LAPPEENRANTA
UNIVERSITY OF TECHNOLOGY

Virpi Ritvanen

PURCHASING AND SUPPLY MANAGEMENT CAPABILITIES IN FINNISH MEDIUM-SIZED ENTERPRISES

Thesis for the degree of Doctor of Science (Economics and Business Administration) to be presented with due permission for the public examination and criticism in the Auditorium of the Student Union House at Lappeenranta University of Technology, Lappeenranta, Finland, on the 29th of August, 2008, at noon.

Acta Universitatis
Lappeenrantaensis
311

Supervisor	Professor Veli-Matti Virolainen Supply Management/School of Business Lappeenranta University of Technology Finland
Reviewers	Professor Jari Juga Department of Management and Entrepreneurship University of Oulu Finland
	Doctor, Docent Arto Suominen Department of Management Turku School of Economics Finland
Opponent	Professor Jari Juga Department of Management and Entrepreneurship University of Oulu Finland

ISBN 978-952-214-604-5
ISSN 1456-4491

Lappeenrannan teknillinen yliopisto
Digipaino 2008

ABSTRACT

Virpi Ritvanen
Purchasing and supply management capabilities in Finnish medium-sized enterprises

Lappeenranta, 2008
210 p., 36 Figures, 15 Tables, 3 Appendices

Acta Universitatis Lappeenrantaensis 311
Diss. Lappeenranta University of Technology
ISBN 978-952-214-604-5
ISSN 1456-4491

Purchasing and supply management (PSM) has become increasingly important for companies to survive in current highly competitive market. Increased outsourcing has extended the role of PSM, making external resource management and supplier relationships critical success factors in business. However, the recent research has mainly concentrated on large enterprises. Therefore the PSM issues related to medium-sized enterprises represent a significant research area.

The thesis aims to explore the status and role of PSM in Finnish medium-sized firms, understand how strategic companies consider PSM to be, clarify what are the competence requirements for PSM professionals, and increase the understanding of PSM capabilities needed from the points of view of individual competence and organisational capabilities.

The study uses data that was collected in 2007 from purchasing executives at the director/CEO level representing a sample of 94 Finnish firms. 54 % of the respondent enterprises had a supply strategy. The total supply cost was on average 60 % of firms' turnover. Centralisation of PSM and outsourcing of logistics will increase in Finnish medium-sized enterprises.

The findings point out that Finnish medium-sized enterprises had strategical features of PSM. However, Finnish firms have not concentrated on making strategies that relate to PSM. The elements that explain the existence of a supply strategy could be found in this study. It can be concluded from this study that there is an advantageous base for the development of strategic PSM, because nearly all the enterprises were of the opinion that PSM capabilities have an effect on business success.

When reviewing the organisational capabilities, the five most important development elements were supplier relationships, both operational and strategic processes, time management, and personnel's competence. Training in internationalisation, strategic management, and communication could help to improve competences of PSM personnel.

Keywords: purchasing, supply management, capabilities, supply strategy, medium-sized enterprise, resource-based view, transaction cost economics

UDC 658.7: 65.017.2

ACKNOWLEDGEMENTS

This research effort is finally complete. Doing my research has been hard work but also fun; naturally, the doctoral research period is, for the most part, comprised of writing but even more so of learning about interesting and complicated issues.

First of all, I want to thank the reviewers of my work, Professor Jari Juga and Dr., Docent Arto Suominen. I am very grateful to you for your professional expertise in commenting on and further developing my work. I would like to express my gratitude to my thesis supervisor Professor Veli-Matti Virolainen. Your encouragement and professional comments gave me the strength to keep going.

There are a number of people from numerous companies who have been involved in this study. I want to offer my gratitude to all the companies and persons that have given me their time and the interest to carry out this research.

I thank Professors Kaisu Puumalainen (Lappeenranta University of Technology) and Pertti Yli-Luoma (University of Oulu) for their expert help during the statistical analyses. I thank Taina Rönkkö for revising the language of this thesis.

I gratefully acknowledge the financial support granted to me by the Finnish Cultural Foundation (Suomen Kulttuurirahasto) and the Foundation for Economic Education (Liikesivistysrahasto).

Lastly, I wish to present my warmest thanks to my family. Emma and Otto-Pekka have put up with mother's never-ending writing work with remarkably good grace, and my husband Veli made it possible for me to concentrate on this work and, at the same, was understanding about this research effort.

Kajaani, August 11th 2008.

Virpi Ritvanen

ABBREVIATIONS

DC	Dynamic Capabilities
ECR	Efficient Consumer Response
EDI	Electronic Data Interchange
EOQ	Economic Order Quantity
ERP	Enterprise Resource Planning
ICT	Information and Communication Technology
IMP	Industrial Marketing and Purchasing
IT	Information Technology
JIT	Just-In-Time
KM	Knowledge Management
MRP	Material Requirements Planning
PSM	Purchasing and Supply Management
R&D	Research and Development
RBV	Research-Based View
SCM	Supply Chain Management
SME	Small and Medium-sized Enterprise
TCA	Transaction Cost Approach
TCE	Transaction Cost Economics
VCS	Value Creating System
VMI	Vendor Managed Inventory

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

1.1 Problem statement

The objective of this thesis is to explore Purchasing and Supply Management (PSM) capabilities in Finnish medium-sized enterprises. PSM tasks have become more knowledge intensive as efficiency and productivity have gained ground in companies. Through this, PSM capabilities are becoming an important asset for enterprises. As Rink and Fox (2003, 74) put it: "…'hand-to-mouth' buying, which was nurtured to near perfection in the 1950s and 1960s, is giving way to a longer planning horizon." The prevailing phenomenon in recent decades has been the development of purchasing from a reactive to a proactive function. Another meaningful issue is that the significance of the purchasing function has naturally grown because of companies' strong reliance on outsourcing; during the last few decades, companies have increasingly concentrated on their core capabilities in order to become more specialised. In doing so, they have attempted to focus on a limited set of activities (Gadde & Håkansson 2001).

Medium-sized enterprises have a significant role in the national economy. This research focuses on medium-sized enterprises because of their recognised importance to economic activity, employment, innovation, and wealth creation in many countries. There has been relatively little attention paid to medium-sized enterprises and their PSM in the literature, especially in Finland, regardless of the fact that they are businesses with high growth and employment potential. Furthermore, purchasing and supply management of large companies has been studied quite a lot (see e.g. Carter & Narasimhan 1996b; Johnson, Leenders & Fearon 2006), but medium-sized firms have been left for minor attention. However, the behaviours of large firms do not adequately represent the experiences that medium-sized firms have in PSM or what they do in practice (see e.g. Zheng et al. 2007). There is also lack of empirical research for purchasing and supply management capabilities. Thus, there is a clear need to improve the understanding of this topic.

Empirical evidence indicates that firms can obtain increased competitiveness and business profitability through developed purchasing functions. However, medium-sized enterprises are

not necessarily as focused on supply strategies and the development of purchasing operations as large enterprises. Purchasing in small and medium-sized enterprises (SME) tends to be fragmented and non-strategic. Large firms tend to have corporate procurement departments and professional buyers. In contrast, purchasing in SMEs is generally perceived to be of low priority. (Zheng et al. 2007) According to Quayle (2002b), few SMEs have separate purchasing functions, and the owner-managers' duties often include purchasing. Crichton et al. (2003) reveal that large firms appear to be significantly more positive about purchasing's contribution than smaller firms. Furthermore, there is evidence of lesser enthusiasm for e-procurement in SME organisations (Cox et al. 2001). Although medium-sized companies have traditionally been locally operating business units, today these companies operate in the same business environment, global market, and competition areas, and have similar challenges for supply chain functions as larger enterprises. Therefore, supply management in medium-sized enterprises is a relevant and important research area.

Both in the international context and in Finland, there are quite a few studies of purchasing and supply management in large companies. While planning this thesis, it was found that there were no previous studies that would have surveyed purchasing and supply management activity merely in the sector of medium-sized enterprises in Finland. Procurement, technology, design, production, distribution, and service are firm's capabilities (Hart 1995) and thus, it is very important to explore the capabilities of PSM in Finnish medium-sized enterprises.

In this study, the basic assumption is that firms have to concentrate on developing capabilities both on the individual and on the organisational level to improve their PSM. As Möller and Wilson (1995) note, organisational capability refers to the ability to possess, retain, and develop the capabilities an individual has. PSM professionals experience enormous changes in their daily work because of the changing environment, and new capabilities are required for effectiveness in their profession.

Globalisation, information technology (IT), e-business, and outsourcing are some of these great changes. Medium-sized firms encounter increased pressure to improve cost efficiency continually against a backdrop of improving quality and service. Globalisation integrates

markets, technology, and countries in ways that affect companies and individuals as never before. Telecommunications link countries and companies regardless of their location, and also e-business and outsourcing have considerable implications for the future of purchasing and supply management. (See e.g. Zheng et al. 2007.)

Firms are recommended to concentrate on their core business in outsourcing. Furthermore, companies often sell off activities that are not considered to belong to their core business. These kinds of changes in business lead to increased outsourcing and buying finished products, but also to growing significance of PSM. As a consequence, the share of supply management in the cost price of finished products has increased. This means that PSM will have even greater influence on firm's financial result. Consequently, supply management is increasingly seen as a tool for successful business. These and other factors require that the procurement personnel modify their professional capabilities to address this changing environment.

One way to survive in the growing competition is to increase the capability focus of purchasing and supply management (i.e. the added value gained from supply management). Therefore, the management and development of PSM and its capabilities are increasingly important. Supply management competencies have been studied both in the United States (Carter, Das & Narasimhan 2000) and Europe (Hughes, Ralf & Michels 1998). As the environment of PSM personnel is changing, so must the competencies of those professionals change as well (Croom 2000; Porter 2000). Organisations have to maintain, increase, and protect capabilities in addition to acquiring them. As a consequence, individuals commit themselves better to working and their motivation is increased. Even though professional competence has already been obtained, it is still a great challenge to maintain and enhance this competence. Knowledge and capabilities are important sources of strategic change.

As a field of research, purchasing and supply management includes e.g. economics, psychology, sociology, and management. PSM enables and also requires analysis of problems from various perspectives and through various methodological approaches. Within the area of management, four disciplines have had the greatest impact on PSM: strategic management, organisational behaviour, marketing management, and operations management. This study

emphasises the area of strategic management. Porter (1980) has described the basic ideas of strategic management approach as follows: business is based on company specific vision, mission, and strategy combined with the available resources, competencies, and strengths of the organisation.

Theories of strategic management, such as the resource-based view (RBV), the competence-based view, and the knowledge-based view, have argued that a sustainable competitive advantage results from the possession of resources that are inimitable, not substitutable, tacit in nature, synergistic, and hard to transfer and accumulate (Barney 1991; Wernerfelt 1984) and that are not consumable because of their use (Davenport & Prusak 1998). Thus, the resource-based view of a firm and Transaction Cost Economics (TCE) are handled in this study theoretically in addition to the PSM theory. Marketing has also contributed important approaches to PSM theory such as organisational buying behaviour, relationship marketing, and the industrial network approach. Operations management, for one, provides concepts and theories regarding Supply Chain Management (SCM) and production and inventory control. In addition, value networks are worth of noting. (Virolainen 2006.)

This research continues partly the study done by Paulraj et al. (2006) and considers competence, which includes knowledge, skills, and resources (Carr & Smelzer 1999), as an additional measurement indicator of strategic purchasing. Performance measures provide information, add knowledge, and aid decision making, and purchasing employees are a part of human resources. The more skills each employee possesses, the more valuable the employees are as a resource to the firm. Furthermore, it cannot be forgotten that financially, supply management has a remarkable influence on business.

Because there are three research subjects in the study, PSM, capabilities, and medium-sized enterprises, this study aims at contributing to three different academic fields of study: study of purchasing and supply management, study of capabilities, and study of medium-sized firms. However, the first two provide the primary conceptual framework for the study, and the third one provides an empirical field that is applied to the purchasing and supply management approach.

1.2 Purpose of the study and research questions

The main purpose of this research is to explore the purchasing and supply management capabilities in Finnish medium-sized enterprises. Many questions also take into account plans for a period of five years. More specifically, this thesis aims to:

1. Explore the status and role of PSM in Finnish medium-sized firms;
2. Understand how strategic companies consider PSM to be;
3. Clarify what are the competence requirements for PSM professionals;
4. Increase the understanding of PSM capabilities needed from the points of view of individual competence and organisational capability.

There are also other interesting questions, for example what sets of personal qualities are needed to change purchasing from an operative function into a source of competitive advantage. Furthermore, are there gaps between the present and the desired competence? Comparison of present capabilities with desired goals reveals the gap between these two areas. A gap analysis is important in the capability management process. The capability gap should lead to the acquisition of capabilities if firms are going to develop them. That is why this study has concentrated on making capability gap analysis of the respondent firms. The capability gap analysis is based on every respondent's self-assessments. Furthermore, this study handles e-commerce, globalisation and outsourcing activities, and the firms' decisions related to these issues are of high importance. As Zheng et al. (2007) have noted they will continue to have a fundamental impact on purchasing and supply management.

Purchasing and supply management theory is based on a resource-based view and the total cost of ownership theories. The following figure illustrates the theoretical positioning of this study.

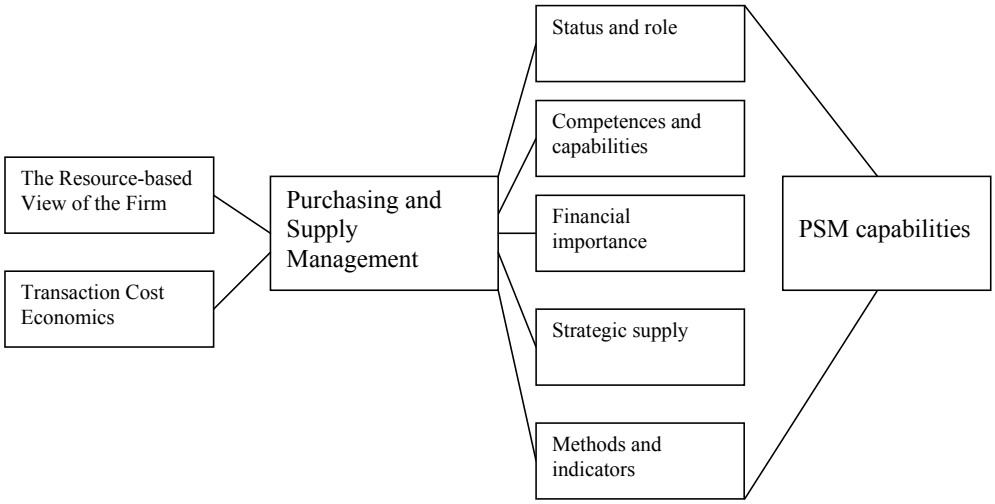

Figure 1. Theoretical position of the research.

The framework of this study is based on a project called Enhancing Global Logistics (EGLO), implemented partly at Lappeenranta University of Technology. The development programme was realised in 2004–2007, and its goal was to support the global competitiveness of Finnish-based companies by promoting logistics research and development activities. The questionnaire survey of this thesis was implemented on the basis of the framework. PSM is composed of five different aspects that are based on the literature: 1) Status and role (questions 19-31), 2) Competencies and capabilities (questions 32-54), 3) Financial importance (questions 55-62), 4) Strategic supply (questions 63-75), and 5) Methods and indicators (questions 76-89). The first 18 questions in the questionnaire deal with the basic information of firms. The variables related to these five research areas are presented in Appendix 2.

Due to supply strategy's potential impact on different aspects of purchasing and supply management, six hypotheses are conducted: the existence of a supply strategy can be predicted (H1); firms that have a supply strategy take advantage of e-procurement more often (H2); firms that have outsourced their activities take advantage of e-procurement more often (H3); firms that have a supply strategy take advantage of outsourcing more often (H4); firms

that have a supply strategy consider financial issues more important (H5); and finally, firms that have a supply strategy consider competence in logistics more important (H6). These hypotheses are presented in Chapter 3.4 and tested in Chapter 5.2.

1.3 Medium-sized enterprises as a research subject

The scope of this thesis was limited to medium-sized enterprises. This study's baseline is taken from the European Commission's definition of small and medium-sized firms. According to the recommendation of the EC (Official Journal of the European Union, 6.5.2003): "A medium-sized enterprise is an enterprise that employs fewer than 250 persons and that has an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million." (Figure 2)

	Micro-firm	Small firm	Medium-sized firm	Large firm
Employs	0–9	10–49	50–249	250–
Turnover/y	X≤2 M€	2<X≤10 M€	10<X≤50 M€	X>50 M€

Figure 2. Medium-sized firm in context of the EC definition and present research.

Medium-sized enterprises have a significant role in the national economy. Empirical evidence indicates that firms can indeed obtain increased competitiveness and business profitability through developed purchasing functions. However, medium-sized enterprises are not necessarily as focused on supply strategies and development of purchasing and supply operations as large globally operating enterprises. Although medium-sized companies have traditionally been more locally operating business units, today these companies operate in the same business environment, global markets, and competition areas, and encounter similar challenges of supply chain functions as larger enterprises. Therefore, supply management in medium-sized enterprises is a relevant and important research area. Also e-business has remarkably affected business environment and supply chain operations of medium-sized companies. The following table presents the central figures of Finnish enterprises.

Table 1. Enterprises, turnovers, and personnel in Finland in 2005 (based on Statistics Finland, 2007).

	Enterprises		Turnover		Personnel	
Size	total	%	total	%	total	%
Micro	220 947	93.5	58 076	18.2	333 811	25.1
Small	12 609	5.3	49 027	15.4	252 584	19
Medium-sized	2 301	1	56 783	17.8	232 507	17.5
Large	578	0.2	154 634	48.6	509 549	38.4
Total	236 435	100	318 519	100	1 328 451	100

Statistics Finland has defined size classes that are based on the number of personnel: small (0 –less than 10), medium-sized (10–less than 250), and large (250 or more).

Globalisation

During the 1980s and 1990s, companies focused on cost efficiency and customer responsiveness, which led to two business strategies – global locations of production and distribution facilities, and time-based competition. These strategies have transformed the way in which business activities are nowadays organised and carried out. Industries are increasingly facing intensifying global competition.

In Finland, medium-sized enterprises also operate in global markets although they have traditionally been more locally oriented. Hence, it is time for firms to increase education in purchasing and supply management in order to improve their business. Therefore, it is important to identify and prioritise those capabilities that have the greatest impact on effectiveness and efficiency of PSM.

Globalisation and increased time-based competition are typical to the business environments of medium-sized enterprises. Although medium-sized companies have traditionally operated in local markets, local markets do not exist any more. All companies and organisations face global competition to some extent. Therefore, companies have to look for competitive advantages in delivery systems, flexibility, and innovation. All these approaches emphasise the importance of time, and the flexibility of the supply chain becomes a critical factor. In today's business environment, the real competition is between supply chains or networks

instead of individual companies. Hence, the ability to operate in a network is an essential and critical success factor for medium-sized enterprises.

Globalisation provides companies with many opportunities by generating more customers and potential market areas, but also by widening the potential supplier network. Globalisation creates many demands as well. The current global economy, for example, demands products of the highest quality at the lowest cost regardless of where the product has been manufactured. Operating in a global market may also increase the uncertainty of company's operations, which may in turn lead to considerably increased inventories and longer lead-times through global supply chains (Bhatnagar & Viswanathan 2000). The ultimate objective of global sourcing is to exploit both firm's and its suppliers' competitive advantages and the corresponding location advantages of various countries in global competition. By combining own and supplier networks' high value inputs and by ensuring differentiation possibilities, a company can achieve a sustainable competitive advantage over its rivals (see e.g. Kotabe & Murray 2004).

In most research results, sourcing is directly or indirectly pointed out as a key factor that can improve company's competitive ability and its market position. This is one reason to why global sourcing should be defined as an integral part of the overall corporate strategic plan. Therefore, it must be based upon an overall sourcing plan, and it must have long-range dimensions. (Samli, Browning & Busbia 1998; Kotabe & Murray 2004.)

Global sourcing has increasingly become a critical strategic decision that is influenced by the capabilities needed to compete in a worldwide market. Without established procurement plans or distribution and service networks, it is extremely difficult to exploit simultaneously both emerging technology and potential markets around the world. Global sourcing is quite natural development trend because global competition is increasing, markets have integrated and thus, it is natural to increase global sourcing of components, parts, and raw materials. PSM professionals must be able to demonstrate that those competencies are necessary for them to be able to locate and evaluate global suppliers who have the potential to generate competitive advantage for the firm. Globalisation is accelerated by new technology, but it is still a force separate from technology. (Volker 2003.)

E-commerce

Electronic commerce represents an inter-organisational information arrangement that supports business-to-business electronic communication, information transfer, and transactions through a network that can be either public or private (Dain & Kauffman 2002; Min & Galle 2001). E-business development in supply chain management follows a number of distinct phases of evolution (Croom 2005). In the first phase, firms use e-mail and websites to gain improved access to customers and markets. In the second phase, the emphasis is on the management of customer relationships. The third phase represents the utilisation of e-business systems to support operations process management. The fourth phase includes a move to integrated e-supply chain management and greater management of total costs of purchasing. The last phase emphasises integrated e-supply chain management such as global positioning.

E-commerce is changing the strategies of supply management and the relationships of participants in the supply chain. Electronic commerce expands the marketplace to international markets because through electronic market places, also medium-sized enterprises can easily and quickly reach more customers, as well as the best suppliers and the most suitable business partners worldwide. Electronic business and supply chain offer therefore another structure for companies that seek adaptability and flexibility in highly dynamic business environments.

E-commerce tools include the Internet, extranet, intranet, and electronic catalogue access. E-procurement tools, such as auctions, provide pricing visibility not otherwise available. In electronic auctions and open marketplaces costs of comparison are low and transparency in terms of prices is generally high. For procurement purposes, reverse auction is the most relevant tool. In these auctions, buyers invite sellers to bid, and the lowest bidder gets the deal. When addressing open marketplaces for procurement, a classification can be made between what firms buy (i.e. either operating inputs or manufacturing inputs) and how firms buy (i.e. either on a spot basis or through long-term contracts).

It has been noted (Turban & Gehrke 2000; Williams, Esper & Ozment 2002) that electronic business has changed the way how companies communicate and interact with their

environments. Increased integration helps members of supply chain networks to create new products, penetrate new markets, and find new customer segments. However, Harland, Brenchley & Walker (2003) argue that the Internet and electronic business increase supply network's speed and complexity, and thus, they also increase risks.

1.4 Structure of the thesis

This thesis is structured as follows (Figure 3). Introduction discusses e.g. the problem statement and medium-sized enterprises as a research subject. The next chapter provides an overview of the literature and conceptual framework used in this study, and it handles the Purchasing and Supply Management as well as the Resource-based View and Transaction Cost Economics theories. PSM capabilities framework is introduced in Chapter 3. The fourth chapter reflects methodological issues: variables, data and data collection, and methods of analysis and interpretation. Chapter 5 reports tested hypotheses and the main results of this research. Finally, Chapter 6 is devoted to conclusions that summarise the main findings, contributions, implications, and limitations of the study. Furthermore, it will propose some ideas for further research.

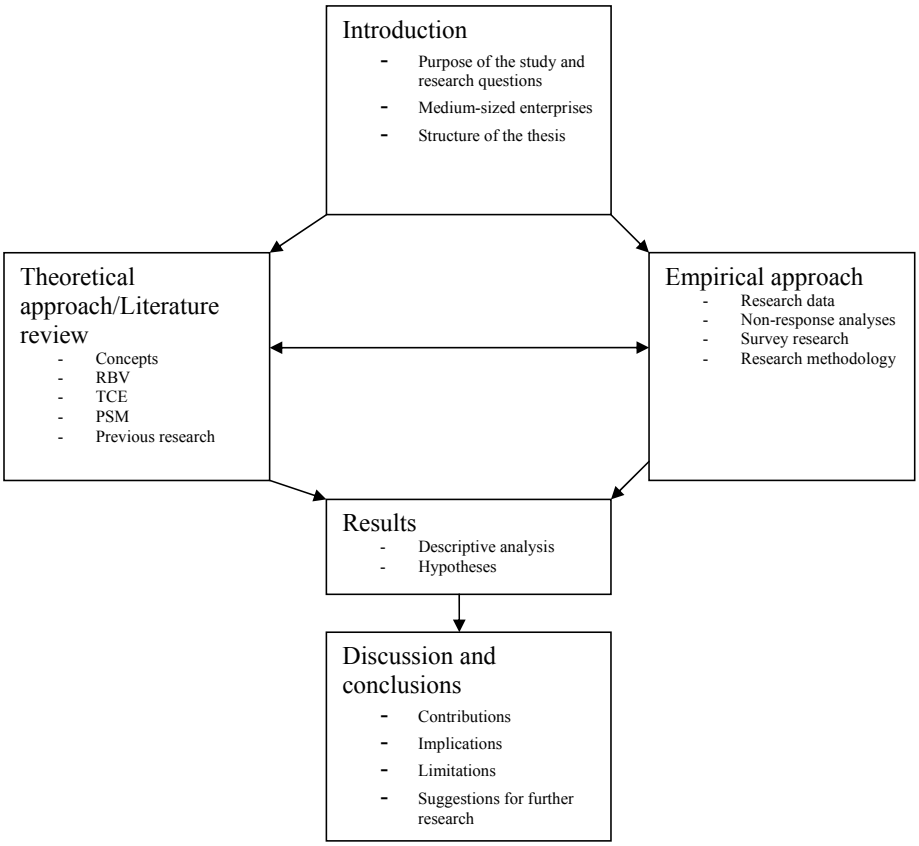

Figure 3. The structure of the thesis.

In this study, descriptive analysis has a notable role; e.g. competence requirements and competence gaps are handled in that part.

2 CONCEPTUAL FRAMEWORK

2.1 Concepts

The main concepts of this thesis are purchasing, procurement, purchasing and supply management, capability, and medium-sized enterprise. There is some confusion in the use of these terms in the existing literature of the field. In addition to purchasing or buying, also procurement and supply management are often used as comparable terms. Essentially, they all refer to material acquirement appearance and are highly important for business. In this thesis, a medium-sized enterprise is defined according to the recommendation of the European Commission (see Chapter 1.3). Furthermore, it is important to clarify the terms “buying”, “sourcing”, and “supply” as well as “competence” and “capabilities”.

2.1.1 Buying, purchasing, procurement, supply management, sourcing

The development of the purchasing function’s role is sometimes described as a process in which the responsibility has gone from buying to supply management via procurement. Purchasing as in “buying” represents purchasing activities and responsibilities that deal with buying goods and services needed and making sure that the basic function of the items bought is acquired at favourable conditions. Axelsson et al. (2005) consider purchasing to be of a rather narrow scope with a low degree of sophistication. According to the authors, purchasing as in “procurement” deals with acquisitioning and optimising the flow of materials, implying a widened role of purchasing. It means that not only price but also volumes and time aspects are being taken into account. Purchasing as in “supply management” increases the scope further, and includes also the formation of supplier structures, the development of suppliers’ capabilities (resources, knowledge), improving administrative routines and so on. All this is done in order to reduce total costs. In Figure 4, the development steps of purchasing function are described according to Axelsson et al. (2005).

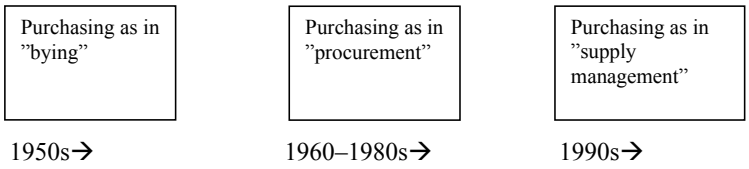

Figure 4. The development of purchasing function's role (adapted from Axelsson et al. 2005).

In this study, purchasing is seen in the same way as Axelsson et al. (2005) see it: purchasing covers all activities for which the company receives an invoice from outside parties. Hence, purchasing includes inter-company business, counter trade arrangements, and the hiring of temporary personnel from outside agencies. It includes all activities that are required to get the product from the supplier to its final destination. It encompasses the purchasing function, stores, traffic and transportation, incoming inspection, and quality control and assurance.

Supply appears to have differences in connotation between North America and Europe. In America, "supply" covers the store's function of internally consumed items such as office supplies, cleaning materials, etc. However, in the United Kingdom and Europe, the term "supply" seems to have a broader meaning which includes at least purchasing, stores, and receiving. (van Weele 1999, 9-11) Harland (2000) thinks that supply provides what is demanded, now and in the future. It focuses on resources and operations to serve end customers. Earlier, Harland, Lamming and Cousins (1999) came to a conclusion that supply is not only about satisfying existing customers. It is about generating, capturing, and maintaining end customer demands. Future business is about innovation, knowledge, learning, and supplying through interorganisational networks. (Harland et al. 1999.)

Principles of supply concept consist of generating, capturing, and maintaining end customer demand, it is not only about satisfying existing customers. In this thesis, the term "supply management" is used to denote to one of the two principal activities in business, the other being demand management. "Central to the concept of supply are the purchasing, use and transformation of resources to provide goods or service packages to satisfy end customers today and in the future, and the organisational structuring decisions that accommodate global markets." (Harland et al. 1999, 662) Also Cousins and Spekman (2003, 20) emphasise

customer satisfaction view in supply management by saying that “ultimately, the goal is to contribute to end-use customer satisfaction”.

Harland et al. (2006, 730) also define supply management in comparison to SCM and logistics. The authors state that “…supply management is an encompassing term rather than the more specific, functionally orientated topics such as supply chain management, purchasing, procurement, and logistics.” The terms ”supply management”, ”SCM”, ”purchasing and supply”, ”logistics”, and ”supply” are used to refer to larger similar domains, problems, and processes. The term “supply management” is used despite the fact that supply management is not yet a discipline. It is, however, an emerging subject area. (Harland et al. 2006, 740.)

Axelsson et al. (2005) use the term sourcing rather than purchasing to reflect their emphasis on strategic and tactical purchasing activities. They consider sourcing essentially as a cross-functional process which aims at managing, developing, and integrating supplier capabilities in order to achieve competitive advantage. This does not only involve externally oriented activities, such as supplier performance measurement and market research, but also internally oriented activities such as the development of organisational mechanisms like cross-functional buying teams and human resource development. The authors also use purchasing and supply management as a synonym for sourcing, to reflect this combination of internally and externally oriented activities, which obviously in reality will be very closely connected to each other. E.g. also specification setting is included in sourcing. It can be said that sourcing involves all activities that lead to an incoming invoice.

Strategic purchasing needs to be dissociated from the concept of purchasing strategy. According to Ellram and Carr (1994), there seem to be three distinct types of “purchasing strategy”: 1) specific strategies employed by the purchasing function, 2) the role of purchasing in supporting the strategies of other functions and those of the firm as a whole, and 3) the utilisation of purchasing as a firm’s strategic function. In this study, the interest is in the first type. Further in this research, buying, purchasing, procurement, purchasing and supply management, and sourcing are defined according to the above-mentioned definitions

of Axelsson et al. (2005) and Harland (1999, 2000, 2006). Thus, sourcing and purchasing and supply management are considered as broader terms than procurement, purchasing, or buying.

2.1.2 Purchasing and Supply Management (PSM)

There are at least three schools in research that concern purchasing and supply management. In this chapter, these three schools are briefly presented together with supply strategy philosophy.

The first school, Supply Chain Management (SCM), sees purchasing as a part of logistics, in which case the point of view is in development of logistics process innovations (e.g. ECR, VMI). SCM scholars tend to respect tangible product or service supply networks and value. (e.g. Lambert et al. 1998; Mentzer et al. 2001). The second school, the Industrial Marketing and Purchasing (IMP) group, is focused on the relationship between buyer and supplier with less emphasis on the transaction level. IMP group tends to build their work from one work or perspective, namely the Interaction Model (Håkansson 1982), which also forms the basis of their key model business networks: the Actors-Resources-Activities model. This means that the research focus is in the functionality of a relationship. The IMP stream of research has mostly tended towards manufacturing industries, albeit there are important exceptions (e.g. Woo & Ennew 2004). The third school is IPSERA (the International Purchasing and Supply Education and Research Association), which reviews purchasing and supply according to relationship and business, and only a bit as a logistics phenomenon. Thus, IPSERA is multi-disciplinary, and therefore also multi-conceptual. In this study, the concept of purchasing and supply is based on the school of IPSERA.

Various people have disputed about the difference between PSM and SCM, and although there are many overlaps, there are arguably also important differences. SCM is based on strategic management, operations management, and logistics (Lamming et al. 2000). PSM generally has the greatest degree of supplier contact, particularly related to supplier pricing and cost management. Therefore, PSM is the logical leader of organisation's supplier cost management efforts. When PSM is perceived as an important corporate function directly

accountable for its results, it will more likely participate in strategic cost management activities that result in improved financial performance (Zdidisin, Ellram & Ogden 2003).

For many decades, purchasing personnel have functioned as clerks as they let bids to multiple suppliers and have followed administrative procedures to issue purchase orders. Performance was measured by using accuracy and the number of purchase orders as well as on-time delivery statistics of suppliers (Scheuing 1998). During the 1990s, procurement function began to gain ground in corporate strategy as PSM professionals and chief executive officers recognised the effect of procurement on business performance (Goh, Lau & Neo 1999; Scheuing 1998). The philosophy of short-term contracts based on competitive bidding generated adversarial relationships between customers and suppliers. At the same time, partnerships and long-term alliances began to replace adversarial transactions. A partnership is a specific relationship that requires an element of continuity and focus on issues beyond price. Long-term relationships require procurement professionals who can manage customer-supplier relationships, relate to other functional areas of the business, and understand procurement's role in business performance (Goh et al. 1999).

Operational and strategic points of view are one possibility to examine the role of supply management. A strategy can be seen as a plan of action designed to achieve given goals and objectives. Supply strategies vary from one purchasing situation to another because each situation is unique. Thus, every strategy has to be tailored to the type of product being purchased, the stage of the procurement cycle, the past purchasing history, the nature of the supply environment, and the buying company itself: its resources, negotiation strength, and its purchasing policies (Corey 1978).

According to Scheuing (1998, 40), purchasing strategy can be described as "a set of rules…of the firm's purchasing effort over time in response to changes in competition and the environment so as to permit the firm to take advantage of profitable opportunities. In other words, the entire process of formulating, implementing, and evaluating purchasing strategy is directed at producing an optimum fit between a firm's corporate and purchasing resources on the one hand and its environmental constrains and opportunities on the other."

Watts, Kee and Hahn (1992, 5) state that purchasing strategy can be viewed as "the pattern of decisions related to acquiring required materials and services to support operations activities that are consistent with the overall corporate competitive strategy". Therefore, the supply strategy should always be integrated with the corporate strategy, and it should be based on the objectives and strategic principles of the firm.

According to Arnold (1998), supply strategy is comprised of six sub-strategies, which are the supplier, object, area, time, subject, and site sub-strategies. Each of these has at least two attributes, described as sourcing concepts. The firm has to choose the optimal sourcing concept from every sub-strategy, and all the selected sourcing concepts form the supply strategy of the firm.

Nowadays, the strategic character of supply management has been largely recognised. In supply management, the strategic level deals with decisions that have a long-lasting effect on the firm. These include decisions regarding the number, location, and capacity of inventories and manufacturing plants and the flow of material through the logistics network. The tactical level includes decisions that are typically updated anywhere between once every quarter and once every year. These include purchasing and production decisions, inventory policies, and transportation strategies, including the frequency with which customers are visited. The operational level refers to day-to-day decisions such as scheduling, lead-time quotations, routing, and truck loading. (Simchi-Levi, Kaminsky & Simchi-Levi 2004, 13.)

Carr and Pearson (1999) state that when strategic purchasing increases, it is expected that firm's communication, cooperation, and coordination with key suppliers increase as well. As purchasing evolves from a clerical to a strategic role in the firm, purchasing professionals tend to focus their attention on issues that are consistent with the firm's goals. According to purchasing professionals, more cooperative relationships with key suppliers are in the best interest of the buying firm. A few years later, Carr and Pearson (2002) defined the purchasing function as non-strategic or strategic. A non-strategic purchasing function is clerical in nature, reactive to other functions, non-integrative and focuses on short-term issues. Carr and Smeltzer (1997) had noticed earlier also that many firms recognise the value added of strategic purchasing to the firm. In these firms, purchasing is proactive and has the necessary

status, skills, and resources to perform at a strategic level. In fact, their research presented one of the first efforts to operationalise strategic purchasing. The authors empirically developed four indicators that correlate to the level of strategic purchasing: status, knowledge and skills, risk, and resources. Status explains how the function is perceived inside the firm. Knowledge and skills refer to the knowledge of supplier markets, analytical skills, and purchasing performance measurement. In this connection, risk means willingness to take advantage of new opportunities and foresight. Resources include access to information.

As Dubois and Wynstra (2005, 77) state: "The strategic role of the purchasing function is determined by its ability to establish and develop relationships with suppliers that may contribute to the performance of the firm both in a short and in a longer time perspective". At the same time, Axelsson et al. (2005) noticed that purchasing and supply management's role in business strategy is changing. The three main objectives for PSM (i.e. sourcing) to contribute to an organisation's competitive position are:

- cost optimisation (e.g. lower purchase price, transaction cost, overhead costs etc.)
- asset utilisation (e.g. outsourcing, inventory management etc.)
- value creation (e.g. new products/process development, quality improvement etc.).

Nollet, Ponce and Campbell (2005) distinguish "strategy" and "strategies" in supply management. The authors see that "strategy" consists of corporate strategy and business strategy, when as in supply management "strategies" consist of e.g. service acquisition strategies, supplier selection strategies, and outsourcing strategies.

Harland's (2000) definition of the concept of supply strategy highlights the new role of supply in the business context of the 21st century. She considers that supply strategy involves design, development, and management of internal and external components of the supply system. Supply strategy operates at different levels. In supply strategy, the relationship is between buying and selling organisations. The relationship operates in the short-term when goods and services are exchanged between the two parties in return for payment, and in the long term when collaboration over time causes long-term bonds to form between the organisations. The supply network includes suppliers and suppliers' suppliers and so on up to the original source,

and customers and customers' customers and so on down to end customers. Strategic relationships are long-term and result in a reduction of the total supplier base such as the operational relationship is short term and includes inspection, receiving, and other routine activities. The tactical relationship can be seen as a medium time frame, which includes information sharing, supplier selection and evaluation, and supplier training.

Carr and Smeltzer (1999) find that strategic purchasing is positively related to four supply management variables: supplier responsiveness, supplier communication, changes in the supplier market, and the firm's performance. Earlier, Hadeler and Evans (1994) had identified partnering, supplier relationships, and strategic alliances with suppliers as strategies to focus and improve efficiency in procurement management. The authors also argue that, in capturing value in supply management and sourcing, an effective "strategy" must be developed and implemented. Later, Virolainen (1998) has found that the selected procurement strategy will differ depending on the business strategy, competencies, and the power of the company. Companies often use different purchasing strategies simultaneously, and the approach is determined by the character of the purchased products, the resulting complexity of the supply market, and the procurement requirements. Companies can enhance their market positions by developing a sourcing strategy that focuses on the character of the firm's competitive strength.

The appropriate procurement strategy clearly depends on the product type that the firm is purchasing, as well as on the level of risk the firm is willing to take. This risk is associated with:

- uncertain demand, implying inventory risk
- volatile market, price, implying price risk
- component availability, implying a shortage risk with an impact on the firm's ability to satisfy customer demand. (Simchi-Levi et al. 2004, 154.)

It has recently been said that the perception of the strategic nature of supply depends on "firm's strategic goals and priorities" (Cousins 2005, 403). The author has observed that "…if a firm adopts a cost focused approach to its competitive position it will unlikely consider

supply as a strategic process, because its' competitive priority is to reduce cost." On the other hand, if a firm sees itself as a differentiator in the market place, it is likely to take a more strategic view of supply. It is then seen as a source of competitive advantage through inter-organisation collaboration management. (Cousins 2005, 422).

Sourcing strategy began to evolve from its traditionally myopic form, focused on price, to a meticulous but uncompromising practice, geared towards the attainment of an array of world-class suppliers. (Hall & Braithwaite 2001, 87.) Monczka, Trent and Callahan (1993) were among the first to highlight the key role of procurement and supply in world-class firms. According to Frazelle (1998), "world-class supply management" and "world-class supplier" are expressions that have become common in indicating the development of superior supply capabilities and performance. Nollet et al. (2005) emphasise that supply management has to be responsive, proactive, and innovative in building competitive capabilities. In many industries, innovation is often created collaboratively in a network of firms (Powell 1998).

A strategic purchasing function can help a firm to sustain its competitive advantage in a number of ways. First, it provides value in the area of cost management. Second, it provides the enterprise valuable information concerning supply trends that will enable the firm to make better decisions and achieve its goals. Third, it establishes close relationships where appropriate with suppliers to improve the efficient quality and delivery of materials. (Hogan & Armstrong 2001.)

Ramsay (2001) suggests that PSM activities could even add strategic value to a firm if they result in a sustainable competitive advantage for the firm. Critics argue that PSM personnel cannot provide a sustainable competitive advantage because competitors can imitate PSM activities. Ramsay's (2001) response to these critics is that firms should develop assets and relationships that are difficult to copy. Human capital is difficult to duplicate, and PSM personnel possesses a wide range of capabilities. Volker (2003) insists that the skills of PSM professionals must evolve as the firm's strategy and requirements change to maintain a competitive advantage. Unfortunately the temptation for buyers to gain short-term advantage still exists in supplier development to the detriment of long-term partnerships. Also, meeting

the needs of buying firms is not necessarily linked to development that enhances overall supply chain competitiveness. (Harrison & Van Hoek 2005, 264.)

2.1.3 Competence and capabilities

Individuals involved in the assessment of performance by others frequently refer to the competence or competency of other. Both competence and competency have a variety of meanings, as Moore, Cheng and Dainty (2002) have noted.

The Oxford English Dictionary (2007) defines “competence” as: "sufficiency of means for living; easy circumstances; capacity to deal adequately with a subject; legal capacity; adequacy of the work”. “Competency”, in turn, is defined as: “the means of life; easy circumstances; capacity; the condition of being competent”. According to the dictionary, competence and competency are interchangeable. Both terms describe factors beyond success and performance of organisations.

Burgoyne (1989) states that competence can be defined simply as the ability and willingness to perform a task. This definition possesses an element of willingness. Hayes (1979) defines competence in terms of being a number of possibilities: generic knowledge, motive, trait, social role, or skill of a person. These were also linked to the requirement to exhibit superior performance in their completion. This infers that an individual displaying competence should be able to apply their skills and/or abilities to work activity (Moore et al. 2002). Boyatzis (1982) supports this view by defining competence as “an underlying characteristic of a person which results in effective and/or superior performance in a job”.

Spanos and Lioukas (2001) note that there is no explicit distinction between resources and capabilities in the early contributions. Later, Nooteboom (2004a, 511) has stated that there is considerable confusion about the similarities and differences between the notions of “resource, competence, and capability”. He defines competence as action orientated, and it entails an ability and a position to employ resources. Thus, it also includes knowledge. Resources include not abilities but entities, and access to finance and to markets of inputs and outputs. The “capabilities” of a firm form a wider concept in the ability to configure

competences and resources, in exploitation. “Dynamic capability” entails the ability to develop new competences and resources, and new configurations, in exploration. (Nooteboom 2004a, 511.) Sanchez and Heene (1997) define competence fairly similarly as Nooteboom but they emphasise objectives.

Armstrong (1998) suggests that “competences” describe what people need to be able to do to perform a job well, and “competency**”** is defined in terms referring to those dimensions of behaviour lying behind competent performance. Differences between the two terms are subtle. Moore et al. (2002, 316) suggest the following characteristics of the key terms:

- competence – an area of work;
- competency – the behaviour(s) supporting an area of work; and
- competencies – the attributes underpinning a behaviour.

Axelsson et al. (2005) have studied competence and capabilities in purchasing and supply management. According to them, skills and knowledge in combination with motivation provide the basis for an individual’s competence. Capabilities, in turn, most often refer to the abilities of a firm or an organisation to fulfil its assignments. Capabilities are the combination of human resources, technologies, production equipment and organisation as well as processes and procedures applied. (2005, 138-139.)

In literature, the activities of core competence/competency are recognised and differentiated. The idea of a core competence is of particular interest to purchasing because it highlights the central strategic importance of make-or-buy decision-making. Once a company has identified its core competences, all other activities and resources are, by definition, non-core, which means that they have no strategic significance and may therefore be subcontracted to the best available suppliers.

Chandler and Hanks (1994) define the core competency as a capacity of an organisation to coordinate these resources in a creative way in order to achieve a target or to fulfil a given task. Core competency can also be defined as know-how that enables the competitive edge to

create and provide value to customers (Hamel & Prahalad 1996). According to Quinn and Hilmer (1994), an organisation should:

1) Identify its core competencies (these being "those activities in which it can achieve definable pre-eminence and provide unique value for customers") and commit the organization's resources to these activities; and
2) Outsource all other activities for which the organization "has neither a critical strategic need nor special capabilities."

Prahalad and Hamel (1990, 82) define core competence as "the collective learning in the organization", and view this integral process "not only for knowledge production but also for the management of knowledge**".** Hamel and Prahalad (1996) have later argued that an activity, process, or set of skills that is not only involved in the creation of a sustainable competitive advantage but can also be used to generate of a number of different products or services, might be called a "core competence".

Core competencies tend to be activities and skills in which organisations have long-term competitive advantage. These competencies are activities that an organisation can perform more effectively than its competitors, and which are of importance to customers and tend to be knowledge-based rather than simply depending on owning assets. Other non-core activities which are not of fundamental importance to the organisation's competitive edge can be considered for outsourcing. In proposing core competencies as the starting point for strategic analyses, Hamel and Prahalad (1994) criticise the "fashion of customer orientation" and state that companies need to be able to go beyond what their customers ask for. According to Parolini (1999), the core competence and value net approaches are anything but incompatible and are in many ways complementary. Davenport and Harris (2007) use sophisticated analytics in their supply chain and customer-facing processes to create distinctive capabilities that help them serve their customers better and work with their suppliers more effectively.

As well as the concepts of competence and competency, the terms of resources and capabilities are used in various different meanings (Sanchez & Collins 2001). As Winter (2000, 983) states: "…there is a rather thick terminological haze over the landscape where

“capability” lies”. However, capabilities usually refer to the ability to manage resources and consequently are considered more dynamic than resources.

Significant studies on capabilities include Penrose (1959) and Richardson (1972). Amit and Schoemaker (1993), Dos, Santos and Williamson (2001), and Winter (2003) link organisational capabilities strongly to routines. Amit and Schoemaker (2003) state that capabilities involve routines and knowledge about how to carry out productive tasks effectively. Capabilities can be regarded both organisational and individual where organisational capability refers to the ability to possess, retain, and develop the capabilities an individual has (Möller & Wilson 1995). Winter (2003, 991) defines organisational capability as follows: “An organisational capability is a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organisation’s management a set of decision options for producing significant outputs of a particular type.”

Capabilities are a matter of knowledge (Prahalad & Hamel 1990; see also Teece, Pisano & Shuen 1997), and cannot be easily bought or sold in markets. Therefore knowledge resources have to be developed through experience. To build a base of capabilities means basically the creation of dynamic capability (Teece et al. 1997). According to Winter, capabilities are substantial in scale and significance. Further**,** capabilities are reflected in a large chunk of activity that enables outputs that clearly matter to the organisation’s survival and prosperity. Organisations have to be to able to leverage and develop their current capabilities to maintain their competitive advantage and further obtain added value.

Teece et al. (1997) suggest that firm’s competitive advantage is grounded on specific asset positions and processes, organisational capabilities. Empirical evidence suggests that the way in which firm’s management has organised production is the source of differences in firms’ competence in various domains. Those competences that define a firm’s fundamental business are core ones. When an organisation finds its suppliers lacking in performance it can help suppliers to develop their capabilities.

Teece et al. (1997) suggest that a firm’s capacity to renew its existing resource base, knowledge, and routines is crucial in changing operating environments in order to achieve

congruence with the requirements of business environments. The authors call this as renewal ability dynamic capabilities. “Dynamic” refers to the firm’s ability to create new asset combinations and “capabilities” to the knowledge, processes, and structures that are needed in asset-based development and organisational transformation. (Figure 5) It can be seen that the dynamic capabilities view is the evolutionary version of the resource-based view (e.g. also Eisenhardt & Martin 2000).

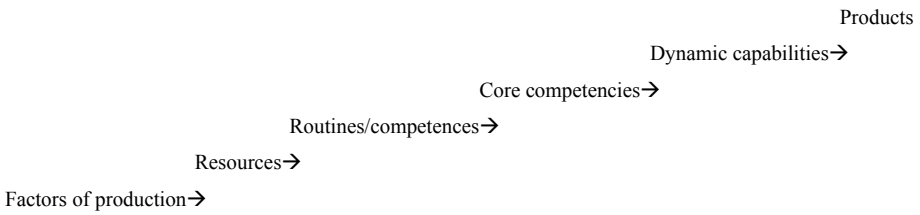

Figure 5. Dynamic capability framework based on definitions by Teece et al. (1997).

Teece et al. (1997, 516) see that factors of production are “undifferentiated” inputs available in disaggregate form in factor market. By undifferentiated they mean that they lack a firm-specific component. Land, unskilled labour, and capital are typical examples. Resources are firm-specific assets that are difficult if not impossible to imitate. Trade secrets and engineering experience are other examples, and they are difficult to transfer among firms because of transactions costs and transfer costs. Organisational routines/competences are in question when firm-specific assets are assembled in integrated clusters spanning individuals and groups so that they enable distinctive activities to be performed. Examples include quality and systems integration. Differences in coordinative routines and capabilities seem to have a significant impact on performance variables such as development cost, development lead times, and quality. In turn, dynamic capabilities are the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Finally, end products are the final goods and services produced by the firm based on utilising the competences that it possesses. The performance (price, quality, etc.) of a firm’s products in respect to its competitors at any point will depend upon its competences (which over time depend on its capabilities).

Dynamic capabilities are the subset of the competences/capabilities, which allow a firm to create renewed or new routines, producing renewed and new products and processes, and respond to changing market circumstances. Capabilities consist of routines. Routines are learnt behaviour, highly patterned, repetitious or quasi-repetitious, founded partly in tacit knowledge, and with specific objectives. The opposite of a routine is ad hoc problem solving. (Winter 2003.)

The dynamic capabilities approach seeks to provide a coherent (and evolutionary) framework on how firms develop competitive advantage and maintain it over time. In essence, dynamic capabilities are about identifying the foundations that undergird long run enterprise growth and prosperity. In summary, dynamic capabilities refer to the (inimitable) capacity firms have in shaping, reshaping, configuring, and reconfiguring their asset base so as to respond to changing technologies and markets. If a firm possesses resources/competences but lacks dynamic capabilities, it has a chance to make a competitive return for a short period, but superior returns cannot be sustained. Dynamic capabilities not only include an organisation's (non-imitable) ability to sense changing customer needs, technological opportunities, and competitive developments, but also its ability to adapt to – and possibly even to shape – the business environment in a timely and efficient manner. There is also a significant element of intentionality involved. (Augler & Teece 2007, 179.)

Nooteboom (2004a) argues that firms need to maintain flexibility of competences and resources and their configurations for the sake of innovation in the form of Schumpeterian "novel combinations**".** This yields to the claim that internally firms should concentrate on the activities at which they are best ("core competencies") and outsource other activities as much as it is strategically possible. Nooteboom sees that considerations of capabilities are strategically more crucial than transaction costs, especially since for transaction costs there are instruments to control hold-up risk in outside relations. Dynamic capabilities entail that, in addition to the usual considerations of efficiency, flexibility, and speed, learning is an important goal of collaboration. (Nooteboom 2004a, 511-512.)

Hughes et al. (1998) profile key factors in supplier and business relationships. Required competence is one of those factors. According to the writers, in free market competition both

parties must be committed to appropriate quality and competence of staff. When a relationship is a mix of competition and collaboration, suppliers are likely to be selected on the basis of their competence and ability to add value over the medium term. Finally, full and active collaboration and the possession of strategic competencies and capabilities may be at the heart of the relationship. Hughes et al. (1998) state that access to capability is becoming more important than merely sourcing a product or service. In turn, this requires a re-evaluation of many of the methodologies being used to locate and assess potential suppliers.

Hughes et al. (1998, 75-76) distinguish three types of capabilities in relational competence: secondary, complementary, and strategic capabilities. Secondary capabilities refer to capabilities that by their very nature are freely available within any market place. Such capabilities can be safely handled through shorter-term contracts and relatively arm's length or competitive relationships. Complementary capabilities provide access to areas of expertise that will add significant value in the value proposition being delivered to end customers. They should normally be managed through more collaborative forms of contract and relational types and over a longer period than the less important secondary capabilities. They are prime targets for performance partnership and joint venture type arrangements. The third type concerns strategic capabilities, which are normally associated with the close meshing in of business processes in successful strategic alliances or cross-shareholding. In many circumstances their importance is such that they prompt one party to acquire the other. It is crucial that these capabilities are properly protected in order for the competitive advantage that is being delivered through such sophisticated ways of working not to be eroded or diluted.

Further, Doz, Santos and Williamson (2001) distinguish six metanational capabilities: prospecting, accessing, moving, melding, relaying, and leveraging capabilities. According to the authors, these capabilities will allow the metanational to sense, mobilise, and operationalise underexploited pockets of knowledge scattered around the world. The challenge, for budding global competitors and existing multinationals alike, is to develop the capabilities and the organisational structures, processes, and incentive systems to harness them. (Doz et al. 2001, 82-83.)

Davenport and Harris (2007) remind that organisations that want to be competitive must have some attribute in which they are better than anyone else in their industry – a distinctive capability. The authors emphasise the meaning of capabilities. According to the writers, if analytics are to support competitive strategy, they must be in support of an important and distinctive capability. According to them, the capability varies by organisation and industry and might involve supply chains, pricing and revenue management, customer service, customer loyalty, or human resource management. Capabilities required to achieve supply chain excellence contains Return on Investment (ROI), implementation, and planning horizon. (Simchi-Levi et al. 2004, 271.) ROI is a widely used method for measuring shareholder value, and it is also used in this research as a financial figure.

Blomqvist, Kyläheiko and Virolainen (2002) have developed a dynamic capability view and try to give rationales for identifying core capabilities of a firm. The authors also explore how dynamic capability view can help companies define their core capabilities and thus boundaries of the firm. They state that in the future particularly evolutionarily generating dynamic capabilities – like ability to accumulate learning and to creatively utilise external complementary capabilities – will be major determinants of firms' business success.

Later, Kyläheiko, Sandström and Virkkunen (2002, 65) bring out their conception of dynamic capability view of the firm as follows: "…the company consists of human, physical and financial resources and its knowledge base, which, in turn, consists of already existing and routinely exploited, i.e. static and not yet fully developed or exploited dynamic capabilities, which both can be produced either internally by the firm itself of externally through the open market or network".

Davenport and Harris (2007) emphasise that organisations need to assess their level of analytical capability in three areas: organisation, human, and technology. The key elements of an analytical capability are the following:

- Insight into performance drivers, choosing a distinctive capability, performance management and strategy execution and process redesign and integration (organization).

- Leadership and senior executive commitment, establishing a fact-based culture, securing and building skills, and managing analytical people (human).
- Quality data and analytical technologies (technology). (Davenport & Harris 2007, 111.)

According to Davenport and Harris (2007, 108), the development of an analytical capability is an iterative process, as managers gain better insights into the dynamics of their business over time by working with data and refining analytical models. The literature on manufacturing capabilities indicates that quality capability forms the basis for improvement in other capabilities such as dependable delivery, flexibility, and cost (e.g. Rosenzweig & Roth 2004).

This study utilises the following definitions of resources, competence, organisational routines/competences, core competence, capability, and dynamic capabilities:

Resources: Resources include not abilities but entities, and access to finance and markets of inputs and outputs (Nooteboom 2004a). Resources are firm-specific assets that are difficult if not impossible to imitate (Teece et al. 1997).

Competence: Action orientated, and entails an ability and a position to employ resources. Thus, it also includes knowledge. (Nooteboom 2004a.) Skills, knowledge, and motivation that provide the basis for the individual's competence (Axelsson 2005). Therefore, competence is seen mostly as an employee's area.

Organisational routines/competencies: Activities required, when firm specific resources are assembled in integrated clusters to enable distinctive activities to be performed (Teece et al. 1997).

Core competence: Unique, distinctive, difficult to imitate, and superior to competition (Chen & Wu 2007). This is essential to a company's survival in the short and long term. Core competence is greater than competence of an individual. Core competence is essential to the development of core products and eventually to end products.

Capability: Can also be defined as the combination of human resources, technologies, production equipment, and organisation, as well as processes and procedures applied. This refers most often to the abilities of a firm or an organisation to fulfil its assignments (Axelsson et al. 2005).

Dynamic capabilities: The firm's ability to integrate, build, and reconfigure internal and external competencies/capabilities to address rapidly changing environments. They reflect firm's ability to achieve new and innovative forms of competitive advantage given path-dependencies and market positions. (Teece et al. 1997.)

In this study, the knowledge needed in PSM was categorised into individual competences and organisational capabilities. In the end, the individual's competences consist of skills and knowledge that are needed in one's daily work, whereas organisational capability of PSM consists of the organisation's ability and level to manage its external resources and conduct its internal tasks and responsibilities.

2.1.4 Knowledge and Knowledge Management (KM)

Organisations need employees who understand the importance of data, information, and knowledge and are able to apply them to improve business. As Nonaka and Takeuchi (1995, 34-35) put it: a firm is a repository of knowledge.

Data, information, and knowledge are closely connected to each other. Data can be defined as a symbolic representation of numbers, amounts, quantities, and facts. According to Ståhle and Grönroos, only data that is understood can be information. Information arises when a person gives sense to data. Conclusions can be drawn from information, and information must be transformed into knowledge. (Ståhle & Grönroos 2000, 31.) The raw material of data is the unformatted, unstructured material in the world. The relation between data and information is formally that information is a structuring of data that reduces uncertainty. In a more informal way it could be said that information is data that has been interpreted (e.g. Nooteboom, 2004b).

The nature of information is radically changing. The virtual age has facilitated the presence and accessibility of data and it can be used in ways that were unthinkable still a few years ago: we are moving from a position of data to one of information and hence to knowledge – a process that must, over time, produce smarter individuals, companies, and actions. (Hall & Braithwaite 2001, 95.)

Axelsson et al. (2005, 161) define knowledge as the ability of a person to perform a task by connecting data with their own information, experience, and attitude. This study is based on this definition of knowledge. Axelsson et al. (2005) bring up six knowledge domains for purchasing managers and buyers that firms need to monitor and develop: organisational, professional, supply market, supplier, customer, and product knowledge. This could be considered one possible way to present the generic knowledge that relates to the profession of purchasing.

Knowledge is the interpretation of information, and thus the same information may lead to different knowledge for various individuals. As a consequence, sharing of knowledge is not easy and depends not only on the quality of the message and the sender, but also on the quality of prior related knowledge of the receiver. Knowledge is frequently portrayed as a key source of competitive advantage (e.g. Spender 1996; Teece 1998).

The efficient and effective movement of raw materials, intermediate goods, and final products rely on information and knowledge. The knowledge base of a nation, industry, supply chain, or business has to be transformed into value. The paradox of knowledge is that it is impermanent and inherently unmanageable. If ways to capture knowledge are not realized, there can be a failure to transform supply chain management to value networks. (Brewer, Button & Hensher 2001, 4-5.)

There are two main resources in an organisation: tangible and intangible. According to Amit and Schoemaker (1993), these resources are transferable, mobile, and owned and managed by the organisation. The tangible resources are e.g. financial capital, raw materials, buildings, and equipment. The intangible resources are mainly competencies that are information and knowledge-based skills and processes that may be strengthened by relationships and

networks. Furthermore, there is also a social perspective, which includes e.g. cultural issues. Teece et al. (1997) emphasise that resources are not static but in dynamic interaction with each other to be transformed into value. Thus, knowledge can be understood as dynamic. Knowledge is clearly a vital corporate capability.

Nonaka (1994) and Nonaka and Takeuchi (1995) have created a theory of organisational knowledge creation. It this theory, knowledge creation is seen as a social and subconscious process. Knowledge creation is interaction in human minds and between humans. Much of the knowledge in an organisation is silent, or in other words, tacit knowledge that is difficult to express verbally (see also Polanyi 1966, Choo 1998, Sanchez 1997). According to this view, organisational knowledge is transferred from tacit to explicit and vice versa. Sveiby and Simons (2002) found that collaborative climate tends to improve with age, education level, and managerial role. Further, collaborative climate also seems to improve with organisational size at least up to mid-sized firms.

There are several definitions of Knowledge Management (KM). Sveiby (1997, 12-13) defines it as "the art of creating value by leveraging intangible assets". This refers to the managing, balancing, and developing of all intangible resources, like human, organisational, and network capital, as well as overall knowledge exploitation in the company. Innovation is considered a central part of this activity. Ståhle and Grönroos define knowledge management as a process instead of a project. It is not a method, but a deep cultural change. Reaping the benefits of knowledge management requires a transparent and clearly communicated strategy. (Ståhle & Grönroos 2000, 12, 226.) The progress of a knowledge management process can and must be measured. The measuring system must then produce information about improvement of the knowledge management system per se and about the tangible results achieved by the process. If these two requirements are not met, the knowledge management system has failed and can never legitimate itself in the long run. (Ståhle & Grönroos 2000, 240-241.)

Knowledge focus gets support from Salojärvi (2005). She states that knowledge management supports the sustainability of the small and medium-sized enterprises (SMEs). Any type of SME can be active in knowledge management. So far only a minority of SMEs are active in KM. According to Salojärvi's research, KM seems to serve the purpose of change, renewal,

and new strategic orientation in SMEs and to be closely related to organic growth, entrepreneurship, and innovation. Furthermore, conscious development of intangible assets seems to support a better balance of different categories of intangible assets and to increase the knowledge focus, which in turn, at least partly, facilitates the path to the improved overall performance. (Salojärvi 2005.)

Although much has been written about knowledge management in general, there is only a little information especially on knowledge management for purchasing and supply management. There are two main motives for purchasing professionals to manage their purchasing and supply knowledge: they have to prevent the loss of existing knowledge and to increase the level of knowledge. Axelsson et al. (2005, 148-149) found several barriers which hinder the development and sharing of knowledge. These barriers are e.g.:

1. No clear definition of knowledge.
2. Purchasers are unaware of who owns what knowledge.
3. No incentive to share knowledge.
4. Geographically dispersed.
5. No time is available to share knowledge.

Managing knowledge and competencies thus implies the creation and management of the organisation in such a way that these barriers will to a large extent be removed. Axelsson et al. (2005) suggest that the strategy makes employees aware of the fact that purchasing and supply is not an operational function, but that purchasing and supply departments serve as the knowledge and competence centre for the organisation. Parallel to these processes, the purchasing department should define its knowledge gap and consequently its knowledge strategy and goals.

Ståhle and Grönroos (2000) state that intangible assets, competencies, and capacity for self-renewal form only the potential intellectual capital of a company. This is realised only if the company is able to convert the potential into financial results.

Soo et al. (2002), for instance, have found that while knowledge itself is difficult to measure, it does have a clear impact on business outcomes. The very perception of economic prospect depends on knowledge of markets, competitors, new technology, government policy, and general economic and political conditions. That is what is referred to as strategic intellectual source of learning, as well as being part of our overall intellectual capital. A common interactive knowledge base has to be established, along with clear accountabilities for its management. Furthermore, the balance of knowledge and skills needs to be transformed by building a small but highly capable group of knowledge brokers who can identify processes that are used by competitors, partners, suppliers, and customers. Stakeholders need to know about progress in creating and maintaining a knowledge organisation, mainly because focused and consistent internal signals are essential if culture change is to be achieved. The new focus is customer-dominated: who will the customers be, what will customers expect, and how can a business source and utilise its knowledge to create a real competitive advantage? (Brewer et al. 2001, 6-7.)

2.2 Theories used to explain PSM

The purpose of this chapter is to summarise the wider theoretical background of this study by presenting the frameworks of resource-based view and total cost economics, which are complementary perspectives to the purchasing and supply management. The intent of the theoretical background is to clarify the researcher's understanding of the field of study prior to the empirical research. The theoretical construct is presented at the end of the chapter.

The resource-based view (RBV) stresses the internal aspects of a firm instead of an external emphasis on traditional strategic research. Resource-based, dynamic capability, and knowledge-based theories of a firm explain how competencies, such as those supporting PSM, create competitive advantage. However, they emphasise different underlying dynamics. The resource-based view of a firm substitutes two alternate assumptions in analysing sources of competitive advantage. First, RBV assumes that firms within an industry (or group) may be heterogeneous with respect to the strategic resources they control. Second, RBV assumes that these resources may not be perfectly mobile across firms, and thus heterogeneity can last long. (Barney 1991, 101) The dynamic capabilities view emphasises that competencies need

to change over time in order to maintain their value. It highlights knowledge development and capabilities acquisition as crucial processes (Teece et al. 1997; Eisenhardt & Martin 2000). The KBV identifies leveraging, which refers to how firms extract value from existing competencies.

At first glance, the resource-based view would appear to be of a little relevance to purchasing. However, the RBV focuses on the range of different resources employed by companies; the way in which those resources are managed, and the contribution of those management practices on company's sustainable competitive advantage. The purchasing function's responsibility for managing firm's external resources suggests that insight into the function may be gained from a conceptual approach that focuses on resources. Thus, managers may use the RBV to enhance the strategic profile of the purchasing function, but also its contribution to company's sustainable competitive advantage. The basic idea of resource-based view (see Wernefelt 1984; 1995) is similar to knowledge-based approach that was handled in section 2.1.4.

Transaction cost economics (TCE) emphasises cost efficiency, and purchasing and supply management (PSM) explains the nature of procurement practices, activities, and strategies. The primary difference between TCE and KBV of firms evolves around governance choice. TCE scholars argue that governance choice relies on the assumption of both bounded rationality and opportunism while KBV scholars indicate that only the assumption of bounded rationality is needed to explain governance choice (Heiman & Nickerson 2002). TCE indicates that transactions between parties can be organised by choosing between the two governance mechanisms of markets or hierarchy (firm), with the latter providing higher monitoring and safeguarding procedures to control for opportunism in the transaction (Williamson 1985).

Both RBV and TCE theories pursue to explain why the boundaries of a firm are formed like they are. RBV theory views that a firm is build up from resources, and the theory emphasises the internal assets of a firm whereas TCE theory stresses efficiency. On the other hand, in RBV firms are thought to be different ones when they are viewed on the grounds of resources and competences. This leads to the acquisition of resources externally, outside from own firm.

This idea relates to the basic idea of transaction cost economics that is to get an answer to the question: make or buy? Naturally, the resources that are available in an enterprise have an effect on the answer. It is worth of noticing that transactions can embrace resources like equipments, machines, processes, and competences. With regard to this issue, there is a clear connection to the efficiency of resources and that, for one, relates to transaction costs.

It can be said that in TCE cooperation between enterprises is examined mainly from one single firm's standpoint and the main goal is to minimise costs. RBV instead emphasises the reconciliation of all the business partners to achieve the maximum benefits for all partners.

2.2.1 Resource-based View (RBV)

This chapter focuses on the resource-based view (RBV) which emphasises the strategic importance of firm's resources and capabilities. When the Porterian view of a firm sees the firm as a bundle of activities, the RBV sees enterprises as a bundle of resources and capabilities (Wernerfelt 1984; Barney 1991). However, the emphasis on internal resources was already pointed out much earlier: Penrose (1959) defined the resources in terms of physical and human resources including the knowledge and experience of the management team.

RBV attempts to explain how companies can gain sustainable competitive advantage through resource analysis which is the core of design and implementation of appropriate strategy. The RBV refers to internal analysis and it attempts to scan for internal strengths and weaknesses. Enterprises can earn profits by capitalising on the unique attributes of their resources. However, firm's resources must be strategically managed for the firm to be able to maintain its competitive advantage (Aaker 1995). The resource-based view contains relationship value, strategic business values and operational, i.e. professional and work values and intellectual capital. According to Brewer (2001b), intellectual capital contains knowledge, intellectual property, reputation, and brand image relationships (all these are included in structure and design).

According to Wernerfelt (1984, 172), resources include brand names, in-house knowledge of technology, recruiting of skilled personnel, trade contacts, machinery, efficient procedures, and capital. Barney (1991, 101) adds firm attributes, information, and knowledge to the list of Wernerfelt. In fact, Barney categorises all kinds of resources into three main categories: physical, human, and organisational capital. Physical capital refers to e.g. machines or plants, human capital consists of proprietary know-how and organisational capital means e.g. the reputation of a firm. Olavarrieta and Ellinger (1997) are almost unanimous in that resources include not only market inputs (e.g. labour, transportation, equipment) and assets (facilities and tools owned by the organisation), but also knowledge and capabilities (competencies).

In the RBV, the basic assumption of the organisation is quite internal and static. Planning and decision-making are highlighted in this model. RBV emphasises mainly decision-making and managerial skills instead of learning and innovation of the whole organisation. Anyhow, RBV clarifies strategic thinking and strategy formation from its own internal perspective. The RBV has recently been extended to dynamic markets where the competitive landscape is shifting and companies must adapt to changing environments. These companies do not necessarily have any tangible resources, but they have some special knowledge, which is often embedded in people. In spite of this, these companies require certain resources when they attempt to achieve a global presence, or to create new radical products as industry standards. (Varis et. al. 2004.)

Hart (1995) presents a framework supported by the strategy and resource-based view literature. Hart (1995) refers to Porter's (1980) model of competitive advantage. In Porter's model, buyers and suppliers are two of the driving forces of competitiveness in an industry. Unique purchasing activities that are strategically oriented toward accomplishment of the firm's goals help the firm to sustain its competitive advantage (Ramsay 2001). Except for Porter's value chain model and his industry competitive analysis framework, classical managerial contributions have not explicitly discussed the supply function, or procurement, or supply strategy (Nollet et al. 2005).

Porter (1990) noted that resources are valuable because they permit a firm to conduct business activities that lead to competitive advantages in specific markets. The notion of core

competence of an enterprise is connected to resources. Prahalad and Hamel (1990) argue that a competitive advantage begins by building core competencies that are superior to the competitors' core competencies.

The resource-based view has been applied to strategic alliances. Das and Teng (2000) put forward a general theory of resource-based theory of strategic alliances synthesising the various findings in the literature on alliances from a resource-based view. The authors noted that certain resource characteristics, such as imperfect mobility, imitability, and substitutability, promise accentuated value-creation and thereby facilitate alliance formation. At the same time, Eisenhardt and Martin (2000) argued that the RBV has difficulties in predicting the length of competitive advantage and the sources of future advantages. In high-velocity markets, the strategy for creating competitive advantage is about creating a series of unpredictable advantages through timing and a loosely structured organisation (Eisenhardt & Martin 2000, 1118).

Varis, Virolainen and Puumalainen (2004) prove that one possibility to achieve appropriate flexibility in capability creation is to use cooperative relations with complementary firms. In the authors' opinion, companies in this kind of turbulent and technologically complex industry cannot master all the skills needed to fulfil customer needs in the best possible way. It is necessary to focus on company's own core competencies and target limited resources to those activities where they are the most efficient. Resources and capabilities not in the focus area can be arranged by other means. This leads to outsourcing practice that is handled elsewhere in this study.

Kyläheiko et al. (2002) see that the most important strategic link between capabilities and strategic options can be formed by using firm boundaries as strategic tools. The firm is viewed as a value chain consisting of many transactions (activities), based on partly tacit and partly generic path-dependent routines/capabilities. Some internal and external capabilities are static and ready for exploitation, whereas some have to be explored to generate new knowledge, i.e. they are dynamic. Some activities can be bought from other firms, whereas others are based upon firm-internal capabilities. Acquisition costs are called transaction costs and the "in-house" costs are called management costs.

2.2.2 Transaction Cost Economics (TCE)

In business studies, same issues can be explained and studied with different theoretical frameworks. Transaction cost economics (TCE) creates the basis for the make-or-buy decision, collaboration, consortium sourcing, and the decision concerning centralisation and decentralisation. Because these are the main elements of every supply strategy, TCE can be used as a theoretical basis for supply strategy decisions. Further, transaction cost theory can be used in explaining both the importance of PSM and intangible assets of the organisation.

Transaction cost theory is also important in PSM in the identification of the cost structure. There are certain processes and management practices which make the control function less demanding and costly. On the other hand, transaction cost theory can explain the existence of the external network capital: when purchasing from the market is more economical than the production within the organisation, it is easier to control long-time contracts than to continuously seek for new ones. However, an enterprise's intangible assets are often very social, and thus not equivalent to rational.

The development of transaction cost theory has been said to be based on Coase's (1937) seminal article "The Nature of the Firm". According to him, the nature of a firm consists of a system of relationships which comes into existence when the direction of resources is dependent on an entrepreneur. The basic assumption of the TCE theory is that a firm can choose between hierarchy, i.e. self-organising operations, or markets, i.e. source from outside the suppliers. Markets and hierarchies (i.e. firms) are seen as alternative coordination mechanisms, from which a firm may choose the most efficient one (see Coase 1937, Williamson 1975). Markets refer to outsourcing (buying), and hierarchies to insourcing (making). The basic rule of transaction costs economics says that when marginal costs of market usage are higher than the costs of running the company, transaction should be organised within the company and vice versa (Coase 1937). Particular emphasis is given to the fact that the use of market is not free of charge, but incurs transactions costs. However, Coase (1937) discusses firms which have lower transactions costs than markets.

Later, Williamson (1991) added hybrid organisational form to the theory. This represents a more elastic and asset specific nature of governance compared to the traditional market-based form of organisation. When neither the markets nor the hierarchies are optimal solutions for the buying company, situation can be solved by using a contractual solution which is placed between vertical integration and free market forces (Ellram & Billington 2001). This governance structure can be called hybrid (see Coase 1937), network (see e.g. Thorelli 1986, Jarillo 1988), or partnership (see e.g. Blomqvist et al. 2002), and it is based on collaboration between buyer and supplier.

The main purpose of transaction cost approach (TCA) (Commons 1934; Williamson 1990) is to explain why transactions in a certain institutional arrangement operate more or less efficiently. Transaction costs are used to measure efficiency and accrue from the handling of goods and services. In this case, TCA allows comparison of the costs of different institutional arrangements. The central idea of TCA is that a transaction is much better organised and handled when the characteristics of institutional arrangements are equivalent to the transaction requirements.

Transaction cost economics offers a framework to analyse the effectiveness of different governance structures (Williamson 1975, 1985). The basic principle of the TCE framework is the assumption that there are diverse types of additional costs associated to business outside the organisational boundaries. These transaction costs arise from the presence of three features of costs originating from asset specific investments, frequency of transactions, and bounded rationale decision-making. Williamson (1975) presented also the so-called transaction uncertainties. They are used in many studies for different purposes, e.g. McIvor (2000) used the concepts to understand outsourcing process.

Transaction cost theory (Coase 1937; Williamson 1975; 1981) overlooks the sociological aspects within and between organisations and emphasises the rationality and economic self-interest. Employers are considered to be aiming at rationality and the maximisation of economic interest, while employees are considered to be opportunists who have vested interests. The theory is concerned with how to economise the costs of managing opportunistic workers, particularly when conditions are uncertain and complex. Transaction cost is seen as

the “price of contract negotiation and renegotiations of contract” (Williamson 1975, 60). The same principle concerns interorganisational networks. It depends on the cost of contracting, collecting information, and auditing and enforcing the contract, if the hierarchy (i.e. company itself) or market is the superior source of products or services. The central problem in the TCE theory is how to get employees to think like owners. The solution based on this approach is to create contracts and to carefully control them, but to do this only as far as it is economically more profitable than purchasing from the market. The central concept in transaction cost theory is also to limit uncertainty of decision-making.

Williamson (1990) aimed to achieve a micro-analytic framework to explain and systematise transactions. High transaction costs result from different environmental conditions. The environmental conditions taken into account are specificity, uncertainty, and frequency of transactions. Uncertainty means the predictability of the number of modifications by performance properties like quality, time, price, or volume during a transaction. The more these modifications vary in time, the higher the uncertainty.

Williamson (1990) differentiates fixed and variable transaction costs. Fixed transaction costs occur through the implementation of the coordination form. Markets have low-fixed transaction costs due to the already-existing legal system that can be used by companies. The implementation of a hierarchy requires high-fixed transaction costs. Variable transaction costs develop through every added transaction. The amount of variable transaction costs is dependent on specificity. The market, on one hand, can be used for almost every transaction while creating high-variable transaction costs. Comparatively, hierarchy causes low-variable transaction costs due to long-term contracts.

Transaction costs arise from coordinating economic activities, i.e. costs from balancing demand and supply in an exchange, and coordinating costs that arise from the organisation of collaborative activities with other companies. On the grounds of IT, transaction costs occur mainly because of inaccurate or incomplete information exchange. Thus, it seems to be important to emphasise the role of information exchange in cooperation.

Nooteboom (2004b) refers to TCE which he says to focus on static efficiency – by trading-off production costs, transaction costs and costs of organisation, given a certain state of knowledge, technology, and preferences. Nooteboom (2004a) has integrated governance and competence perspectives in a unified theory. This integrated framework retains instruments for governance from TCE, but de-emphasises contracts, especially in innovation, and adds others, such as trust and additional roles for go-betweens.

A number of researchers have criticised TCE, arguing that the market-hierarchy dichotomy is too simplistic to represent various forms of governance mechanisms (Rindfleisch & Heide 1997) and that TCE fails to recognise that hierarchical behaviour can also foster opportunistic behaviour (Ghoshal & Moran 1996). Furthermore, some authors have criticised TCE because it emphasises cost efficiency as the motivation for cooperation and it has been effective in predicting vertical integration among suppliers and buyers, but it does not capture many of the strategic advantages of alliances (Eisenhardt & Schoonhoven 1996, 136-137). Further, TCE does not have much to do with the relational elements of supply chain management.

2.3 Previous research

Purchasing has received a great deal of attention in recent years from practitioners and academics alike. Internationally, there have been several researches about purchasing and supply management, and they have frequently mentioned the strategic role of PSM (see e.g. Carter & Narasimhan 1996a, Cox 1997, Mol 2003; Monczka, Trent & Handfield 2005). However, opposing opinions have been presented as well (e.g. Ramsay 2001). Ramsay argues that purchasing typically has no significant strategic role to play and that the activities related to it are operational in nature.

Despite the opposing opinions, the evolution of purchasing from an operative task to a strategic process of supply management has been well noted in the purchasing literature for many years (e.g. Cousins & Spekman 2003). However, purchasing and supply capabilities have not been a common research subject. Capabilities in purchasing and supply management of medium-sized enterprises have not been studied in Finland until now. There are at least three different approaches that clarify the previous researches: 1) What role does PSM have in

the practice of processes and techniques; 2) What impact does PSM have on the performance of an enterprise; 3) What kind of competence requirements are there for PSM. This thesis deals next with each of those approaches.

2.3.1 What role does PSM have in the practice of processes and techniques?

According to the survey commissioned by the Ministry of Transport and Communications Finland, in 2005 logistics costs were on average 13 % of the turnover (equivalent of 24.4 billion euros), which is a relatively high figure in international comparison. Awareness of the importance of logistics is generally good. Firms assess their competence in logistics as relatively good, especially in large companies, retail trade, and logistics firms. The most important development needs are: supply chain visibility (large and international companies); competence of staff (SMEs); and partner networks and customer service (logistics firms). Procurement, buying, and inventory management were among the main areas of improvement in both industry and trade companies, especially at supervisor and mid-management level. Among senior management, business strategy was seen as the main area of development. (Naula, Ojala & Solakivi 2006, 66.)

On the other hand, Quayle (2002b) surveyed firms with fewer than 200 employees in the United Kingdom and found that only 19 % of the surveyed firms had a separate purchasing function, and that purchasing was of a very low priority to the firms. Morrissey and Pittaway (2004) argue, however, that small and medium-sized enterprises do see purchasing as important, although they may not have a discrete purchasing function.

In recent years, collaboration has become the focus of supply chain systems. At the same time outsourcing is a widespread practice in business today. Companies aim to focus on their core activities and to transfer less critical functions to their subcontractors. This has led to increased outsourcing with even more emphasis on the PSM function as the selector of proper suppliers. Generally speaking, outsourcing refers to practices where activities that were previously performed in-house are transferred out of the company. Some are doing so because of tactical considerations; they are outsourcing specific business functions such as accounts payable or customer service centre operations to reduce costs. Others are taking a more

strategic tack, including the outsourcing of sets of capital-intensive activities like manufacturing, distribution, or IT, so as to grow without adding capital (Carter, Markham & Monczka 2007).

There have also been interests towards outsourcing of the ownership of fixed assets or the whole manufacturing process. Morgan and Monczka (2003) see that the nature of the outsourcing decision threatens directly supply management; it is naturally strategic for any company because of its impact on supply capabilities. Carter et al. (2007) come around to Morgan and Monczka's view by stating that the outsourcing of procurement activities is a strategic option. Arminas's (2003) study indicates that 22 percent of companies (of a total of 219) outsource some purchasing areas whereas more than a half of UK companies and 64 percent in France are likely to outsource procurement by 2006. Also Carter et al. (2007) evaluate that outsourcing of procurement is growing although it is not yet widespread.

In outsourcing and partnering literature, success factors for the relationship have been reached rather extensively (e.g. Ellram 1991; Mohr & Spekman 1994; Ellram 1995; Lee & Kim 1999; Tuten & Urban 2001). A few presented models (Ellram & Edis 1996; Zhu, Hsu & Lillie 2001) discuss rather thoroughly the planning, developing and implementing phases of an outsourcing partnership. Kern and Willcocks (2000) have presented a model of outsourcing relationships. Their model is applicable mainly from the customer's point of view and focuses on the relationship management element of the process. They also highlight the behavioural aspects of a relationship. Increased outsourcing has been one of the reasons for the need of more systematic partner selection. According to Parolini (1999), problems arise when competition becomes more varied; some companies almost completely outsource the working phases of production, others move them to countries with low labour costs and so on. In Parolini's opinion the real problem is not the method, but the object to which the analysis refers: industry. In outsourcing decision making, it is important to figure out how different factors influence the total costs and why one alternative is the best solution from the perspective of costs.

A strategy which leads to the outsourcing of all non-core activities has its own risks and problems, as failure of these activities can jeopardise organisations' core business. Also, the

cost of choosing a suitable company to outsource an activity to and managing this arrangement can be high, and the cost may in fact be greater than if the activity was performed in-house. When the potential for vulnerability and competitive edge with respect to an activity is high, the need for tight control over sourcing is required, which suggests either carrying out the activity in-house, through joint ownership, or through detailed long-term outsourcing contracts. (Browne & Allen 2001, 254-255.)

Enterprises have gradually moved from operational purchasing to more strategic activity, and this has lead to an increased importance of supplier relationships. Monczka et al. (1993) identify a series of steps from least to most supplier responsibility as follows:

1. None: The supplier is not involved in design. Materials and subassemblies are supplied according to customer specifications and design.
2. White box: This level of integration is informal. The buyer "consults" with the supplier informally when designing products and specifications, although there is no formal collaboration.
3. Gray box: This represents formal supplier integration. Collaborative teams are formal between the buyer's and the supplier's engineers, and joint development occurs.
4. Black box: The buyer gives the supplier a set of interface requirements, and the supplier independently designs and develops the required component.

Identification and analysis of potential suppliers should be done in an early stage of the process. As Simchi-Levi et al. (2004) state, firms have found it useful to involve suppliers early on in the design process. The authors (2004, 178) emphasise that "…firms must develop a strategy that helps them to determine the appropriate level of supplier integration for different situations". In the 1980s and 1990s, there was a proliferation of texts on purchasing, having common themes of selecting, using, and developing suppliers in line with strategic goals and overall business objectives.

2.3.2 What impact does PSM have on the performance of an enterprise?

In strategy research, the essential question is to explain why some enterprises perform better than others (e.g. Porter 1991; Cox 1997; Spanos & Lioukas 2001; Spanos, Zaralis & Lioukas 2004). Porter (1991) states that firm profitability can be decomposed into effects stemming from industry's structural characteristics and the firm's strategic positioning within its industry. Cox (1997) says that sustainable competitive business success is achieved, for individuals or companies, by flexible ownership and/or control of critical value net assets which cannot be replicated or replaced by existing or potential competitors. This, rather than competitive positioning, is the essence of entrepreneurial activity. Spanos et al. (2004) find that different forms of strategy have different effects on profitability. Thus, success depends more on firm-level strategic choices than on industry conditions. Further, their findings indicate a significant influence of industry structure on firm profitability. However, it is worth noticing that one player can increase firms' profitability by being particularly effective in carrying out purchasing and sales activities in the strict sense (Parolini 1999).

Purchasing performance has been examined from the points of view of cost reduction and efficiency, buyer-supplier relationships (Carr & Pearson 1999; Fynes, Voss & de Búrca 2005), and quality (Sanchez-Rodriguez, Martinez-Lorente & Clavel 2003). Also on-time delivery and actual versus target costs have been seen as criteria of purchasing performance (Chao, Scheuing & Ruch 1993). Cavinato (1987) has earlier identified internal customer satisfaction to be the most important element of purchasing performance.

The notion, that if an activity cannot be measured it cannot be managed is well known. The need to manage activities is the key reason for their measurement (Heaver 2001, 14-15). The measurement may be undertaken to enable comparison of an activity against a standard or a goal, over time, between different activities at one time or a combination of these. van Weele (2002) finds that management's expectations of the purchasing function have significant influence on the measures that are used in assessment of purchasing operations. If purchasing has strategic status in a firm, performance measures are more qualitative, and complex procedures and guidelines are used to monitor the progress of purchasing performance.

González-Benito (2007) proposes that the contribution of purchasing to business performance depends on the degree to which purchasing capabilities fit with the business strategy and support it. Narasimhan, Jayarama and Carter (2001) assumed that purchasing's contribution lies in the implementation of a series of concrete purchasing practices and initiatives, whereas other outstanding articles argue that the degree of involvement of the purchasing function in strategic planning processes determines the level of implementation of certain advanced purchasing practices (Carr & Pearson 1999; Chen, Paulraj & Lado 2004), or moderates the effect of these practices on business performance (Narasimhan & Das 2001).

The evidence provided in Gonzáles-Benito's (2007) research lead to the conclusion that the purchasing function contributes to business performance and that this contribution depends on the interaction of two elements: purchasing efficacy, understood as the alignment between purchasing strategy and capabilities, and purchasing strategic integration, which reflects the degree of alignment between purchasing and business strategy. Unlike Narasimhan et al. (2001), the researcher links business performance theoretically to purchasing capabilities instead of purchasing practices. But as Gonzáles-Benito emphasises, his approach does not contradict previous research but rather reveals the need to compare and combine different approaches to fully understand purchasing competence.

Carr and Smeltzer (2000) have studied the relationship between PSM skills and suppliers' responsiveness and the financial performance of the firm. Their results indicate that technical skills of PSM professionals are positively related to firm's financial performance. The technical skills of PSM professionals also positively influence suppliers' responsiveness to firm's requirements. Purchasing competence has also been compared to manufacturing cost, quality, and delivery, as well as to new product introduction and customisation performance. Purchasing integration, a component of purchasing competence, has been found to relate to all dimensions of manufacturing performance. (Das & Narasimhan 2000.)

Varamäki and Järvenpää (2004) state that versatile performance measurement has become a natural part of management in large firms, but this method has only slightly spread to SMEs. The challenge is to accept performance metrics that are not short-term and easily quantifiable.

One can see the attraction of variance to stated price as a metric; it is recognisable and easy to understand. (Cousins & Spekman 2003.)

There are different results concerning the impacts of PSM. On average, Finnish firms scored well against international logistics performance indicators. Firms exposed to international competition scored far better than those operating domestically. Outsourcing of warehousing, invoicing, and inventory control are expected to increase substantially. (Naula et al. 2006.) However, it has been noted that larger firms have more resources than smaller firms (Boyer et al. 1996). It is believed that firms have more flexibility to devote resources to strategic purchasing activities, while smaller firms do not have the same flexibility.

Mudambi, Schründer and Mongar (2004) report that most SMEs do not engage in cooperative purchasing arrangements, while the few that do experience marginal success. Quayle (2002b) finds that SMEs are unaware of the fact that effective purchasing can positively affect the profitability of organisations. Das and Narasimhan (2000) have noticed that the effective management of the supply chain provides PSM professionals an opportunity to influence the business results of the firm and to place their firm in a position of competitive advantage. The authors also found that purchasing competence has a significant and positive impact on aggregate manufacturing performance.

Generally, the costs of procurement are examined in relation to firm's total costs, sales ration, or turnover. According to Degraeve (2001), the largest single cost to most firms is the procurement of products and services. These products and services cost for an average firm more than 60 % of the firm's total costs. The costs of products and services for some manufacturing firms may be as high as 75 %. The cost of products and services for service firms is approximately 35 %. A 5 % saving in these costs can be important to the profits of a firm. Axelsson et al. (2005) state that purchasing-to-sales ration in general is in the range of 30–60 % for service organisations, 50–70 % for manufacturing industries, and 80–95 % for retailing firms. Also purchasing department's spending has been studied earlier. For example, CAPS (Fearon & Bales 1993) found that of the $140.3 billion that 166 organisations used on purchases, only 41 percent was spent by the purchasing department whereas 59 percent was spent outside of the purchasing department.

PSM's significance to an enterprise can be recognised also in terms of potential savings. According to Cousins and Spekman (2003), the realisation that firms can save huge amounts of money by managing their supplies strategically has resulted in that firms have begun to invest in this area of management. Typically this means that a 1 % cost saving in purchasing equates to a 10 % increase in sales. The creation of strategic purchasing departments has given purchasing a "new lease of life". Purchasing is viewed as a strategic business process. (Cousins & Spekman 2003, 20.)

Ellram et al. (2002, 14) suggest that PSM function is a "support process" in business strategy and that optimising PSM function would not necessarily ensure above average financial results for the firm. The authors note that PSM can reduce costs in the supply chain, employ progressive technology, and influence suppliers to assist in research and development, but implementing leading practices in PSM will not make up for inadequate marketing strategy, poor distribution, faulty decision making, or defective products or services. However, PSM personnel are the gatekeepers of most costs that originate from the outside of the firm. As Volker (2003, 31) states: "Purchasing and supply management professionals must demonstrate those competencies that help the firm reduce its costs and help attain its business objectives".

In literature, efficient logistics performance is recognised as a source of competitive advantage and a crucial strategic imperative for the success of firms. Huttunen, Kyläheiko and Virolainen (2001, 14) agree by stating that the competitive advantage of the company or a business unit is dependent both on the quality of the strategy and the capability of the organisation to dynamically implement it. According to Huttunen et al. (2001), skills and competence issues were earlier regarded purely as human resources and individual level issues, without great strategic intent.

Quayle (2002a) states that many large companies have pursued global strategies in an attempt to get better quality, punctual delivery, lower prices, a problem-solving capability, or additional technology. Often "local" suppliers have been perceived as incapable of meeting these needs. Quayle refers to the terror attack in New York City in 2001 and states that the highest business priorities are security of supply, quality, support capability, product

reliability, and time to market. Lower on the list comes pricing, e-commerce, research and development, new technology, and purchasing. At the same time, companies have concentrated on the need of supply security and on the expansion of centralised procurement and local sourcing. (Quayle 2002a.)

Buvik and George (2000) have realised that the inclusion of PSM strategies within an overall business strategy can provide firm competitive advantage. Gelderman and van Weele (2005, 19) agree by stating that "…firms can indeed obtain competitive advantage by managing supplier relations". Otherwise, tools of information technology, especially the Internet and electronic procurement, are changing the strategies of PSM (Porter 2000).

The position and the professionalism of purchasing are both positively related to the greater use of purchasing portfolio models. Purchasing portfolio methods are used more often by more professional purchasers than by their less professional colleagues. In other words, the usage of portfolio models increases significantly as purchasing professionalism increases. As expected, firm size has a significant impact on portfolio usage. The likelihood that a larger company uses a portfolio model is nearly 2.6 times higher than those of an SME. (Gelderman & van Weele 2005, 25.) Kraljic (1983) introduced the first comprehensive portfolio approach for the use in purchasing and supply management. He advised managers to guard their firms against disastrous supply interruptions and to cope with changing economic and technological dynamics. According to Gelderman's and van Weele's findings (2005, 19-21), portfolio usage is definitely a sign of purchasing sophistication.

Paulraj, Chen and Flynn (2006) have studied the impact of strategic purchasing on supply chain performance, and according to the results, it has a profound impact on both buyer and supplier firms. The results show that strategic purchasing is a good indicator of supply chain performance, and they support the notion that by fostering relational capabilities that engender sustainable competitive advantages, strategic purchasing can create a win-win situation for both supplier and buyer firms. The authors come to the conclusion that the further the firm is along the strategic purchasing stages, the better the supplier and buyer performance. Moreover, results suggest that when purchasing is strategically oriented, it can engender as well as protect the sustainable competitive advantages of both the buyer and

supplier firms, thereby ultimately maximising transaction value instead of simply minimising transaction cost. Superior performance and sustained competitive advantage are dependent on the strategic role of people.

Ylinenpää (1997) had depicted nearly ten years earlier how high-performing small manufacturing firms develop in-house competencies and acquire external expertise. High-performing firms reveal more intensive supplier relations and they regard their banks and auditors as more important. In addition, they are more oriented towards own products with a higher degree of complexity, accompanied by a broader range of in-house competence. Eventually, high-performing firms also operate in more volatile environments characterised by a higher degree of market turbulence and more rapid technological development in the firm's line of industry. (Ylinenpää 1997.)

The study of Ylinenpää (1997) implicates that firms seeking a better sales performance should combine investments in explicit and often general knowledge with investments in work-related continuous learning methods. It is, however, the combination of methods and approaches together with a sensitivity towards environmental influences that seems to be related to different degrees of market performance.

2.3.3 What kind of competence requirements are there for PSM?

Researches related to competencies and capabilities of purchasing and supply management personnel have been implemented increasingly during the first years of the 21st century (e.g. Porter 2000; Carr & Smetzer 2000; Giunipero & Pearcy 2000; Faes, Knight, Matthyssens 2001; Volker 2003; Cousins & Spekman 2003; Axelsson et al. 2005).

In 2000, Porter noted that much of the current work of PSM professionals will change during the coming decade. At the same time, Carr and Smetzer (2000) emphasised that PSM professionals will be required to demonstrate the skills necessary to operate at the strategic level as the PSM function is elevated to the strategic level. They believe that academic institutions recognise the changing business environments and are modifying their curricula to emphasise the skills most organisations want for their PSM professionals.

Giunipero and Pearcy (2000, 8) have specified the skills that are important to purchasing/supply management professionals. The following ten skills were ranked as the most important: a) interpersonal communication, b) ability to make decisions, c) ability to work in teams, d) analytical, e) negotiation, f) managing change, g) customer focus, h) influencing and persuading, i) strategic, and j) understanding business conditions. The authors emphasise that the identification of a required set of skills is important if purchasing is to achieve professionalism, growth, and influence within the organisation.

Also Volker (2003, 3) has studied competency requirements of PSM professionals. According to him, competency requirements depend on the tasks that PSM professionals will perform. Volker divides these tasks to six classes: a) selection of suppliers, b) management of supplier relationships, c) management of supply chains, d) digitalisation of transactions, e) demonstration of PSM's functional impact on the corporate profitability, and f) management of other functional and administrative responsibilities. The findings of Volker's study suggest that although the environment of PSM professionals is changing, there appear to be some competencies that remain consistent. The findings indicate that it will be necessary for PSM professionals to be more than good practitioners of the PSM functions. PSM professionals need to be good business people, great communicators with outstanding interpersonal skills, and be able to lead and cause change. Furthermore, they must follow ethical and fairness standards that are above reproach and be able to raise the ethical and fairness standards of others with their behaviours and attitudes. Professionals must be continuous learners. (Volker 2003.)

In this connection, it can be brought up that the term "professional" has been termed variously. It can be said that professional buyers are individuals whose main function in an organisation is to carry out purchases as efficiently as possible. Their common feature is their specialisation in the process of purchasing, rather than in the object of purchasing. Thus they are distinguished by procedural rather than substantive knowledge (see e.g. Boer et al. 2003, 912).

Cox (2003) emphasises professional competence. According to him, it requires that managers do not rely on any one approach of sourcing but forces them to make complex choices from a

range of different approaches. Cox identifies four basic sourcing options: supplier selection, supply chain sourcing, supplier development, and supply chain management. True competence comes from an ability to undertake all of the four types of sourcing activity, as well as knowing under which circumstances they should be using one approach rather than the other. This understanding is critically important for buyers' competence development.

Volker (2003, 122-124) presents the following propositions, which were developed from data that was grounded on real-world experiences of PSM professionals (i.e. Certified Purchasing Managers, C.P.M.s), senior managers, and consultants and academics:

1. Purchasing and supply management professionals must have a comprehensive knowledge base of their own firm. Understanding relationships and interaction between internal departments is important.
2. Knowledge of the supply base was determined to be crucial. PSM professionals must understand how to gather information about industries and potential suppliers including knowledge of suppliers' processes, capabilities, limitations, and challenges.
3. It will be necessary for PSM professionals to know and understand the characteristics of the industries in which the firm operates. Industry knowledge included understanding business and economic factors and trends.
4. PSM professionals must understand the processes and principles necessary to excel as a PSM professional. Some examples include the understanding of cost analysis and cost drivers, early supplier involvement, cost reduction processes, and quality processes.
5. The ability to communicate effectively was unanimously expressed as a skill necessary for PSM professionals.
6. Management and leadership skills will be required of PSM professionals.
7. Interpersonal skills will be necessary to PSM professionals. Some of these skills included the ability to negotiate, mediate, promote and influence (sell), resolve conflicts, and build and lead teams.
8. PSM professionals must be able to define and map processes and material flow in the supply chain. They must be able to audit processes and documents, conduct cost analyses,

and evaluate the performance of suppliers. They must effectively use those electronic tools and systems available to them.

9. The attitude requirements of PSM professionals were those that are inner directed (e.g. ethical, honest, fair) and those that are learned (e.g. focused, risk taker, motivated). In an environment of change the attitude of continual learner will be critical.

Cousins and Spekman (2003) have found that the level of qualifications within purchasing appears to be generally good, with a mix of degree and professionally qualified personnel. This shows an increasing trend when compared to past research projects, which have placed the level of purchasing competence as low, compared to other strategic departments such as marketing, finance, and production. Nonetheless, the authors note that purchasing is not fully viewed as a strategic player in many organisations partly by their own deeds. Still, many procurement professionals have not risen to the challenge and are part of the problem, not the solution.

Axelsson et al. (2005) bring out aspects of work situation with an impact on competencies. According to the writers, depending on various combinations, the task assignment becomes totally reproductive, method-based, goal-based, or creative. Thus, it is likely that there will be a great difference in what kind of individual competence fits best to carrying out various tasks. Totally reproductive tasks demand very little individual thinking and arguably very limited conceptual understanding. The method-based assignment means that the purchasers should know at least the specific methods, processes, and procedures they are applying. The goal-based task opens up more freedom to act. Organisation, team, or individual has to meet defined goals but have freedom to choose and forge methods in order to achieve it. When the task is creative by nature, purchasing organisation, team, or individual acts to develop the business of the firm. The latter role should call for genuine understanding of concepts (conceptual thinking), in-depth understanding of the organisation, supply markets, and the customers in order to be able to see possibilities and to act on the right ones in relevant ways. (Axelsson et al. 2005, 160.)

3 PSM CAPABILITY

The purchasing and supply management, the resource-based and transaction cost economics views provide a wider theoretical framework for this study. The theories of value creation and knowledge management are closely related and can be considered to belong under the same umbrella of strategic management theories.

Value creation relates essentially to purchasing and supply management. Value chain philosophy is suitable for supply management whose main goal is to achieve value for the customer. Although the position of purchasing and supply in organisations has improved over the years and has gained management attention, the added value is still questioned by the members of the organisation (Axelsson et al. 2005). Value creation is understood here as the processes and exchanges in the relations between people and organisations and within different organisational systems without necessary immediate material or monetary involvement (Allee 2002). Also material and monetary values are results from these exchanges.

Over the last decade, purchasing has developed from an operational function to a strategic one. In this study, an interesting research subject emerged from the research of Mintzberg and Waters (1985) which explores the process by which strategies form within organisations. The authors compare intended strategies with realised strategies. Intended strategies are those that come from a planning process, and realised strategies are what the organisations actually do. Mintzberg and Waters provide a framework to study the difference between these two concepts.

While purchasing and supply management has developed towards strategic profession, decision-making has become more knowledge and competence driven. Purchasing competence can be operationalised, developed, and estimated in a firm (Das & Narasimhan 2000). Capabilities in PSM can be studied from different perspectives. In this study, PSM capabilities are examined from individual and organisational points of view. Purchasing and supply capabilities can be analysed by studying individual competences and skills needed. Articles frequently refer to professional buyers, industrial buyers, or purchasing managers

(e.g. Sheth 1973; Patton, Puto & King 1986; Smeltzer & Ogden 2002; Hunter, Bunn & Perreault 2006). Organisational purchasing is associated in the literature mostly with goods and materials (e.g. Reid, Pullins & Plank 2002). When organisational capabilities are reviewed, maturity of organisation's PSM should be taken into account.

3.1 Value creation

Porter introduced the concept of the value chain and competitive advantage in 1985. The assumption underlying the value chain is that each activity either adds or removes value from the products or services at hand. At the heart of all business strategies lies the desire to achieve differentiation through cost reduction and/or value enhancement (Porter 1985). Later Porter (1991) states that firm profitability can be decomposed into effects stemming from industry structural characteristics and the firm's strategic positioning within its industry. However, it is easy to see the steps that add value, but it is much more difficult to see all the waste that surrounds them. The thesis is that beginning to eliminate this 60 % of activities and costs offers the biggest opportunity for performance improvement today. (Hines, Jones & Rich 2001, 173.)

By considering their core competencies, companies must be able to connect themselves flexibly to different value-creating systems (VCSs) and be capable of rapidly and efficiently establishing new connections with other players (Parolini 1999). Parolini (1999, 152) states that the five competitive forces proposed by Porter (1980) are becoming increasingly difficult to apply: a growing number of industries are difficult to define and delimit, and it is consequently difficult to understand what their boundaries are, which industries should be considered customers and which suppliers, and what is their cost structure.

According to Parolini, the major limitation of Porter's definition is that it identifies value only with the value that the company has managed to obtain for itself, almost as if the net value for customers was not a value in itself. Parolini compares the specificity of the value net approach to Porter's supply chain analysis: "…Porter's value system refers to a more limited set of activities than our value creating system: for example, it does not include those activities that contribute towards the creation of value for the final purchaser, but are not included in the

value system itself. The value system model attempts to broaden the strategic perspective and to consider links with both upstream and downstream value chains, but it clearly takes the viewpoint of the company making the analysis, without ever fully considering the end-user's point of view. Furthermore, Porter describes value systems as sets of value chains; i.e. sets of economic players (companies, the business units of diversified companies, final purchasers)." (Parolini 1999.)

Parolini (1999) stresses that the value created by a system can be maximised by having appropriate resources for specialisation and by reducing the costs of the related purchase and sales activities to a minimum. In relation to transaction management activities, it is finally worth stressing that it is necessary to avoid confusing sales and purchase activities with the complex of activities carried out by salesmen or the people in a buying office; transaction management activities play an important role in distributing the value created by a system. The problem for many companies is that a good part of the time and energy of their buyers and salesmen is spent on the activities of purchasing and selling in the strict sense, which means that they have less opportunity to carry out activities that are more significant in terms of the creation of value.

For the purposes of strategic analysis, it is useful to distinguish the net value created by the system, the net value received by final customers, and the net value acquired by value-creating players. The total net value created by the system is divided between the final customers and the economic players participating in its creation on the basis of their relative bargaining power. The net value received by final customers can be defined as the difference between the value that customers attribute to a product and the price actually paid for it. The total price paid corresponds to the total revenues received by the players involved in value-creating activities. The net value acquired by the value-creating players can be defined as the difference between the total price that the purchasers have paid to the players who carry out value-creating activities and the total costs that the latter have had to bear. (Parolini 1999.)

Also Brewer (2001a) refers to Porter (1980) when she speaks of value creation. The terms customer value and value proposition are also mentioned. Furthermore, Brewer speaks of shareholder value under the concept of industry view. Creating value can only be attained if

the stakeholders can exchange resources, share knowledge and skills, and build supply chain capability for the pursuit of goal achievement. This is at the core of competitive advantage. If price is emphasised in PSM, it does not recognise value-creation opportunities that relationships with strategic suppliers provide. Brewer (2001b) sees e-procurement as a way of action which changes PSM personnel's work less clerical while becoming more strategic.

Kaplan and Norton (1996) created the balanced scorecard (BSC) model, which represents a management control system in communicating an interacted notion of value creation. Plenty of enterprises have created a mix of different indicators and processes significant for their own value creation (Rucci, Kirn & Quinn 1998; Johanson, Mårtenson & Skoog 2001a; 2001b). The common denominator of these models is that they formally acknowledge non-financial organisational aspects to be at least as important as financial aspects are in the value creation process (Skoog 2003).

After BSC and other models concerning measurement of intellectual capital, there have been many other applications of them. Meritum (2001) is so called intellectual capital (IC) model which was initiated by the European Union. The Meritum model divides intangible assets into three categories: human capital, structural capital, and relational capital. Furthermore, organisations obtain also value creation.

Earlier the main goal was the ability to provide customers quality products. In today's customer-driven market it is not the product or service itself that matters most but the perceived value to the customer of the entire relationship with a company. The current emphasis on customer value tries to establish the reasons a customer chooses one company's product over another's and looks at the entire range of product, services, and intangibles that constitute the company's image. Customer value requires learning why customers purchase, continue to purchase, or defect from a company. (Simchi-Levi et al. 2004) The authors emphasise information's role as a value-added service. To allow customers access their own data, such as pending orders, payment history, and typical orders, enhances their experience with the company. Customers value the ability to know the status of an order, sometimes even more than the actual turnaround time. This capability provides reliability and enables planning.

3.2 Purchasing sophistication

Purchasing sophistication (or maturity) can be viewed as a key characteristic of the purchasing function. In this study, purchasing and supply management sophistication (purchasing maturity) reflects the level of professionalism in PSM (see Rozemeijer, van Weele & Weggeman 2003) and its position within companies (see Gelderman & van Weele 2005).

Various characteristics of the purchasing function can be expected to determine its level of sophistication and maturity. Gelderman and van Weele (2005, 22) use for the development of a purchasing sophistication construct: 1) reporting level of the purchasing function, 2) the contribution to the competitive position of the company, 3) an orientation on collaborative supplier relationships, 4) the skills to participate in cross-functional teams, 5) skills for developing purchasing and supplier strategies, and 6) a focus on clerical and administrative duties. These characteristics provide an indication of the level of sophistication of the purchasing function. The authors' findings indicate that portfolio usage is definitely a sign of purchasing sophistication.

At the same time, van Weele (2005, 94) presents a six-stage purchasing developmental model (Figure 6) in which purchasing develops from transaction orientation to value chain integration. van Weele comes to the conclusion that companies may go through stages presented in the purchasing development model when they want to develop purchasing professionalism. He advises, however, to use the model carefully, for all stages may not be relevant for all types of commodities, companies, and industries.

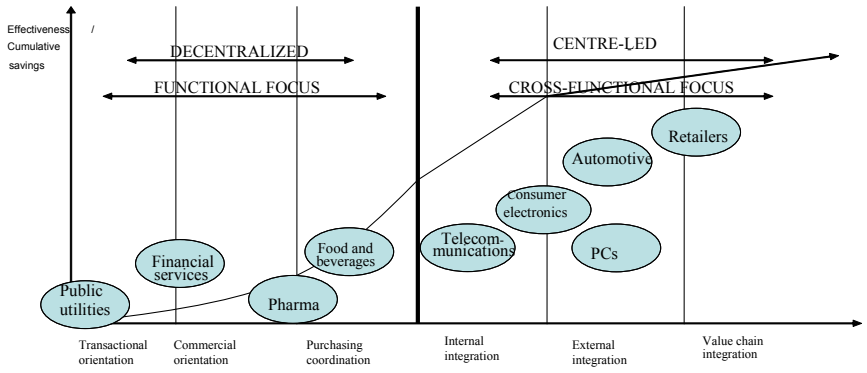

Figure 6. Six levels of purchasing maturity (adapted from van Weele 2005, 94; Axelsson et al. 2005, 21).

The lowest level of maturity, or professionalism, is said to be prevalent for the transactional orientation phase. This is recognised in a very passive or reactive purchasing operation where the purchasing professionals merely "administer" the purchasing tasks. Commercial orientation (phase 2) is regarded as a somewhat more developed commercial approach with regular requests for tender, comparisons of various bids from suppliers and negotiations, as well as operation with pre-qualified suppliers. Phase 3, purchasing coordination, emphasises a work mode where buying enterprise has strong control over purchased volumes, the number of suppliers and purchased items. Common to these three levels is a functional approach where the purchasing department acts on its own. In addition, phases 2 and 3 call for increased coordination or centralisation of purchasing operations. (van Weele 2005, 93-97.)

Internal integration (phase 4) implies that the organisation handles purchases and suppliers in a more process-oriented way and utilises cross-functional teams with the relevant competencies and expertise that take responsibility for important goods and services bought. For example purchasing systems and enterprise resource planning (ERP) are often used methods. Phase 5, external integration, introduces synchronisation and optimisation of supply chains. In this phase, there is a need for utilisation of information and communication

technology (ICT), e.g. EDI systems. Value chain integration (phase 6) is looked on as the most sophisticated development phase. This phase establishes a clear connection to the buying organisation's own customers. PSM here means doing both all of the purchasing and supply operations from the previous phases and contributing to the creation of customer value. In-depth understanding of customer needs and willingness and capabilities to satisfy these are the basic requirements for reaching phase 6. This presupposes that PSM has a global perspective on suppliers and undertake entrepreneurial collaboration with suppliers. Cross-functional teams and centre-led operations are an important prerequisite for phases 4 to 6. A centre-led function does not necessarily imply the dominance of a centrally placed purchasing unit. (van Weele 2005, 93-97.)

Also Axelsson et al. (2005) have studied purchasing maturity. According to them, a mature and sophisticated working method is very much about developing and applying a structured working method. Thereby the organisation will establish a sustainable, improved foundation for its sourcing operations.

3.3 Competence and capability requirements

Competences and capabilities of purchasing and supply management can be classified in many ways. Individual competences of PSM are often studied in a broader context as a part of logistics and SCM (see e.g. Gammelgaard & Larson 2001).

Das and Narasimhan (2000) define purchasing competence as the capability to structure, develop, and manage the supply base in alignment with the manufacturing and business priorities of a firm. According to the authors, purchasing competence enables purchasing to become a participant in the strategic planning processes of a firm and impact key policies at the functional and corporate levels when it is fully developed. Das and Narasimhan (2000) see that four purchasing practices – supply base optimisation, buyer-supplier relationship development, supplier capability auditing, and purchasing integration – provide a platform for the evolutionary development of purchasing competence in a firm. But, as the authors state: "The four purchasing competence factors may not constitute the full domain of this construct"

(2000, 27). They suggest that global sourcing, environmental issues, and logistics are some additional areas that could be included in other studies besides issues of order and sequence.

According to Cox (2001, 47), competence in procurement and supply management "is based on the recognition that the best circumstance for the buyer is not the pursuit of any one relationship management approach. Rather, it is based on the recognition that the ideal circumstance for any buyer is to be located in the buyer dominance box, as well as on the ability to devise strategies to move all supply relationships (or as many as possible) toward this ideal." Thus Cox sees procurement and supply competence in the context of buyer and supplier power. Adversarial relationships are being replaced by increasing cooperation, communication, and striving for mutual benefits. Firms recognise that independence is not a strength but an obstacle in terms of increased profitability.

New venues and activities have enhanced both strategic role of suppliers, for instance in innovation (Croom 2001), and the strategic role of supply management professionals (Ellram et al. 2002). According to Ellram et al. (2002), knowledge and skills developed during the last ten and even fifteen years have enabled the adoption and integration of best practices in supply management. According to Nollet et al. (2005), the most interesting standpoint of the practise of a profession is the scanning of leading-edge technologies and supplier market information. The authors (2005, 137) emphasise the main implications for supply managers:

1. Find out corporate and/or business strategy and understand it (them); you will be able to align the supply "strategy" and demonstrate how supply management can respond to organisational goals and objectives.
2. Communicate business demands placed on supply by the business strategy, as you understand them: you will promote knowledge exchanges, thus creating a sense of oneness that will empower the responsiveness of the supply organisation to business changes.
3. Systematically evaluate the effective contribution of the supply "strategy" to corporate and/or business strategy: you will be aware of improvements to perform and are more likely to know when to make them.

Different posts need naturally different competences, i.e. director is supposed to have leadership skills as basic competence. Axelsson et al. (2005) measure individual purchasing knowledge and experience on a four-point scale: rookie level, basic level, senior level, and expert level:

1. Rookie level: Concept/activity is new for him/her and he/she has no experience in applying the concept/conducting the activity in practice.
2. Basic level: He/she has basic knowledge of the concept/activity and some experience in applying the concept/conducting the activity in practice on a small scale.
3. Senior level: He/she has almost full knowledge of the concept/activity and he/she is experienced in applying the concept/conducting the activity in practice.
4. Expert level: He/she has full knowledge of the concept/activity and he/she is very experienced in successfully applying the concept/conducting the activity in practice. (Axelsson et al. 2005, 163.)

Cox and Lamming (1997, 62) say that supply management professionals have to "constantly assess the relative utility of a range of collaborative and competitive external – and internal – contractual relationships". Later Cavinato (1999) found a higher level of involvement named "knowledge-based business" where the function is strategically involved in linking the firm to suppliers and networks knowledge. To reach this level, it is compulsory for supply management professionals to master the strategy-making process and its implications. Further, supply professionals are expected to ensure the realisation of the full potential of supply. Rozemeijer and Wynstra (2005) emphasise continuous training and education, job rotation, networking, and acquisition of a wide range of experience which will become the most valuable assets for the buyer in the future.

Narasimhan et al. (2001) found that few studies have identified the defining elements that constitute purchasing competence. The authors introduce the construct of purchasing competence using a second-order factor structure derived from purchasing practices identified in literature. Narasimhan et al. (2001, 4) offer a generic definition of purchasing competence: "Purchasing Competence can be measured as a multidimensional performance index comprised of performance along key enabling content elements for which the purchasing

function has a primary responsibility". The authors measure purchasing competence along five dimensions: empowerment, employee competence, interaction frequency-tactical, interaction effectiveness-NPD, and buyer seller relationship management. (Figure 7)

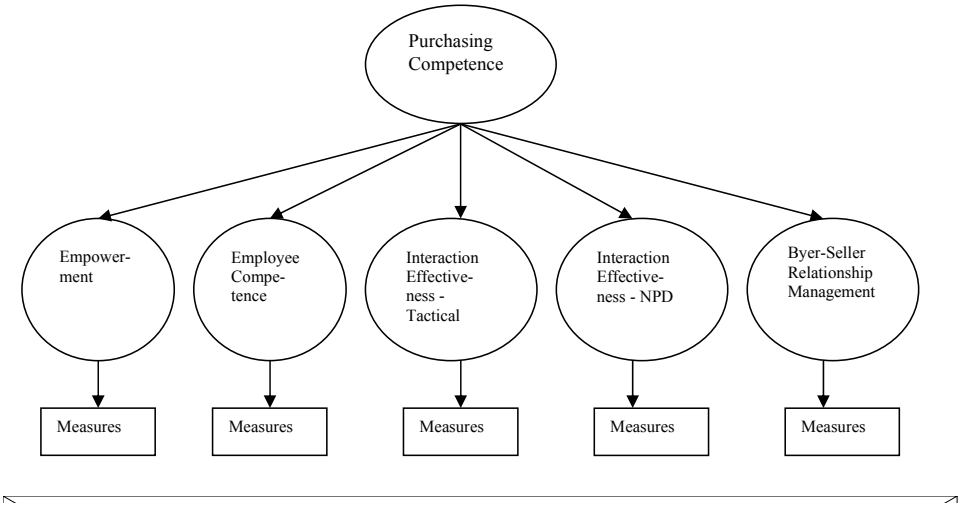

Figure 7. Dimensions of Purchasing Competence (adapted from Narasimhan et al. 2001, 5).

Narasimhan et al. (2001) operationalise empowerment in terms of involvement in job-related and operational decisions, autonomy, and job security, which encourages risk taking and trying out new ideas and practices to solve tactical and operational problems. Employee competence is defined in terms of training for purchasing employees and suppliers in strategic initiatives such as quality improvement and customer satisfaction, and performance evaluation of purchasing employees that are tied to quality improvement goals. Interaction effectiveness-tactical is captured by purchasing's interaction frequency with production and quality control. Interaction effectiveness-NPD is measured in terms of interaction between purchasing and R&D and interaction between purchasing and engineering. Finally, buyer-seller relationship management is captured in terms of four variables: purchasing's involvement in risk sharing for capital investment with suppliers, purchasing's sharing of technical information with suppliers, joint production planning with suppliers, and sharing of cost savings with suppliers.

Narasimhan et al. (2001) find that empowerment and buyer-seller relationship management are the key dimensions that purchasing executives should monitor to improve firm-level strategic performance. The study also found joint planning for production with suppliers as a key practice for effective management of buyer-seller relationships. Involving key suppliers in production planning and scheduling is indicative of a strong commitment towards partnering with suppliers.

PSM competencies can also be viewed as requirements for supply network management. Harland and Knight (2001) see that competencies are related to general management and leadership as opposed to actual PSM subjects.

3.4 PSM capabilities framework and hypotheses

The following purchasing and supply management capabilities framework (Figure 8) was constructed for this study on the basis of a combination of literature reviews that was presented in previous chapters. Naturally, the research questions and the aims of this study were the groundwork for the literature review (see 1.2). The framework highlights five key aspects of purchasing and supply management capabilities: status and role, individual competences and organisational capabilities, financial importance, strategic supply, methods and indicators. According to the literature these are the most important elements in purchasing and supply management.

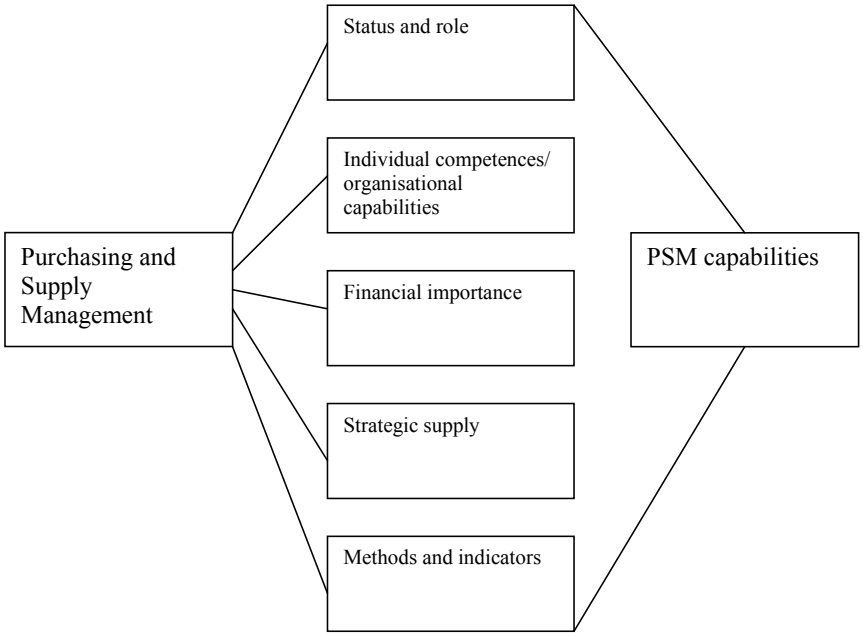

Figure 8. Framework for purchasing and supply management capabilities.

The aspects are presented next. All the following aspects are related to the maturity of PSM, value creating and competence and capability requirements that are highlighted by e.g. Gelderman and van Weele (2005), Axelsson et al. (2005), Brewer (2001a), Simchi-Levi et al. (2004), and Narasimhan et al. (2001). The researcher was interested to study whether there could be found some features of sophisticated PSM in respondent firms. The implemented questionnaire was based on the created model. The original survey questionnaire that has been translated into English is presented in Appendix 1.

1. Firms have identified and recognised the status and role of purchasing and supply management.

Goals of purchasing and supply management are integrated in the business strategy of the whole firm. PSM's synergy initiatives are aligned with business line strategies. The status and role of purchasing and supply management is established also at the executive level of an

enterprise. PSM is considered as an important resource for the firm. PSM function is reporting directly to top management.

2. Purchasing and supply management is being continuously developed by taking care of both the personnel's competences and the organisation's capabilities.

Individual competence and organisational capabilities are seen as crucial assets because of purchasing and supply management's significance for the firm's success. Changes in the PSM function and in the environment in which it operates affect significantly the competence set required for professional excellence. With regard to competence development, this study differentiates three main sources: education, on-the-job training, and hiring that have been taken account in the questionnaire. Organisational capabilities of PSM area scantly researched area, and that is the reason why it is important to study also this issue.

3. Firms have recognised financial importance of purchasing and supply management.

Competitive advantage can be sustained if firms are successful over the long term. Thus, firm's financial performance, such as profitability or growth, is included in this aspect. Although all supply decisions are important, some of them are more critical to organisational performance. Thus, it is important to notice that competitive advantage is linked to both costs and value of enterprise's offerings. Top management acknowledges that PSM contributes significantly to the competitive position of the firm.

4. Purchasing and supply management is strategic by nature.

Suppliers are considered as key success factors. There is an orientation towards collaborative relationships with suppliers. PSM personnel are willing to develop supply strategies, and value creation is seen as the area in terms of supply strategy development. Purchasing and supply management's operations are proactive. PSM utilises internal cross-functional teams. PSM personnel do not engage mainly in clerical and operational duties.

5. Purchasing and supply management is measured and controlled.

Directors and managers want to know if purchasing and supply tasks have been done well or if there is progress in change efforts. Thus, measurement has also a control dimension. If activities are measured and evaluated, personnel get feedback. Wrong measurements can lead organisation to the wrong direction. Furthermore, measurement is one way to enforce the realisation of desired results. In this study, measurement is taken into account in the questionnaire by asking questions that deal with e.g. financial figures that pay attention to the enterprises' plans for five years ahead.

As Zheng et al. (2007) have found, e-commerce, globalisation, and outsourcing have been identified in literature as key contextual developments that will continue to have a fundamental impact on purchasing and supply management. Each of these represents a central element of purchasing strategy, but also these trends are contextual factors that shape purchasing strategy, structure and skill requirements. Based on the literature review and before mentioned elements, six hypotheses were formed. They are presented briefly below.

H1: The existence of a supply strategy can be predicted.

Generally supply strategy involves design, development, and management of the internal and external components of the supply system. Thus, it is an important element of firm's management system. Furthermore, supply strategy is a clear sign of the appreciation of purchasing and supply management (cf. Ramsay 2001, see Cousins & Spekman 2003). It is interesting to examine if there are any elements which have an influence on supply strategy's existence (see Mintzberg & Waters 1985).

H2: Firms that have a supply strategy take advantage of e-procurement more often.

E-procurement is changing the strategies of purchasing and supply management and the relationships of participants in the supply chain. E-procurement can been seen as a way of action which changes PSM personnel's work less clerical and more strategic (Brewer 2001b). With increasing e-procurement and outsourcing of non-strategic purchasing, the allocation of

purchasing activities within organisations is evolving (Zheng et al. 2007). E-procurement has been found to improve the quality of enterprises' operations and to make their internal processes more efficient.

H3: Firms that have outsourced their activities take advantage of e-procurement more often.

Outsourcing is one of the central concepts and practices related to purchasing and supply management. Outsourcing is all about strategic make-or-buy decisions. (Morgan & Monczka 2003; Carter et al. 2007.) Therefore, it relates to the competence view. It has been evaluated that outsourcing of procurement is growing even though it is not yet widespread. Outsourcing and e-commerce are major trends in terms of how purchasing effectively contribute to corporate competitiveness in the new business environment (Zheng et al. 2007). It has been studied that e-commerce increases optimal outsourcing levels, and managers ought to be cognisant of this. As new e-commerce opportunities arise in their environment, the pressure to outsource more activities mounts. (Kotabe, Mol & Murray 2008.)

H4: Firms that have a supply strategy take advantage of outsourcing more often.

Common practice in today's business is related to outsourcing: companies aim to focus on their core activities and to transfer less critical functions to their subcontractors (cf. Ylinenpää 1997). Due to outsourcing's close relation to strategic purchasing, it is important to study whether or not there is a connection between these factors. (see e.g. Gadde & Håkansson 2001; Morgan & Monczka 2003; Carter et al. 2007)

H5: Firms that have a supply strategy consider financial issues more important.

Purchasing and supply management's financial importance in regard to the firm's performance is considerable (see Das & Narasimhan 2000; Carr & Smeltzer 2000; Gonzáles-Benito 2007; Paulraj et al. 2006). Percentage values of total supply costs' in comparison to turnovers are high (see e.g. Degraeve 2001; Axelsson et al. 2005). Firms can save considerable amounts of money by making purchasing function more effective. The economic aspect cannot be forgotten when speaking of strategic supply management.

H6: Firms that have a supply strategy consider competence in logistics more important.

A firm cannot operate if it does not have capabilities. Competence issues have to be examined strategically from both individuals' and organisations' points of view. Purchasing and supply function is one of firms' logistics functions. It is interesting to study if the enterprises, which set a value on supply strategy, prefer also logistics. (see e.g. Huttunen et al. 2001, Quayle 2002a; Naula et al. 2006.)

All the hypotheses will be tested in Chapter 5 and results of these tests will be presented and further analysed in Chapter 6.

4 RESEARCH METHODOLOGY

This research is quantitative and explorative by nature. This study's object is not to handle purchasing and supply management of one single enterprise. Thus, quantitative research was carried out to get a wider background information of the data. Furthermore, quantitative research can reveal connections that are not obvious for researchers. The empirical data of the study was collected through a structured survey. Due to the usage of a structured questionnaire, this research needed also preliminary theoretical background. Therefore, the approach was more deductive than inductive. Ghauri and Grønhaug (2002, 48) state that when the research problem is badly understood, a (more or less) exploratory research design is adequate. Skill requirements differ in exploratory research. The main skill requirements in exploratory research are often the ability to observe, get information, and construct explanation, i.e. theorising. The questionnaire of this study was based on literature and earlier studies on the subject (see e.g. Carter & Narasimhan 1996a, Carter et al. 2007; Carr & Pearson 1999, 2002).

Subjectivist and objectivist dimensions of approaches, composed of four sets of assumptions, have dominated social sciences for more than two hundred years. The ontological and epistemological approaches of this study are closer to realism and positivism than nominalism or anti-positivism. This study represents sosiological positivism, which treats the world as the natural world, adopting "realistic" ontology, "positivist" epistemology, relatively "deterministic" views of human nature, and use of "nomothetic" methodologies. (Burrel & Morgan 1979, 2-4.) The position of this research is objectivist. Human nature is deterministic, but methodology is nomothetic: it is group-centred and uses standardised, controlled environmental contexts and quantitative methods.

The questionnaire survey represents a quite objective approach. In the paradigms of organisation studies as defined by Burrell and Morgan (1979), this study belongs to functionalist paradigm that is based on the assumption that a society has a concrete, real existence, and a systematic character. It tends to provide rational explanations of social affairs. Functionalists are individualists. That is, the properties of an aggregate are determined by the properties of its units. Ardalan (2003) has found that the functionalist paradigm has

become dominant in academic sociology and mainstream academic finance. The other paradigms, defined by Burrell and Morgan (1979), are radical humanist, radical structuralist, and interpretive. However, this study could also be considered to belong to the interpretive paradigm which emphasises the role of subjective perceptions and inter-subjective experiences of individuals.

4.1 Research data and methods of data collection

The survey was conducted in order to study purchasing and supply capabilities in Finnish medium-sized enterprises. The study was implemented with a questionnaire that included 89 questions. A conceptual model was constructed on the basis of a literature review. A survey instrument was then designed to validate the areas of the model: status and role, competencies and capabilities, financial importance, strategic supply, and measures and indicators.

The questionnaire was pre-tested by three enterprises and two academics. The tester firms located in Kuopio (retail, Province of Eastern Finland), in Suomussalmi (manufacturing, Province of Oulu) and in Valkeakoski (transportation, Province of Western Finland). On the grounds of the testers' feedback few questions were either reformed or removed.

Respondents were asked to rate the above-mentioned different characteristics, mainly using a 5-point Likert scale (from 1=completely disagree to 5=completely agree). The complete English questionnaire can be found in Appendix 1. Questionnaire's questions were originally in Finnish because of Finnish enterprises and respondents. Variables were analysed quantitatively with the Statistical Package for Social Sciences (SPSS) software. Also some factors were created in addition to original variables. The following variables can be considered as the key ones throughout the study:

1) Does your firm have a supply strategy?
2) Has your firm outsourced its activities?
3) Does your enterprise have e-procurement activity?

Data collection took place from December 2006 to January 2007. Statistics Finland made a random sample of 600 medium-sized enterprises from a database of 1377 medium-sized manufacturing, wholesale and retail trade, and transportation, storage and communication enterprises in Finland. These industries were seen as an important research area from the point of view of logistics (see e.g. Naula et al. 2006). Further, according to Statistics Finland (2007), all the before mentioned industries grew in 2006. At the same time it means that the meaning of PSM will likely increase. Also service enterprises were included because of the growing need for the study in that sector (see e.g. Paulraj et al. 2006).

Companies were classified as small and medium-sized enterprises (SMEs) in compliance with the official definition of the EU. The number of employees was taken into account as an absolute criterion. As the information of the firms' turnover was from the year 2005, there were some enterprises that did not fulfil the medium-sized criterion any more, and these cases were excluded from the final sample. However, there are few, if any, exceptions. The enterprises in the sample were selected randomly from the database, but the PSM persons within them were not, which is a possible source of selection bias. However, there were only a few persons from which to choose the respondents or no options at all. In some cases, the selected respondent had sent the request of answer to someone else.

The final questionnaire was administered to 536 medium-sized Finnish enterprises because there were 64 invalid firms in the sample. There were eleven state-owned or county-owned companies and eight Ålandic firms in the invalid enterprises. In this study, state-owned or county-owned companies were not considered as enterprises. Swedish is spoken as official language in Ålandic firms, thus Finnish questionnaire would not necessarily have been understood. Nine firms did not have Internet sites or e-mail addresses. Thus it was not possible to send them the questionnaire by e-mail. In addition, 36 out of 600 enterprises were no longer medium-sized due to organic growth or merges. These firms were rejected on the grounds of the firms' own announcement to the researcher.

This research uses data collected from purchasing executives at the Director/CEO level. They were chosen as respondents because of their insights into the development of the purchasing function. First e-mails were sent to the aforementioned sample of 536 professionals. A

reminder e-mail followed eight days later. Follow-up phone calls were made to all non-respondents, beginning 17 days after the first e-mails. A total of 94 responses were received of which none were invalid. The effective response rate was 17.5 percent (94/536). Considering the length of the survey, this response rate is quite satisfactory. Manufacturing enterprises were the most willing to reply the questionnaire.

4.2 Non-response analyses

The survey was conducted in December 2006 and in January 2007, and because of Christmas and New Year, the response rate (17.5 %) may have been lower than naturally. However, this kind of possibility was taken into account already in the beginning of research, but due to the researcher's schedules, it was not possible to conduct the survey any later. Data absence was quite big in certain research questions. The value of outsourced activities was a difficult question or, for some other reason, the respondents were not willing to answer that question: only 16 respondents answered the value concerning the year 2001 and 28 respondents the value concerning the year 2005. Furthermore, the questions concerning the supply values in 2001 (62 replies) and in 2005 (74 replies) got few answers.

The main problem with surveys is that low response rate causes bias in results. In other words, the response group is significantly different compared to the rest of the population. In order to test possible non-response bias, respondents and non-respondents were compared with respect to location and industry. The comparison was done with chi-square analysis. The following Table 2 shows the distribution of respondents and non-respondents in terms of location. There was no statistical difference between respondents and non-respondents ($t(3)=3.376$, $p=0.337$). Thus, the respondents reflect the population reliably with respect to location.

Table 2. Distribution of respondents and non-respondents in terms of location.

Location	Total	% of total	Respondents	% of total	Non-respondents	% of total
Province of Southern Finland	150	28	28	29.8	118	26.7
Province of Western Finland	225	41.9	44	46.8	183	41.4
Province of Eastern Finland	53	9.9	11	11.7	43	9.7
Province of Oulu	100	18.7	11	11.7	90	20.4
Province of Lapland	8	1.5	0	0	8	1.8
Total	536	100	94	100	442	100

29.8 % of respondent firms were situated in the Province of Southern Finland, 46.8 % in the Province of Western Finland, 11.7 % in the Province of Eastern Finland and 11.7 % in the Province of Oulu. There were no respondents in the Province of Lapland. Manufacturing industry was emphasised, but wholesale and retail trade, transportation and storage, and communication industries had smaller proportions, as shown in Table 3.

Table 3. Distribution of respondents and non-respondents in terms of industry.

Industry	Total	% of total	Respondents	% of total	Non-respondents	% of total
Manufacturing	372	69.4	82	87.2	290	65.6
Wholesale and retail trade	98	18.3	7	7.5	91	20.6
Transportation, storage	66	12.3	5	5.3	61	13.8
Total	536	100	94	100	442	100

There was statistical difference in terms of industry ($t(2)=14.412$, $p=0.001$). Thus, the respondents do not reflect the population reliably with respect to industry.

Non-response bias was not tested by comparing respondents according to the response date. Responses were gathered during a short time beginning in December 2006 and ending in the early days of January 2007, which was the reason why non-response bias was not tested by comparing the respondents according to the response date. The respondents and non-respondents had similar demographic backgrounds. Thus the answers should not be biased in this sense, either.

On the basis of the above results of non-response analysis, it is possible to say that the collected data illustrates the whole population representatively when considering of location, whereas the wholesale and retail trade and the transportation, storage, and communication industries are not successfully represented in this study. On the other hand, manufacturing industry is very well represented.

4.3 Methods of data analysis and interpretation

The survey data was analysed by using quantitative methods. The statistical methods, such as factor analysis, chi-square test (χ^2), independent samples t-test, and logistics regression used in this study are presented next.

Factor analysis was used to test unidimensionality of the items which means that they are strongly associated with each other and represent a single concept. The test of unidimensionality means that each summated scale consists of items loading highly on a single factor. Chi-square test (χ^2), independent samples t-test, and logistics regression were used to test the hypotheses of the study. The main principles of these methods are presented briefly in the following section. Chapter 5 presents the results of this study, and it is followed by the discussion of the overall results.

4.3.1 Factor analysis

The research problem is the starting point in factor analysis. Factor analysis is a linear model explaining the relationships between independent and dependent variables. Factor analysis is somewhat different from regression models. In factor analysis, the dependent variables are a set of empirically measured variables while independent variables are thought to be dimensions (factors) that are not known beforehand.

The main claim of factor analysis is that factors cause covariation among the observed variables. Thus, variables correlate with each other and define a factor that could be interpreted to be a certain construct. Factor analysis is an interdependence technique, whose

primary purpose is to define the underlying structure among the variables in the analysis (Hair et al. 2006, 104). Factor analysis can be utilised to examine the underlying patterns or relationships for a large number of variables and to determine whether the information can be condensed or summarised in a smaller set of factors or components. The quality and meaning of the derived factors reflect the conceptual underpinnings of the variables included in the analysis (Hair et al. 2006, 110).

The Bartlett test of sphericity, a statistical test for the presence of correlations among the variables, provides the statistical significance that the correlation matrix has significant correlations among at least some of the variables (Hair et al. 2006, 114). Hair et al. present one word of caution for the selection of the final set of factors: negative consequences arise from selecting either too many or too few factors to represent the data. If too few factors are used, then the correct structure is not revealed and important dimensions may be omitted. If too many factors are retained, interpretation becomes more difficult when the results are rotated. The authors recommend that researchers examine a number of different factor structures derived from several trial solutions so that the best representation of the data can be compared and contrasted. (Hair et al. 2006, 121.)

To define a construct, researchers use two alternative techniques: a) confirming technique and b) exploring technique. In confirming technique, the aim is to confirm that a certain set of variables defines a construct (a factor). In exploring technique, the aim is to explore how variables are related to factors. Confirming technique aims at establishing that a set of variables defines a certain factor, while exploring technique searches all the possible variables that define factors without a previous picture of the factors.

This study uses exploring technique to find out if those factors are found that were suggested in the theory. Thus, it is studied whether the variables in the questionnaire define factors that could be interpreted as those that are presented in the theory. It was studied whether the theoretical constructs were independent or unobservable (i.e. do not correlate too much with each other). In this type of use, factor analysis tests the reliability of a construct, and thus could be used together with Cronbach's alpha coefficient. This study uses both to assess reliability of constructs and to make sure that a certain set of variables defines a certain factor.

The eigenvalue of the factor shows how important an explanatory factor is in the model. The common rule is that factors having eigenvalues under 1.00 should not be used in a model because a smaller eigenvalue of a factor explains variation more weakly than a single variable. It is a rule of thumb used frequently as a means of making a preliminary examination of the factor matrix. In short, factor loadings ±.30 to ±.40 are minimally acceptable, values greater than ±.50 are generally considered necessary for practical significance. (Hair et al. 2006, 129.) To summarise the criteria for the significance of factor loadings, the following guidelines can now be stated: (1) the larger the sample size, the smaller the loading to be considered significant; (2) the larger the number of variables being analysed, the smaller the loading to be considered significant; (3) the larger the number of factors, the larger the size of the loading on later factors to be considered significant for interpretation. (Hair et al. 1998, 112.) Loadings that exceed +0.70 are considered indicative of a well-defined structure and are the goal of any factor analysis, although it may decrease to .60 in exploratory research (Hair et al. 2006). In this study, also Varimax rotation was used. It tries to produce factor loadings that load as high as possible on one factor and as low as possible on other factors. According to Hair et al. (2006), Varimax appears to give a clearer separation of the factors.

In the following analyses, the factors were used as Likert scale sum-variables. Multicollinearity is the issue that might cause problems in the use of sum-variables in further analyses. To maximise the prediction from a given number of independent variables, researcher should look for independent variables that have low multicollinearity with other independent variables but also have high correlations with the dependent variable (Hair et al. 2006, 186). Factor scores do not have this particular problem. Instead, the problems related to factor scores mean that different rotations of the factor solution may lead to different factor scores. In addition to that, the measurement model indicates that variables are functions of both common factors and measurement error terms, which causes factor scores to be affected by measurement errors. The use of sum-variables was chosen instead of factor scores because the above-mentioned problems of factor scores are quite severe and sum-variables are easier to construct and use.

4.3.2 Chi-square test (χ^2)

Chi-square test is the most basic statistical concept. In chi-square test, the method of data analysis is a contingency table which is used by comparing the actual cell frequencies to an expected cell frequency. The expected cell frequency is based on the marginal probabilities of its row and column (probability of a row and column among all rows and columns). (Hair et al. 2006, 630.)

In cross-tabulated data, each cell contains the values for a specific row/column combination. The chi-square procedure proceeds in four steps to calculate a chi-square value for each cell and then transform it into a measure of association. (Hair et al. 2006, 665.)

4.3.3 Independent samples t-test

T-test assesses the statistical significance of the difference between two sample means for a single dependent variable. The t-test is a special case of ANOVA for two groups or levels of a treatment variable.

The t-test is widely used because it works with small group sizes and is quite easy to apply and interpret. It does face a couple of limitations: it only accommodates two groups, and it can only assess one independent variable at a time. (Hair et al. 2006, 390.) However, analysis of variance can be used if researcher wants to remove either or both of the before mentioned restrictions.

4.3.4 Logistic regression analysis

Logistic regression is a "special form of regression in which the dependent variable is a nonmetric, dichotomous (binary) variable" (Hair et al. 2006, 272). Logistic regression analysis allows prediction of which of the two categories a respondent is likely to belong to. The analysis can be used to establish which variables are influential in predicting the correct category. Both discriminant analysis and logistic regression are the appropriate statistical

techniques when the dependent variable is a categorical (nominal or nonmetric) variable and the independent variables are metric variables. One difference between logistic regression and discriminant analysis is that logistic regression has the advantage of being less affected than discriminant analysis when the basic assumptions, particularly normality of the variables, are not met. Logistic regression can accommodate nonmetric variables through dummy variable coding. (Hair et al. 2006; also Metsämuuronen 2001.) However, logistic regression is limited to a prediction of a two-group dependent measure only.

Hair et al. (2006, 355) present two reasons for which logistic regression may be preferred instead of discriminant analysis:

- Discriminant analysis relies on strictly meeting the assumptions of multivariate normality and equal variance-covariance matrices across groups – assumptions that are not met in many situations. Logistic regression does not face these strict assumptions and is much more robust when these assumptions are not met, making its application appropriate in many situations.
- Even if the assumptions are met, many researchers prefer logistics regression because it is similar to multiple regressions. It has straightforward statistical tests, similar approaches to incorporating metric and nonmetric variables and nonlinear effects, and a wide range of diagnostics.

The authors see that for these before mentioned and more technical reasons, logistics regression is equivalent to two-group discriminant analysis and may be more suitable in many situations.

5 RESULTS

Most of the results based on the respondents' answers are reported in this chapter. Firstly, descriptive results are presented in several subsections. Hypotheses are tested and presented lastly.

5.1 Basic information

Case firms had on average 117 employees (Table 4). 87.2 % of enterprises represented manufacturing, 7.4 % were wholesale and retail trade, and 5.3 % represented transportation, storage and communication sector. Over half of the enterprises (54 %) had begun their business before the year 1975 and the eldest firms in the end of 19th century. Nearly half of the enterprises (46 %) had started their business during the past 30 years, and 13 % in the 21st century. 69 enterprises exported and 23 firms did not export at all. Two firms did not answer the question concerning export activities.

Over half of the respondent firms (53 %) did not have more than one hundred employees, and one fourth of the companies (26 %) announced to have 101–150 employees. 12 % of the enterprises employed over 200 persons. (Figure 9.)

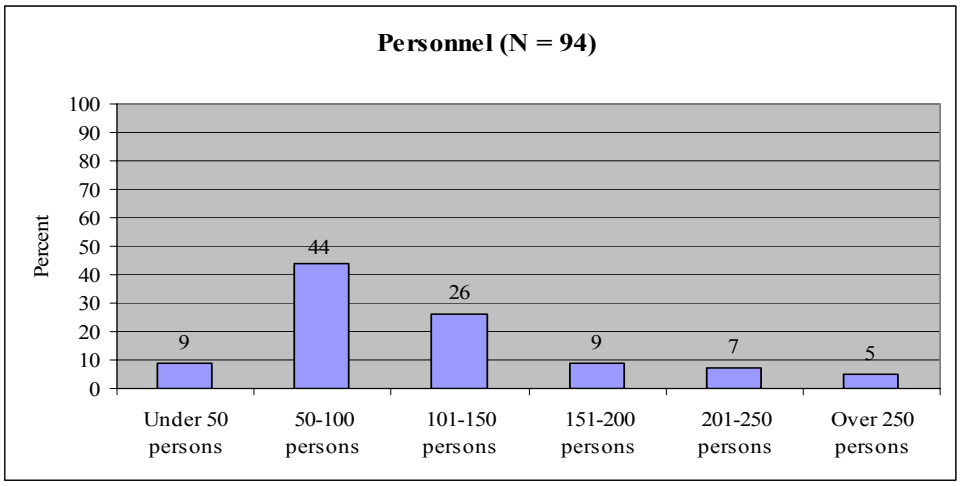

Figure 9. Employees in the respondent firms.

The annual turnover in 2005 was under 20 million euros in half of the firms (54 %). 84 % of the enterprises had increased their turnover in 2005 when compared to 2001. Therefore, these enterprises can be considered as growth firms. 23 % of them announced their turnover to be 20–29 million euros. Turnover was over 40 million euros in 12 % of the enterprises. 70 % of the firms had under 20 million euros turnover in 2001, and only three percent had it over 40 million euros. (Table 4.)

Table 4. Sample characteristics in 2005.

	Mean	Median
Turnover (1000 €)	20 389	17 400
Supply value (1000 €)	9 615	6 250
Number of employees	117	96

The respondent firms used 7.9 million euros for supplies on average in 2001 (Figure 10). The total supply value had increased 21 % from the year 2001 and was 9.6 million euros on average. The supply value (total purchasing expenditure) ranged from 200 000 euros to 50 million euros in 2001 and in 2005 the range was 200 000–55 000 000 euros. This total supply value of all the respondent firms increased significantly during five years to 711 million euros. The supply value was on average 45 % of the turnover, proportions ranged from seven

to even 85 %. Thus the range was very high. The smallest proportion was given by a firm that represented transportation, storage and communication sector, and a firm that represented manufacturing evaluated the proportion to be the highest one. Surprisingly, there were plenty of non-respondents in the question concerning total supply value. This can come from ignorance or unwillingness to answer the question. But then it could have been believed that entrepreneurs, directors and managers know the supply values of their enterprises. In over half of the enterprises at most 85 % of supplies are productive by nature.

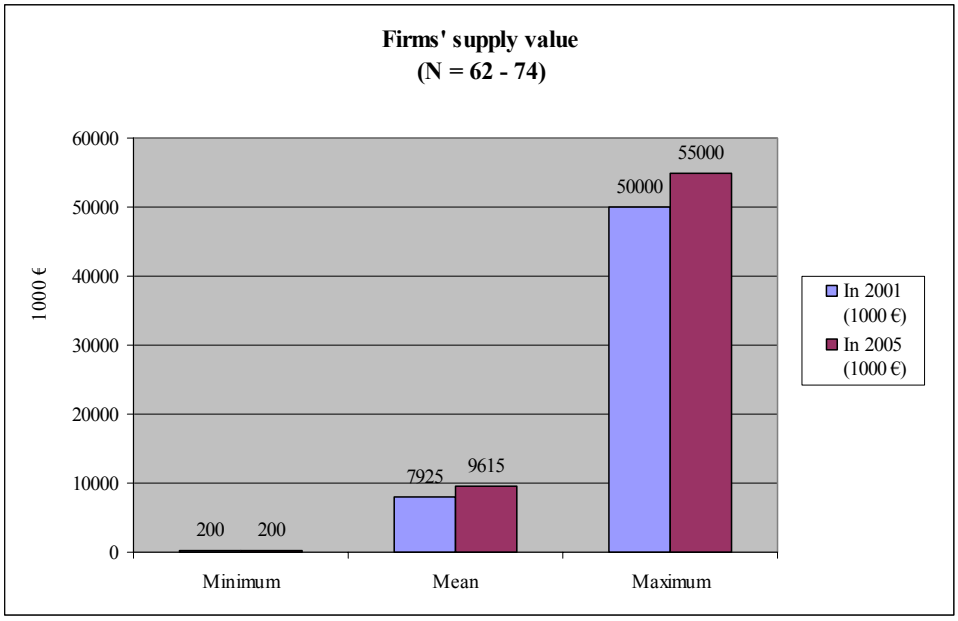

Figure 10. The supply value used in firms in 2001 and 2005.

The respondents evaluated the supply cost proportions of turnovers. The costs consist purchasing personnel's salaries, IT (e.g. instruments, programmes, investments), facility (floor area), and other costs (e.g. phone, business trips, consulting, investments). These costs do not include purchase prices of products and services. In most cases these costs were between 10–19 percent. To avoid the possible misunderstanding of the costs related to the supply cost proportions, the above mentioned examples were presented also in the questionnaire. (Figure 11.)

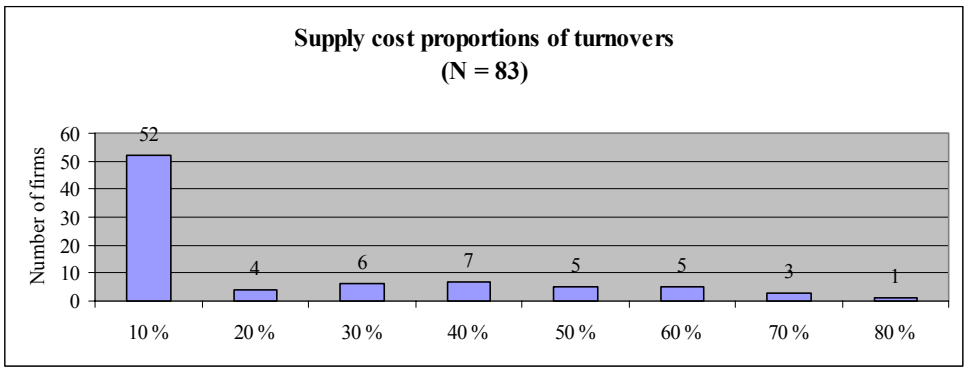

Figure 11. Supply cost proportions of turnovers.

The percentage increases when supply values are compared to their costs with turnover. In this study, total supply cost is defined as not only the price of the specific products bought, but also the costs of related activities like administration. In addition, it includes efforts to stimulate the creation of new opportunities in terms of product and process innovation. This total supply cost including supply value (price) was on average 54 % of a firm's turnover (evaluated with care) when minimum was ten percent and maximum 95 percent of a firm's turnover. The proportion is 60 % if it is evaluated with announced maximum supply costs. The results correspond with earlier studies (see e.g. Axelsson et al. 2005). This result strengthens the financial significance of purchasing and supply management.

Tables 5 and 6 present cross tabulations between supply strategy and operating result, and operating result relative to return on investment (ROI). Among the respondents, there were twelve unprofitable enterprises in 2005. About 19 % of the respondent firms had good operating result (over 10 %). (Table 5.) Interestingly, firms that have a supply strategy had greater amount of weaker operating results in proportion to the total amount of respondents than those enterprises that do not have a supply strategy.

Table 5. Crosstabulation between firms' supply strategy and profit.

		Supply strategy		Total
		Yes	No	(N)
Operating result 2005 (%)	Under 5	16	9	25
	5 - 10	14	13	27
	Over 10	5	7	12
Total (N)		35	29	64

ROI could be classified as good (over 15 %) in 44 % of respondent enterprises (Table 6). The researcher was interested in studying whether there were correlations between supply strategy, firms' operating result 2005, turnover 2005, or ROI. This was tested by Mann-Whitney U-test and in all cases $p > 0.05$. No correlations were found.

Table 6. Crosstabulation between firms' operating result and ROI.

		ROI			
		Under 9	9 - 14.9	Over 15	Total (N)
Operating result 2005 (%)	Under 5	33	5	6	44
	5 - 10	4	3	18	25
	Over 10	1	2	13	16
Total (N)		38	10	37	85

33 firms had global sourcing even though they did not have a supply strategy. On the other hand, 41 % of enterprises supplied at least 40 % of their materials domestically. Nearly half (49 %) of the enterprises conducted not more than one fifth of their supplies globally. However, global supply seems to be quite usual practice in middle-sized firms. In future, direct supplying from abroad will still increase when compared to the moment of response date. When examining means of global sourcing, direct global sourcing was the most common means. (Figure 12.) It is worth noting that over one third (34 %) of the responding firms acted in global markets.

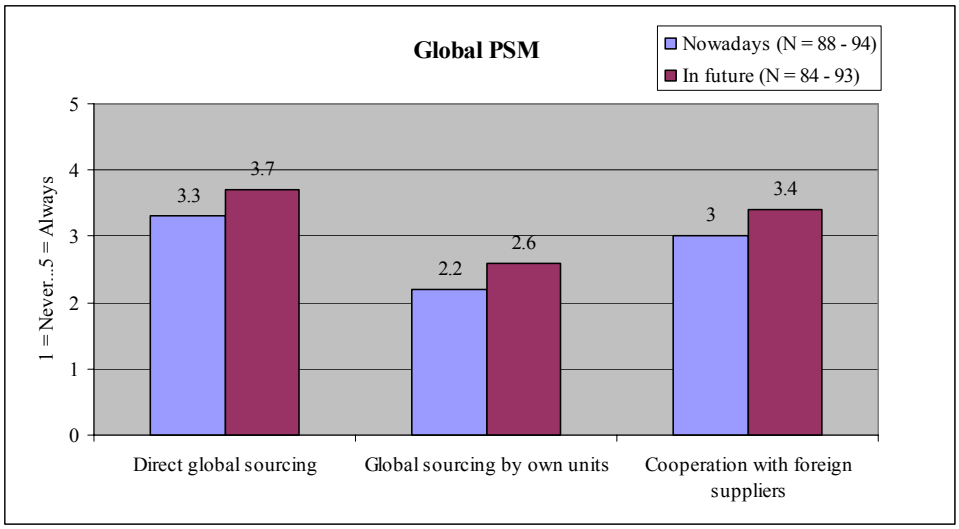

Figure 12. Means of global sourcing in future.

21 % of the enterprises had one full-time purchasing employee, 39 % had at least two full-time employees, and 16 % had not any full-time purchasing professional. Firms evaluated that number of both full-time and part-time purchasing employees will decrease in the near future. It was not asked for this research how the respondent enterprises are going to organise their purchasing and supply management activities if they decrease the amount of employees. It is possible that for example centralisation of PSM is believed to reduce the need of personnel.

The most appreciated elements in purchasing personnel were personal qualities (1.8), work experience (2.0), and business competence (2.5) in Likert-scale from 1 (the most important) to 5 (the least important). However, variance of these items are quite small being between 0.8 - 1.4. This result is not surprising, because it supports the other results of this research, e.g. about the appreciation of international competence.

According to respondents, the five most important development elements in purchasing and supply functions were supplier relationships, operational processes, time based management, competence, and strategic processes. These answers can be examined through the number of answers. All the before mentioned elements got at least 37 choices on a Likert scale from 1 to 5. When the question concerned the need for development one can come to the conclusion

that there is a demand for the improvement of these elements, and often the firms reach for e.g. effectiveness by developing their processes and competence.

5.1.1 Education and work experience

Nearly half of the respondents were managing directors or entrepreneurs, 43 % were directors, and ten percent represented buyers or some other personnel. The majority of respondents were male (91 %). 42 % of respondents had been working under five years, and 28 % had been working over eleven years in their current position.

Respondents considered technical (mean 4.0) and commercial (mean 3.9) education most important in purchasing and supply management. This is understandable because of the characteristics of PSM. According to the respondents, competence levels were the best in respect to those elements. The competence level of technical education was evaluated to be 3.7 and the commercial 3.4 on a scale from 1 to 5. The firms' biggest capability gap was in commercial and in law education when the importance and competence levels of education field were evaluated between themselves.

The most important educational backgrounds were a Bachelor's Degree from a University of Applied Sciences (mean 3.8) and supply management courses (mean 3.7). The least important educational backgrounds were licentiate and doctoral thesis at a university. Most often the respondent firms' employees had the educational background of a Matriculation Examination or college (mean 3.4). Thus, the educational background was not very high among respondents, and on the other hand, academic studies were not listed as important ones. This could mean that the respondents do not see that academic studies would give any added value for PSM tasks, or perhaps the reason is in the respondents own lower educational background. It can be asked what kind of value if any the respondent firms could achieve if they would have more highly educated employees.

Respondent enterprises considered common work (mean 4.1) and experience in supply management (mean 4.0) to be the most important work background. The best competence level of work background was in the amount of work experience (mean 4.3) and in the

experience of their own field of work (mean 3.9). Based on these evaluations, the biggest capability gap was in international issues. Interestingly, personnel had even more work experience than the respondents wished for them to have.

According to the results, young graduated people could have possibilities to get employed for purchasing and supply tasks in middle-sized firms. Again, commercial and law studies would be valuable. As said before, high education is not expected.

5.1.2 Business and international competence

Strategic management (mean 4.2), logistics, and supply chain management (means 4.1) were evaluated as the most important business competences. This is a bit conflicting result to prior ones, because academic studies were not highly appreciated, but again strategic views are expected. Competence in legal issues was evaluated to be the least important (2.5). The best competence was in supply chain management (mean 3.6), strategic management, logistics, and in production technology and inventory management (means 3.5). The weakest competence was estimated to be in legal issues (mean 2.1). According to the answers, the biggest business capability gap was in strategic management. This sounds alarming because good management of PSM presumes strategic perspective.

Language skills were considered as the most important international competence area (mean 4.2) whereas cultural knowledge was evaluated to be the least important (mean 3.3). Respondents evaluated that their competence level was best in language skills (mean 3.4) and the weakest in cultural knowledge and global logistics chain management (means 2.8). According to the answers, the biggest capability gap was in language skills. This result is quite contradictory because global sourcing and internationalisation require both good language skills and cultural knowledge. Furthermore, it is notable that respondent firms are going to increase global sourcing during the next five years.

5.1.3 Personal qualities

Purchasing personnel's competence is influenced by several personal qualities which are shown in Figure 13. Respondents were asked to evaluate the importance of purchasing professionals' personal qualities. The most important characteristic was the ability to make decisions (mean 4.4) and the least important was related to ethical issues (mean 3.5). Thus, ethical issues are not classified as important in spite of the fact that in public those kinds of things have got considerable attention lately. For example child labour and human rights are those kinds of matters that could be encountered in PSM.

Firms evaluated their employees' personal qualities at the response moment. Customer focus had the best rating (mean 3.8), which means that respondent firms have a clear customer orientation. Analytical thinking and computer literacy (means 3.4) and communication skills (mean 3.2) were weaker competences. Thus, the greatest capability gap was in communication skills and in the ability to see the big picture. In ethical issues, there was no competence gap (means 3.5).

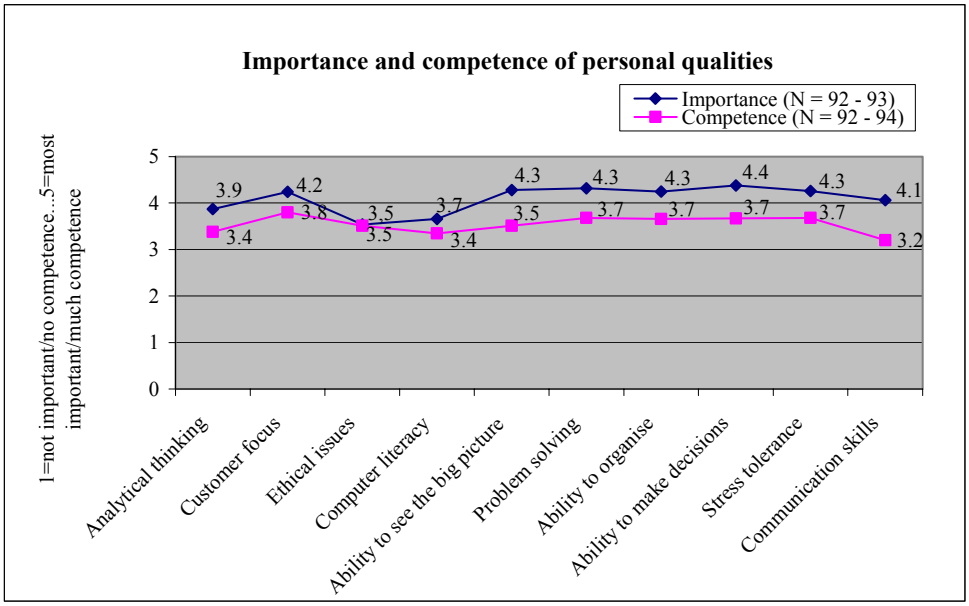

Figure 13. Importance and competence of personal qualities.

Personal qualities were the most important factors influencing the competence of purchasing personnel. Work experience was in the second place, and education field, educational background, and international competence were the least important factors. (Figure 14.) These results are congruent with the respondents' answers which did not highly appreciate education and cultural knowledge.

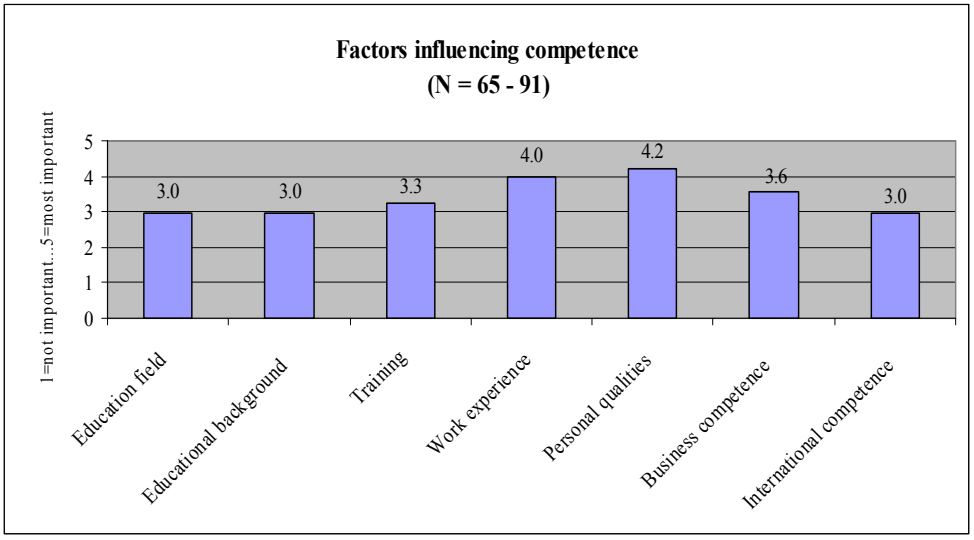

Figure 14. Factors influencing the competence of purchasing personnel.

Training of current purchasing personnel (mean 3.9), utilisation of the existing technology, and the rewarding of current purchasing personnel were the most important ways to develop purchasing personnel's competencies (means 3.4). It can be concluded that the employers want to give work to the current personnel by training and rewarding them. The ways of rewarding were not asked in the questionnaire. The results are shown in Figure 15.

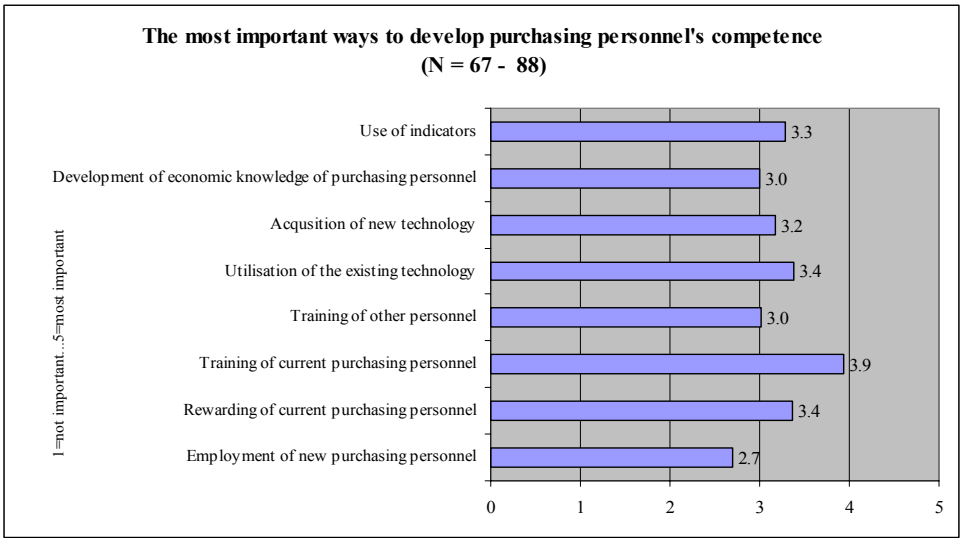

Figure 15. The most important ways to develop purchasing personnel's competencies.

The most considerable obstacles in the development of competence were hectic work (mean 3.6) and inadequate human resources (mean 3.3). This result was impending. Meanwhile, the possible bad relationships between employees were not a great obstacle to the development of competence (mean 1.8). Firms should think about their possibilities to employ new employees or to rearrange personnel's work tasks to ease their responsibilities. Busyness often creates faults that do not have any value adding elements in PSM either.

5.1.4 Supplier relationship management and development

Respondents were asked to evaluate the importance of supplier relationship management and development. Supplier selection and long-lasting relationships with key suppliers were mentioned as the most important elements. Thus, one of the key characteristics of PSM is fulfilled. Common IT systems and investments with suppliers were the least important. Lack of trust can be one reason for this. On the other hand, if buyers have long relationships with their suppliers, trust and confidence will usually emerge in due course. Knowledge can be the

catalyst needed to initiate trust and develop buyer-supplier relationship towards sustainable improvements across the value chain.

Respondents emphasised the importance of collaboration both with other activities of their own firm and suppliers. Also the total cost management of supplies and delivery control were significant elements, while respondents do not stress the composition of supply strategy and global sourcing, for instance. (Figure 16.)

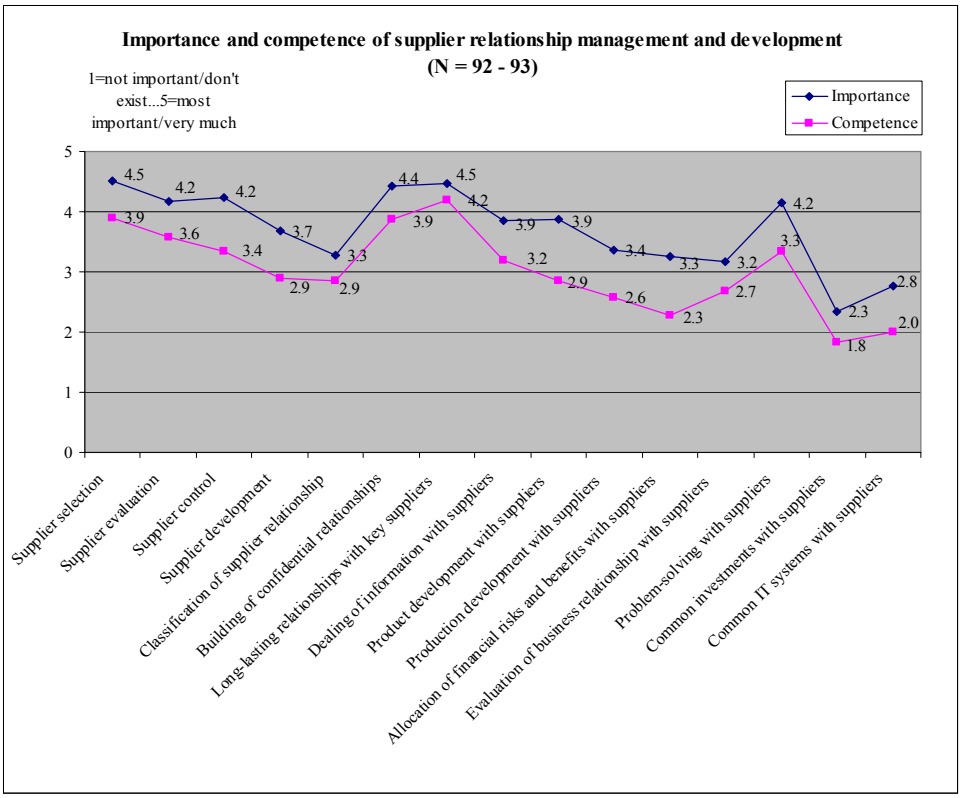

Figure 16. Importance and competence of supplier relationship management and its development.

Comparison of importance and competence revealed that the most important development factors were product development and the allocation of financial risks and benefits with suppliers. Also these things call for trust from all parties.

5.1.5 Supply strategy, the role and functions of PSM

The role and strategic planning of PSM was surveyed with the help of several statements. Firstly, firms were asked in the questionnaire whether or not they have a supply strategy. 54 % of enterprises had a supply strategy. As it was noted earlier in this study, supply strategy is a clear sign of the appreciation of purchasing and supply management. All enterprises responded to this question.

24 respondents reported that their firms' purchasing and supply management was decentralised. Furthermore, 27 percent of the respondents evaluated that their organisation's PSM will be centralised in five years. It is worth noting that there were 27 persons who did not answer the question that concerned the organisation of PSM in the future. This means that the non-respondent firms have not decided this issue at all, the respondent did not know the answer, or he/she did not like to answer the question. One fifth of the respondent firms had a separate purchasing department. The amount of purchasing departments will decrease in five years, and team work will gain more emphasis.

Firms were asked to inform what kind of material they supply in cooperation with other organisations. The most usual joint supplies were raw materials (mean 2.3) and components (mean 2.2). The most unusual joint supplies were non-productional supplies (mean 1.8), investments, and semi-finished products (mean 2.0). Thus, the generality of joint supplies did not significantly change depending on supplies. However, joint supplies were rare in number.

According to respondents, purchasing directors were those who mainly plan, manage, develop, evaluate, control, and report the activities that concern PSM. Buyers mainly take care of orders, payments, transport and forwarding activities, delivery controlling, and complaints. Furthermore, they were responsible for cooperation between purchasing, production, and warehousing. This result is similar to previous researches. 70 % of respondents reported that the person responsible for purchasing and supply management belongs to the management group of their enterprise. This can be evaluated to be a good proportion, and it verifies the strategic appreciation of PSM. Purchasing directors are principally responsible for cooperation with sales department. There were a few respondents

who answered that no one is in charge of personnel's management and training. 38 percent of respondents had at least two whole time purchasing employees. On the other hand, there were 15 firms without even one whole time purchasing employee. The respondents were asked the titles of employees in charge of PSM. 48 % of respondents announced that purchasing director is mainly in charge of supplies. 7 % informed that supply or purchasing manager is responsible for supplies in their enterprise, and buyer is mainly responsible for supplies in 13 % of the firms. The latter task does not usually belong to the responsibilities of buyers. Managing director or entrepreneur was in charge of supplies in 12 % of the responding enterprises. Production and product development departments were most often participated in supply decisions, whereas transport and law departments were infrequently used. (Figure 17.)

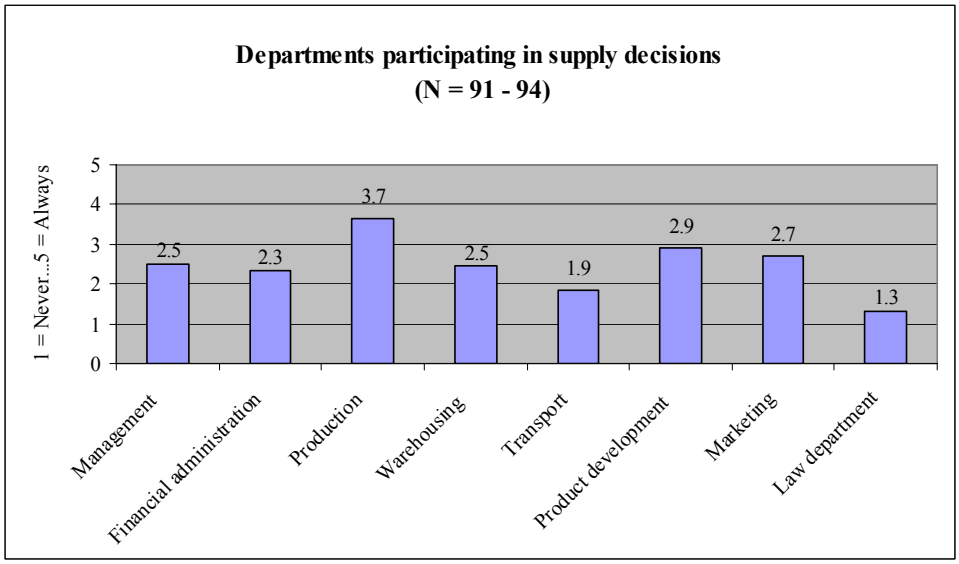

Figure 17. Departments participating in supply decisions.

Further, respondent firms were asked to evaluate the strategic and operative role of their PSM. When examining the firms' strategic nature in percentages, 18 % of respondents described it to be strategic and one third as proactive. Two thirds classified their PSM as a clearly operative function and one third as reactive by nature. (Figure 18.)

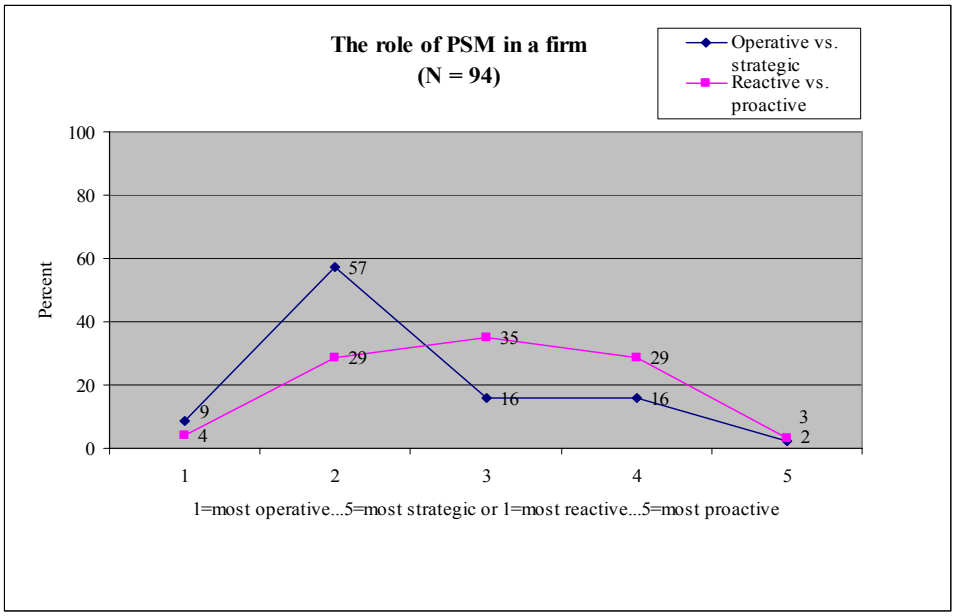

Figure 18. The role of purchasing and supply management in the enterprises.

Strategic and operative roles can be examined further. In cross tabulation, 48 firms can be classified as operative and reactive by their PSM. Further, there were 29 operative and proactive firms, 16 strategic and reactive, and only one respondent evaluated their own PSM to be both strategic and proactive. Questions concerning roles were asked using a 5-point Likert scale. For cross tabulation, all answers 1–2 and 3–5 were connected to their own classes. Thus, two classes were formed from all aspects. It can be noted that purchasing and supply management is still quite operative and reactive function by its nature in respondent firms. (Table 7.)

Table 7. Operative vs. strategic and reactive vs. proactive roles.

		1 Reactive	2 Proactive	Total (N)
Role	1 Operative	48	29	77
	2 Strategic	16	1	17
		64	30	94

There was a clear connection between the above-mentioned factors, which was indicated by Pearson chi-square test (t(10)=6.473, p=0.011).

84 % of respondents agreed that PSM can create added value for firms. 74 % of respondents informed that senior management recognises the strategic significance of PSM. 71 % of respondents found that PSM has a central role in the development of supply chain. These answers are a sign of strategic attitude towards PSM. Distribution of statements is presented below in Figure 19.

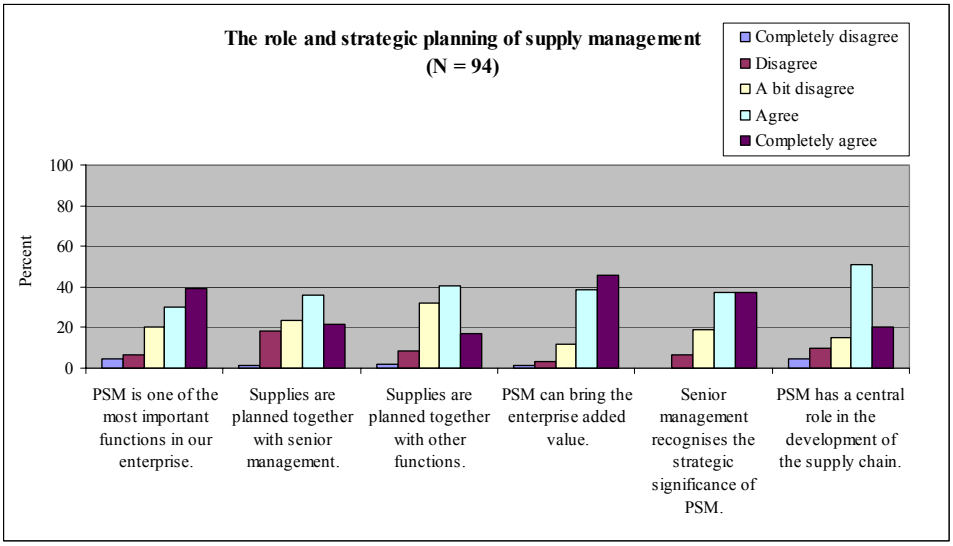

Figure 19. Distribution of the role and strategic planning of supply management.

Respondent firms had outsourced their business activities (26/91). However, only one firm had outsourced PSM, and two firms were going to do so in future. This amount is a remarkably smaller proportion than e.g. Arminas (2003) has noted. The most common outsourced activities were support activities like catering, cleaning, security, and maintenance (70 %) and training (43 %). According to the answers, outsourcing of both activities will continue in future, too. Furthermore, logistics, product design, production, and financial administration (11 %) will be outsourced more often in future. Outsourcing of marketing, on the other hand, will not be outsourced more often than nowadays. In future, two enterprises

are going to outsource their customer service. That can mean significant business possibilities for the entrepreneurs and firms of those sectors. It can be concluded that outsourcing will still increase, but this trend is not a startling one.

Respondents were asked about who participate in outsourcing's decision making. According to the respondents, in 94 % of the case firms, senior management was playing a part in outsourcing decisions. This is understandable because outsourcing is clearly a strategic decision for any firm. Product development and marketing departments were participating in outsourcing decisions less frequently. Interestingly, production personnel participated in decision making more frequently (51 %) than purchasing personnel (49 %). Nine percent of respondents informed that some other personnel group like the executives, government, quality management, financial administration, personnel administration, maintenance, or warehousing personnel take part in outsourcing. (Figure 20.)

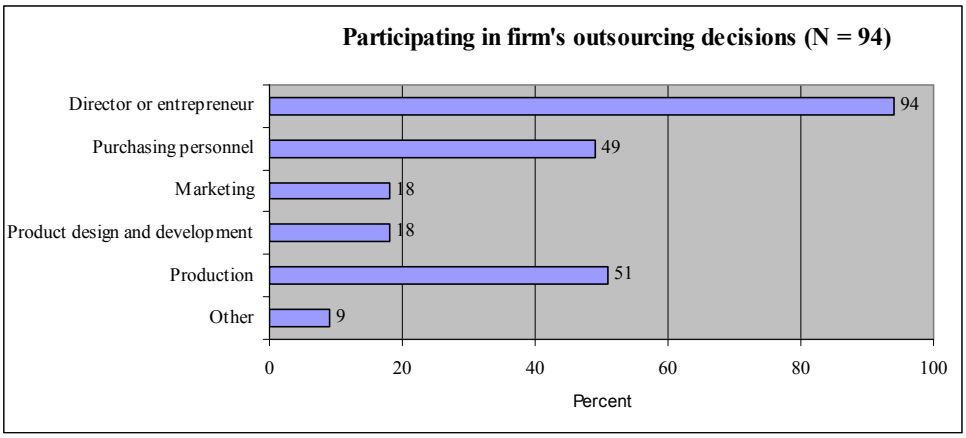

Figure 20. Participation in firm's outsourcing decisions.

When speaking of the importance of the development of the purchasing and supply management as a whole, the most important factors were supplier relationships (30 responses), operative (26), and strategic (25) activities. Information technology (IT) and research and development (R&D) that were related to PSM were seen as the least important elements. (Figure 21.) R&D got only two answers. It is possible that the respondent

enterprises do not see what kind of possibilities research and development of products and processes could emerge for their firms.

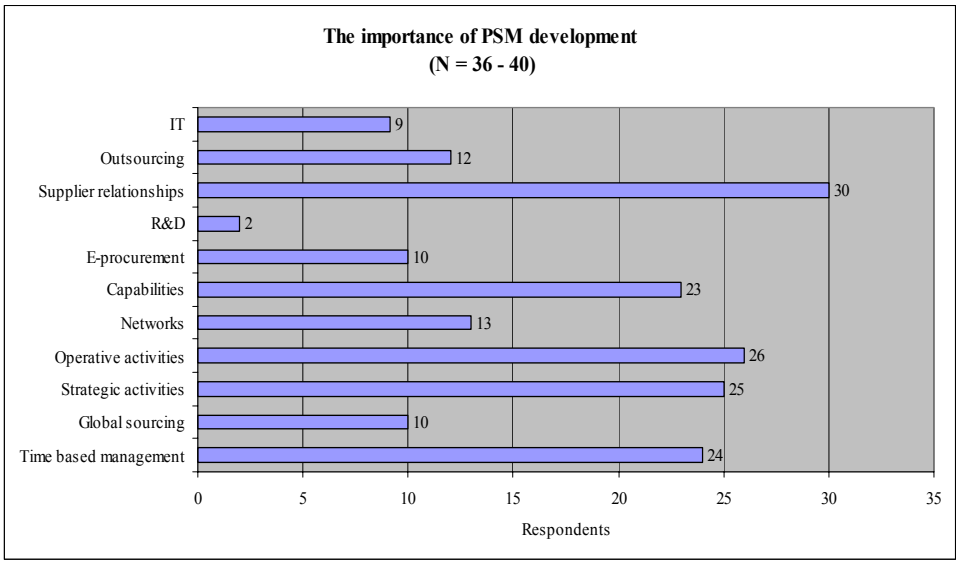

Figure 21. The importance of PSM development factors.

Respondents evaluated the importance of PSM's role. Functions were divided into four categories: firms' internal cooperation, strategic and operative capabilities in purchasing and supply management, and purchasing personnel's competence management. 25 respondents agreed that "Sales and purchasing personnel constantly cooperate with each other." while 39 respondents disagreed. 55 respondents considered that "There are often or always shortage in production because of purchasing's ineffectiveness". 39 persons responded as follows: "Purchasing gets information in time from the firm's other functions". These results point out that there is a need to improve cooperation, effectiveness and communication in respondent firms. These kinds of improvements could be implemented by frequent and intensive communication between firms' departments.

Questionnaire included also questions about the proportion of supplies acquired via procurement department when compared to all supplies done in the firm. 27 respondents informed that supplies acquired via purchasing department consist at least 60 % of all

supplies. Over half of the enterprises (54 respondents) made at least 40 % of supplies via purchasing department. Purchasing department took care of at most 20 % of the whole supplies in 12 enterprises. According to these results there is still a lot of purchasing that is conducted past procurement department. The researcher considers it as important that the needed supplies are purchased via procurement personnel. However, the above described results do not support the reliability of indicators with which the PSM is measured. If there are supplies that are purchased past procurement personnel there is a risk that these purchases are not taken into account when the amounts, pieces, or costs of purchased materials and products are calculated. If performance is measured, it should involve all the supplies to enable reliable indicators and measuring results. Naturally there is a possibility that also the supplies conducted past procurement department can be measured, but this demands that all the persons who purchase know the importance of measurement. Further, systems used in an enterprise should be the same because that is how the reliability of measurement is fostered.

Nearly all firms allowed their purchasing personnel to access production and inventory knowledge base (94 %) and product information (93 %). Every tenth respondent firm did not give their purchasing personnel access to sales information. However, most of the enterprises (72 %) gave their purchasing professionals access to sales information. Financial information was allowed for 36 % of respondent firms' purchasing personnel, whereas about one fourth (26 %) of personnel could not follow them. The reason for non-access was not asked in the questionnaire. Anyway, access to sales and financial information could improve the personnel's ability to act proactively.

When examining the importance and competence of strategic PSM, cooperation with suppliers (mean 4.4) and total cost management (4.3) were seen as the most important elements. Global sourcing (3.2) and environmental issues (3.1) were the least important ones. Best competences were in supplier cooperation (3.9) and total cost management (3.7). Networking competence was the weakest factor (2.7). According to the answers, firms' biggest capability gap was in networking. (Figure 22) Interestingly, networking has been one of the central subjects in publicity over the years, and much training has been offered in networking, but still there is a lack of competence in it in middle-sized enterprises. However, it is important to note that the concept of networking competence can be understood quite

differently depending on a respondent; one of respondents embraces it to be cooperation, an other believes it to be partnership.

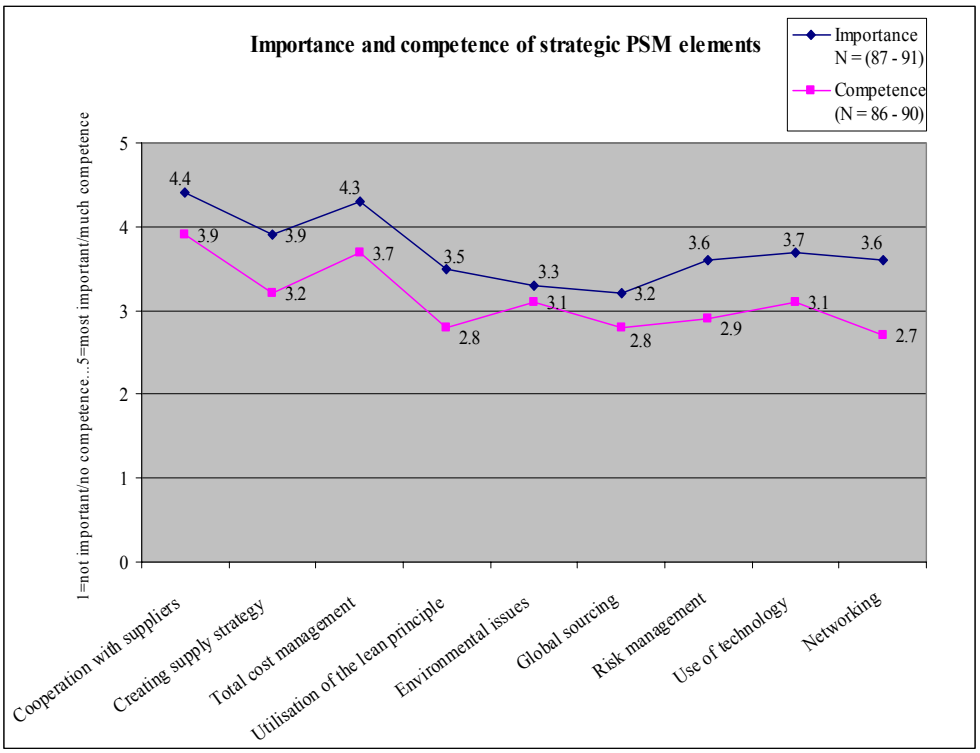

Figure 22. Importance and competence of strategic PSM elements.

When examining operative functions, evaluation of material needs, controlling supplies, and contract negotiations were seen as the most important elements. Standardisation and document handling were the least important. However, efficiency could be improved also through them.

Furthermore, respondents evaluated the competence level of operative functions at response date. According to the answers, delivery control, contract negotiations, and evaluation of material needs (means 4.1) were the best competence areas and standardisation the weakest (3.4) one. When comparing importance and competence to each other, the biggest gap was

found to be in the shortening of lead-times. (Figure 23.) The shortening of lead-times has been one of the main objects in logistics for decades, but according to the respondents there is still much to do. But again, there can be too highly defined objectives for lead-times.

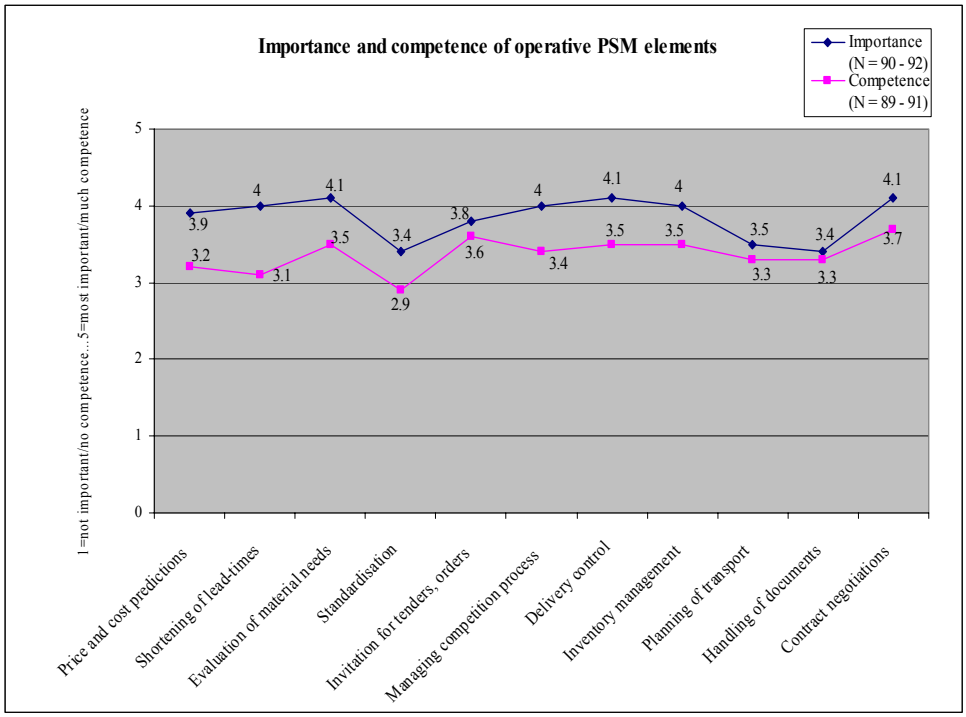

Figure 23. Importance and competence of operative PSM elements.

Training (mean 3.7) was seen as more important than rewarding (mean 3.5) in regard to competence management. Training got the mean 2.9 and rewarding 2.5 in the evaluation of the current level in respondent organisation. One fifth of the firms responded that there is no rewarding practice in their firm at all. However, it is worth of consideration that rewarding practice could be implemented in medium-sized enterprises. This kind of phenomenon could improve the performance of purchasing and supply management.

5.1.6 Appreciation of PSM

Respondents were asked to evaluate appreciation of PSM capabilities in their enterprise. Appreciation was characterised by the selection of personnel, competence measurement, capability risks, and the meaning of PSM.

Firstly, respondents were asked about the selection criterion of PSM personnel. When measured with means, personal qualities (mean 3.6) and work experience (mean 3.5) were the most important selection criterion in the selection of PSM personnel. The least important factor was international competence (mean 2.1). This result supports the answers given to the questions concerning e.g. the need of cultural knowledge and global sourcing. 45 % of respondents informed that PSM personnel were employed according to strictly defined criteria. 55 % of respondents informed it to be on the contrary. In most respondent enterprises, competence of PSM personnel was supervised during employment. As for the evaluation of risks related to PSM competence, 42 % of respondents saw that competence will be lost if the key employee leaves the company (Figure 24). Lack of competence was not seen as a risk factor because only 17 % agreed on the argument that it is a risk. Thus employees have been easy to get or otherwise they have not been recruited at all.

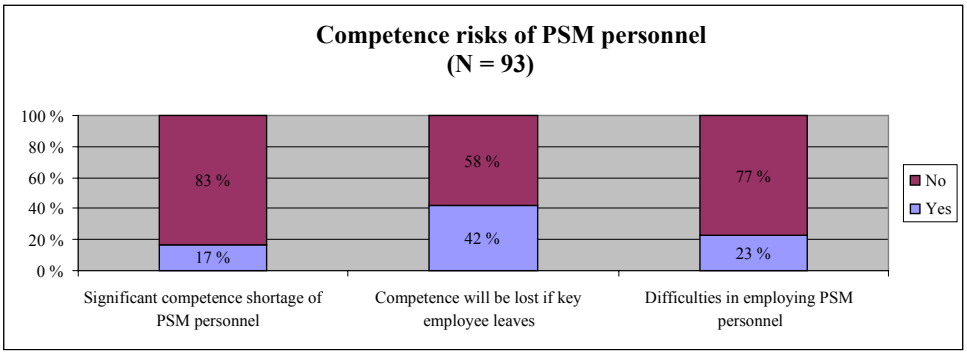

Figure 24. Competence risks of PSM personnel.

Almost all respondents agreed with the argument that supply management plays a part in their business success. 58 % of respondents considered their own PSM capability to be better than

in other firms of the same field. This amount decreases when a firm evaluates its own competence to other firms in Finland: 41 % of enterprises evaluated purchasing and supply capability to be better than others. (Figure 25.) On this account the researcher believes that there could be place for benchmarking. Further, it could be taken into consideration where the respondents ground their evaluations; are they grounded on e.g. feeling or benchmarking. Furthermore, firms do have a conception of their own capabilities, but not of the other firms. Finally, firms can also be inclined to consider their own capabilities better than the others'.

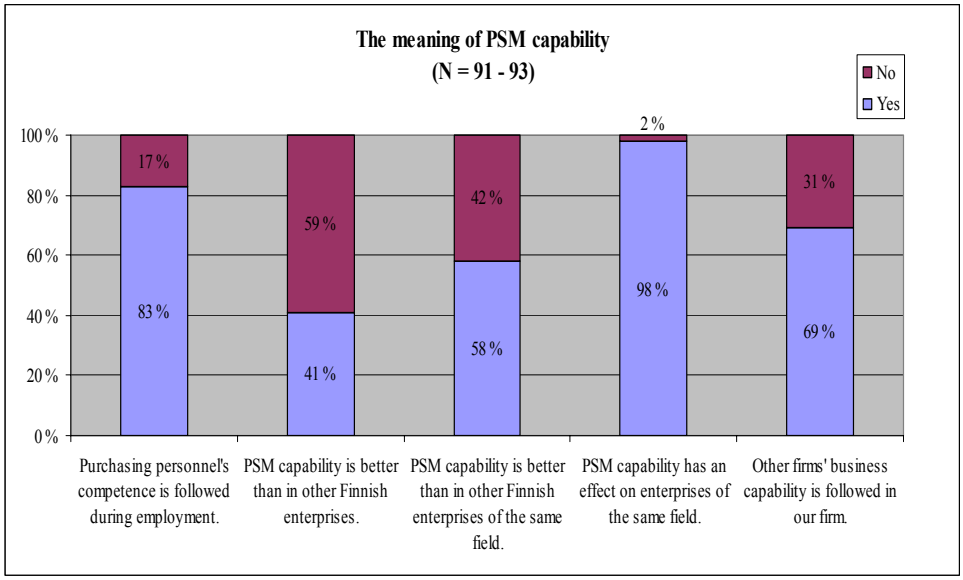

Figure 25. The meaning of PSM capability for the firms.

In respondents' opinions, the purchasing and supply capability can be developed best by training, technology, and rewarding. The biggest barriers to the progress of development were hectic work, inadequate personnel resources, and employees' beliefs or sets of values. The researcher recommends firms for a careful investigation in order to clarify what kinds of tasks cause busyness in personnel's every day work. Namely hectic work often causes errors and, on the other hand, there is no organisation that could prosper without development.

5.1.7 Financial importance

The questionnaire studied also the financial importance and measurement of PSM. According to the respondents, working capital (mean 4.04), gross margin (mean 4.08), and return on investment (3.99) had the strongest effects on supply management.

Respondents were asked what key indicators they control. Nearly all respondent firms (97 %) controlled gross margin and working capital. Also liquidity and self-sufficiency were often followed (94 %), such as ROI (90 %) and payment time (88 %). According to respondents' evaluations, most key indicators will be controlled more in future than nowadays. Naturally, this is a good trend if it does not mean that indicators are mobilised more than would be reasonable. Further, it is crucial to analyse indicators and plan future operations.

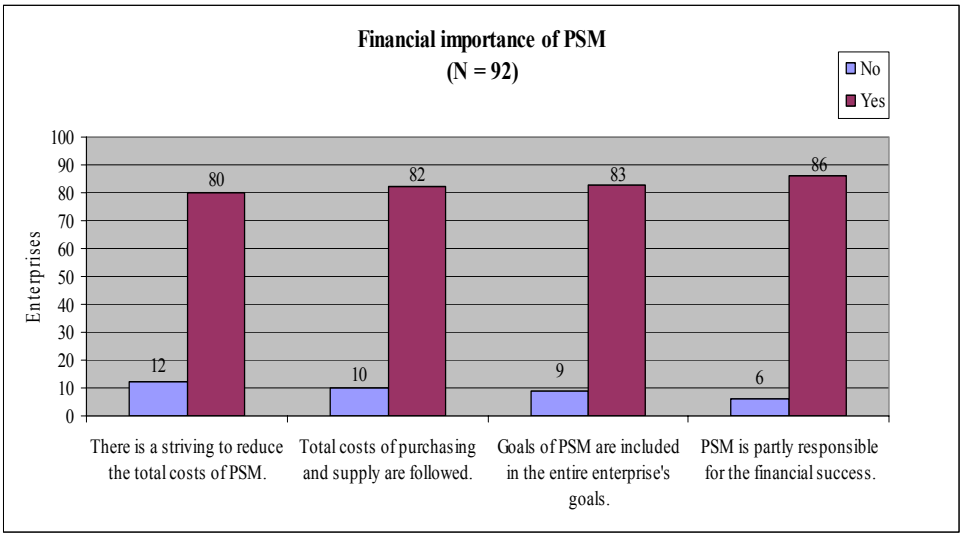

Figure 26. Financial importance of purchasing and supply management.

Respondents were quite unanimous in their answers: according to 80–83 respondents, the total costs of supplies are controlled, their firms try to reduce costs, and the goals of PSM are included in the goals of the entire enterprise. 86 respondents agreed on the statement that supply management is responsible for the business success. (Figure 26.) This is contradictory

to those answers in which it was stated that the person responsible for purchasing and supply management does not belong to the management group of their enterprise. It can be hard to be responsible for something if there is no way to influence decisions. Supply management was managed accountably in 64 firms. In most enterprises (63 %) procurement was budgeted yearly. Quarterly budgeting was used in 17 % of the responded enterprises.

5.1.8 Measurement

Purchasing and supply management performance was considered as interaction between procurement of raw materials, products and services, and business.

Respondents were asked about the indicators used in PSM performance. Quality (mean 4.4), price (mean 4.3), and cost efficiency (4.3) were emphasised the most. Tied equity (mean 3.5) and capital turnover (mean 3.3) got the least attention. (Figure 27.) Many indicators were nevertheless used often.

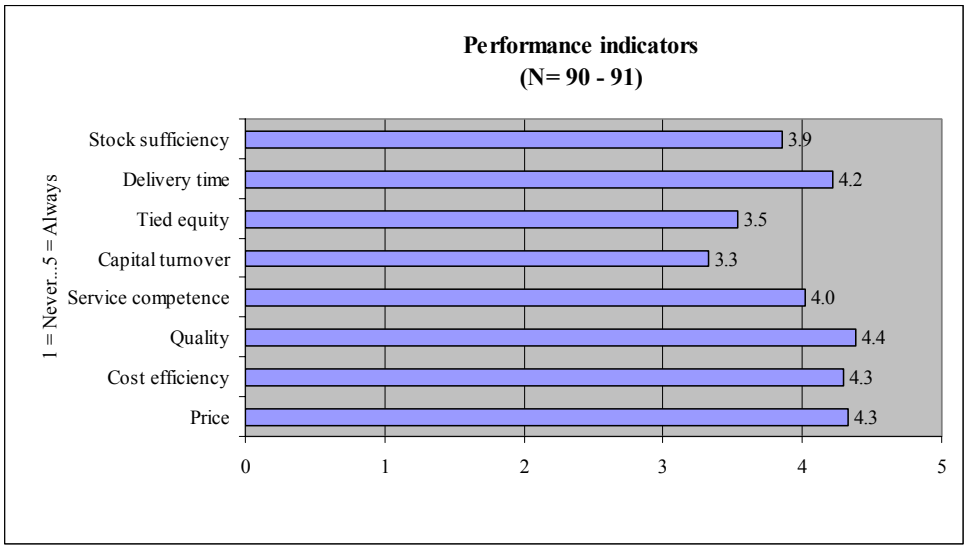

Figure 27. Supply management performance indicators.

Respondents were asked to evaluate purchasing and supply management performance by answering different statements. The statement "Supply costs are followed" (mean 4.0) was given the highest mean. The need for more frequent communication was revealed also in this result when e.g. sales and purchasing do not interact very often. (Figure 28.)

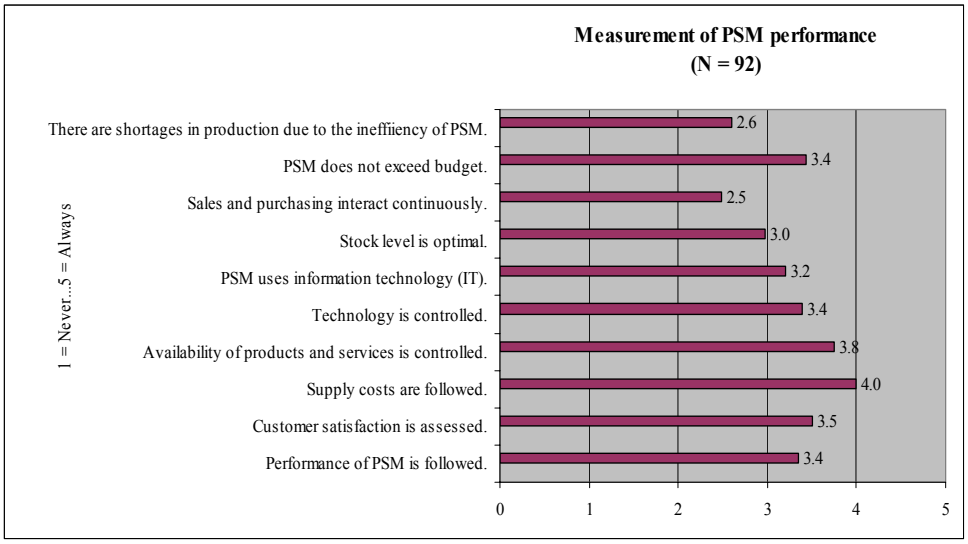

Figure 28. The measurement of purchasing and supply management performance.

57 % of the respondents were going to increase the use of PSM indicators in future. Only six percent of respondents were planning to decrease the usage of these indicators. Perhaps they already have several indicators in use or they are of the opinion that the less indicators the better. In most enterprises (84 %) supply management performance will be measured better in future.

5.1.9 Planning and strategic tools of supply management

The performances of single suppliers were evaluated in supplier evaluation, as well as their influence on business. Both selection and performance evaluation criteria were examined in supplier evaluation.

Nearly 50 % of respondents had over 70 suppliers. Only 2 % had less than ten suppliers. (Figure 29.) As for the question about key suppliers, fifteen enterprises had under five, 65 firms had 5–14 and eleven firms had 15 or more key suppliers. It is obvious that the respondent firms can have divergent conceptions of who they consider as their key suppliers. Again, the "right" amount of suppliers largely depends on industry.

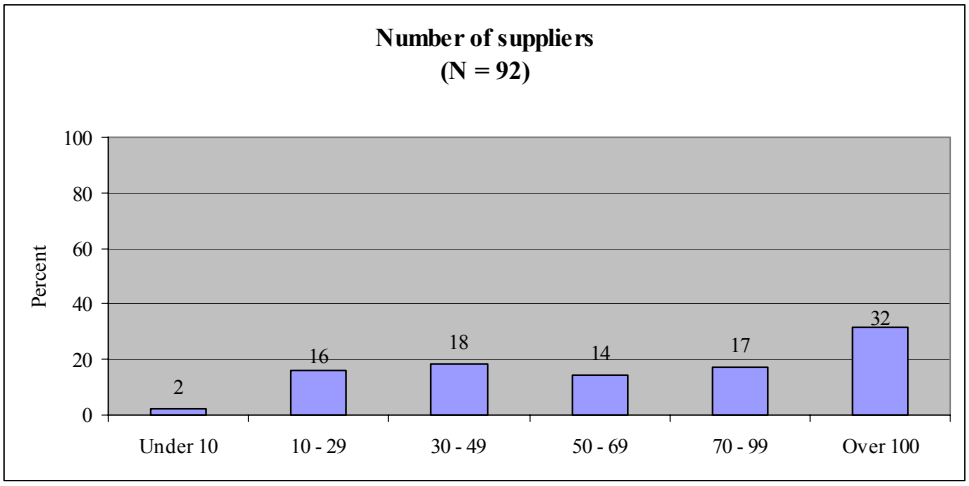

Figure 29. Number of suppliers in respondent firms.

In buyer-supplier relationship, respondents emphasised the importance of supplier selection and long-running relations to key suppliers. This is a good result, if a firm wants to have strategic relationships with suppliers. It is vital to select supplier delicately in order to create rewarding and long-lasting relationship between buyer and supplier. Therefore, supplier selection is a fundamental stage of PSM process.

The representatives of enterprises were asked to inform their supplier selection criteria. Respondents agreed that delivery reliability (mean 4.5), quality (4.4), and price (4.3) were essential criteria in supplier selection. The internationality of a supplier (mean 2.5) was the least important selection criterion. (Figure 30.) However, an international supplier could usually offer major connections with other actors at global market.

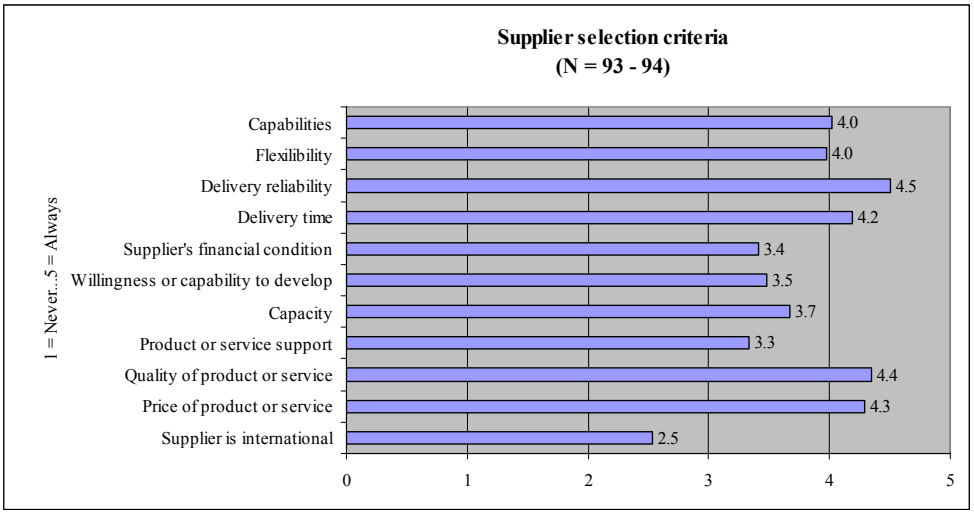

Figure 30. Supplier selection criteria.

Quality system (mean 3.2) and cost analysis (mean 3.1) were the methods that were used most often in the evaluation of suppliers' performance. Target cost calculation (mean 2.5) and value analysis (mean 2.3), on the other hand, were the least used methods. When the question is about the qualities emphasised in the evaluation of supplier's performance, delivery reliability (mean 4.6) and delivery accuracy (mean 4.5) were the ones used most often.

Senior management can lean on planning and strategic tools of supply management and in assistance of those tools to make decisions related to the plans and strategic decisions of future operations. The respondents were asked to evaluate what kind of planning and strategic tools they use. The most common methods were the classification of suppliers (mean 3.3) and benchmarking (2.7). A bit surprisingly, the most unusual method was purchasing portfolio analysis (mean 2.0). (Figure 31.) Gelderman and van Weele found (2005) that portfolio usage is definitely a sign of purchasing sophistication. From this point of view purchasing of the respondent enterprises is not sophisticated despite the fact that portfolio usage is certainly not the only sign that indicates purchasing maturity.

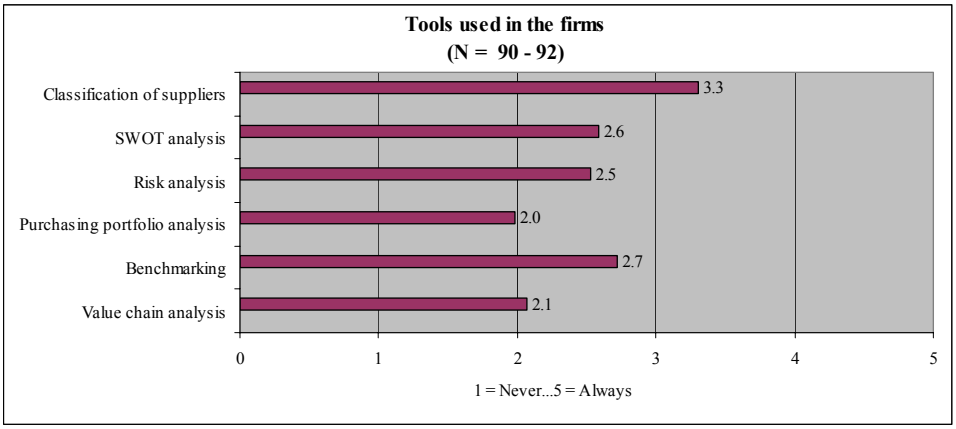

Figure 31. The planning and strategic tools used in the firms.

Furthermore, respondents were asked about what kind of inventory management systems enterprises use. According to the replies, the most common methods were the order lot size method (61 %) and the safety stock (47 %). Time series analysis was the least popular method (3 %). 15 % of respondents informed that they do not use any single inventory management systems. Respondents reported about the Vendor Managed Inventory (VMI) method, Kanban, demand predictions, and firms' own production management systems in addition to the alternatives mentioned in the questionnaire. (Figure 32.) However, the usage of these systems is rare in number.

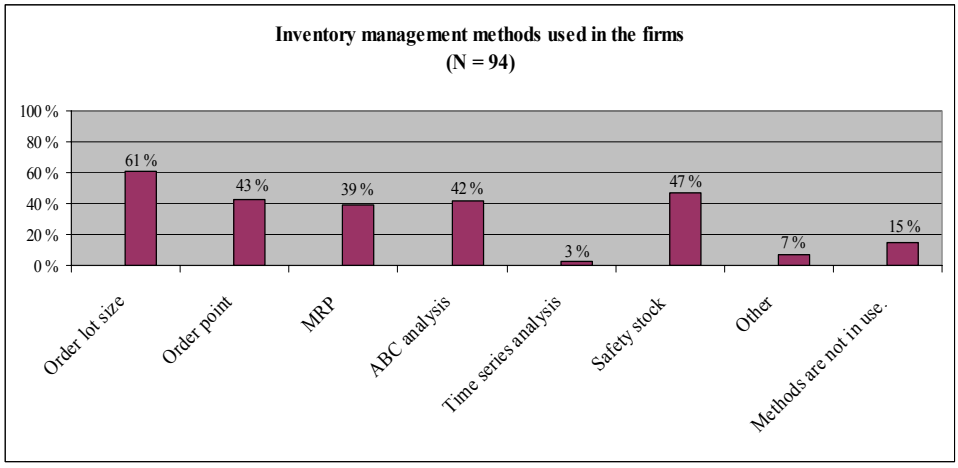

Figure 32. Inventory management methods used in the respondent enterprises.

Nearly 60 percent of the firms did e-procurement. Respondents were asked to evaluate the changes that had resulted from e-procurement. Respondents strongly agreed that as a consequence of e-procurement, business quality had improved (42 respondents) and internal process management had become more effective (42 respondents). Collaboration with other enterprises had also increased. This can be seen as a consequence of common goals related to e-procurement. On the other hand, planning and implementation of e-procurement certainly call for negotiations between business partners. Costs had significantly reduced in twelve firms. Distribution of statements can be seen in Figure 33.

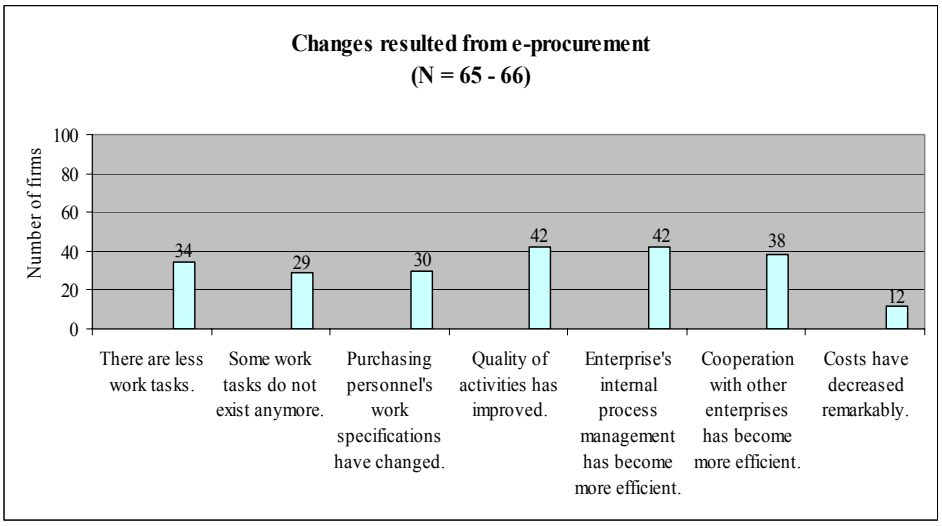

Figure 33. Changes resulted from e-procurement.

Figure 34 views respondent firms' willingness to develop e-procurement systems. They are going to be developed most commonly in order processes (56 firms), ERP systems (47 firms), and delivery control (41 firms) in five years.

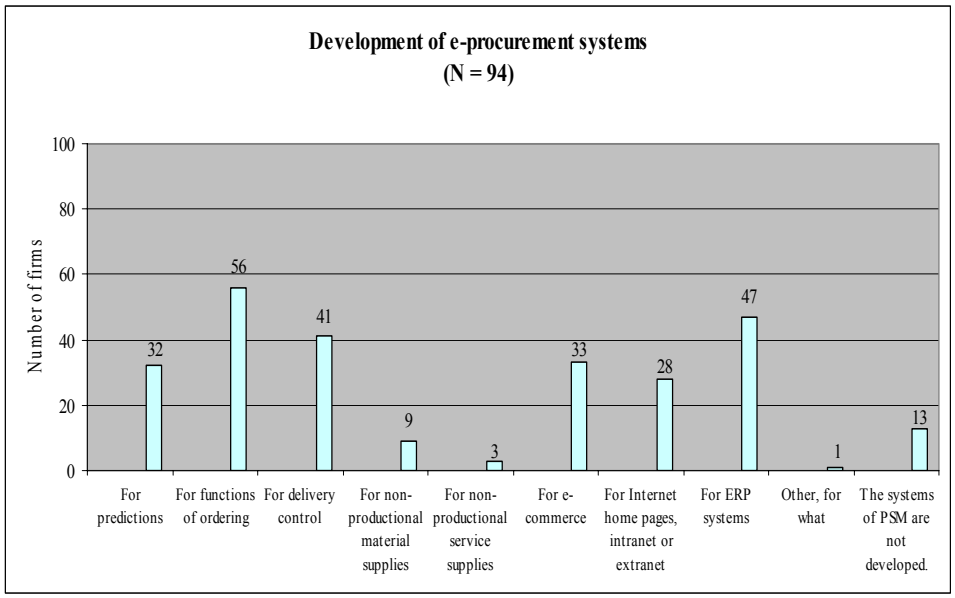

Figure 34. Development of e-procurement systems in respondent enterprises.

As can be seen from the figure above, the development of e-procurement systems was rare for non-productive materials and service supplies. Only 12 firms will develop them. E-procurement related to service supplies is considered to be more difficult because of the service's nature. Service is immaterial and thus it is a great challenge to put those kind of supplies on the Internet. Thirteen enterprises are not going to develop their e-procurement systems at all.

5.2 Factor analysis and hypotheses

Due to supply strategies' potential impact on different aspects of purchasing and supply management, the following hypotheses were tested:

H1. The existence of a supply strategy can be predicted.
H2: Firms that have a supply strategy take advantage of e-procurement more often.
H3: Firms that have outsourced their activities take advantage of e-procurement more often.

H4: Firms that have a supply strategy take advantage of outsourcing more often.
H5: Firms that have a supply strategy consider financial issues more important.
H6: Firms that have a supply strategy consider competence in logistics more important.

Implemented factor analysis will be presented next and it is followed by the testing of hypotheses.

5.2.1 Factor analysis

All items used in the factor analysis were measured on a 5-point Likert scale. The construction of quantitative tests was created by the researcher based on the literature about purchasing and supply management. At first, the researcher classified the variables got from the questionnaire (Appendix 1) by forming sum variables. There were 46 sum variables (Appendix 2), and the factors were formed after that in the following manner. Sum variables that were included in them are presented in Table 8.

This study used Varimax-rotated factor loadings, and they are shown in Appendix 3. The factor loadings were above the cut-off point of 0.40 (Hair et al., 2006). Majority of variables showed strong loading on only one of the components. The loadings below 0.3 were considered as insignificant (Hair et al., 1998), and they are not shown in Appendix 2.

Maximum likelihood method was used to purify the scales. The maximum likelihood method was used because in this method, errors between empirical data and factor model are estimated by chi square test. If the difference is not statistically significant, the elementary assumption of the similarity of data and model will remain. Thus, the idea is to find a factor model which has the smallest amount of factors, but which also fills the statistical demand for the compatibility of data and model. For the purpose of this objective, maximum likelihood method offers a Goodness-of-Fit test, in which the value should be more than five. (Yli-Luoma 2002) The tests implemented in this research confirmed those assumptions.

Reliability was operationalised using internal consistency method, which is estimated by using Cronbach's α (Nunnally, 1978). In these tests, all scales ranged from 0.82 to 0.90 for

Cronbach's alpha, thus providing evidence of reliability. The confidence interval was 95 %. The results are thoroughly handled in Discussion and conclusions.

In factor analysis, supplier relationships were measured using 26 items. Cronbach's alpha was 0.87. The Kaiser-Meyer-Olkin value exceeded 0.6 and was 0.745, and Bartlett's Test of Sphericity supported the factorability of the correlation matrix when it reached statistical significance (sig. = 0.000). Seven factors with eigenvalues greater than one emerged, explaining in total 69 % of the variance. Supplier selection (Fac1), Supplier evaluation (Fac2) and Attitudes towards suppliers (Fac3) used in Hypothesis 1 were among these seven factors.

In the factor analysis, the importance of competence was measured using 23 items. Cronbach's alpha was 0.90. The Kaiser-Meyer-Olkin value was 0.817, and Bartlett's Test of Sphericity supported the factorability of the correlation matrix when it reached statistical significance (sig. = 0.000). Five factors with eigenvalues greater than one emerged, explaining in total 65 % of the total variance. Importance of competence in logistics (Fac4) used in Hypotheses 1 and Hypothesis 6 was among these factors.

The importance of education field was measured using 17 items. Cronbach's alpha was 0.82. The Kaiser-Meyer-Olkin value was 0.687 and Bartlett's Test of Sphericity supported the factorability of the correlation matrix by reaching statistical significance (sig. = 0.000). The analysis revealed the presence of six factors with eigenvalues that exceeded one, explaining 75 % of total variance. Importance of education field (Fac5) and Managing global logistics (Fac6) used in Hypothesis 1 were among these factors.

Financial importance was measured using 12 items. Cronbach's alpha was 0.87. The Kaiser-Meyer-Olkin value was 0.798 and Bartlett's Test of Sphericity was significance (sig. = 0.000). The analysis revealed the presence of three factors with eigenvalues that exceeded one, explaining 65 % of total variance. PSM's effect on financial indicators factor (Fac7) and Measurement of performance factor (Fac8) were among these factors. Fac7 and Fac8 were used in Hypothesis 5. Furthermore, Meaning of capital factor (Fac9) was conducted. However, this factor was extracted because of its low t-value and significance. Thus, the final

financial measurement model was created from the financial indicators and measurement of performance. Table 8 highlights the factors and items that are included in those factors.

Table 8. The items included in the factors.

Supplier selection (Fac1)	**Supplier evaluation (Fac2)**	**Attitudes towards suppliers (Fac3)**
Supplier selection is based on	Evaluation of supplier performance is based on	Information is shared with suppliers
capacity	value analysis	Problems are handled together with suppliers
supplier's financial situation	cost analysis	Supplier has to adopt to enterprise's methods
product or service support	target cost analysis	PSM has a central role in developing the supply chain
competence	audition	Enterprise has joint purchasing with
development will or capability	quality system	network's other actors
delivery reliability		
flexibility		
product or service quality		
Importance of competence in logistics (Fac4)	**Importance of education field (Fac5)**	**Managing global logistics (Fac6)**
Importance of competence in	social education	Importance of competence in
planning transportation	administrative education	global supply channel management
inventory management	pedagogical education	global logistics management
handling supply documents		
PSM's effect on financial indicators (Fac7)	**Measurement of performance (Fac8)**	**Meaning of capital (Fac9)**
PSM effect on	Financial importance of PSM is reported to	cost efficiency
equity ratio	the senior management	capital turnover
working capital	Purchasing and supply performance is measured	tied equity
operating margin	Purchasing costs are followed	
payment time		
ROI		
liquidity		

As one can see from the Table 8, Fac1 contains eight items, Fac2 and Fac3 contain five items each, Fac4 and Fac5 contain three items each, Fac6 has two items, Fac7 has six items, and Fac8, and Fac9 contain three items. Items in Fac1 describe elements that influence supplier selection. Fac2 encompasses methods that are used in the evaluation of suppliers. Fac3 brings out the attitudes and ways of action between buyer and supplier. In Fac4 the items describe how the respondent firms categorise the importance of competence in transportation, inventory management, and documents. The importance of competence in education is measured by Fac5. In Fac6 the perspective is global. Fac7 examines how often the respondent enterprises use financial indicators. Fac8 brings out the cost awareness centred view of purchasing and supply management. Fac9 describes what kind of elements are emphasised in the respondent firms' purchasing and supply management.

It is worth noting that Fac4, Fac5, Fac6, Fac8, and Fac9 are not very powerful indicators, because there are only two or three items in each one. However, they were constructed because of their significance for the tests.

5.2.2 Tests of the hypotheses

H1 Hypothesis

Logistic regression analysis (LRA) can be used to establish which variables are influential in predicting the correct category. In this hypothesis, answer can be found to the next question: Which variables are appropriate for predicting whether a supply strategy exists in an enterprise or not. The LRA method is presented in Chapter 4.3.4.

The predictor variables were Supplier selection (SS), Supplier evaluation (SE), Attitudes towards suppliers (ATS), Importance of competence in logistics (ICL), Importance of the education field (IEF), Managing global logistics (MGL), Outsourced activities (OA), Role of PSM; operative versus strategic, Role of PSM; reactive versus proactive, and Number of PSM personnel (NPSM). The Likert-scaled items used for measuring the first six predictors are listed in Table 8. These predictors were obtained by factor analysis, the process of which is described earlier. The basis of factor analysis is presented in Chapter 4.3.1. Outsourced activities is a dichotomic variable, and the last three variables are Likert-scaled ones.

In logistic regression, the continuous predictor variables were distributed approximately normally within the dependent group, and the variances were stable. The omnibus tests of model coefficients were statistically significant, χ^2 (10, N = 73) = 51.606, p=0,000. The model was able to classify correctly 92.3 % of those who had supply strategy and 76.5 % of those who did not have one, for an overall success rate of 84.9 %. Nagelkerke was 0.677.

Table 9 shows the important codes of the logistic regression, like coefficient, Wald test, and odds ratio for each of the predictors. A positive B increases the odds of the event and a negative B decreases the odds. I.e. the bigger the predictor is, the more likely it is that an enterprise has a supply strategy. If there is a negative B, the bigger the predictor is, the more unlikely it is that an enterprise has a supply strategy.

Table 9. Logistic regression predicting supply strategy.

Predictor	B	S.E.	Wald	df	Sig.	Exp(B)
Supplier selection	**-0,680**	**0,205**	**11,020**	**1**	**0,001**	**0,507**
Supplier evaluation	**0,438**	**0,178**	**6,062**	**1**	**0,014**	**1,550**
Attitudes towards suppliers	**0,518**	**0,191**	**7,348**	**1**	**0,007**	**1,679**
Importance of competence in logistics	0,372	0,239	2,421	1	0,120	1,451
Importance of education field	**0,614**	**0,260**	**5,586**	**1**	**0,018**	**1,848**
Managing global logistics	**1,472**	**0,498**	**8,728**	**1**	**0,003**	**4,359**
Outsourced activities	-0,826	0,937	0,777	1	0,378	0,438
Role of PSM; operative vs. strategic	0,145	0,447	0,106	1	0,745	1,156
Role of PSM; reactive vs. proactive	**1,324**	**0,573**	**5,328**	**1**	**0,021**	**3,757**
Number of PSM personnel	-0,722	0,373	3,738	1	0,053	0,486

Employing a 0.05 criterion of statistical significance, Supplier selection, Supplier evaluation, Attitudes towards supplier, Importance of education field, Managing global logistics, and Roles of PSM have significant partial effects.

The odds ratio for MGL indicates that when holding all other variables constant, an enterprise is more likely to have a supply strategy if they have much competence in global logistics. It can be concluded that firms are often used to making strategies to help their globalisation, and it is essential to manage logistics when business partners are abroad long way from homeland. If personnel have much competence in logistics, it is natural that they consider supply strategy as important.

Furthermore, the more proactive the role of PSM is in an enterprise, the more often the firm has a supply strategy. This result reflects that proactiveness is a key element of strategic purchasing and supply management.

The odds ratio for IEF indicates that when a firm emphasises employee's education field, it is more likely to have a supply strategy. It can be evaluated that firms who appreciate education recruit educated personnel and they in turn can and will make strategies.

Further, the more often a firm uses supplier evaluation criteria, the more likely it is that the firm has a supply strategy. The researcher presumes that the need for evaluation is better recognised in firms that have a supply strategy than in other enterprises. The criteria included

value analysis, cost analysis, target cost analysis, audition, and quality system. These analysis methods belong to the practices used in PSM, and thus this finding is not a surprising one.

The odds ratio for ATS indicates that when a firm is well disposed towards suppliers, it is more likely to have a supply strategy. To put it another way: The more often a firm agrees with sentences: “Information is shared with suppliers”, “Problems are handled together with suppliers”, “Supplier has to adapt to enterprise’s methods”, ”Procurement has a central role in developing the supply chain” and “Enterprise has joint purchasing with network’s other actors.”, the more likely the firm is to have a supply strategy. This finding is very understandable, because the sentences represent the general principles of strategic PSM. Supplier relationships are emphasised on in PSM, and this result strengthens the power of current literature and theories.

Finally, the odds ratio for Supplier selection reveals that the more often an enterprise uses supplier selection criteria, the more unlikely it is that that firm has a supply strategy. This finding is a bit surprising, because it would be more understandable if the regularly used selection criterion had an effect on supply strategy. However, this result could mean that it is not very important to use selection criterion frequently when the buyer has a supply strategy, and perhaps thanks to it, firms’ business cultures emphasise long relationships and that is the reason why supplier selection is rarely used.

Supplier selection was the only factor that has the negative effect on predicting the existence of a supply strategy. On the other hand, Supplier selection was the most significant predictor. It can be stated that this result strengthens the meaning of supplier selection in strategic supply. Managing global logistics and Attitudes towards suppliers were significant, and Role of PSM, Importance of education field, and Supplier evaluation were nearly significant predictors. On the grounds of factor model it can be stated that there are six essential areas which predict the existence of supply strategy. The following Figure 35 clarifies the factors that influence the existence of a supply strategy. SS includes eight variables; there are five variables included both in ATS and SE, IEF includes three variables, and MGL has two variables; supply channel management and global logistics management (see also Table 8).

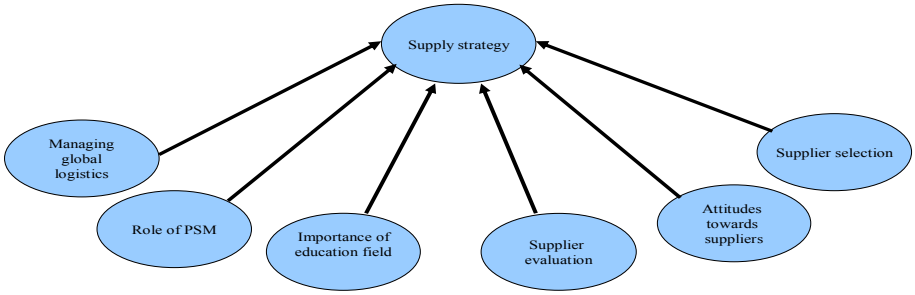

Figure 35. Factors that predict the existence of supply strategy in Finnish medium-sized enterprises.

According to the results, firms had understood correctly the question about the existence of a supply strategy. However, eight enterprises answered that they do not have a supply strategy even though the test tells differently. This means that those firms have the above mentioned characteristics of supply strategy although they do not have any written strategy document. Three firms answered that they have a supply strategy, but according to the test results that is not correct. This can be interpreted that these enterprises truly have a written strategy document, but the answers they gave to this research do not support the existence of a supply strategy. Those eight enterprises, which answered that they do not have a supply strategy, have the following common characteristics:

- turnover under 29 million euros
- located in Southern, Western, and Eastern Finland, and
- 51–150 employees.

Thus, these firms can be classified as smaller medium-sized enterprises. There are also some regional differences. This result has novelty value, because earlier the existence of supply strategy has not been studied this way.

H2, H3 and H4 hypotheses

The chi-square test was used in hypotheses H2, H3, and H4. The basis of chi-square test is presented in Chapter 4.3.2. This test method was used because the researcher was interested in studying if there is interdependence between a supply strategy and e-procurement, or outsourcing and e-procurement. This test used variables "Does your enterprise have a supply strategy?", "Has your firm outsourced its activities?", and "Does your enterprise have e-procurement activity?" All these variables are dichotomic by nature. Thus, this method was adequate for studying these hypotheses. In the 2x2-table, the continuity correction of Yates was taken into account.

There were significantly more firms that had a supply strategy, and also e-procurement activity (34 enterprises). Further, one third of those enterprises that have a supply strategy have no e-procurement activity at all. (Table 10)

Table 10. Supply strategy's effect on e-procurement activity.

		Does your enterprise have e-procurement activity?		
		No	Yes	Total
Does your enterprise have a supply strategy?	No	24	19	43
	Yes	17	34	51
	Total	41	53	94

According to the test results, supply strategy (χ^2=3.924, df=1, p=0.048) has a significant dependence on e-procurement. However, it is important to emphasise that there is uncertainty of the direction of the dependences.

Table 11 indicates that there are clearly more such firms that have not outsourced their functions but that have e-procurement activity (43 firms). Furthermore, there are ten firms that have outsourced their functions and have also e-procurement activity.

Table 11. Oursourcing's effect on e-procurement activity.

		Does your enterprise have e-procurement activity?		
		No	Yes	Total
Has your enterprise outsourced its functions?	No	22	43	65
	Yes	16	10	26
	Total	38	53	91

According to the test results, outsourcing has a significant dependence on e-procurement (χ^2=4.773, df=1, p=0.029). Also in this case the researcher cannot be sure about the direction of dependence.

In H4 was tested the possible connection between a supply strategy and outsourcing. Table 12 indicates that the most firms have a supply strategy but they have not outsourced their activities (35 firms). There are least such enterprises that have not a supply strategy but which have outsourced their activities (11 firms).

Table 12. Supply strategy's effect on outsourcing.

		Has your enterprise outsourced its functions?		
		No	Yes	Total
Does your enterprise have a supply strategy?	No	30	11	41
	Yes	35	15	50
	Total	65	26	91

According to the test results, supply strategy has not any dependence on outsourcing (χ^2=0.010, df=1, p=0.920).

As a summary, it was found that the hypotheses H2 and H3 are supported, but H4 is rejected. The results are a bit surprising especially when speaking of outsourcing, and it is important to note that outsourcing may have been a difficult term and that may have led the answers astray. On the other hand, e-procurement can be thought of as a progressive function. That could explain the result. Further, perhaps a written supply strategy has not much significance when speaking of outsourcing.

H5 and H6 hypotheses

In hypotheses H5 and H6, independent sample t-tests were conducted to assess whether the means were significantly different or not. The basis of independent sample t-tests is presented in Chapter 4.3.3. This test method was selected because there are two groups to be compared and the variables are scaled and normally distributed.

PSM's effect on the financial indicators factor (Fac7) was significant (t(89)=-2.432, p=0,017), equal variances were assumed. Also Measurement of performance factor (Fac8) was significant (t(65)=-4.300, p=0.000). Equal variances were not assumed. Meanwhile, Meaning of capital was not significant (t(72)=-0.880, p=0.382), equal variances were not assumed. (Table 13.)

Table 13. Group statistics for supply stategy and three financial factors.

		N	Mean	Std. Deviation	Std. Error Mean
PSM's effect on	No	41	22.5	4.5	0.7
financial indicators.	Yes	50	24.6	3.8	0.5
Measurement of performance	No	42	10.5	2.9	0.5
	Yes	49	12.8	1.8	0.3
Meaning of capital	No	41	11.0	2.5	0.4
	Yes	48	11.4	1.8	0.3

An independent sample t-test was conducted to assess whether the means were significantly different between the variable called "Do you have a supply strategy in your firm?" and measurement models consisting of the above-mentioned two financial factors; PSM's effect on financial indicators and Measurement of performance factor. These results showed that firms with a supply strategy considered financial issues more important than others. The variables related to financial issues consisted of financial reporting, performance measurement, and cost control. In addition to indicators, the study also found out that these characteristics are emphasised when a firm has a supply strategy.

Furthermore, it was interesting to study whether there was a connection between the increased turnovers and supply strategy (Table 14). Pearson chi-square points out that there is a clear correlation (t(4)=10.948, p= 0.027).

Table 14. Crosstabulation on supply strategy and turnovers.

		Turnover	Turnover, increase percent				
		No increase or decreased	0.1 - 20	21 - 50	51 - 100	101 or more	Total
Supply strategy?	No	7	11	5	11	4	38
	Yes	7	12	21	8	1	49
	Total	14	23	26	19	5	87

Finally, this study examined the possible connection between Importance of competence in logistics (Fac4) and supply strategy. According to the test results, there is a statistically significant difference in Importance of competence in logistics depending on supply strategy (t(87)=-2,535, p=0,013). The equal variances were assumed. (Table 15.)

Table 15. Group statistics for supply stategy and the importance of competence in logistics.

	Does your enterprise have a supply strategy?	N	Mean	Std. Deviation	Std. Error Mean
Importance of competence in logistics	No	41	10.4	1.9	0.3
	Yes	48	11.4	1.9	0.3

As a consequence, competence in logistics is considered more important in enterprises with a supply strategy. As a summary, the results of H5 and H6 hypotheses were logical. If a firm has a supply strategy, it would be strange if it would not value financial issues and logistics and think highly about their importance.

6 DISCUSSION AND CONCLUSIONS

The objective of this research was to explore the purchasing and supply management capabilities in Finnish medium-sized enterprises. More specifically, this thesis aimed to explore the status and role of PSM in Finnish medium-sized firms, study how strategic PSM is, define the competence requirements of PSM professionals, and increase the understanding of PSM capabilities needed from the points of view of individual competence and organisational capability. Furthermore, the purpose was to clarify what sets of personal qualities are needed to move purchasing from an operative function to a source of competitive advantage. Also gaps between the present and desired competence were meant to study. Outsourcing and e-procurement aspects were tied to the research to get a wider view to this phenomenon.

This study helps to understand the strategic and operational features of PSM and the required competencies and capabilities. The managers can utilise the results of this study in the running of their firms' purchasing and supply management. A number of conclusions can be drawn from this research. This chapter also assesses the theoretical contributions and managerial implications. The discussion in this chapter is based on the classification presented in the introduction: 1) status and role, 2) competencies and capabilities, 3) financial importance, 4) strategic supply, and 5) methods and indicators.

1) Status and role

Centralisation will increase in Finnish medium-sized enterprises. If this trend is evaluated by previous studies (see van Weele 2005; Axelsson et al. 2005), centre-led operations are a sign of mature purchasing and supply management. Therefore, we can come to a conclusion that Finnish medium-sized enterprises are gradually transferring to a more sophisticated function.

There were still plenty of supplies which are acquired past procurement department. This is not a good practice, because there is a great risk that volume benefits are not fully exploited. It can also be possible that there is no purchasing data available of series of events in information system. Thus, control and measurement systems are not based on real

circumstances. Further, procurement is not professional if it is not done by purchasing specialists or procurement department.

Most of the respondent firms reported that the person in charge of PSM belongs to the management group of their enterprise. This is good news and it points out that there is strategic purchasing and supply. Meanwhile, less than half of the enterprises' purchasing directors were in main charge of supplies. Worryingly, there were numerous buyers that are responsible for supplies, but it remains unclear if they have enough competence for that. Quayle (2002b) found that the owner-managers' duties often included purchasing, but according to this research this is not quite correct, because they were in charge of supplies in only 12 % of the respondent enterprises.

The sharing of information could be improved in the respondent firms. There were plenty of enterprises in which purchasing personnel do not constantly cooperate with each other. On the other hand, the results revealed that there are often or always shortage in production because of the purchasing's ineffectiveness. It is worth remembering that also these kinds of answers were given mostly by purchasing personnel itself. We can come to a conclusion that self-criticism is high, but furthermore, there are several things that have an influence on the situation, for example inaccurate deliveries, wrong qualities or amounts, and incompetence. It is essential to note that when shortages appear it should be asked what the initial reasons are.

2) Competencies and capabilities

This research deals with PSM capabilities. The creation of PSM capabilities can be described in the same way as in Figure 36. Firstly, present PSM capabilities have to be mapped. Then the existing needs are verified, gaps are recognised, and capabilities are acquired. Finally, capabilities have to be adapted in order to merge the new capabilities with the old ones.

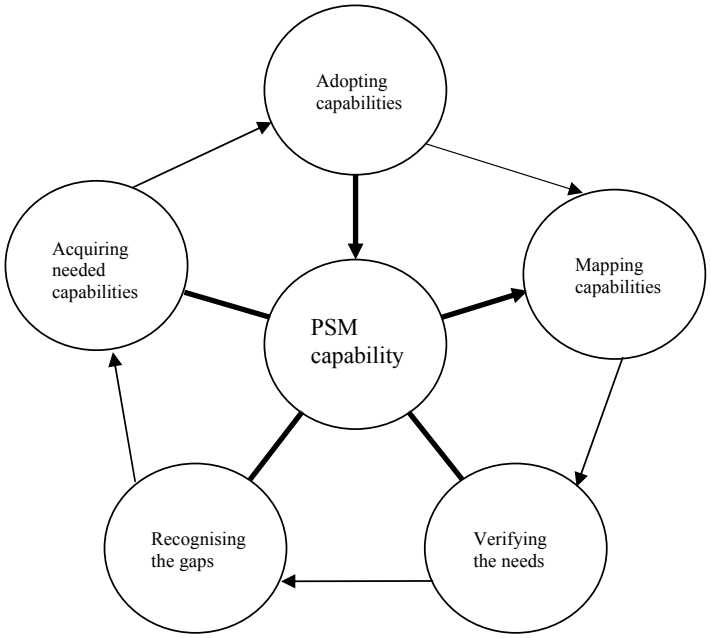

Figure 36. Capability process in an organisation.

In this study, focus has been in the first three parts. Meanwhile, not much attention has been paid on how or from where the enterprises acquire the capabilities they need. The adaptation of new purchasing and supply management capabilities to already existing capabilities was not included in this research.

When it comes to mapping capabilities and verifying the needs, cooperation with suppliers and total cost management were seen as the most important element in respect to the examination of strategic PSM. The best competence was in the cooperation between suppliers and the total cost management. These are the characteristics that describe the strategic nature of purchasing and supply in the respondent firms. In other words, the enterprises highly appreciate cooperation with suppliers and they are also good at it, but they still like to improve it further. In operative functions, evaluation of material needs, control of supplies, and contract negotiations were seen as the most important elements. Delivery control, contract negotiations, and evaluation of material needs were the best competence areas. Evaluation and control were emphasised in operational function. When contract negotiations are classified as

important development area, this often means that language skills should be improved, too. This is because many suppliers are foreign and the need for a common language is therefore obvious during the negotiations.

When reviewing the organisational capabilities, the five most important development elements were supplier relationships, both operational and strategic processes, time management, and personnel's competence. Strategic management, logistics, and SCM were evaluated as the most important business competences. From all accounts, the respondent firms have noted that they need to see the big picture. This result gets support from the answers that were given on the question that concerned PSM capability's effect on the success of the whole enterprise. Nearly all of the respondents agreed that it has influence on success.

When recognising the gaps, the enterprises' biggest capability gaps are in the following competence areas of purchasing personnel:

- commercial and legal education
- international issues
- strategic management
- language skills, communication skills, and the ability to see the big picture
- networking, and
- shortening of lead-times.

In conclusion, training in internationalisation, strategic management, and communication could help to improve competences of PSM personnel. Training of current purchasing personnel, exploitation of technology, and rewarding were the most important ways of developing purchasing personnel's competencies. Training in internationalisation could also improve the management of lead-times. As Bhatnagar and Viswanathan (2000) noted, operating in a global market may in turn lead to considerably increased inventories and longer lead-times through global supply chains.

There was not a single element in which the desired competence would have been lower than the evaluated present competence of PSM personnel. However, the personnel had work

experience even more than the respondents wished them to have. In respect to ethical issues, the importance and competence of personal qualities were at the same level. An interesting finding is that those enterprises that have a supply strategy consider financial issues and competence in logistics more important.

Risk management should be taken into a better account in medium-sized enterprises. The enterprises cannot afford to risk the capability base of their firm by losing a key employee. For example, constant training, rewarding system implementation, or deputy practice could be suitable risk management.

3) Financial importance

The total supply value of this study's medium-sized enterprises has increased with over a quarter between the years 2001 and 2005. There are several reasons for this kind of development, e.g. businesses have expanded and as a consequence, supplies have increased, enterprises have increased outsourcing, and prices have risen. The supply value was on average 45 % of firms' turnover, but proportions ranged from seven to even 85 %. When also supply costs were added to supply values, the total supply cost was on average 60 % of firms' turnover. This result supports previous researches (see e.g. Axelsson et al. 2005). About 80 respondents informed that the total costs of supplies were controlled, their firms try to reduce costs, and that the goals of procurement are included in the goals of the whole enterprise. Furthermore, financial indicators were controlled often. Thus, it can be said that firms have identified the financial importance of supply management.

In this research, nothing can be said about the connection of PSM to business performance because no correlations were found between supply strategy, the firms' operating result, turnover, and ROI. However, nearly all respondents agreed on that PSM can create added value for their firms. This research did not ask what kind of added value PSM can offer. A connection was found between increased turnovers and supply strategy. This can mean that larger and expanding firms note the importance of strategy to make their operations more efficient, profitable, and suitable.

In most enterprises, procurement had a yearly budget. It is a bit surprising that quarterly budgeting was not in common use. It is justified to state that quarterly budgeting could be helpful in planning supplies, evaluating the results, and managing economics. That is why large firms usually prefer quarterly budgeting. The more considerable volumes, the more frequent control should be.

4) Strategic supply

When assessed by the respondents themselves, half of the responding enterprises have strategic and proactive characteristics in purchasing and supply management. This conclusion gets support from the notion that in numerous enterprises the senior management recognises the strategic significance of PSM. Further, supplier selection and long-lasting relationships with key suppliers were mentioned as the most important aspects when the question was about the importance of supplier relationship management and development.

The outsourcing of PSM is slightly increasing among Finnish medium-sized enterprises. Outsourcing of logistics will grow most of all. Direct supplies from abroad will increase when compared with the response date. This spotlights a certain problem because according to the results, the biggest competence gaps were related to international issues and language skills.

This study was able to establish that certain characteristics are related to the existence of a supply strategy. Thus, a firm can have a supply strategy even though it is not in any written form. According to the questionnaire, eight enterprises answered that they do not have a supply strategy even though the test showed otherwise. These firms have common characteristics. Three firms answered that they have a supply strategy but according to the test results, that is not correct. The researcher does not mean that those respondents are lying; the enterprises can certainly have a supply strategy, but they did not fulfil the features that are connected to a supply strategy.

Initially, there were ten predictors testing the existence of supply strategy. However, four predictors were not included in the model: Importance of competence in logistics, Outsourced activities, Role of PSM; operative versus strategic, and Number of PSM personnel. Findings

indicated that these predictors were not significant in predicting the existence of supply strategy. The researcher draws a conclusion that importance of competence in logistics does not explain enough the existence of supply strategy whereas the key issue is global logistics. Furthermore, operativeness versus strategical features do not define the strategic extent of a firm, but rather proactivity. In advance, it was evaluated that a number of personnel would predict the existence of supply strategy, but this was not true either. The amount of employees does not correlate with whether or not an enterprise has a supply strategy.

Furthermore, e-procurement is a quite general way of handling PSM in medium-sized enterprises. E-procurement will continue its growth and it will be developed during the next five years. The growth of e-procurement makes demands on IT and capabilities. Based on the previous researches and literature, this study tested the interconnections between supply strategy and e-procurement and, on the other hand, between outsourcing and e-procurement. Judging by this finding, firms that have a supply strategy or that have outsourced their activities take advantage of e-procurement. The connection between a supply strategy and outsourcing was also tested but no connection was found. This finding is also interesting, although it had to be rejected. It can be considered that outsourcing decisions are not necessarily based on a supply strategy. However, make-or-buy decision is a clear strategic decision for any firm. It is worth noticing that there were no questions about outsourcing strategy in the questionnaire.

5) Methods and indicators

Quality, price, and cost efficiency are the most often used indicators of PSM performance. This result was foreseeable. Supply management's costs and product and service availability were followed the most often. Also customer satisfaction was measured regularly. Thus it can be stated that customers are highly appreciated in the respondent firms. This highlights the meaning of standard of service as an indicator. The use of PSM indicators will increase in the future.

Most firms have plenty of suppliers: nearly half of the enterprises had over 70 suppliers. Only 15 firms have less than five key suppliers. It would be relevant to reduce amount of suppliers

in many enterprises. Delivery accuracy, quality, and price are the most essential criteria in the selection of suppliers. On the other hand, medium-sized enterprises do not highly appreciate suppliers' internationality although global sourcing will increase in future. Worryingly, suppliers' financial condition or product/service support have only a little influence on their selection. The researcher suggests that firms should pay attention on these elements. It is a great risk for a buyer firm if a supplier cannot deliver products because of its bad economics or bankruptcy. Thus the financial situation of a supplier should be evaluated before the establishment of a business relationship. Also support services are necessary in order to secure uninterrupted production in the buyer firm.

Further, delivery reliability and delivery accuracy are mostly used in the evaluation of supplier performance. The respondent firms used supplier classification and benchmarking as strategic tools. Purchasing portfolio analysis is the most unusual method, which contradicts Gelderman's and van Weele's findings (2005). Order lot size method and safety stock are the most common inventory management methods used by the firms

The objectives of this research were repeated in the beginning of this chapter. After a thorough handling of results and discussion, it can be judged that this study provides answers to its research objectives.

6.1 Theoretical contributions

It was mentioned in the introductory chapter that the aim of this dissertation was to: 1) explore the status and role of PSM in Finnish medium-sized firms, 2) understand how strategic companies consider PSM to be, 3) clarify what are the competence requirements for PSM professionals, and 4) increase the understanding of PSM capabilities needed from the points of view of individual competence and organisational capability.

The framework of the research was based on the Purchasing and Supply Management, Resource-based View, and Total Cost of Economics theories. RBV and TCE are complementary perspectives to the PSM. The framework includes both individual and

organisational points of view, and it was utilised in the structuring of this research on the PSM capabilities.

The literature review revealed that previous research has mainly been focused on large enterprises. Consequently, the purchasing and supply management theory has been developed mainly on the basis of researches related to large firms. On the other hand, capabilities have been widely studied in recent years. This dissertation has taken a promising step forward by developing a framework for the research of the capabilities of PSM in medium-sized enterprises as well. However, the findings of this study point out that current purchasing and supply management theory, when viewed from the perspective of large organisations, seems to make sense even though there are weaknesses in these models.

Interestingly, purchasing portfolio analysis is not a common tool for the respondent enterprises. When the previous research is taken into account (Gelderman & van Weele 2005), purchasing and supply management is not very professional in the enterprises that participated in this study. The results of this study, however, support Gelderman and van Weele's research results in which they noticed that the likelihood that a larger company uses a portfolio model is higher than in SMEs. The firms of this study are included in SMEs, and perhaps that is why these firms do not frequently use purchasing portfolio analysis.

On the other hand, the findings of this study do not support Quayle's (2002b) research which found that purchasing was of very low priority to the firms. At the same time, it can be seen that, similarly to Morrissey and Pittaway's findings (2004), also medium-sized enterprises see purchasing as important. One reason for this can be that the respondent firms have noted that PSM is responsible for PSM assets that equals to about 60 % of the average medium-sized enterprises' turnover. This finding supports the previous literature and research findings (e.g. Degraeve 2001; Axelsson et al. 2005).

Comparison of this study's results to Arminas (2003) and Carter et al. (2007) confirms also that the outsourcing of procurement is growing. However, according to the findings of this research, this outsourcing phenomenon is not yet widespread neither will it increase extremely. It may be that knowledge of outsourcing of procurement is still low or the

respondents do not get mileage out of outsourcing. González-Benito (2007) proposes that the contribution of purchasing to business performance depends on the degree to which purchasing capabilities support and fit in with the business strategy. In this study, that kind of connection was not studied, and even though contribution of PSM to business performance was examined with a few tests, it could not be proved explicitly.

The required PSM competence areas revealed in this study remind those examined in previous researches (Volker 2003; Cox 2003). For example, purchasing professionals need to be good business people and great communicators. However, ethical issues were not emphasised in this study in spite of Cox's findings.

RBV was relevant in depicting the internal aspects of a firm, such as competence and capabilities. The findings of this study confirm the view of RBV which states that firms within an industry are heterogeneous with respect to the strategic resources they control. For example, competence and capability requirements differ depending on the enterprise. Furthermore, these resources differ in their mobilisation between firms, because enterprises are independent and they want to keep information and resources safe from other organisations. As the dynamic capabilities view emphasises, competencies need to change over time. This was noted in many contexts of this study. The answers of the respondent firms supported the conception that PSM can create competitive advantage for a firm. RBV, for one, contributes to company's sustainable competitive advantage. Meanwhile, there was no clear evidence that those firms that have a written supply strategy would have better financial success than others. Thus, the meaning of a written supply strategy to the business success cannot be confirmed.

The importance of decision-making was supported by respondents according to RBV and TCE theories. According to the respondents, the personnel's competence in decision-making should be improved. Furthermore, it can be concluded that many enterprises had strategic partnership or network relationship which can also be characterised as hybrid organisational form. This result was achieved on the basis of answers related to buyer-supplier relationship which, for example, emphasised long-lasting relationships.

Information's role as a value-added service has not been realised well enough yet, which means that the study revealed inadequate exchange of information and it can be assessed to be a part of the transaction costs in respondent enterprises, although there were no questions about the emergence of transaction costs. PSM's added value function was recognised, which favours the meaning of value creating in purchasing and supply management theory. Also customer focus was emphasised in the literature, and according to the answers this was at its best in respect to employees' personal qualities. This result depicts that purchasing personnel do pay attention to the customers. Further, it could be presumed that customers' needs are taken into account when purchasing decisions are made.

In sum, this study has contributed to the field of Purchasing and Supply Management in five areas that are specific to capabilities:

1. It provided a detailed conceptualisation of the term purchasing and supply management capabilities (Chapter 2.1).
2. It generated a framework for studying the capabilities of PSM, and this framework was used to classify the elements of PSM capabilities. (Chapter 3.4).
3. It provided analyses of the status and role, individual competences and organisational capabilities, strategic supply, financial importance and measurement of PSM. (Chapter 5.1).
4. It identified new factors that predict the existence of a supply strategy. Furthermore, it pointed out other results related to a supply strategy, e-procurement or outsourcing (Chapter 5.2).
5. It highlighted the status and meaning of purchasing and supply management capabilities for the medium-sized firms (Chapters 2.3, 5.1, and 6.2).

It can be stated that the main contribution of the study was to structure and analyse the capabilities of purchasing and supply management. This helped in understanding the competences and capabilities needed in PSM, and it made it also possible to recognise the most challenging areas and to propose some means to respond to these challenges. Furthermore, there has not been much discussion of supply function or supply strategy before this study (see Nollet et al. 2005).

6.2 Managerial implications

Medium-sized enterprises have a significant role in the national economy. It stands to reason that the interest for purchasing and supply management as one of the main focuses of top management is growing. This is understandable and even desirable, because as was verified in this research, PSM is of great significance for firms also financially.

However, nobody knows what is needed tomorrow. There is a danger that competencies and capabilities will never be utilised or exploited completely. The perception of what is available and required in terms of capabilities may change over time and that changes also the view on what roles the purchasing and supply management could or should have. Clearly, there are key competences that are required from PSM professionals at the same time as the function adopts a more strategic role in improving the competitive positions of firms. The results of this research are important to directors and managers for a number of reasons.

From a managerial standpoint, the enterprises had varying degrees of experience in purchasing and supply tasks. 42 % of respondents had been working under five years, and 28 % had been working over eleven years in their current position. Some had been doing their job extensively for over 20 years, while others had just begun to engage in such tasks over the last years. On the other hand, the firms had unequal length of experience in purchasing and supply management on the grounds of years of activities. Understandably, there were clear differences in competence and capability gaps between different firms. This has certainly effected the answers that concerned e.g. competence requirements. For a director or manager it would be helpful to know how much of the competence is tacit versus explicit in PSM.

Furthermore, there are several competence areas of the personnel which should be improved. For example networking competence and negotiation and language skills were found to be inadequate. However, improvement of these competences is very important; global sourcing and team work are about to increase in the future, and a networked way of doing business is natural also for medium-sized enterprises. Furthermore, most of the respondent enterprises exported their products. There was also demand for more competence in strategic management. Benchmarking could be one possibility to acquire competence and capabilities for medium-sized firms.

An ideal competence set assists in the recruiting process because it provides directors with a standard to which the competences of candidates can be compared. Directors have to be aware of that, because as the PSM function and the operating environment change, the required competence set of the PSM personnel must evolve as well. When professional competence has once been obtained, a great challenge is to maintain and increase individual's competence. This finding highlights how important it is to recruit right people to the PSM forces and to recognise the developmental needs firms have. Competent personnel improve firm's competitiveness which may, in turn, improve profitability. More efficient exploitation of PSM assets could release more resources to the development of medium-sized enterprises.

Worryingly, there is a great risk that Finnish medium-sized firms lose their PSM capabilities if only one employee leaves the company. This statement is also based on the respondents' own assessments. The bottom line is that enterprises should carefully consider, understand and reduce the risks related to capabilities of their firm. It is also important to remember that the respondents were mainly purchasing directors or managers. Thus, there is a possibility that the respondents overestimated their own competence and its significance to enterprises. It would be reasonable to consider if buyer firms could substitute the capability gaps for cooperation with suppliers and customers to fulfil their needs. Naturally, some capabilities could be bought from other enterprises. Nevertheless, this study has identified numerous competencies and capabilities needed in PSM, and these can be used for purposes in the training and management areas. Managers can identify areas that are in the need of improvement and appropriate training. What would be really useful from a managerial perspective is the creation of a model that helps to determine what is the optimal degree of capability for a firm.

Supplier selection was found to be one of the most important elements in the evaluation of the importance of supplier relationship management and development. Thus this is an important area to develop in medium-sized enterprises. The demand for research in the area of supply selection will likely increase in future. Surprisingly, ethical issues were not classified as important in spite of the fact that in public those kinds of things have lately got considerable attention.

This study was able to recognise the elements that explain the existence of a supply strategy. Managerially, this result is useful for firms which would like to develop their PSM to have a more strategic function. The implemented tests proved that today's enterprises do not unequivocally understand what kind of features are attached to strategic PSM. Firstly, this study found several strategic characteristics in the responding firms, and secondly, the tested hypothesis revealed that some of the respondents had strategic features of PSM although they did not have a written supply strategy. However, when respondents were asked about the juxtaposition of strategic versus operative and proactive versus reactive, the assessments did not support the strategic nature of PSM. The status and role of purchasing and supply vary from one enterprise to another. A written supply strategy would help to understand their supply function, and to plan the future. In order to focus the efforts and get the best total value in supply management, firms must develop and implement an effective strategy. Respondent enterprises should also improve the role of information as a value-added service.

However, Finnish medium-sized enterprises have strategical features of PSM, and the enterprises acknowledge the value-added capabilities of purchasing and supply management. According to the results, Finnish firms have not concentrated on making strategies that relate to PSM. Fortunately, the objectives of PSM are included in the goals of the whole enterprise. Most of the enterprises have recognised how important it is to have a purchasing director in the board of their enterprise. Buyer-supplier relationships are considered important, and there are a lot of capabilities in those relationships. But then again, there is much empty space in the development of a strategic PSM. It can be concluded from this study that there is an advantageous base for the development of strategic PSM because nearly all the enterprises are of the opinion that PSM capabilities have an effect on business success. However, this connection was not verified by statistical tests in this study.

In today's medium-sized enterprises, PSM is often viewed as having a more strategic function which needs more and more competence from its employees. As has already been said, there is still lack of a strategic focus. This result is supported by earlier studies and research (cf. Cousins & Spekman 2003). However, strategic supply has to be the main goal in the PSM of medium-sized firms as well. When working with suppliers, buyers can either be proactive or reactive. Proactive implies that the buyer is involved in the designing and specifying of

products, and committed to develop supplier relationship on a long-term basis whereas a reactive buyer sources on a short-term basis.

It has been noted that there should be more interaction between the firms' different departments. For example, there are plenty of supplies that are conducted past procurement department. In practice this means that there is a significant risk that huge amount of resources (capital, work time) is wasted as a consequence of overlapping activities. On the other hand, findings pointed out that only 21 % of the companies had a separate purchasing department, and this proportion will still decrease in the future. It could be stated that those enterprises are in danger of having less purchasing power. There appears to be a lack of awareness that effective purchasing may positively affect profitability. However, there is a strong possibility that increased interaction and improved communication would make PSM activities more efficient. According to the respondents' own assessments, there were shortages in production due to inefficiency of the procurement. Managers should focus attention on practices and structures that support effective purchasing and supply management. One solution could be the use of a joint supplies or consortia.

Enterprises should establish clear specifications and performance indicators, and they have to be controlled. For example, an enterprise should measure supplier performance versus expectations. This is especially important because it was found that supplier relationships were classified as the most important aspect of PSM in respect to its development. Again, training especially in supplier relationship management and measurement could be useful for many firms.

The researcher hopes that this study can help to lower the uncertainty surrounding managerial issues. In a dynamic, networked and changing business environment, purchasing and supply management has to be proactive and innovative in building competitive capabilities. When medium-sized firms grow, they gradually become a large company; this means more and more supplies and as a consequence total volume and costs of supplies will increase. Eventually, PSM should be organised and managed in the most successful way.

6.3 Limitations

This chapter provides an overview of the limitations of this research. In order to contribute to the field of research, the reliability, validity, and generalisability of this study have to be assessed. In quantitative research, there are commonly accepted standards of quality. The reliability and validity of the study are assessed after an overview of the limitations.

This study consists of a questionnaire survey of 94 middle-sized enterprises located in Finland. Several methods of analysis were used to understand the issue in focus. The preferred methodological tool of this quantitative study was survey questionnaire, and thus there was a strict agenda to follow. The large amount of questions in the questionnaire enabled the acquisition of versatile answers. The length of the questionnaire may have had effect on the response rate (17.5 %) which could have been higher.

This study was limited to Finnish medium-sized enterprises, which means that the conclusions do not apply to any other country as such. Nevertheless, Finland can be taken as an example of a small and developed country in Northern Europe. Furthermore, the results of this study cannot be generalised to all Finnish medium-sized enterprises. The sectors included in this research were only manufacturing, wholesale and retail, and transportation, storage and communication. As the test results indicate, the data representatively illustrates the whole population in respect to location. Wholesale and retail trade as well as transportation, storage, and communication sectors are not successfully represented in this study. However, the results can be generalised to the manufacturing industry. Because of the very limited number of respondents from wholesale and retail (7 answers), transportation, storage, and communications sectors (5 answers), comparisons between those sectors were not done. This kind of comparison would have been rewarding, and that is why the researcher suggests that it would be implemented in further studies. It can be evaluated that all industries do not consider supply management and the studies related to it as important enough. Thus these sectors should be taken into better account when planning research of purchasing and supply management.

According to Yin (1984), generalisation is related to similar concepts and phenomena that may occur in similar investigation contexts. There are certain limitations in the use of concepts in this study as well. Purchasing and supply management, competence and capabilities, for instance, can be understood in many different ways. Defining the concepts as precisely as possible solved this problem at least partly.

One limitation concerns the partly non-objective nature of this study. Answering the questionnaire is a subjective matter. Researcher could not explain questions to respondents face-to-face because the questionnaire was implemented on the Internet. However, it was possible to ask about questions and concepts used in questionnaire from researcher but no one did that. The answers were based on self-assessment. Furthermore, one respondent represented each enterprise. Thus perspective of answers is based on only one person's opinions. The respondent's attitude, physical environment, or the pressures of the day may have influenced the answers of the participant. Another limitation of this study relates to the choice of respondents. Purchasing and supply management executives of buyer firms were considered to be the best candidates to answer the various questions posed in this study. Although the complexity of data collection would have been increased when collecting data from both the buyer firm and its suppliers, this method was not used in this study. However, using multiple respondents such as supply management executives, management and suppliers will increase the validity of the results.

Questionnaire's reliability and the validity of self-assessment are also open to discussion. The absolute values, like financial, could be checked from databases, and in this study they were confirmed from the Amadeus database. However, when data are obtained from a number of firms, there can be significant and unknown differences in the exactness of what each firm reports. Self-assessment is more reliable for gauging processes, behaviours and attitudes than for assessing one's own results and achievements (Biazzo & Bernardi 2003; Moore et al. 2002)**.** In this study, the self-assessment concerns absolute values, behaviours, and attitudes. It can also be assumed that, owing to the anonymity of the respondents, there is no reason for them to lie when referring to their work processes, practices, and opinions. Consequently, it is assumed that self-assessment is an acceptable method to be used in this study. As Davenport

and Prusak (1998) indicate, in respect to the firms with at most 200–300 employees, this study can give a reliable picture of the existing collective information.

It is also worth noting that the business world is changing so that the present circumstances may not even apply in the future because of which some generalisation value is lost. There is still only a relatively limited understanding of the status and role of PSM in some key sectors including non-manufacturing industry and small firms. In test presentations, the degree of generalisability is represented with the degrees of freedom. The larger the degrees of freedom, the more generalisable are the results. Thus, the objective is to achieve the highest predictive accuracy with the most degrees of freedom. That is the reason why the degrees of freedom are presented in this study. Furthermore, it is worth of noting that in some factors there were only two predictors. This fact weakens the impressiveness of those factors. However, those predictors were essential to be included from the perspective of the test implementation.

6.3.1 Reliability of the research

Statistical methods have traditionally been used to assess the reliability of quantitative research. Reliability refers to how well the results are possible to be replicated by using the same methods as in this study.

The data collection is closely tied to reliability (Ellram 1996). The empirical data was collected from one person who represented his/her employer. This approach was used because it was necessary that the respondent is a professional of purchasing and supply management. This causes possibilities of bias in the data as it is based on one person's views only. Some steps were used to ensure that the data would still be reliable. Firstly, the questionnaire was designed with several rounds of revisions and with a pilot test. In this way, it was ensured that respondents understand the questions. Secondly, random sampling was used when selecting the enterprises for the questionnaire study. Thirdly, the questions and statements in this study were as concrete as possible although the concepts are difficult to measure.

The Cronbach's alpha (Cronbach 1951) measures composite reliability, and in addition to it, a common method to assess inter item reliability is factor analysis (Yli-Renko 1999, also Hair

et al. 2006). Inter item reliability illustrates the internal consistency of a set of items measuring a construct. It shows how well a set of items represents a common latent unobserved construct.

Co-efficients below 0.7 are often considered adequate for analysis (Nunnally 1978) although it may decease to .60 in exploratory research (e.g. Hair et al. 2006; Chen & Paulraj 2004; Jack & Raturi 2002). Values above 0.60 were accepted because this study measured very intangible constructs (cf. Yli-Renko 1999). On the other hand, the number of items was kept at 10 or under based on the recommendation of Hair et al. (2006) in order not to raise threshold.

6.3.2 Validity of the research

Validity refers to the extent to which the measurement really measures what it is intended to measure. **V**alidity is connected to the potential generalisability of the results. Thus, validity has been shown through statistical sampling. Quantitative research provides a statistical significance and generalisation. Generalisability or external validity refers to how broadly the results of the study can be generalised to be valid for contexts outside the setting of the study (e.g. Uusitalo 1991; Yli-Renko 1999). External validity verifies the hypotheses (e.g. Grönfors 1982). In the next few paragraphs, the validity of constructs is assessed with respect to four dimensions: content validity (also known as face validity), convergent validity, discriminant validity, and nomological validity. The last three validity forms refer to construct validity.

Face validity refers to the degree to which the constructs are consistent with common agreements about the concepts (Yli-Renko 1999). In other words, how close the used constructs are to those that are generally used. If constructs and empirical measures are different from those normally used, then the face (or content) validity of the study is low. Only such constructs were used in this study that have been used in other studies of similar type. The used constructs were based on the careful review of literature and pre-tests. Thus, it is proposed that the content validity of the study should be high.

Convergent validity assesses the degree of correlation of two measures of the same concept. The researcher may look for alternative measures of a concept and then correlate them with the summated scale. High correlations here indicate that the scale is measuring its intended concept. (Hair et al. 2006, 137) In this research, all items loaded significantly on the hypothesised constructs and provided evidence of convergent validity.

Discriminant validity is the degree to which two conceptually similar concepts are distinct. The empirical test is the correlation among measures, but the summated scale is correlated with a similar but conceptually distinct measure. The correlation should be low in this study, demonstrating that the summated scale is sufficiently different from the other similar concepts. (Hair et al. 2006, 137-138.) Thus, discriminant validity can be assessed by examining if the average variance extracted by the items of a construct is greater than the average shared variance between two constructs. All the constructs passed this test, supporting discriminant validity. Discriminant validity was ensured also by pre-tests of the questionnaire.

Finally, nomological validity refers to the degree to which the summated scale makes accurate predictions of other concepts in a theoretically based model. The researcher must identify theoretically supported relationships from prior research or accepted principles and then assess whether the scale has corresponding relationships or not. (Hair et al. 2006, 138.) In this research, the previous literature and research review supports nomological validity.

Hair et al. (2006, 138) sum up the following: convergent validity confirms that the scale is correlated with other known measures of the concept; discriminant validity ensures that the scale is sufficiently different from other similar concepts to be distinct; and nomological validity determines whether the scale demonstrates the relationships shown to exist based on theory or prior research.

6.4 Future research

This study provides answers to its research questions and raises numerous research questions for future research. This study was conducted by using a quantitative research method. It does

not seem feasible to expand the scope of this study by using the same research method. Therefore, it may be useful to attempt to develop a qualitative interview-based research on the basis of purchasing and supply management capability model or matrix. That kind of research could be applied in research into a small range of companies, and the capability model of PSM could be developed and tested further. One such direction of development could be to examine how supply managers and directors focus the aspects of their supply strategy. These issues could include risk in addition to cost and value. Comparing different supply strategies might give noteworthy findings. Furthermore, in order to increase understanding of the PSM in medium-sized firms, long-term perspective should be applied to the research.

The significance of PSM could also be viewed by examining the time personnel use in strategic issues like planning and tasks that are related to management and leadership. This kind of view was not the intention of this study. Further, the acquiring and adopting of PSM capabilities could be important to study as qualitative case studies. Further research could also consider gathering data for multiple respondents within each firm to increase the validity of the data. In this study, there was only one respondent from each firm. An assessment of important competences by job title could be included in future research. Again, it would be interesting to study a purchasing department on its own, i.e. the extent to which a particular set of goals, including financial issues, has been achieved. Future research could also examine the differences in capability requirements across industries or by organisational structure of the enterprise.

PSM's effect on financial performance was not the focus of this study. However, there are plenty of researches which have similar focuses on large companies. Comparison of the effects of PSM on both medium-sized and large enterprises' financial performance could enhance the understanding of this phenomenon. An interesting research area would also be to focus on all medium-size enterprises, not just on few fields. It would also be possible to broaden this view to be more international by including other countries into the research as well. Varying definitions of purchasing and supply between countries should not be any insuperable obstacle to international research work. There is a clear demand for knowledge about features in purchasing and supply management between nations.

Finally, the researcher proposes that global sourcing, internationalisation, ethical, environmental, and supply chain management issues should be included in other studies related to purchasing and supply management. These issues are relevant because of climate change, increasing globalisation, and risk management, e.g. the threat of terrorism. It is crucial to understand that purchasing and supply management is fixedly dependent on both other functions of the enterprise and circumstantial factors in the surrounding society.

REFERENCES

Aaker, D.A. (1995). *Developing Business Strategies.* 4th Edition. John Wiley and Sons, New York, USA.

Alkula, T., Pöntinen. S. & Ylöstalo, P. (1995). *Sosiaalitutkimuksen kvantitatiiviset menetelmät.* 1–2 nd Edition. WSOY, Juva, Finland. [in Finnish]

Allee, V. (2002). *The Future of Knowledge.* Butterworth-Heinemann. Burlington, MA, USA.

Amit, R. & Schoemaker, P.J.H. (1993). Strategic Assets and Organizational Rent. *Strategic Management Journal*, vol. 15 (1), 33–46.

Anderson, J.C. & Gerbing, D.W. (1988). Structural Equation Modeling in Practice: a Review and Recommended Two-step Approach. *Psychological Bulletin,* vol. 103 (3), 441–443.

Ardalan, K. (2003). Theories and Controversies in Finance: a Paradigmatic Overview. *International Journal of Social Economic,* vol. 30 (1/2), 199–209.

Argyris, C. (1999). *On Organizational Learning.* 2nd Edition. Blackwell Publishing, Cornwall.

Arminas, D. (2003). More Firms to Outsource Purchasing. *Supply Management,* vol. 8 (23), 10.

Armstrong, M. (1998). *A Handbook of Personnel Management Practice.* 5th Edition. Kogan Page, London, UK.

Augler, M. & Teece, D.J. (2007). Dynamic Capabilities and Multinational Enterprise: Penrosean Insights and Omissions. *Management International Review, v*ol. 4 (2), 175–192.

Axelsson, B. & Easton, G. (eds.) (1994). *Industrial Networks – A New View of Reality.* Routledge, London, UK.

Axelsson, B. & Laage-Hellman, J. (1991). *Inköp – en ledningsfråga.* Verkstadsindustriernas Förlag, Stockholm, Sweden. [in Swedish]

Axelsson, B., Rozemeijer & Wynstra, F. (2005). *The Case for Change.* In Axelsson, Rozemeijer & Wynstra (eds.). Developing Sourcing Capabilities. Creating Strategic Change in Purchasing and Supply Management. John Wiley & Sons Ltd., Chichester, UK.

Axelsson, B., Rozemeijer, F. & Wynstra, F. (2005). *Exploring Change Issues in Strategic Sourcing.* In Axelsson, Rozemeijer & Wynstra (eds.). Developing Sourcing Capabilities. Creating Strategic Change in Purchasing and Supply Management. John Wiley & Sons Ltd., Chichester, UK.

Axelsson, B., Bouwmans, P., Rozemeijer, F. & Wynstra, F. (2005). *Developing and Managing Knowledge and Competencies.* In Axelsson, Rozemeijer & Wynstra (eds.). Developing Sourcing Capabilities. Creating Strategic Change in Purchasing and Supply Management. John Wiley & Sons Ltd, Chichester, UK.

Ballou, R.H. (1999). *Business Logistics Management.* Planning, Organizing, and Controlling the Supply Chain. Prentice Hall, USA.

Barney, J.B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management,* vol. 17 (1), 99–120.

Bhatnagar, R. & Viswanathan, S. (2000). Re-engineering Global Supply Chains. Alliances Between Manufacturing Firms and Global Logistics Services Providers. *International Journal of Physical Distribution and Logistics Management,* vol. 30 (1) 13–34.

Biazzo, S. & Bernardi, G. (2003). Organizational Self-assessment Options: A Classification and Conceptual Map for SMEs. *International Journal of Quality & Reliability Management,* vol. 20 (8), 881–900.

Blomqvist, K., Kyläheiko, K. & Virolainen V.-M. (2002). Filling a Gap in Traditional Transaction Cost Economics: Towards Transaction Benefits-based Analysis, *International Journal of Production Economics,* vol. 79, 1–14.

Bowersox, D.J., Gloss, D.J., Stank, T.P., Keller, S.B. (2000). How Supply Chain Competency Leads to Business Success. *Supply Chain Management Review,* vol. 4 (4).

Boyatzis, R. (1982). *The Competent Manager - A Model for Effective Performance.* John Wiley & Sons, New York, USA.

Boyer, K.K. & Verma, R. 1996. *Multiple Raters in Survey-based Operations Strategy Research: a Review and Evaluation.* Working Paper, DePaul University, USA.

Brewer, A.M., (2001a). *The concept of value: symbolic artefact or useful tool?* In Brewer, A. M., Button, K. J. & Hensher, D. A. (eds). Handbook of Logistics and Supply-Chain Management. Elsevier Science Ltd., UK.

Brewer, A.M., (2001b). *Organizational logistics: Definition, components, and approaches.* In Brewer, A. M., Button, K. J. & Hensher, D. A. (eds.). Handbook of Logistics and Supply-Chain Management. Elsevier Science Ltd., UK.

Brewer, A.M., Button, K.J. & Hensher, D.A. (eds.) (2001). *Handbook of Logistics and Supply-Chain Management.* Elsevier Science Ltd., UK.

Browne, M. & Allen, J. (2001). *Logistics out-sourcing.* In Brewer, Ann M., Button, Kenneth J. & Hensher, David A. (eds.). Handbook of Logistics and Supply-Chain Management. Elsevier Science Ltd., UK.

Burgoyne, J. (1989). Creating the Managerial Portfolio: Building on Competency Approaches to Management Development. *MEAD, v*ol. 12 (1), 56–61.

Burrel, G. and Morgan, G. (1979). *Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life.* Heinemann, London, UK.

Buvik, A. & George, J. (2000). When Does Vertical Coordination Improve Industrial Purchasing Relationships? *Journal of Marketing, v*ol. 64, 53–66. October.

Carr, A.S. & Pearson, J.N. (1999). Strategically Managed Buyer-supplier Relationships and Performance Outcomes. *Journal of Operations Management, v*ol. 17 (5), 497–519.

Carr, A.S. & Pearson, J.N. (2002). The Impact of Purchasing and Supplier Involvement on Strategic Purchasing and Its Impact on Firm's Performance. *International Journal of Operations & Production Management,* vol. 22 (9), 1032-1053.

Carr, A.S. & Smeltzer, L.R. (1997). An Empirically Based Operational Definition of Strategic Purchasing. *European Journal of Purchasing and Supply Management,* vol. 3 (4), 199–207.

Carr, A.S. & Smeltzer, L.R. (2000). An Empirical Study of the Relationships Among Purchasing Skills and Strategic Purchasing, Financial Performance, and Supplier Responsiveness. *Journal of Supply Chain Management.* Summer, vol. 36, 40–53.

Carter, J.R. & Narasimhan, R. (1996a). Is Purchasing Really Strategic? *International Journal of Purchasing and Materials Management*, vol. 32 (1), 20–28.

Carter, J.R. & Narasimhan, R. (1996b). Purchasing and supply management: Future Directions and Trends, *International Journal of Purchasing and Materials Management*, vol. 32 (4), 2–12.

Carter, J.R., Markham, W.J. & Monczka, R.M. (2007). Procurement Outsourcing: Right for You? *Supply Chain Management Review*, vol. 11 (4), 26–32.

Cavinato, J.L. (1987). Purchasing Performance: What Makes the Magic? *Journal of Purchasing and Materials Management*, vol. 23 (1), 10–16.

Cavinato, J.L. (1999). Fitting Purchasing to the Five Stages of Strategic Management. *European Journal of Purchasing & Supply Management,* vol. 5 (2), 75–83.

Chandler, G. & Hanks, S. (1994). Market Attractiveness, Resource-based Capabilities, Venture Strategies and Venture Performance. *Journal of Business Venturing*, vol. 9, 243–260.

Chao, C., Scheuing, E.E. & Ruch, W.A. (1993). Purchasing Performance Evaluation: an Investigation of Different Perspectives. *International Journal of Purchasing and Materials Management*, vol. 29 (3), 33–39.

Chen, I.J. & Paulraj, A. (2004). Towards a Theory of Supply Chain Management: the Constructs and Measurements. *Journal of Operations Management,* vol. 22 (2), 119–150.

Chen, I.J., Paulraj, A. & Lado, A.A. (2004). Strategic purchasing, Supply management, and Firm performance. *Journal of Operations Management*, vol. 22 (5), 505–523.

Chen, Y. & Wu, T. (2007). An Empirical Analysis of Core Competence for High-tech Firms and Traditional Manufacturers. *Journal of Management Development*, vol. 26 (2), 159–168.

Chiesa, V. & Barbeschi, M. (1994). *Techology Strategy in Competence-based Competitio.* In Hamel & Heene (eds.). Competence-based Competition. John Wiley & Sons Ltd., Chichester, UK.

Choo, W.C. (1998). *The Knowing Organization. How Organizations Use Information to Construct Meaning, Create Knowledge and Make Decisions.* Oxford University Press, New York, USA.

Christopher, M. (1992). *Logistics and Supply Chain Management. Strategies for Reducing Costs and Improving Services.* London: Financial Times. Pitman Publishing, UK.

Christopher, M. (1998). *Logistics and Supply Chain Management. Strategies for Reducing Cost and Improving Service.* 2 nd Edition. London: Finance Times. Prentice Hall, UK.

Coase, R. (1937). The Nature of the Firm. *Economica*, vol. 4, 386–405.

Commons, J.R. (1934). *Institutional Economics*. Macmillan, New York, USA.

Con, A. (2003). Horses for Courses. *Supply Management*, January 30, vol. 8 (3).

Cook, D.P, Goh, C. & Chung, C.H. (1999). Service Typologies: A State of the Art Survey. *Production and Operations Management*, vol. 8 (3), 318–338.

Corey, R. (1978). Should companies centralize procurement? *Harvard Business Review*, vol. November-December, 102–110.

Cousins, P.D. (2005). The Alignment of Appropriate Firm and Supply Strategies for Competitive Advantage. *International Journal of Operations & Production Management*, vol. 25 (5), 403–428.

Cousins, P.D. & Spekman, R. (2003). Strategic Supply and the Management of Inter- and Intra-organisational relationships. *Journal of Purchasing & Supply Management,* vol. 9 (1), 19–29.

Cox, A. (1997). *Business Success*. *A Way of Thinking about Strategy, Critical Supply Chain Assets and Operational Best Practice.* Earlsgate Press, Winteringham, UK.

Cox, A. (2001). Managing the Power: Strategies for Improving Value Appropriation from Supply Relationships. *The Journal of Supply Chain Management,* Spring, 42–47.

Cox, A. & Lamming, R. (1997). Managing Supply in the Firm of the Future. *European Journal of Purchasing & Supply Management,* vol. 3 (2), 53–62.

Cox, A., Chicksand, L., Ireland, P. & Day, M. (2001). *The E-business Report*. Earlsgate Press, UK.

Croom, S.R. (2000). The Impact of Web-based Procurement on the Management of Operating Resources Supply. *Journal of Supply Chain Management*, Winter, vol. 36, 4–13.

Croom, S.R. (2001). The Dyadic Capabilities Concept: Examining the Process of Key Supplier Involvement in Collaborative Product Development. *European Journal of Purchasing & Supply Management,* vol. 7 (1), 29–37.

Croom, S.R. (2005). The Impact of E-business on Supply Chain Management. An Empirical Study of Key Developments. *International Journal of Operations & Production Management*, vol. 25 (1), 55–73.

Dai, Q. & Kauffman, R.J. (2002). Business Models for Internet-based B2B Electronic Markets. *International Journal of Electronic Commerce*, vol. 6, 41–72.

Das, A. & Narasimhan, R. (2000). Purchasing Competence and its Relationship with Manufacturing Performance. *Journal of Supply Chain Management,* vol. 36 (2).

Das, T.K. & Teng, B.-S. (2000). A Resource-Based Theory of Strategic Alliances. *Journal of Management,* vol. 26 (1), 31–62.

Davenport, T.H. & Harris, J.G. (2007). *Competing on Analytics. The New Science of Winning.* Harward Business School Press, USA.

Davenport, T.H. & Prusak L. (1998). *Working Knowledge. How Organizations Manage What They Know.* Harvard Business School Press, USA.

Davidsson, P. (1989). *Continued Entrepreneurship and Small Firm Growth.* Stockholm School of Economics, Stockholm, Sweden.

De Boer, L., Holmen, E. & Pop-Sitar, C. (2003). Purchasing as an Organizational Design Problem: the Case of Non-product-related Items and Services. *Management Decision*, vol. 41 (9), 911–922.

Degraeve, Z. (2001). A Smarter Way to Buy. *Harvard Business Review,* vol. 79, 22–23.

Doz, Y., Santos, J. & Williamson, P. (2001). *How Companies Win in the Knowledge Economy. From Global to Metanational.* Harvard Business School Publishing Corporation, Boston, USA.

Dubois, A. & Wynstra, F. (2005). *Developing the Supply Base by Changing Supplier Relations.* In Axelsson, Rozemeijer & Wynstra (eds.). Developing Sourcing Capabilities. Creating Strategic Change in Purchasing and Supply Management. John Wiley & Sons Ltd., Chichester, UK.

Edvinsson, L. & Malone, M.-S. (1997). *Intellectual Capital: Realizing your Company's True Value by Finding its Hidden Brainpower*. Harper Collins Business, New York, USA.

Eisenhardt, K.M. & Martin, J.A. (2000). Dynamic Capabilities: What Are They? *Strategic Management Journal*, vol. 21, 1105–1121.

Eisenhardt, K.M. & Schoonhoven, C.B. (1996). Resource-based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms. *Organization Science,* vol. 7(2), 136–150.

Ellram, L.M. (1991). Key Success Factors and Barriers in International Purchasing Partnerships. *Management Decision,* vol. 29 (7), 38–44.

Ellram, L.M. (1995). Partnering Pitfalls and Success Factors. *International Journal of Purchasing and Materials Management*, vol. 31 (2), 36–44.

Ellram, L.M. (1996). The use of the case study method in logistics research. *Journal of Business Logistics*, vol. 17 (2), 93–138.

Ellram, L.M. & Carr A.S. (1994). Strategic Purchasing: a History and Review of the Literature. *International Journal of Purchasing and Materials Management*, vol. 30 (3), 2–8.

Ellram, L. M. & Edis, O.R.V. (1996). A Case Study of Successful Partnering Implementation. *International Journal of Purchasing and Materials*, Fall, 20–28.

Ellram, L.M., Zsidisin, G.A., Siferd, S.P. and Stanly, M.J. (2002). The Impact of Purchasing and Supply Management Activities on Corporate Success. *Journal of Supply Chain Management*, vol. 38 (1), 4–7.

Fayes, W., Knight, L. & Matthyssens, P. (2001). Buyer Profiles: an Empirical Investigation of Changing Organizational Requirements. *European Journal of Purchasing & Supply Management,* vol. 7 (3), 197–208.

Fearon H.E. & Bales, A.W. (1993). *CEO*s*'/presidents' perception and expectations of the purchasing function.* CAPS Report, National Association of Purchasing Management (NAPM). Tempe, AZ.

Fitzsimmons, J.A. & Fitzsimmons, M.J. (2000). *Service Management: Operations, strategy, and information technology.* McGraw-Hill, New York, USA.

Fornell, C. & Larker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, vol. 18, 39–50.

Frazelle E.H. (1998). Develop World-class Supply Practices. *Transportation & Distribution, v*ol. 39 (11), 45–49.

Fynes, B., Voss, C. & de Búrca, S. (2005). The Impact of Supply Chain Relationship Dynamics on Manufacturing Performance. *International Journal of Operations & Production Management*, vol. 25 (1), 6-19.

Gadde, L.-E. & Håkansson, H. (2001). *Supply Network Strategies.* John Wiley & Sons Ltd., Chichester, UK.

Gammelgaard, B. & Larson P.D. (2001). Logistics Skills and Competencies for Supply Chain Management. *Journal of Business Logistics*, vol. 22 (2), 27-50.

Gelderman, C.J. & van Weele, A.J. (2005). Purchasing Portfolio Models: A Critique and Update. *The Journal of Supply Chain Management*, Summer, vol. 41 (3).

Ghauri, P. & Grønhaug, K. (2002). *Research Methods in Business Studies. A Practical Guide.* Pearson Education Limited. UK.

Ghoshal, S. & Moran, P. (1996). Bad for Practice: A Critique of the Transaction Cost Theory. *Academy of Management Review*, vol. 21 (1), 13–47.

Giunipero, I.C. & Pearcy, D.H. (2000). World-class Purchasing Skills: An Empirical Investigation. *Journal of Supply Chain Management*, vol. 36 (4), 4–13.

Goh, M., Lau, G. & Neo, I. (1999). Strategic Role and Contribution of Purchasing in Singapore. A survey of CEOs. *Journal of Supply Chain Management*, Fall, vol. 35, 12–27.

Gonzáles-Benito, J. (2007). A Theory of Purchasing's Contribution to Business Performance. *Journal of Operations Management*, vol. 25, 901–917.

Grönfors, M. (1982). *Kvalitatiiviset kenttätyömenetelmät.* 2. p. WSOY, Porvoo-Helsinki-Juva, Finland. [in Finnish]

Hadeler, B.J. & Evans, J.R. (1994). Supply Strategy: Capturing the Value. *Industrial Management*, July/August.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. & Tatham, R.L. (2006). *Multivariate Data Analysis*. 6th Edition. Prentice Hall, Upper Saddle River, New Jersey, USA.

Hall, D. & Braithwaite, A. (2001). *The Development of Thinking in Supply Chain and Logistics Management.* In Brewer, A.M., Button, K. J. & Hensher, D. A. (eds.). Handbook of Logistics and Supply-Chain Management. Elsevier Science Ltd., UK.

Hamel, G. (2000). *Vallankumouksen kärjessä*, engl. Leading the Revolution. In Finnish Ritva Liljamo 2001. Harvard Business School Press. WSOY, Helsinki, Finland. [in Finnish]

Hamel, G. & Prahalad, C.K. (1994). Competing for the Future. *Harvard Business Review,* vol.72 (4), 122–128.

Hamel, G. & Prahalad, C.K. (1996). *Competing for the Future*. With a New Preface by the Authors. Harvard Business School Press, USA.

Hansen, M. (1999). The Search-Transfer Problem – The Role of Weak Ties in Sharing Knowledge Across Organizational Subunits. *Administrative Science Quarterly,* vol. 44 (1).

Harland, C.M. (2000). *Lecture Concerning Concept of Supply*. Lappeenranta University of Technology. August.

Harland, C., Brenchley, R. & Walker, H. (2003). Risk in Supply Networks. *Journal of Purchasing and Supply Management*, vol. 9, 51–62.

Harland, C.M. & Knight, L.A. (2001). Supply Network Strategy: Role and Competence Requirements. *International Journal of Operations & Production Management,* vol. 21 (4), 476–489.

Harland, C.M., Lamming, R.C. & Cousins, P.D. (1999). Developing the Concept of Supply Strategy. *International Journal of Operations & Production Management*, vol. 19 (7), 650–673.

Harland, C.M., Lamming, R.C., Walker, H., Phillips, W.E., Caldwell, N.D., Johnsen T.E., Knight L.A. & Zheng, J. (2006). Supply Management: Is It a Discipline? *International*

Journal of Operations and Production Management, vol. 26 (7), 730–753. Emerald Group Publising Limited.

Harris, M. & Schaubroeck, J. (1988). A Meta-analysis of Self-supervisor, Self-peer and Peer-supervisor Ratings. *Personnel Psychology*, vol. 41, 43–62.

Harrison, A. & van Hoek, R. (2005). *Logistics Management and Strategy*. 2nd Edition. Pearson Education Limited, UK.

Hart, S.L. (1995). A Natural Resource-based View of the Firm. *Academy of Management Review*, vol. 20 (4), 986–1014.

Hayes, J.L. (1979). A New Look at Managerial Competence: the AMA Model of Worthy Performance. *Management Review*, November, 2–3.

Heaver, T.D. (2001). *Perspectives on Global Performance Issues.* In Brewer, Button & Hensher (eds.). Handbook of Logistics and Supply-Chain Management. Elsevier Science Ltd., UK.

Heiman, B. & Nickerson, J.A. (2002). Towards Reconciling Transaction Cost Economics and the Knowledge Based View of the Firm: the Context of Interfirm Collaborations. *International Journal of the Economics of Business,* vol. 9 (1), 97–116.

Hines, P., Jones, D. & Rich, N. (2001). *Lean Logistics*. In Brewer, Button & Hensher (eds.). Handbook of Logistics and Supply-Chain Management. Elsevier Science Ltd., Oxford, UK.

Hines, P., Rich, N., Bicheno, J., Brunt, D., Taylor, D. Butterworth, C. and Sullivan, J. (1998). Value Stream Management. *International Journal of Logistics Management*, vol. 9 (1), 25–42.

Hoang, H. & Antonic, B. (2003). Network-based Research in Entrepreneurship: A Critical Review. *Journal of Business Venturing,* vol. 18 (2), 165–187.

Hogan, J.E. & Armstrong, G. (2001). Toward a Resource Based Theory of Business Exchange Relationships the Role of Relational Asset Value. *Journal of Business-to-Business Marketing,* vol. 8(4), 3–28.

Hudson, W.I. (1993). *Intellectual Capital: How to Build It, Enhance It, Use It*. John Wiley & Sons. New York, USA.

Hughes, J., Ralf, M. & Michels, B. (1998). *Transform Your Supply Chain. Releasing Value in Business*. International Thomson Business Press, London, UK.

Hunter, G.K., Bunn, M.D. & Perreault, W.D. Jr. (2006). Interrelationships Among Key Aspects of the Organizational Procurement Process. *International Journal of Research in Marketing*, vol. 23, 155–170.

Huttunen, A. Kyläheiko, K. & Virolainen, V.-M. (2001). *Why to Identify Core Capabilities? Dynamic Capability View of the Firm*. A paper presented at the 13th International Conference of NOFOMA.

Håkansson, H. (1982). *International Marketing and Purchasing of Industrial Goods: An Interaction Approach*. John Wiley, Chichester, UK.

Jack, E.P. & Raturi, A. (2002). Sources of Volume Flexibility and Their Impact on Performance. *Journal of Operations Management,* vol. 20, 519–548.

Jarillo, J.C. (1988). On Strategic Networks. *Strategic Management Journal,* vol. 9, 31–41.

Jarillo, J.C. (1993). *Creating the Borderless Organization*. Butterworth-Heinemann Ltd., Oxford, UK.

Jick, T. (1979). Mixing Qualitative and Quantitative Methods: Triangulation in Action. *Administrative Science Quarterly*, vol. 24.

Johannisson, B. (1996). *The Dynamics of Entrepreneurial Networks*. In Reynolds, P. et al. (eds.). Frontiers of Entrepreneurial Research. Center of Entrepreneurial Studies. Wellesley, MA, USA, 253–267.

Johanson, U., Mårtenson, M. & Skoog, M. (2001a). Mobilizing Change Through the Management Control of Intangibles. *Accounting, Organizations and Society,* vol. 26 (7-8), 715–733.

Johanson, U., Mårtenson, M. & Skoog, M. (2001b). Measuring to Understand Intangible Performance Drivers. *European Accounting Review,* vol. 10 (3), 407–437.

Johnson, P.F., Leenders M.R. & Fearon H.E. (2006). Supply's Growing Status and Influence: A Sixteen-Year Perspective. *Journal of Supply Chain Management*, vol. 42 (2), 33–43.

Jorde, T.M. & Teece, D.J. (1990). Innovation and Cooperation: Implications for Competition and Antitrust. *Journal of Economic Perspectives*, vol. 4 (3), 75–96.

Kanpp T.R. & Brown J.K. (1995). Ten Measurement Commandments That Often Should Be Broken. *Research in Nursing and Health,* vol. 18, 465–469.

Kaplan, R. & Norton, P. (1996). *The Balanced Scorecard: Translating Strategy into Action*. Harvard Business School Press, Boston, USA.

Kern, T. & Willcocks, L. (2000). Exploring Information Technology Outsourcing Relationships: Theory and Practice. *Journal of Strategic Information Systems,* vol. 9, 321–350.

Kotabe, M. & Murray, J. (2004). Global Prucurement of Service Activities by Service Firms. *International Marketing Review*, vol. 21 (6), 615–633.

Kotabe, M., Mol, M.J. & Murray, J.Y. (2008). Outsourcing, Performance, and the Role of E-commerce: A Dynamic Perspective. *International Marketing Management*, vol. 37, 37–45.

Kraljic, P. (1983). Purchasing Must Become Supply Management. *Harvard Business Review*, vol. 61 (5), 109–117.

Kyläheiko, K., Sandström, J. & Virkkunen, V. (2002). Dynamic Capability View in Terms of Real Options. *International Journal of Production Economics*, vol. 80 (1), 65–83.

Lambert, D.M., Cooper, M.C. & Pagh, J.D. (1998), Supply Chain Management: Implementation Issues and Research Opportunities. *International Journal of Logistics Management*, vol. 9 (2), 1–19.

Lamming, R., Johnsen, T., Zheng, J. & Harland, C. (2000). An Initial Classification of Supply Networks. *International Journal of Operations & Production Management*, vol. 20 (6), 675–691.

Lee, J.-N. & Kim, Y.-G. (1999). Effect of Partnership Quality on IS Outsourcing Success: Conceptual Framework and Empirical Validation. *Journal of Management Information Systems*, vol. 15 (4), 26–61.

Loasby, B.J. (1998). The Organisation of Capabilities. *Journal of Economic Behaviour & Organization*, vol. 35, 139–160.

Lowe, P.G., Markham, W.J. (2001). Perspectives on Operations Excellence. *Supply Chain Management Review*, vol. 5 (6).

Mentzer, J.T., DeWitt, W., Keebler, J.S., Min, S., Nix, N.W., Smith, C.D. & Zacharia, X.G. (2001). Defining Supply Chain Management. *Journal of Business Logistics*, vol. 22 (2), 1–25.

Meritum (2001). *Guidelines for Managing and Reporting Intangibles (Intellectual Capital Report)*. Final Report of the MERITUM Project, EU.

Metsämuuronen, J. (2001). *Monimuuttujamenetelmien perusteet SPSS-ympäristössä*. Metodologia-sarja 7. International Methelp Ky, Helsinki, Finland. [in Finnish]

Meyer, M.M. (2001). Why IBM is Linking Information and Logistics. *Supply Chain Management Review*, vol. 5 (5).

Min, H. & Galle, W.P. (2001). Electronic Commerce-based Purchasing. A Survey on the Perceptual Differences Between Large and Small Organizations. *International Journal of Logistics*, vol. 4, 79–95.

Mintzberg, H. & Waters, J.A. (1985). Of Strategies, Deliberate and Emergent. *Strategic Management Journal*, vol. 6, 257–272.

Mohr, J. & Spekman, R. (1994). Characteristics of Partnership Success. Partnership Attributes, Communication Behaviour, and Conflict Resolution Techniques. *Strategic Management Journal,* vol. 15, 135–152.

Mol, M.J. (2003). Purchasing's Strategic Relevance. *Journal of Purchasing and Supply Management*, vol. 9 (1), 43–50.

Monczka, R.M., Trent, R.J. & Callahan, T.J. (1993). Supply Base Strategies to Maximize Supplier Performance. *International Journal of Physical Distribution & Logistics Management*, vol. 23 (4), 42–45.

Monczka, R., Trent, R.J. & Handfield, R. (2005). *Purchasing and Supply Chain Management*. 3rd Edition. Thompson Corporation, South-Western, Ohio, USA.

Moore, D.R., Cheng, M.-I. & Dainty, A.R.J. (2002). Competence, Competency and Competences: Performance Assessment in Organisations. *Work Study*, vol. 51 (6), 314–319.

Morgan, G. (1981). Paradigms, Metaphors and Puzzle Solving in Organization Theory. *Administrative Science Quaterly*, vol. 26 (1), 605–622.

Morgan, J.P. & Monczka, R.M. (2003). Why Supply Chains Must be Strategic. *Purchasing,* vol. 132 (7), 42–45.

Morrissey, B. & Pittaway, L. (2004). A Study of Procurement Behaviour in Small firms. *Journal of Small Business and Enterprise Development*, vol. 11 (2), 254–262.

Mudambi, R., Schründer, C.P. & Mongar, A. (2004). How Cooperative Is Co-operative Purchasing in Smaller Firms? *Long Range Planning*, vol. 37 (1), 85–102.

Möller, K. & Wilson, D.T. (1995). *Business Relationships - An Interaction Perspective.* In Business Marketing: An Interaction and Network Perspective, K. Möller & D.T. Wilson (eds.). Kluwer Academic Publishers, Boston, USA.

Narasimhan, R. & Das, A. (2001). The Impact of Purchasing Integration and Practices on Manufacturing Performance. *Journal of Operations Management*, vol. 19 (5), 593–609.

Narasimhan, R., Jayaram, J. & Carter, J.R. (2001). An Empirical Examination of the Underlying Dimensions of Purchasing Competence. *Production and Operations Management,* vol. 10 (1), 1–15.

Nollet, J., Ponce, S. & Campbell, M. (2005). About "strategy" and "strategies" in Supply Management. *Journal of Purchasing and Supply Management,* vol. 11, 129–140.

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, vol. 5 (1), 14–37.

Nonaka, I. & Takeuchi, H. (1995). *The Knowledge Creating Company. How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, New York, USA.

Nonaka, I., Toyama, R. & Konno, N. (2001). *SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation*. In Nonaka & Teece (eds): Managing Industrial Knowledge. Creation, Transfer and Utilization. SAGE Publications, London, UK, Thousands Oaks, USA, New Delhi, India.

Nooteboom, B. (2004a). Governance and Competence: How Can They be Combined? *Cambridge Journal of Economics*, vol. 28 (4), 505–525.

Nooteboom, B. (2004b). *Inter-firm Collaboration, Learning and Networks: an Intergrated Approach.* Routledge, New York, USA.

Nunnally, J. & Bernstein, I.H. (1994). *Psychometric Theory*. 3rd Edition. Mc-Graw-Hill, New York, USA.

Olavarrieta, S. & Ellinger, A.E. (1997). Resource-based Theory and Strategic Logistics Research. *International Journal of Physical Distribution and Logistics*, vol. 27 (9/10), 559–587.

Parolini, **C.** (1999). *The Value Net. A Tool for Competitive Strategy*. John Wiley Books.

Patton, W.E., Puto, C.P. & King, R.H. (1986). Which Buying Decisions are Made by Individuals and not by Groups? *Industrial Marketing Management,* vol. 15 (2), 129–138.

Paulraj, A., Chen, I.J. & Flynn, J. (2006). Levels of Strategic Purchasing: Impact on Supply Intergration and Performance. *Journal of Purchasing & Supply Management*, vol. 12 (3), 107–122.

Penrose, E.T. (1959). *The Theory of the Growth of the Firm*. Oxford University Press, Oxford, UK.

Polanyi, M. (1966). *The Tacit Dimension*. Anchor Day Books, New York, USA.

Porter, M.E. (1980). *Competitive Strategy*. The Free Press, New York, USA.

Porter, M.E. (1985). *Competitive Advantage. Creating and Sustaining Superior Performance*. The Free Press, New York, USA.

Porter, M.E. (1990). *The Competitive Advantage of Nations*. Basic Books, New York, USA.

Porter, M.E. (1991). Towards a Dynamic Theory of Strategy. *Strategic Management Journal*, Winter Special Issue, vol. 12, 95–117.

Porter, A.M. (2000). Experts See Big Future for E-procurement. *Purchasing,* March 23., *v*ol. 128, 530–544.

Powell, W.W. (1998). Learning From Collaboration: Knowledge Networks in the Biotechnology and Pharmaceutical Industries. *California Management Review, v*ol. 12 (3), 228–240.

Prahalad, C.K. & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*, vol. 68 (3), 79–91.

Prusak, L. (2001). Where did Knowledge Management Come from? *IBM Systems Journal*, vol. 40 (4).

Quayle, M. (2002a). Global or Local? *Supply Management*, vol. 7 (4), 17.

Quayle, M. (2002b). Purchasing in Small Firms. *European Journal of Purchasing & Supply Management*. September, vol. 8 (3), 151–159.

Quinn, F.J. (2001). A New Agenda for the Decade. *Supply Chain Management Review*, vol. 5 (6).

Quinn, J.B. & Hilmer, F.G. (1994). Strategic Outsourcing. *Sloan Management Review*, vol. 35 (4), 43–55.

Ramsay, J. (2001). The Resource Based Perspective, Rents, and Purchasing's Contribution to Sustainable Competitive Advantage. *Journal of Supply Chain Ma*nagement, vol. 37, 38–46.

Reid, D.A., Pullins, E.B. & Plank, R.E. (2002). The Impact of Purchasing Situation on Salesperson Communication Behaviors in Business Markets. *Industrial Marketing Management,* vol. 31 (3), 205–213.

Richardson, G.B. (1972). The Organisation of Industry. *The Economic Journal*, vol. 82 (327), 883–896.

Rindfleisch, A. & Heide, J.B. (1997). Transaction Cost Analysis: Past, Present, and Future Applications, *Journal of Marketing,* vol. 61, 30–54.

Rink, D.R. & Fox, H.W. (2003). Using the Product Life Cycle Concept to Formulate Actionable Purchasing Strategies, *Singapore Management Review*, vol. 25 (2), 73–89.

Rosenzweig, E.D. & Roth, A.V. (2004). Towards a Theory of Competitive Progression: Evidence from High-tech Manufacturing. *Production and Operations Management*, vol. 13, (4), 354–368.

Rozemeijer, F. & Wynstra, F. (2005). *Organizing for Strategic Sourcing*. In Axelsson, Rozemeijer & Wynstra (eds.). Developing Sourcing Capabilities. Creating Strategic Change in Purchasing and Supply Management. John Wiley & Sons Ltd., Chichester, UK.

Rozemeijer, F.A., van Weele, A. & Weggeman, M. (2003). Creating Corporate Advantage through Purchasing: Toward a Contingency Model. *Journal of Supply Chain Management*. Winter, vol. 39 (1), 4–12.

Rucci, A.J., Kirn, S.P. & Quinn, R.T. (1998). The Employee-Customer-Profit Chain at Sears. *Harvard Business Review,* vol. 76 (1), 82–97.

Salojärvi, S. (2005). *Increasing Knowledge Focus - a Means for Entrepreneurs to Remain on a Growth Path. Essays on the Role and Nature of Knowledge Management in Finnish SMEs*. Ekonomi och Samhälle. Skrifter utgivna vid Svenska handelshögskolan Publications of the Swedish School of Economics and Business Admistration. Nr 145. Helsingfors. Finland.

Samli, A.C., Browning, J.M. & Busbia, C. (1998). The Status of Global Sourcing as a Critical Tool of Strategic Planning: Opportunistic Versus Strategic Dichotomy. *Journal of Business Research,* November, vol. 43 (3), 177–187.

Sanchez, R. (1997). *Managing Articulated Knowledge in Competence-based Competition*. In Sanchez & Heene (eds.). Strategic Learning and Knowledge Management. John Wiley & Sons Ltd., Chichester, UK.

Sanchez, R. & Collins, R.P. (2001). Competing - and Learning - in Modular Markets. *Long Range Planning,* December, vol. 34 (6), 645–667.

Sanchez, R. & Heene, A. (1997). *A Competence Perspective on Strategic Learning and Knowledge Management*. In Sanchez & Heene (eds.). Strategic Learning and Knowledge Management. John Wiley & Sons Ltd, Chichester, UK.

Sanchez-Rodriguez, C., Martinez-Lorente, A.R. & Clavel, J.G. (2003). Benchmarking in the Purchasing Function and Its Impact on Purchasing and Business Performance. Benchmarking. *An International Journal*, vol. 10 (5), 457–471.

Scheuing, E. (1998). The Leadership Leap. *Supply Management*, vol. 3 (4), 34–35.

Sheth, J.N. (1973). A Model of Industrial Buying Behaviour. *Journal of Marketing,* vol. 37, 50–56.

Simchi-Levi, D., Kaminsky, P. & Simchi-Levi, E. (2004). *Managing the Supply Chain. The definitive guide for business professionals*. McGraw-Hill, New York, USA.

Soo, C., Devinney, T., Midgley, D. & Deering, A. (2002). Knowledge Management: Philosophy, Processes, and Pitfalls. *California Management Review, v*ol. 44 (4), 129–152.

Spanos, Y.E. & Lioukas, S. (2001). An Examination into the Causal Logic of Rent Generations: Contrasting Porter's Competitive Strategy Framework and the Resource-based Perspective. *Strategic Management Journal*, vol. 22 (10), 907–934.

Spanos, Y.E., Zaralis, G. & Lioukas, S. (2004). Strategy and Industry Effects on Profitability: Evidence from Greece. *Strategic Management Journal*, vol. 25, 139–165.

Spender, J-C. (1996). Making Knowledge the Basis of a Dynamic Theory of the Firm. *Strategic Management Journal*, vol. 17, 45–62.

Ståhle, P. & Grönroos, M. (2000). *Dynamic Intellectual Capital™, Knowledge Management in Theory and Practice*. WSOY, Helsinki, Finland.

Sveiby, K.-E. (1997). *The New Organizational Wealth: Managing and Measuring Knowledge Based Assets*. Berret Koehler, San Francisco, USA.

Sveiby, K.-E. & Simons, R. (2002). Collaborative Climate and Effectiveness of Knowledge Work - an Empirical Study. *Journal of Knowledge Management*, vol. 6 (5), 420–433.

Teece, D.J. (1998). Capturing Value from Knowledge Assets: The New Economy, Markets for Knowhow, and Intangible Assets. *California Management Review,* vol. 40 (3), 55–79.

Teece, D.J. (2000). *Managing Intellectual Capital: Organizational, Strategic, and Policy Dimensions*. Oxford University Press, Oxford, UK.

Teece, D.J, Pisano, G. & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, vol. 18 (7), 509–533.

Thorelli, H.B. (1986). Networks: Between Markets and Hierarchies. *Strategic Management Journal,* vol. 7 (1), 37–51.

Turban, E. & Gehrke, D. (2000). Determinants of e-commerce Website. Website Design: Experts vs. Consumers. *Human Systems Management*, vol. 19. 111–120.

Tuten, T.L. & Urban, D.J. (2001). An Expanded Model of Business-to-Business Partnership Formation and Success. *Industrial Marketing Management,* vol. 30, 149–164.

Uusitalo, H. (1991). *Science, Research, and Thesis* (Tiede, tutkimus ja tutkielma). WSOY, Helsinki, Finland.

van Weele, A.J. (1999). *Purchasing Management. Analysis, planning and practice*. International Thomson Business Press, UK.

van Weele, A.J. (2002). *Purchasing and Supply Chain Management*. 3rd Edition. Thomson Learning, London, UK.

van Weele, A.J. (2005). *Purchasing and Supply Chain Management: Analysis, Strategy, Planning and Practice*, 4th Edition, Thomson Learning, London, UK.

Varamäki, E. & Järvenpää, M. (2004). *Verkostotasoisen suorituskykymittariston kehittämisen tavoitteet ja perustelut.* In book Varamäki (eds.) Kärkiyritysverkoston suorituskyky – teoreettinen viitekehys. Vaasan yliopiston julkaisuja. Tutkimuksia 262. Vaasa.

Varis, J., Virolainen, V.-M. & Puumalainen, K. (2004). In Search for Complementarities – Partnering of Technology-intensive Small Firms. *International Journal of Production Economics*, vol. 90, 117–125.

Vesalainen, J. (2002). *Kaupankäynnistä kumppanuuteen: yritystenvälisten suhteiden elementit, analysointi ja kehittäminen*. MET Kustannus, Helsinki, Finland. [in Finnish]

Virolainen, V-M. (1998). A Survey of Procurement Strategy Development in Industrial Companies. *International Journal of Production Economics*, vol. 56–57, 677–688.

Virolainen, V.-M. (2006). *Seminar for graduate students*. February, 16th. Lappeenranta University of Technology.

Virolainen, V.-M., Peltola, S., Vesterinen, T., Lintukangas, K., Niemi, P., Kivistö, T., Hämäläinen, T., & Puumalainen, K. (2006). *Hankintatoimen nykytila ja tulevaisuuden haasteet.* Lappeenrannan teknillinen yliopisto, Digipaino, Lappeenranta, Finland. [in Finnish]

Watts, C.A., Kee, Y.K. & Hahn, C.K. (1992). Linking Purchasing to Corporate Competitive Strategy. *International Journal of Purchasing and Materials Management*, vol. 28 (4), 2–10.

Wernerfelt, B. (1984). A Resource Based View of the Firm. *Strategic Management Journal*, vol. 5 (3), 171–180.

Wernerfelt, B. (1995). The Resource-based View of the Firm: Ten Years After. *Strategic Management Journal,* vol. 16, 171–174.

Williams, L.R., Esper, T.L. & Ozment, J. (2002). The Electronic Supply Chain. Its Impact on the Current and Future Structure of Strategic Alliances, Partnerships and Logistics Leadership. *International Journal of Physical Distribution & Logistics Management*, vol. 32 (8) 703–719.

Williamson, O. (1975). *Markets and Hierarchies. Analysis and Antitrust Implications*. The Free Press, New York, USA.

Williamson, O. (1981). The Economics of Organization. The Transaction Cost Approach. *American Journal of Sosiology*, vol. 87, 548–577.

Williamson, O. (1985). *The Economic Institution of Capitalism*. Free Press, New York, USA.

Williamson, O. (1990). *Economic Organization, Firms, Markets and Policy Control.* New York University Press, New York, USA.

Williamson, O. (1991). Strategizing, Economizing, and Economic Organization. *Strategic Management Journal*, vol. 12, 75–94.

Winter, S.G. (2000). The Satisficing Principle in Capability Learning. *Strategic Management Journal*, vol. 21, 981–996.

Winter, S.G. (2003). Understanding Dynamic Capabilities. *Strategic Management Journal*, vol. 24, 991–995.

Yin, R.K. (1984). Case Study Research: Design and Methods. 2nd Edition. SAGE, Beverly Hills, CA, USA.

Yli-Luoma, P. (2002). Johdatus kvantitatiivisiin analyysimenetelmiin SPSS for Windows -ohjelman avulla. IMDL, Sipoo, Finland. [in Finnish]

Ylinenpää, H. (1997). *Managing Competence Development and Acquisition in Small Manufacturing Firms. Differences between firms by organisational market performance.* Doctoral Thesis 1997:27. Luleå University of Technology. Department of Business Administration and Social Sciences. Division of Industrial Organisation. Sweden.

Yli-Renko, H. (1999). *Dependence, Social capital, and Learning in Key Customer Relationships: Effects on the Performance of Technology-based New Firms*. Ph.D. Thesis. Helsinki University of Technology. Helsinki, Finland.

Zheng, J., Knight, L., Harland, C., Humby, S. & James, K. (2007). An Analysis of Research into the Future of Purchasing and Supply Management. *Journal of Purchasing and Supply Management*, vol. 13, 69–83.

Zhu, Z., Hsu, K. & Lillie, J. (2001). Outsourcing - a Strategic Move: the Process and the Ingredients for Success. *Management decision*, vol. 39 (5), 373–378.

Zsidisin, G.A., Ellram, L.M. & Ogden, J. A. (2003). The Relationship between Purchasing and Supply Management's Perceived Value and Participation in Strategic Supplier Cost Management Activities. *Journal of Business Logistics*, vol. 24 (2), 129–154.

Internet-publications:

Amadeus database. Bureau van Dijk. Electronic publishing. Available at: http://www.bvdep.com (Accessed 19 January 2008)

Crichton, G., Gallery, C., Zammit, V., Hughes, J., Vammen, S. & Day, M. (2003). *Connecting Purchasing & Supplier Strategies to Shareholder Value*. Emerging Trends for Executive Action. Future Purchasing Alliance. Available at: http://www.futurepurchasing.com (Accessed 16 October 2007)

Hughes, J., Vammen, S., Crichton, G., Gallery, C., Day, M. & Zammit, V. (2003). *Strategies for purchasing transformation 2003-5. "Defining the future agenda for purchasing"*. Future Purchasing Alliance. Available at: www.futurepurchasing.com. (Accessed 16 October 2007)

Naula, T., Ojala, L. & Solakivi, T. (2006). *Logistics Survey 2006.* Ministry of Transport and Communications Finland. Research report. July 12, 2006. Available at: http://www.mintc.fi/oliver/upl367-Julkaisuja%2045_2006.pdf (Accessed 13 December 2007)

Official Journal of the European Union. Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. 2003/361/EC, Vol. L124, 36–41, 20.5.2003. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:EN:PDF (Accessed 21 August 2003)

Oxford English Dictionary 2007. Competence. Competency. Available at: https://vpn.lut.fi/http/0/dictionary.oed.com/cgi/entry/50045525?single=1&query_type=word&queryword=competence&first=1&max_to_show=10 (Accessed 23 February 2008)

Statistics Finland 2007. *Enterprises in 2006.* Available at: http://www.tilastokeskus.fi/tup/suoluk/suoluk_yritykset_en.html (Accessed 15 March 2008)

Dear recipient!

You are about to answer to an enquiry that is part of a doctoral thesis on purchasing and supply management capabilities in Finnish medium-sized enterprises. An enterprise is medium-sized if it employs less than 250 employees and if its annual turnover is at most 50 million euros. This research is realised by M.Sc. (Econ.) Virpi Ritvanen.

This research studies how medium-sized enterprises view their capabilities in purchasing and supply management (PSM) and its development, as well as business relationships between enterprises. In Finland, there is only a little knowledge about this topic and from this point of view. This doctoral thesis determines how purchasing and supply management capabilities affect enterprises' commercial success, but also the relevance of networking for purchasing and supply management. The goal is also to create a model for enterprises on how to map their purchasing and supply management. This research is carried out at Lappeenranta University of Technology for the degree programme in Supply Management, and the supervisor of this thesis is professor Veli-Matti Virolainen.

You are asked to answer the questions on behalf of your business unit. Answers are confidential and they are treated so that the answers of one single enterprise cannot be detected from the results. It takes about 30 minutes to answer the questions. You may send answers until 31 December, 2006.

In March 2007, a report about the results of this enquiry will be sent to all respondents. The person performing this research will be happy to answer any questions about the enquiry: tel. 044 5595 575, e-mail: virpi.ritvanen@viesti.net

Welcome to develop purchasing and supply management of medium-sized enterprises!

1 Name of the enterprise_____

2 Domicile_____

3 Line of business

- ☐ Manufacture of food products, beverages, and tobacco
- ☐ Manufacture of textiles and textile products
- ☐ Manufacture of leather and leather products
- ☐ Manufacture of wood and wood products
- ☐ Manufacture of pulp, paper, and paper products; publishing and printing
- ☐ Manufacture of coke, refined petroleum products, and nuclear fuel
- ☐ Manufacture of chemicals, chemical products, and man-made fibres
- ☐ Manufacture of rubber and plastic products
- ☐ Manufacture of other non-metallic mineral products
- ☐ Manufacture of basic metals and fabricated metal products
- ☐ Manufacture of machinery and equipment
- ☐ Manufacture of electrical and optical equipment
- ☐ Manufacture of transport equipment
- ☐ Construction
- ☐ Wholesale and retail trade
- ☐ Transport, storage, and communication
- ☐ Other, what?_____

4 Respondent's point of view to questions

1 Medium-sized enterprise as a whole
2 Profit centre
3 Other, what?_____

5 Turnover in 2001_____(euros)

6 Turnover in 2005_____(euros)

7 Estimate of turnover in 2006_____(euros)

8 Operating result in 2005_____(%)

9 Return On Investment, ROI_____(%)

10 Year of foundation_____

11 Number of personnel in 2005_____

12 Does your enterprise have export activities? If yes, write down export's percentage value in your enterprise's turnover.

1 Yes_____
2 No

13 In which market areas does your enterprise operate? You may circle one or more options.

1 Domestic or EU countries
2 Asia
3 North America
4 Rest of the world

14 Are your products mainly: You may circle one or more options.

1 Products for other enterprises
2 Subcontract products for enterprises
3 Services for other enterprises
4 Products for personal customers
5 Services for personal customers
6 Other, what?_____

15 Respondent's position in the enterprise (occupational title)_____

16 Respondent's experience in years 3(16)

In current position _____In current enterprise _____In this field_____

17 Respondent's level of education

1 University
2 Polytechnic
3 College
4 Other, what? _____

18 Respondent's field of education

1 Economics
2 Technology
3 Law
4 Other, what? _____

STATUS AND ROLE OF PURCHASING AND SUPPLY MANAGEMENT IN YOUR ENTERPRISE

This section is concerned with the organising, personnel, and status and role of purchasing and supply in your enterprise.

19 Which answer of the following options represents the status and future prospects of purchasing and supply management in your enterprise? Tick the correct option(s) in both columns.

	Now	**In 5 years**
Purchasing and supply management is centred in one place.	_____	_____
Purchasing and supply management has been decentralised.	_____	_____
Purchasing and supply management is part of a matrix organisation.	_____	_____
Purchasing and supply management is in its own department.	_____	_____
Enterprise has a purchasing and supply management team.	_____	_____
Departments have separate buyers.	_____	_____

20 What is the occupational title of the person in charge of purchasing and supply management?

1 Managing director or entrepreneur
2 Purchasing and supply director
3 Purchasing and supply manager
4 Buyer
5 Other, what?_____

21 Who is mainly in charge of the following purchasing and supply activities in your enterprise? Circle one option in each row. Scale: 5 = Managing director or entrepreneur, 4 = Purchasing and supply director, 3 = Purchasing and supply manager, 2 = Buyer or someone else, 1 = No one

Planning and direction of purchasing and supply	5	4	3	2	1
Personnel administration and management	5	4	3	2	1
Development of purchasing and supply	5	4	3	2	1
Control, measurement, and statistics of purchasing and supply management	5	4	3	2	1
Participation in the management of enterprise, e.g. membership in the management group	5	4	3	2	1
Invitations for tenders and their comparison	5	4	3	2	1
Contracts and contract negotiations	5	4	3	2	1
Cooperation with suppliers	5	4	3	2	1
Reporting of purchasing and supply management	5	4	3	2	1
Orders and recalls	5	4	3	2	1
Transport and forwarding arrangements	5	4	3	2	1
Cooperation with production	5	4	3	2	1
Cooperation with sales	5	4	3	2	1
Cooperation with warehousing	5	4	3	2	1
Payments	5	4	3	2	1
Delivery control	5	4	3	2	1
Complaints and returns	5	4	3	2	1
Training or the responsibility of training of the purchasing personnel	5	4	3	2	1

22 How many persons work in purchasing and supply management in your enterprise? Tick the correct option(s) in both columns.

	Now	**In 5 years**
No full-time employees	_____	_____
One full-time employee	_____	_____
Two or more full-time employees	_____	_____
One employee along with other tasks	_____	_____
Two or more employees along with other tasks	_____	_____

23 The person in charge of purchasing and supply belongs to the management group of your enterprise.

Now	**In 5 years**
1 Yes	1 Yes
2 No	2 No

24 To whom does purchasing and supply management report in your enterprise?

1 Managing director or entrepreneur
2 The person responsible for marketing
3 The person responsible for production
4 The person responsible for finance or administration
5 Someone else, who?_____
6 There is no reporting about purchasing and supply management.

25 Answer the following statements.

	Yes	No	Partially
Purchasing personnel has access to product information.	1	2	3
Purchasing personnel has access to sales information.	1	2	3
Purchasing personnel has access to production and stock information.	1	2	3
Purchasing personnel has access to financial information.	1	2	3

26 How much of enterprise's purchases and supplies are handled through purchasing and supply department or the person responsible for purchasing and supply (%)? Give the number that is closest to the actual percentage.

20 40 60 80 100

27 What kind of raw materials, products, investments, or services does your personnel in purchasing and supply procure? (5=always, 4=often, 3=quite often, 2=rarely, 1=never)

Raw materials	5 4 3 2 1
Semi-manufactured products	5 4 3 2 1
Components	5 4 3 2 1
Investments	5 4 3 2 1
Non-productional purchases	5 4 3 2 1

28 How many percents of your purchases are conducted locally, domestically, or from abroad? Give the number that is closest to the actual percentage.

Local region or economic area	20 40 60 80 100
Domestic market	20 40 60 80 100
From abroad	20 40 60 80 100

29 Does your enterprise have joint purchasing and supply activities with other organisations? (5=always, 4=often, 3=quite often, 2=rarely, 1=never):

Locally	5 4 3 2 1
Domestically	5 4 3 2 1
Abroad	5 4 3 2 1

30 How international is your purchasing and supply management? (5=always, 4=often, 3=quite often, 2=rarely, 1=never)

Purchases are conducted directly from abroad	5 4 3 2 1
Purchases are conducted from abroad through own units	5 4 3 2 1
Cooperation with foreign suppliers	5 4 3 2 1

31 How international is your purchasing and supply management in 5 years? (5=always, 4=often, 3=quite often, 2=rarely, 1=never)

Purchases are conducted directly from abroad	5	4	3	2	1
Purchases are conducted from abroad through own units	5	4	3	2	1
Cooperation with foreign suppliers	5	4	3	2	1

COMPETENCIES AND CAPABILITIES IN PURCHASING AND SUPPLY MANAGEMENT

The capabilities of an enterprise's purchasing and supply management are comprised of the enterprise's capabilities and its personnel's competences, as well as of the development of capabilities. Purchasing personnel's competences are based on training and work experience. An enterprise's purchasing and supply capabilities include both strategic and operative capabilities. During the following questions, evaluate the importance of personnel's different competence areas and the level of capabilities in your enterprise.

32 Evaluate the importance of the following fields of education on a scale from 1 to 5. Mark an answer on each row. Section "Other, what?" is optional. 5= very important, 1= not important at all.

Economics_____
Technology_____
Law_____
Humanities_____
Public administration_____
Social sciences_____
Education_____
Other, what?_____

33 Evaluate your current personnel's competences on the following fields of education on a scale from 1 to 5. Mark an answer on each row. Section "Other, what?" is optional. 5= very important, 1= not important at all.

Economics_____
Technology_____
Law_____
Humanities_____
Public administration_____
Social sciences_____
Education_____
Other, what?_____

34 Evaluate the importance of educational background on a scale from 1 to 5. Mark an answer on each row. Section "Other, what?" is optional. 5= very important, 1= not important at all.

University degree_____
Bachelor's degree (Polytechnic)_____
High school or college degree_____
University post-graduate (licentiate, doctorate)_____
Courses in purchasing and supply_____
Other, what?_____

35 Enter your current personnel's educational background on a scale from 1 to 5. Mark an answer on each row. Section "Other, what?" is optional. 5= lots of education, 1= no education at all.

University degree_____
Bachelor's degree (Polytechnic)_____
High school or college degree _____
University post-graduate (lisentiate, doctorate)_____
Courses in purchasing and supply_____
Other, what?_____

36 Evaluate the importance of further training along with working on a scale from 1 to 5. Mark an answer on each row. Section "Other, what?" is optional. 5= very important, 1= not important at all.

For option ’Other, what?’, write also an explanation.

Inter-company training	5	4	3	2	1
Outside training	5	4	3	2	1
Degree programme	5	4	3	2	1
Degree in purchasing and supply management	5	4	3	2	1
Other than a degree in purchasing and supply management, what?_____	5	4	3	2	1

37 Evaluate the extent of further training along with working in your enterprise on a scale from 1 to 5. Mark an answer on each row. Section ”Other, what?” is optional. 5= very important, 1= not important at all.

For option ’Other, what?’, write also an explanation.

Inter-company training	5	4	3	2	1
Outside training	5	4	3	2	1
Degree programme	5	4	3	2	1
Degree in purchasing and supply management	5	4	3	2	1
Other than a degree in purchasing and supply management, what?_____	5	4	3	2	1

38 Evaluate the importance of work experience on a scale from 1 to 5. Mark an answer on each row. Section ”Other, what?” is optional. 5= very important, 1= not important at all.

Amount of work experience	5	4	3	2	1
Experience in purchasing and supply	5	4	3	2	1
Other commercial work experience	5	4	3	2	1
Work experience in products	5	4	3	2	1
Work experience in the industry	5	4	3	2	1
Work experience in several industries	5	4	3	2	1
International work experience	5	4	3	2	1

39 Enter your current personnel’s work experience on a scale from 1 to 5. Mark an answer on each row. 5= very much, 1= no work experience at all.

Amount of work experience	5	4	3	2	1
Experience in purchasing and supply	5	4	3	2	1
Other commercial work experience	5	4	3	2	1
Work experience in products	5	4	3	2	1
Work experience in the industry	5	4	3	2	1
Work experience in several industries	5	4	3	2	1
International work experience	5	4	3	2	1

40 Evaluate the importance of competences in business operations on a scale from 1 to 5. Mark an answer on each row. 5= very important, 1= not important at all.

Strategic administration	5	4	3	2	1
Financial administration	5	4	3	2	1
Logistics	5	4	3	2	1
Marketing	5	4	3	2	1
Law	5	4	3	2	1
Quality management	5	4	3	2	1
Risk management	5	4	3	2	1
Production technology	5	4	3	2	1
Supply chain control	5	4	3	2	1
Stock control	5	4	3	2	1

41 Evaluate your current personnel’s competences in business operations on a scale from 1 to 5. Mark an answer on each row. 5= very good, 1= no capabilities.

Strategic administration	5	4	3	2	1
Financial administration	5	4	3	2	1

Logistics	5	4	3	2	1
Marketing	5	4	3	2	1
Law	5	4	3	2	1
Quality management	5	4	3	2	1
Risk management	5	4	3	2	1
Production technology	5	4	3	2	1
Supply chain control	5	4	3	2	1
Stock control	5	4	3	2	1

42 Evaluate the importance of personal qualities on a scale from 1 to 5. Mark an answer on each row. 5= very important, 1= not important at all.

Analytical thinking	5	4	3	2	1
Customer oriented action	5	4	3	2	1
Ethics	5	4	3	2	1
IT skills	5	4	3	2	1
Control of entities	5	4	3	2	1
Problem-solving skills	5	4	3	2	1
Organisational skills	5	4	3	2	1
Decision making skills	5	4	3	2	1
Stress tolerance	5	4	3	2	1
Communicational and interactional skills	5	4	3	2	1

43 Evaluate your current personnel's qualities on a scale from 1 to 5. Mark an answer on each row. 5= very much, 1= not at all.

Analytical thinking	5	4	3	2	1
Customer oriented actions	5	4	3	2	1
Ethics	5	4	3	2	1
IT skills	5	4	3	2	1
Control of entities	5	4	3	2	1
Problem-solving skills	5	4	3	2	1
Organisational skills	5	4	3	2	1
Decision making skills	5	4	3	2	1
Stress tolerance	5	4	3	2	1
Communicational and interactional skills	5	4	3	2	1

44 Evaluate the importance of international competence on a scale from 1 to 5. Mark an answer on each row. 5= very important, 1= not important at all.

Language skills	5	4	3	2	1
Cultural knowledge	5	4	3	2	1
Supply channel management	5	4	3	2	1
Global logistics management	5	4	3	2	1

45 Evaluate your current personnel's international competence on a scale from 1 to 5. Mark an answer on each row. 5= very much, 1= not at all.

Language skills	5	4	3	2	1
Cultural knowledge	5	4	3	2	1
Management of supply channels	5	4	3	2	1
Management of global logistics	5	4	3	2	1

46 Place the following fields in order of importance so that 1 is the most important and 5 is the least important field. You may choose only 5 fields.

Notice, that 1 refers to the most important factor.

Education	_____
Educational background	_____
Training	_____
Work experience	_____
Personal qualities	_____

Business competence _____
International competence _____

47 Place the qualifications that are essential in the selection of purchasing personnel in order of importance so that 1 is the most important and 5 is the least important qualification. You may choose only 5 qualifications.

Education _____
Work experience _____
Personal qualities _____
Business competence _____
International competence _____
Other, what?_____

48 Answer the following statements from your enterprise's point of view.

	Yes	**No**
Purchasing personnel is hired according to strict criteria.	1	2
Current purchasing personnel participates in the hiring of new employees for purchasing and supply management.	1	2
New members of purchasing personnel are initiated into work.	1	2
Purchasing and supply management has difficulties in finding qualified personnel.	1	2
Purchasing personnel's competence is followed during employment.	1	2
Purchasing personnel is trained regularly.	1	2
Capability in purchasing and supply management are lost, if the key person leaves enterprise.	1	2
There are severe weaknesses in the competence level of the purchasing personnel.	1	2
In our company, purchasing and supply management capability is better than in Finnish enterprises on average.	1	2
In our company, purchasing and supply management capability is better than in other enterprises in the same line of business on average.	1	2
Capability level in purchasing and supply management affects entire enterprise's success.	1	2
Purchasing personnel changes work tasks within enterprise.	1	2
Our enterprise follows other companies' business competencies.	1	2

49 In your opinion, how could your enterprise's purchasing and supply capabilities be developed? Place the following factors in order of importance so that 1 is the most important and 5 is the least important factor. You may choose only 5 factors.

By hiring new professionals for purchasing and supply. _____
By motivating the current purchasing personnel with rewards. _____
By training the current purchasing personnel. _____
By training other personnel to work in purchasing and supply. _____
By utilising the existing technology in a better manner than at the present. _____
By acquiring new technology for purchasing and supply. _____
By improving purchasing personnel's economic expertise. _____
With indicators developed for purchasing and supply management. _____

50 Which factors in your enterprise hinder the development of purchasing personnel's capabilities? Mark an answer on each row. 5= completely agree, 4= agree, 3= somewhat agree, 2= disagree, 1= completely disagree.

Purchasing personnel's incompetences	5	4	3	2	1
Purchasing personnel's unwillingness to develop its competence	5	4	3	2	1
Purchasing personnel's busyness	5	4	3	2	1
Purchasing personnel's beliefs and values	5	4	3	2	1
Employees' bad relationships with each other	5	4	3	2	1
Enterprise's small financial resources	5	4	3	2	1
Enterprise's small human resources	5	4	3	2	1
Enterprise's small facility resources	5	4	3	2	1
Development of purchasing and supply competence is regarded insignificant.	5	4	3	2	1

51 Evaluate the importance of competences related to control and development of supplier relations. Mark an answer on each row. 5= very important, 1= not important at all.

Selection of suppliers	5	4	3	2	1
Evaluation of suppliers	5	4	3	2	1
Surveillance and control of suppliers	5	4	3	2	1
Developing of suppliers	5	4	3	2	1
Classification of supplier relations	5	4	3	2	1
Developing of confidential relations	5	4	3	2	1
Long-term relations with key suppliers	5	4	3	2	1
Sharing of information with suppliers	5	4	3	2	1
Product development with suppliers	5	4	3	2	1
Production planning with suppliers	5	4	3	2	1
Allocation of financial risks and profits with suppliers	5	4	3	2	1
Evaluation of business relations with suppliers	5	4	3	2	1
Problem-solving with suppliers	5	4	3	2	1
Joint investments with suppliers	5	4	3	2	1
Joint information systems with suppliers	5	4	3	2	1

52 Evaluate your enterprise's current capabilities in the control and development of supplier relations. Mark an answer on each row. 5= very much, 1= not at all.

Selection of suppliers	5	4	3	2	1
Evaluation of suppliers	5	4	3	2	1
Surveillance and control of suppliers	5	4	3	2	1
Developing of suppliers	5	4	3	2	1
Classification of supplier relations	5	4	3	2	1
Developing of confidential relations	5	4	3	2	1
Long-term relations with key suppliers	5	4	3	2	1
Sharing of information with suppliers	5	4	3	2	1
Product development with suppliers	5	4	3	2	1
Production planning with suppliers	5	4	3	2	1
Allocation of financial risks and profits with suppliers	5	4	3	2	1
Evaluation of business relations with suppliers	5	4	3	2	1
Problem-solving with suppliers	5	4	3	2	1
Joint investments with suppliers	5	4	3	2	1
Joint information systems with suppliers	5	4	3	2	1

53 Evaluate the importance of capabilities related to the role and tasks of purchasing and supply management. Mark an answer on each row. 5= very important, 1= not important at all.

Cooperation with other functions in your enterprise	5	4	3	2	1
Cooperation with suppliers	5	4	3	2	1
Formulation of purchasing strategies	5	4	3	2	1
Management of total costs of purchases	5	4	3	2	1
Formulation of price and expense predictions	5	4	3	2	1
Shortening of lead-times	5	4	3	2	1
Utilisation of the lean principle	5	4	3	2	1
Observing of environmental issues	5	4	3	2	1
Global purchasing	5	4	3	2	1
Training of purchasing personnel	5	4	3	2	1
Rewarding of purchasing personnel	5	4	3	2	1
Risk management in purchasing and supply management	5	4	3	2	1
Estimation of material needs	5	4	3	2	1
Standardisation of purchases	5	4	3	2	1
Placing of orders and preparation of invitations for tenders	5	4	3	2	1

Management of competition process	5	4	3	2	1
Delivery control	5	4	3	2	1
Stock control	5	4	3	2	1
Planning of shipping	5	4	3	2	1
Processing of purchasing documents	5	4	3	2	1
Contract negotiations	5	4	3	2	1
Use of technology	5	4	3	2	1
Networking	5	4	3	2	1

54 Evaluate your enterprise's capabilities in the following tasks. Mark an answer on each row. 5= very much, 1= not at all.

Cooperation with other functions in your enterprise	5	4	3	2	1
Cooperation with suppliers	5	4	3	2	1
Formulation of purchasing strategies	5	4	3	2	1
Management of total costs of purchases	5	4	3	2	1
Formulation of price and expense predictions	5	4	3	2	1
Shortening of lead-times	5	4	3	2	1
Utilisation of the lean principle	5	4	3	2	1
Observing of environmental issues	5	4	3	2	1
Global purchasing	5	4	3	2	1
Training of purchasing personnel	5	4	3	2	1
Rewarding of purchasing personnel	5	4	3	2	1
Risk management in purchasing and supply management	5	4	3	2	1
Estimation of material needs	5	4	3	2	1
Standardisation of purchases	5	4	3	2	1
Placing of orders and preparation of invitations for tenders	5	4	3	2	1
Management of competition process	5	4	3	2	1
Delivery control	5	4	3	2	1
Stock control	5	4	3	2	1
Planning of shipping	5	4	3	2	1
Processing of purchasing documents	5	4	3	2	1
Contract negotiations	5	4	3	2	1
Use of technology	5	4	3	2	1
Networking	5	4	3	2	1

FINANCIAL IMPORTANCE OF PURCHASING AND SUPPLY

This section deals with the financial importance of purchasing and supply and its assessment with economic indicators.

55 How much did you use on supplies in 2001?

_____euros.

56 How much did you use on supplies in 2005?

_____euros.

57 How do your purchases divide between productional and non-productional purchases (%)?

_____% productional supplies
_____% non-productional supplies

58 How much of your enterprise's turnover are the expenses of purchasing and supply management (in percents)? Give the number that is closest to the actual percentage.

Costs of the purchasing and supply management include purchasing personnel's salaries, IT instruments, programmes, and investments, facility (floor area) and other expenses (e.g. phone, business trips, consulting, investments). However, expenses do not include purchase prices of products and services.

10 20 30 40 50 60 70 80 90 100

59 Answer the following statements about the economic significance of purchases from your enterprise's point of view.

	Yes	**No**
Total costs of purchasing and supply are followed.	1	2
There is a striving to reduce the total costs of purchasing and supply management.	1	2
Goals of purchasing and supply management are included in the entire enterprise's goals.	1	2
Purchasing and supply management has a profit target.	1	2
Purchasing and supply management is partly responsible for the financial success.	1	2

60 Are the following economic indicators being followed in your enterprise? Describe the situation now and in 5 years.

	Now		**In 5 years**	
	Yes	No	Yes	No
Return on capital	1	2	1	2
Payment time	1	2	1	2
Self-sufficiency	1	2	1	2
Operating profit	1	2	1	2
Liquidity	1	2	1	2
Working capital	1	2	1	2

61 How important is purchasing and supply management for the above-mentioned indicators of your enterprise? Mark an answer on each row. 5= very important , 4= important, 3=somewhat important, 2=of little importance, 1= of no importance

Return on capital	5 4 3 2 1
Payment time	5 4 3 2 1
Self-sufficiency	5 4 3 2 1
Operating margin	5 4 3 2 1
Liquidity	5 4 3 2 1
Working capital	5 4 3 2 1

62 Is there reporting about the economic significance of purchases to your enterprise's executives?

1 Weekly
2 Monthly
3 Quarterly
4 Every six months
5 Once a year
6 Never

STRATEGIC SUPPLY

This section handles about a relation of purchasing and supply management to your enterprise's strategy.

63 Does your enterprise have a supply strategy?

1 Yes
2 No

64 What does your enterprise supply through joint supplies? Joint supplies mean in this context purchases that are done together with other organisations. 5=always, 4=often, 3=quite often, 2=rarely, 1=never

Raw materials	5 4 3 2 1

Non-productional purchases	5	4	3	2	1
Components	5	4	3	2	1
Investments	5	4	3	2	1
Semi-manufactured products	5	4	3	2	1

65 Who is in charge of the following functions participate in the decision-making of purchasing? 5=always, 4=often, 3=quite often, 2=rarely, 1=never

Enterprise's executives	5	4	3	2	1
Financial administration	5	4	3	2	1
Production	5	4	3	2	1
Warehousing	5	4	3	2	1
Transport	5	4	3	2	1
Product design and development	5	4	3	2	1
Marketing	5	4	3	2	1
Law department or the like	5	4	3	2	1

66 Evaluate the following statements from your enterprise's point of view. 5= completely agree, 4= agree, 3= somewhat agree, 2= disagree, 1= completely disagree

Purchasing and supply management					
is one of the most important functions in our enterprise.	5	4	3	2	1
Supplies are planned together with senior management.	5	4	3	2	1
Supplies are planned together with other functions.	5	4	3	2	1
Supply strategy extends from 5 to 10 years.	5	4	3	2	1
Plan of action for purchases is updated on regular intervals.	5	4	3	2	1
Purchasing and supply can bring add value.	5	4	3	2	1
Senior management recognises and acknowledges the strategic significance of PSM.	5	4	3	2	1
Supply strategy is a part of business strategy.	5	4	3	2	1
Purchasing and supply management is in charge of make-or-buy decisions.	5	4	3	2	1
Enterprise's other functions inform purchasing and supply management in time.	5	4	3	2	1
Problems are handled together with suppliers.	5	4	3	2	1
Information is shared with suppliers.	5	4	3	2	1
Supplier has to adapt to enterprise's methods.	5	4	3	2	1
Enterprise has to adapt to supplier's methods.	5	4	3	2	1
Enterprise has joint purchasing with network's other actors.	5	4	3	2	1
Purchasing and supply management has a central role in developing the supply chain.	5	4	3	2	1

67 Describe the role of purchasing and supply management in your enterprise.

The closer your answer is to the edge, the bigger is the function's significance. E.g. number 4 for the pair operative/strategic means that your enterprise's purchasing and supply management is clearly operative.

Operative	5	4	3	2	1	Strategic
Proactive	5	4	3	2	1	Reactive

68 Evaluate the most important development areas in your enterprise's purchasing and supply management in regard to supply chain so that 1 is the most important and 5 is the least important factor.

Time based management	_____
Global sourcing	_____
Strategic activities	_____
Operative activities	_____
Networks	_____
Capabilities	_____
E-procurement	_____
Research and development	_____
Supplier relatioships	_____
Outsourcing	_____
Information technology (IT)	_____

69 Has your enterprise outsourced its functions?

1 Yes
2 No

70 Will outsourcing increase in your enterprise during the next 5 years?

1 Yes
2 No

71 Which of the following functions have been outsourced or will be outsourced in your enterprise?

	Now	**In 5 years**
Purchasing and supply management	_____	_____
Customer service	_____	_____
Product design and development	_____	_____
Production	_____	_____
Marketing	_____	_____
Catering, cleaning, security, maintenance etc.	_____	_____
Logistics	_____	_____
Financial administration	_____	_____
Training	_____	_____

72 Estimate the financial proportion of your outsourced functions in 2001.

1_____(euros)
2 I don't know or I am unable to tell

73 Estimate the financial proportion of your outsourced functions in 2005.

1_____(euros)
2 I don't know or I am unable to tell

74 The following actors participate in the decision-making about outsourcing:

Choose one or more options.

Managing director or entrepreneur _____
Purchasing personnel _____
Marketing _____
Product design and development _____
Production _____
Other, what?_____

75 Decisions about outsourcing are made according to the following methods or modes of action. Mark an answer on each row. Section "Other, what?" is optional. 5=always, 4=often, 3=quite often, 2=rarely, 1=never:

Cost analysis_____
Market analysis_____
Risk analysis_____
Strategy_____
Other, what?_____

PURCHASING AND SUPPLY MANAGEMENT'S METHODS AND INDICATORS

This section handles about the methods and indicators that are being used in your enterprise's purchasing and supply management.

76 Your enterprise's purchasing and supply emphasises (5=always, 4=often, 3=quite often, 2=rarely, 1=never):

Price	5	4	3	2	1
Cost efficiency	5	4	3	2	1

Quality	5	4	3	2	1
Service capabilities	5	4	3	2	1
Capital turnover	5	4	3	2	1
Return on investment	5	4	3	2	1
Delivery time	5	4	3	2	1
Stock sufficiency	5	4	3	2	1

77 Purchasing and supply is budgeted:

1. On a product level
2. On a product group level
3. Department by department
4. On a corporate or unit level
5. Quarterly
6. Semi-annually
7. Annually

78 Evaluate the accuracy of the following statements from your enterprise's point of view. 5=always, 4=often, 3=quite often, 2=rarely, 1=never:

Performance of purchasing and supply management is followed.	5	4	3	2	1
Customer satisfaction is assessed.	5	4	3	2	1
Supply costs are followed.	5	4	3	2	1
Availability of products and services is controlled.	5	4	3	2	1
Technology is controlled.	5	4	3	2	1
Purchasing and supply management uses information technology (IT).	5	4	3	2	1
Stock level is optimal.	5	4	3	2	1
Sales and purchasing interact continuously.	5	4	3	2	1
Purchasing and supply management does not exceed budget.	5	4	3	2	1
There are shortages in production due to the inefficiency of purchasing and supply management.	5	4	3	2	1

79 In 5 years:

You can choose one or more options.

1. The performance of purchasing and supply management will be monitored better than now.
2. Number of products will decrease.
3. Number of products will increase.
4. Number of suppliers will decrease.
5. Number of suppliers will increase.
6. The number of indicators used in purchasing and supply management will decrease.
7. The number of indicators used in purchasing and supply management will increase.

80 The number of your enterprise's suppliers:

1. less than 10
2. 10 - 29
3. 30 - 49
4. 50 - 69
5. 70 - 99
6. over 100

81 The number of your enterprise's key suppliers:

1. less than 5
2. 5 - 9
3. 10 - 14
4. 15 or more

82 Supplier is selected according to the following criteria. Mark an answer on each row. 5=always, 4=often, 3=quite often, 2=rarely, 1=never:

Supplier is international	5	4	3	2	1
Price of product or service	5	4	3	2	1
Quality of product or service	5	4	3	2	1
Product or service support	5	4	3	2	1
Capacity	5	4	3	2	1
Willingness or capability to develop	5	4	3	2	1
Supplier's financial condition	5	4	3	2	1
Delivery time	5	4	3	2	1
Delivery reliability	5	4	3	2	1
Flexibility	5	4	3	2	1
Capabilities	5	4	3	2	1

83 The following methods are used for the evaluation of supplier's performance. 5=always, 4=often, 3=quite often, 2=rarely, 1=never:

Audits	5	4	3	2	1
Value analysis	5	4	3	2	1
Cost analysis	5	4	3	2	1
Quality system	5	4	3	2	1
Target costing	5	4	3	2	1

84 The following qualities are emphasised in the evaluation of supplier's performance: 5=always, 4=often, 3=quite often, 2=rarely, 1=never:

Flexibility	5	4	3	2	1
Willingness and ability to give service	5	4	3	2	1
Delivery reliability	5	4	3	2	1
Punctuality of delivery	5	4	3	2	1
Quality of product or service	5	4	3	2	1

85 Your enterprise utilises in the planning of purchasing and supply management: 5=always, 4=often, 3=quite often, 2=rarely, 1=never:

Value chain analysis	5	4	3	2	1
Benchmarking	5	4	3	2	1
Purchasing portfolio analysis	5	4	3	2	1
Risk analysis	5	4	3	2	1
SWOT analysis	5	4	3	2	1
Classification of suppliers	5	4	3	2	1

86 Are the following stock control methods used in your enterprise?

1. Size of order quantity
2. Order point
3. Material Requirement Planning (MRP)
4. ABC analysis
5. Time series analysis
6. Safety stock
7. Other, what?_____
8. We do not use any methods.

87 Does your enterprise have e-procurement activity (e.g. e-invoicing, ordering, or e-commerce)?

1 Yes
2 No

88 How has e-procurement affected your enterprise's functioning?

	Yes	**No**
There are less work tasks.	1	2
Some of work tasks do not exist anymore.	1	2
Purchasing personnel's work specifications have changed.	1	2

Quality of activities has improved.	1	2
Enterprise's internal process management has become more efficient.	1	2
Cooperation with other enterprises has become more efficient.	1	2
Costs have decreased remarkably.	1	2

89 Does your enterprise develop the systems of e-procurement?

1. For predictions
2 .For functions of ordering
3. For delivery control
4 .For non-productional material supplies
5. For non-productional service purchases
6. For e-commerce
7. For Internet home pages, intranet or extranet.
8. For ERP system
9. Other, for what?_____
10. We do not develop the systems of purchasing and supply management.

I want to submit my answers.

APPENDIX 2. SUM VARIABLES RELATED TO PURCHASING AND SUPPLY MANAGEMENT CAPABILITY

The role of PSM	Individual competencies and organizational capabilities	Financial importance of PSM	Strategic supply	Methods and indicators
Operative work	Importance of competence in	PSM's effect on financial indicators	Planning tool	Importance of competence in
Cooperation	*rewarding*	Measurement of supply performance	Cooperation with suppliers	*supplier management*
Controlling	*standardisation*	Capital	Attitude towards PSM	*common activities*
Human resource management	*cooperation*		Strategic supply	*common investments*
	competition process			*long-lasting relationships*
	logistics			Supplier selection
	internationalism			Supplier evaluation
	SCM			Attitudes towards suppliers
	quality and risk management			Supplier's performance evaluation
	Importance of			Supplier's customer focus
	business competence			
	work experience *work experience in products, field and years*			
	education field			
	education			
	further education			
	Education field			
	Amount of education			
	Work experience			
	Managing global logistics Experience in products and business field			
	Business competence			
	Competence in			
	rewarding			
	supplier management			
	supplier development			
	operative PSM			
	logistics			
	relationships			

APPENDIX 3. ITEMS, LOADINGS, COMMUNALITIES AND RELIABILITIES OF THE FACTORS

Item	Fac1			Fac2			Fac3			Fac4		
Supplier selection is based on	loadings	com.	alpha	loadings	com.	alpha	loadings	com.	alpha	loadings	com.	alpha
capacity	0.613	0.531	0.858									
supplier's financial situation	0.671	0.632										
product or service support	0.604	0.707										
competence	0.677	0.561										
development will or capability	0.607	0.576										
delivery reliability	0.437	0.689										
flexibility	0.420	0.672										
product or service quality	0.657	0.670										
Evaluation of supplier performance is based on												
value analysis				0.833	0.700	0.778						
cost analysis				0.743	0.686							
target cost analysis				0.649	0.584							
audition				0.515	0.491							
quality system				0.513	0.555							
Information is shared with suppliers							0.818	0.677	0.788			
Problems are handled together with suppliers							0.756	0.594				
Supplier has to adapt to enterprise's methods							0.582	0.529				
PSM has a central role in developing the supply chain							0.611	0.591				
Enterprise has joint purchasing with network's other actors							0.420	0.594				
Importance of competence in												
planning transportation										0.978	0.548	0.704
inventory management										0.458	0.537	
handling supply documents										0.440	0.519	

Item	Fac5			Fac6			Fac7			Fac8			Fac9		
Importance of competence in	loadings	com.	alpha	loadings	com.	alpha	loadings	com.	alpha	loadings	com.	alpha	loadings	com.	alpha
social education	0.983	0.872	0.929												
administrative education	0.893	0.872													
pedagogical education	0.817	0.722													
Importance of competence in															
global supply channel management				0.901	0.583	0.774									
global logistics management				0.573	0.509										
Effect of PSM on															
equity ratio							0.562	0.586	0.870						
working capital							0.665	0.580							
operating margin							0.557	0.618							
payment time							0.638	0.518							
ROI							0.480	0.479							
liquidity							0.786	0.555							
Measurement of performance															
Financial importance of PSM is reported to the senior management										0.408	0.281	0.669			
Purchasing and supply performance is measured										0.779	0.532				
Purchasing costs are followed										0.639	0.463				
Meaning of capital															
cost efficiency													0.458	0.384	0.798
capital turnover													0.823	0.682	
tied equity													0.904	0.657	

The factors were named as follows:

Fac1: Supplier selection

Fac2: Supplier evaluation

Fac3: Attitudes towards suppliers

Fac4: Importance of competence in logistics

Fac5: Importance of education field

Fac6: Managing global logistics

Fac7: PSM's effect on financial indicators

Fac8: Measurement of performance

Fac9: Meaning of capital

ACTA UNIVERSITATIS LAPPEENRANTAENSIS

268. BUTYLINA, SVETLANA. Effect of physico-chemical conditions and operating parameters on flux and retention of different components in ultrafiltration and nanofiltration fractionation of sweet whey. 2007. Diss.

269. YOUSEFI, HASSAN. On modelling, system identification and control of servo-systems with a flexible load. 2007. Diss.

270. QU, HAIYAN. Towards desired crystalline product properties: In-situ monitoring of batch crystallization. 2007. Diss.

271. JUSSILA, IIRO. Omistajuus asiakasomisteisissa osuuskunnissa. 2007. Diss.

272. 5th Workshop on Applications of Wireless Communications. Edited by Jouni Ikonen, Matti Juutilainen and Jari Porras. 2007.

273. 11th NOLAMP Conference in Laser Processing of Materials Lappeenranta, August 20-22, 2007. Ed. by Veli Kujanpää and Antti Salminen. 2007.

274. 3rd JOIN Conference Lappeenranta, August 21-24, 2007. International Conference on Total Welding Management in Industrial Applications. Ed. by Jukka Martikainen. 2007.

275. SOUKKA, RISTO. Applying the principles of life cycle assessment and costing in process modeling to examine profit-making capability. 2007. Diss.

276. TAIPALE, OSSI. Observations on software testing practice. 2007. Diss.

277. SAKSA, JUHA-MATTI. Organisaatiokenttä vai paikallisyhteisö: OP-ryhmän strategiat institutionaalisten ja kilpailullisten paineiden ristitulessa. 2007. Diss.

278. NEDEOGLO, NATALIA. Investigation of interaction between native and impurity defects in ZnSe. 2007. Diss.

279. KÄRKKÄINEN, ANTTI. Dynamic simulations of rotors during drop on retainer bearings. 2007. Diss.

280. KARPOVA, TATJANA. Aqueous photocatalytic oxidation of steroid estrogens. 2007. Diss.

281. SHIPILOVA, OLGA. Particle transport method for convection-diffusion-reaction problems. 2007. Diss.

282. ILONEN, JARMO. Supervised local image feature detection. 2007. Diss.

283. BOTAR-JID, CLAUDIU CRISTIAN. Selective catalytic reduction of nitrogen oxides with ammonia in forced unsteady state reactors. Case based and mathematical model simulation reasoning. 2007. Diss.

284. KINNUNEN, JANNE. Direct-on-line axial flux permanent magnet synchronous generator static and dynamic performance. 2007. Diss.

285. VALTONEN, MIKKO. Performance characteristics of an axial-flux solid-rotor-core induction motor. 2007. Diss.

286. PUNNONEN, PEKKA. Impingement jet cooling of end windings in a high-speed electric machine. 2007. Diss.

287. KÄRRI, TIMO. Timing of capacity change: Models for capital intensive industry. 2007. Diss.

288. TUPPURA, ANNI. Market entry order and competitive advantage of the firm. 2007. Diss.

289. TARKIAINEN, ANSSI. Field sales management control: Towards a multi-level theory. 2007. Diss.

290. HUANG, JUN. Analysis of industrial granular flow applications by using advanced collision models. 2007. Diss.

291. SJÖMAN, ELINA. Purification and fractionation by nanofiltration in dairy and sugar and sweetener industry applications. 2007. Diss.

292. AHO, TUOMO. Electromagnetic design of a solid steel rotor motor for demanding operation environments. 2007. Diss.

293. PURHONEN, HEIKKI. Experimental thermal hydraulic studies on the enhancement of safety of LWRs. 2007. Diss.

294. KENGPOL, ATHAKORN. An evaluation of ICTs investment using decision support systems: Case applications from distributor´s and end user´s perspective group decision. 2007. Diss.

295. LASHKUL, ALEXANDER. Quantum transport phenomena and shallow impurity states in CdSb. 2007. Diss.

296. JASTRZĘBSKI, RAFAŁ PIOTR. Design and implementation of FPGA-based LQ control of active magnetic bearings. 2007. Diss.

297. GRÖNLUND, TANJA. Development of advanced silicon radiation detectors for harsh radiation environment. 2007. Diss.

298. RUOKONEN, MIKA. Market orientation in rapidly internationalizing small companies – evidence from the software industry. 2008. Diss.

299. OIKARINEN, TUIJA. Organisatorinen oppiminen – tapaustutkimus oppimisprosessien jännitteistä teollisuusyrityksessä. 2008. Diss.

300. KARHULA, JUKKA. Cardan gear mechanism versus slider-crank mechanism in pumps and engines. 2008. Diss.

301. RAJAMÄKI, PEKKA. Fusion weld metal solidification: Continuum from weld interface to centerline. 2008. Diss.

302. KACHINA, ANNA. Gas-phase photocatalytic oxidation of volatile organic compounds. 2008. Diss.

303. VIRTANEN, PERTTU. Evolution, practice and theory of European database IP law. 2008.

304. TANNINEN, KATI. Diffusion of administrative innovation: TQM implementation and effectiveness in a global organization. 2008. Diss.

305. PUISTO, ANTTI. The initial oxidation of transition metal surfaces. 2008. Diss.

306. FELLMAN, ANNA. The effects of some variables on CO_2 laser-MAG hybrid welding. 2008. Diss.

307. KALLIOINEN, MARI. Regenerated cellulose ultrafiltration membranes in the treatment of pulp and paper mill process waters. 2008. Diss.

308. PELTOLA, SATU. Capability matrix – identifying and evaluating the key capabilities of purchasing and supply management. 2008. Diss.

309. HONKAPURO, SAMULI. Performance benchmarking and incentive regulation – considerations of directing signals for electricity distribution companies. 2008. Diss.

310. KORHONEN, KIRSI. Facilitating coordination improvement efforts in cross-functional process development programs. 2008. Diss.