***	Hacker,Marla E.; Lang,Jonathan D.
	Date	2000
	Who Published	International Journal of Agile Management Systems
	Star Rating	2 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To design a PAS-based framework to measure the performance of virtual teams
	Industry/Sector	Not specific
	Methodology	Empirical framework with case studies
	Main Arguments	• With the development of global organizations and global competition, many companies of necessity have had to create virtual teams consisting of members who are miles apart or even oceans apart. • The performance to schedule (PAS) indicator summarizes the overall percentage of projects that finish as scheduled. This indicator will monitor the team's progress each quarter. By increasing this percentage, the team will improve its customer satisfaction and overall efficiency, while increasing its project load capacity. Many other internal groups are dependent on the outcome of JET projects, so a high PAS result is vital to creating and maintaining a positive JET (joint engineering group) image.

Title	Descriptive Information	
Expatriate performance management form MNEs of different national origins	***Author***	Hsi-An Shih; Yun-Hwa Chiang; In-Sook Kim
	Date	2005
	Who Published	International Journal of Manpower
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To explore the impact of culture on the performance of expatriate managers in multinational enterprises
	Industry/Sector	Not specific
	Methodology	Case study
	Main Arguments	• The findings show that all of the firms surveyed use standardized performance forms set by headquarters, which are not tailored to local operating environments. Also, lack of on-the-job training for expatriates was found to be prevalent among the five MNE subsidiaries. • Divergent practices in goal setting, performance appraisal, and performance-related pay were largely attributed to the parent company's culture. • The nature of the expatriate mission was another reason for different arrangements in expatriate performance management.

Title	Descriptive Information	
International Joint Venture (IJV) marketing performance: alternative approaches to performance measurement	***Author***	Julian, Craig C.
	Date	2005
	Who Published	International Journal of Business Performance Management
	Star Rating	n/a
	Where Published	Switzerland
	Other Information	
	Objective of Work	To explore the possibility to use market-related measures to replace the traditional financial measures for the performance management of International Joint Ventures
	Industry/Sector	Not specific
	Methodology	Empirical framework with case study
	Main Arguments	• Joint venture's organizational politics and performance measures are more complicated, as they have multiple parents. These parent companies' own interests may be contradictory with each other. Therefore, the performance evaluation requires incorporating multiple viewpoints. • Empirical support is provided by a study that finds that traditional accounting figures, including profitability measures, are statistically not enough to distinguish excellent firm from ordinary firms. • It is suggested that the international joint ventures performance is evaluated by both financial and strategic indicators, as well as perceptual measures of international Joint Ventures' marketing performance.

Title	Descriptive Information	
National Culture and Performance Management in MNC Subsidiaries	***Author***	Lindholm, Niklas.
	Date	1999
	Who Published	International Studies of Management & Organization
	Star Rating	n/a
	Where Published	USA
	Other Information	
	Objective of Work	To evaluate the impact of culture on performance measurement and management in overseas subsidiaries of MNCs
	Industry/Sector	Not specific
	Methodology	Quantitative survey and statistical analysis
	Main Arguments	• This study shows that the communication of subsidiary goals and the setting of job objectives constitute an important process for increasing the job satisfaction of host-country employees in MNC subsidiaries. In addition, fair performance evaluations and frequent performance feedback constitute an important predictor of job satisfaction at these workplaces. • It is well known that employees with negative attitudes are likely to perform poorly, cause disruptions in operations, and eventually jeopardize the viability of the organization. Furthermore, it has been documented that job satisfaction is related to turnover • MNCs can develop ""modular"" performance-management systems that can span different cultures and countries and that may influence both the job satisfaction and the performance of host-country employees. • The MNC's corporate culture may, to a certain extent, explain the similarities in the impact of PM on job satisfaction, since corporate cultures may harmonize the behaviors, beliefs, and values of employees in organizations.

Title	Descriptive Information	
A theory of global strategy and firm efficiencies: Considering the effects of cultural diversity	***Author***	Palich,Leslie E.; Gomez-Mejia,Luis R.
	Date	1999
	Who Published	Journal of Management
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To explore the impact of cultural diversity on the performance of MNCs
	Industry/Sector	Not specific
	Methodology	Qualitative analysis based on the result of quantitative survey
	Main Arguments	• Firms can manage international business units more efficiently when those businesses are established in countries that are "related" in terms of national culture. • Overall, culturally related global firms will be able to attain greater market-related efficiencies than culturally diverse global firms. • Overall, culturally related global firms will be able to attain greater production-related efficiencies than culturally diverse global firms. • Overall, culturally related global firms will be able to attain greater technology-related efficiencies than culturally diverse global firms.

Title	Descriptive Information	
The Effect Of LTO Culture On International Supply Chain Contracts	***Author***	Ryu, Sungmin; Cook, Martha
	Date	2005
	Who Published	Journal of Applied Business Research
	Star Rating	3 *
	Where Published	USA
	Other Information	
	Objective of Work	To explore the impact of culture on contracting relationships between the business partners from different nations
	Industry/Sector	Not specific
	Methodology	Case study
	Main Arguments	• This study examines the cultural factors of time orientation, and find that difference in long-term orientation between western and Asian societies tends to influence the success of soft contracts, but does not has impact on hard contracts. • Contrary to hard contract, a soft contract does not set out specific stipulations since it relies on unstated understandings. • Hypothesis testing supports the claim that, as supply chain members adopt LTO characteristics, they will tend to favor soft contracts with suppliers.

Title	Descriptive Information	
Performance management of Australian and Singaporean expatriates	***Author***	Woods, Peter
	Date	2003
	Who Published	International Journal of Manpower
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To explore and compare the cultural factors influencing the behaviors and performance of expatriates belonging to the MNCs from different nations
	Industry/Sector	Not specific
	Methodology	Case study
	Main Arguments	• These are the lack of a rigorous, formal appraisal system for expatriates, and the lack of objective criteria for expatriate performance appraisal. • The expatriate performance management has more relevance in terms of maintaining head office control in the overseas subsidiary, rather than an objective evaluation of how well an expatriate is performing. • Performance criteria that are mutually derived by expatriate managers and their superiors within an equitable framework may help to overcome the challenge of contextual differences.

Title	Descriptive Information	
Virtual team culture and the amplification of team boundary permeability on performance	***Author***	Workman, Michael
	Date	2005
	Who Published	Human Resource Development Quarterly
	Star Rating	1 *
	Where Published	USA
	Other Information	
	Objective of Work	To examine the impact of culture on the performance of virtual team
	Industry/Sector	Not specific
	Methodology	Quantitative survey with quantitative analysis
	Main Arguments	• As with proximal teams, to accomplish their tasks, virtual team members must accommodate diverse national cultural values and norms. • An open team culture has transcendent entities, has many information-intensive linkages among groups, and is highly interdependent. To compensate for informational gaps created by technology mediation, distance, and time, increased peer group referencing occurs in a virtual setting. • Many organizational and HRD studies have shown that cross-team communication and cooperation can influence performance in virtual teams. 50 configurations. Based on this study's findings, a greater emphasis is needed on supplying structure through more process and political formalization.

Title	Descriptive Information	
Success Factors in Strategic Supplier Alliances: The Buying Company Perspective	*Author*	Monczka, Robert M.; Petersen, Kenneth J.; Handfield, Robert B.; Ragatz, Gary L.
	Date	Decision Sciences
	Who Published	1998
	Star Rating	4 *
	Where Published	USA
	Other Information	
	Objective of Work	To explore the impact of culture-related factors on the success of strategic supplier alliances in supply chain
	Industry/Sector	Not specific
	Methodology	Case study
	Main Arguments	• Interdependency, commitment, and information sharing are identified as critical factors for success of industrial strategic supplier alliances.

Title	Descriptive Information	
Supply-Chain Culture Clash	***Author***	Smagalla, David
	Date	2004
	Who Published	MIT Sloan Management Review
	Star Rating	n/a
	Where Published	USA
	Other Information	
	Objective of Work	To explore the impact of cultural differences on the performance of subsidiaries in global logistics business
	Industry/Sector	Logistics
	Methodology	Case study
	Main Arguments	• The interviews also revealed that European managers did not fully understand the ultimate payoff of the Japanese service strategy. • To improve their performance, Japanese subsidiaries would better adapt to Western business practices if they were to take into greater account the conditions and mores of the country where they are doing business.

Title	Descriptive Information	
Cultural differences can trump the most logical of supply chain planning	***Author***	Smyrlis, Lou
	Date	2004
	Who Published	Canadian Transportation & Logistics
	Star Rating	n/a
	Where Published	Canada
	Other Information	
	Objective of Work	To explore the impact of cultural differences on the performance of subsidiaries in global logistics business
	Industry/Sector	Logistics
	Methodology	Qualitative analysis
	Main Arguments	• The expatriate managers should bear cultural awareness when managing the performance of their local workforce because of the culture diversity existing between them.

Title	Descriptive Information	
Supply Chain Coordination and Cooperation Mechanisms: An Attribute-Based Approach	***Author***	Xu,Lei; Beamon,Benita M.
	Date	2006
	Who Published	Journal of Supply Chain Management: A Global Review of Purchasing & Supply
	Star Rating	n/a
	Where Published	U.K.
	Other Information	
	Objective of Work	To design an attribute-based approach to manage supply chain coordination and cooperation
	Industry/Sector	Not specific
	Methodology	Qualitative analysis
	Main Arguments	• The key factors impacting supply chain alliances are cost, interdependence, information technology, and risk. • Buying companies should adopt attribute-based approach to selecting the potential suppliers and managing long-term relationships with them.

Title	Descriptive Information	
Linking firm culture and orientation to supply chain success	***Author***	Mello, J. E. and Stank, T. P.
	Date	2005
	Who Published	International Journal of Physical Distribution & Logistics Management
	Star Rating	3 *
	Where Published	USA
	Other Information	
	Objective of Work	To design a supply chain culture orientation framework to better manage the supply chain operation
	Industry/Sector	Not specific
	Methodology	Literature review and theoretical framework design
	Main Arguments	• While a managerial philosophy of SCM needs to be in place at a minimum for a SCO to develop, in order for cultural consistency to be in place there must be widely shared agreement throughout an organization.

Title	Descriptive Information	
The Impact of Culture on the Generation of Trust in Global Supply Chain Relationships	***Author***	Ueltschy, L. C., Ueltschy, M. L. and Fachinelli, A. C.
	Date	2007
	Who Published	Journal of Marketing Management
	Star Rating	3 *
	Where Published	Australia
	Other Information	
	Objective of Work	To explore the cultural impact on the non-contractual relationships between the supply chain partners from culturally diversified nations
	Industry/Sector	Manufacturing
	Methodology	Case study
	Main Arguments	• On-going relationships among supply chain relationships increase efficiency and effectiveness. • In an on-going supply chain relationship, the exchange partners are willing to accept short-term imbalances in outcomes, trusting that over the length of the relationship, outcomes will accurately reflect inputs

APPENDIX IV - Selected Papers Regarding Supply Chain Management

Title	Descriptive Information	
Supply chain system taxonomy: A framework and methodology	*Author*	Chandra, Charu; Tumanyan, Armen.
	Date	2005
	Who Published	Human Systems Management
	Star Rating	3 *
	Where Published	Holland
	Other Information	
	Objective of Work	To design a generic taxonomy for supply chain management
	Industry/Sector	Not specific
	Methodology	Mathematical modeling
	Main Arguments	• This paper proposes a generic approach for unification of information standardization and presentation through application of concepts adopted from different fields of study, viz., system science, biological classification, and object-oriented modeling. • System taxonomy provides standardization of terms and definition, thus ensuring shared vocabulary across the supply chain domain users and members. • System taxonomy also provides unified structure for a formal representation, thus ensuring that data and knowledge can be represented in a format consumable by the supply chain member software applications.

Title	Descriptive Information	
Understanding supply chain management: critical research and a theoretical framework	***Author***	Chen,I.J.; Paulraj,A.
	Date	2004
	Who Published	International Journal of Production Research
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To clarify essential considerations and critical elements in supply chain management
	Industry/Sector	Not specific
	Methodology	Literature review
	Main Arguments	• Strategic purchasing, supply management, logistics integration, and supply network coordination are believed to have a significant impact on the performance of supply chain members. • The three driving forces towards the development of supply chain management are environmental uncertainty, customer focus, and information technology. • The contributions toward the research on supply chain management are from a number of studies existing in various disciplines in isolation.

Title	Descriptive Information	
Supply Chain Management: the Pursuit of a Consensus Definition	***Author***	Gibson, Brian J.; Mentzer, John T.; Cook, Robert L.
	Date	2005
	Who Published	Journal of Business Logistics
	Star Rating	3 *
	Where Published	USA
	Other Information	
	Objective of Work	To explore a scope of supply chain management
	Industry/Sector	Not specific
	Methodology	Quantitative survey
	Main Arguments	• Since the term SCM first appeared in the literature more than twenty years ago, numerous academics, practitioners, and professional organizations have offered definitions. • "Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence. Supply chain management integrates supply and demand management within and across companies." (pp: 22)

Title	Descriptive Information	
Current issues and emerging trends in supply chain management: an editorial perspective	***Author***	Mehra, S.
	Date	2005
	Who Published	International Journal of Production Research
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To identify the possible directions for the development of supply chain management
	Industry/Sector	Not specific
	Methodology	Semi-structured survey
	Main Arguments	• Supply chain integration is identified to be increasingly intensified. • Responsiveness is a central consideration in supply chain management. • Reverse logistics and remanufacturing will be received increasingly attention.

Title	Descriptive Information	
Supply Chain Management in a Global Economy	***Author***	Mehta, Janak.
	Date	2004
	Who Published	Total Quality Management & Business Excellence
	Star Rating	n/a
	Where Published	USA
	Other Information	
	Objective of Work	To initiate a theoretical framework to facilitate the understanding of global supply chain management
	Industry/Sector	Manufacturing
	Methodology	Qualitative framework with case study
	Main Arguments	• Key factors or processes influencing supply chain management include trust, sales, and promotions. • The focus of supply chain management is on the reliability and responsiveness of supply chain.

Title	Descriptive Information	
Supply Chain Management: Retrospective and Prospective	***Author***	Rogers,Dale S.; Leuschner,Rudolf
	Date	2004
	Who Published	Journal of Marketing Theory & Practice
	Star Rating	n/a
	Where Published	USA
	Other Information	
	Objective of Work	To review the development history of supply chain management
	Industry/Sector	Not specific
	Methodology	Literature review
	Main Arguments	• Some topics emerged recently as a focus of articles. Among these are Partnerships, Customer Service, Education, Social Responsibility, Reverse Logistics, and Cross-Functional-team become more important as more companies outsource their logistics and supply chain management activities.

Title	Descriptive Information	
Supply-chain networks: a complex adaptive systems perspective	***Author***	Surana, Amit; Kumara, Soundar; Greaves, Mark; Raghavan, Usha Nandini.
	Date	2005
	Who Published	International Journal of Production Research
	Star Rating	3 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To develop a theoretical framework for supply chain management from a systematic perspective
	Industry/Sector	Not specific
	Methodology	Literature review and mathematical modeling
	Main Arguments	• In supply chain management, control is generated through nonlinear though simple behavioral rules that operate based on local information. • The supply chain network can be seen as a complex, self adaptive system. • Information technology is the prerequisite for supply chain cooperation and management.

Title	Descriptive Information	
Supply chain network scenario design and evaluation	***Author***	Zhengping Li; Kumar,Arun
	Date	2005
	Who Published	International Journal of Logistics: Research & Applications
	Star Rating	2 *
	Where Published	U.K.
	Other Information	
	Objective of Work	To design a supply chain scenario evaluation model
	Industry/Sector	Not specific
	Methodology	Quantitative framework with qualitative case studies to test its validity
	Main Arguments	• Enterprises need to model supply chain scenario complexities and evaluate the performance of scenarios before implementing their strategies. • Supply chain scenario competitiveness could be measured by considering the multiple factors in production, co-ordination, system dynamics and vulnerability. • As the patterns of supply chains are various for different industries, it is recommended that more models for industrial scenarios be studied based on real cases. Supply chain models can be classified further according to industrial types to generate more meaningful results.

Title	Descriptive Information	
Definition Problems and a Not Specific Systems Theory Perspective in Supply Chain Management	***Author***	Helou, Mammy M.; Caddy, Ian N.
	Date	2006
	Who Published	Problems & Perspectives in Management
	Star Rating	n/a
	Where Published	Ukraine
	Other Information	
	Objective of Work	To enhance the understanding of supply chain and SCM from a general theory perspective
	Industry/Sector	Not specific
	Methodology	Literature review and theoretic analysis
	Main Arguments	• There is not an already developed and generally accepted comprehensive model of supply chain. Models of supply chain concentrate on only one particular aspect or dimension of the supply chain, viz. 1) organization structure / strategy (Moon, 2004), 2) information technology, 3) human factors . • The Generic Supply Chain Model indicates that supply chains change with time. With the current state of information technology, nowadays, supply chains are operated differently to the way they were operated some time ago. In addition, the nature of the relationship(s) among organizations within the supply chain would also be expected to develop over time. • Organizations need to develop a better understanding of the dynamic constructs that will evolve over time, as such require a dynamic evolution of management practice in order to maintain supply chain effectiveness.