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INFORMATION DISSEMINATION IN SUPPLY CHAIN: FACTORS AND MODELS INFLUENCING WAREHOUSING EFFICIENCY. CASE COMPANY STUDY

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ABBREVIATIONS

EDI	Electronic Data Interchange
SCM	Supply Chain Management
ERP	Enterprise Resource Planning
VWMS	Virtual Warehouse Management System
JIT	Just-In-Time
WMS	Warehouse management systems
VMI	Venture Managed Inventory

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ABSTRACT

Purpose: Based on relationship-specific perspective and the systems of information dissemination in supply chain, this paper explores how these models facilitate the warehousing efficiency in a company that has more than two suppliers in different countries. The study examines how information flow and functioning supply chain could develop a relationship with suppliers and how those specific models and factors contribute to the firm`s inventory management. Current study is conducted from company's point of view on supply chain management in comparison to the supplier-specific requests for logistics operations.

Design/methodology/approach: In order to link theoretical part with empirical research, current study uses exploratory design and due to direct number of survey participants, research method is considered as qualitative survey method with semi-structured interviews. Deductive and inductive approaches were applied in the thesis.

Findings: The result shows that factors of trust and collaboration along with implementation of information dissemination models between company and suppliers have significant importance in supply chain and might reduce the need for inventory. Improving information flow between parties in supply chain contributes to warehousing efficiency through more frequent deliveries and appropriate logistics planning.

Research limitations/implications: Study scope is limited to a single case company as well as from companies' suppliers were chosen only five operating in different countries. Furthermore, the research focuses on one country of the case company: Finland. However, survey was conducted with suppliers from different countries and different background; the findings cannot be generalized to all the companies working in a wide supply chain. Implications of the study are presenting that information flow and such factors as trust and collaboration should be recognized as a crucial part of developing supply chain and increasing the warehousing efficiency.

KEYWORDS: Supply Chain Management, Information dissemination, Suppliers,

Information technology, Warehouse management, Inventory

1. INTRODUCTION

This chapter presents the introductory background of the study as well as specifies the research gap. The purpose of the study with its limitations, research questions and research structure were determined.

1.1 Background of the study

Warehousing facilities perform a vital role in the overall supply chain process. When sales are up, corporations need the ability to move products and materials very prompt in order to capitalize on the activity. When income drops, companies require additional performance to keep costs down while still rendering versatility to pursue new opportunities. Frequently, the capacity to maintain supply chains is focused on warehouse management systems (WMS). These systems connect stores, factories, warehouses and also trucks into a centralized database that provides managers with information about the movement of goods (Gadde & Snehota 2000).

Supply Chain Management (SCM) has been a very popular topic in the business world over the last 10 years. There are many reasons for such popularity, and one of them is increasing globalization. It is evident that continuing globalization and changes/challenges occurring in such areas as logistics, environmental sustainability, information technology, and overall supply chain integration. These areas are further evolving the strategies, roles, and responsibilities for warehouses. It means that companies have been forced to find more efficient way to manage their material flow (Mentze et al. 2001).

However, with the increased importance of supply-chain management models for the organizational performance, the overall target of the logistic strategy for warehousing has become more sophisticated. Several authors pointed out the need for deeper understanding the types of logistic approaches (Albaum, Duer 2005). This need includes as well models of transportation systems between units and the clients during different phases of transport network expansion (Rodrigue 2009).

A particular area in SCM that has not received much attention by scholars is warehouse management. Warehousing is a cost that companies can minimize significantly by reducing the need for inventory. However, several methods and models could be

advised to take into account that have made it possible to reduce the need for storage within companies. (Gattoma & Walters 1996: 122)

One of the main objectives of SCM is to create close and active relationships between all actors within the supply chain. To achieve this, the flow of information has to be constantly circulating (Fynes et al. 2005). Information plays a significant role in reducing inventory requirements and inventory costs. By utilizing information technology to improve the dissemination of information within firms and between participants in the supply chain, company creates new opportunities for effective functioning and effective use of corporate resources (Edwards et al. 2001).

However, lack of research studying warehousing management at different stages of supply chain can be seen. At different stages of SCM different requirements are introduced for client-supplier services approach itself. All the above-mentioned problems justify the necessity for the current study in the proposed area. (Angulo et al. 2004)

There are a number of researches (Askarany et al. 2010; Sakchutchawan, Hong, Callaway & Kunnathur 2011) who claim that the process developing of SCM strategy in a company is rather ambiguous and complex phenomenon that differs significantly from the process of product purchasing activities. Such specific complexity is derived from the nature of the product being sold and consumed and firm size. Moreover, the requirement of direct interactions between suppliers and clients and the importance of their relationship to the final result (success) of the overall engagement introduces additional factors for consideration.

The process of providing logistic services in the firm itself and supply-chain management in particular had been studied by several researchers (Albaum 2005; Rodrigue 2009). Several stages were named comprising the overall process with the provision of a brief description of every stage and potential activities of each participant. However, explanation of the factors that take place during each stage of SCM and their eventual influence on the success of the interaction received no significant attention by the scholars.

A description of the roles played by supply chain received rather precise attention of scholars (Kohn, McGinnis & Ali 2011). However, most of the authors have developed own classifications of the roles that might have specific similarities, but still lacking

integrity. Moreover, in a relationship both firm and suppliers/consumers can play various roles depending on their expectations and experiences. Eventually, correct distribution and perception of such roles brings mutual understanding and satisfaction to the relationship.

One of key ideas in researches over past few years on supply chain is concentrated on successful concluding phase of the SCM development. This stage ensures clients' satisfaction and potential reuse of the service from the same provider. Thus, deploying necessary material and intangible resources to ensure effective implementation stage would benefit both parties in the interaction. Company gets trusted partner and secured profit in the future, and client establishes trusted partnership and reduces potential costs of finding another supplier (Kuik 2010).

1.2 Study objectives, research questions and delimitations.

Constant development of a business environment and globalization has made supply chain management more important in the business world. Business today is very dependent on supplier's chain, and how collaboration works is of great importance for corporate competitiveness and success. There are many factors that influence on how companies succeed in SCM. Among the most important factors is communication between the actors and the proper flow of supply chain (Laing et al. 2005).

In the literature related to SCM and supplier-firm relationships, the main focus has been on market research and analyzing customers' demands. Maintaining good customer-supplier relationships within warehousing framework receives little academic attention even though this particular field is claimed to be one of the fast-growing and crucial sectors in international business (Maloni, Benton 2000).

It is important for a company to always have products in stock and avoid their shortage in the warehouse. Sold out products in customers' orders create major problems and affect company's delivery and reputation negatively. By analyzing various SCM models and by conducting interviews with the CEO, purchasing and logistics managers at Dermoshop Oy and with five of the most important company's suppliers, the author intend to create the theoretical model improving cooperation between case company and suppliers. The main objective of the improvement of the cooperation is defining how to

reduce the effort on keeping company's stock and minimize the need for expansion of the warehouse.

Thus, in order to provide deeper insight into the complicated issue of information dissemination, its influence on warehouse efficiency in supply chain of the firm, and its success factors, this study is aiming to answer the following research questions:

a. *Which factors of supply chain management contribute the most to the growth of the company without expansion of storage facilities?*

b. *How developing the information flow within the company and among company's suppliers can streamline warehouse management?*

c. *What models of information dissemination contribute the most to the development of collaboration between parties in supply chain?*

The following objective constitutes the steps that are to ease the process of answering the research questions.

1. With the help of the theoretical framework identify the key factors in SCM that influence on warehouse management;
2. Analyze which models of information flow between suppliers and company are used in warehouse management in order for increasing the stock efficiency;
3. Identify appropriate models in SCM that decrease the need for warehouse expansion and allow organizing up-to-date response on changes in a business environment.

Apart from a theoretical framework, qualitative empirical research is conducted to answer the research question. Semi-structured interview is chosen for collecting data. The empirical study concentrates on Finnish web shop company which provides its services in 4 different countries. The importance of managing supply chain and warehouse facilities in this company is crucial for efficient service and competitiveness of a firm. The company taking part in the research is operating in the field of guest amenities and cosmetics and has a wide range of suppliers among with complex warehouse management.

Current study is examining the information dissemination models utilizing between case company and main suppliers. That means it doesn't intent to discuss the relationship-specific models with company's partners, rather introduce the influential factors of managing warehousing inventory and how these factors could be applied for increasing efficiency of stock.

As further delimitation, all indirect suppliers were excluded from the current study, as well as suppliers and partners participating in the deliveries for production operations with frequency less than three or four times per year. Moreover, the outsourced warehousing facilities are not taken into current research for analysis. Further limitations will be discussed in the current study later, in the connection with following chapters and literature review.

1.3 The Structure of the Study

In order to achieve stated above objectives, the current study is divided into two theoretical parts and one empirical. First of all, the notion of Supply Chain Management and its key factors will be addressed through definitions and discussion of its respective types and characteristics. In the first chapter the definitions of supply chain; presentation of warehouse management (inventory) factors and their main differential points are presented.

In the second theoretical chapter, the notion of warehouse management will be addressed through listing of constituent parts of the supplier-firm relationship phenomenon. Moreover, presentation of previous research concerning the process of information dissemination models development and their influence on supply chain will be taken into consideration. The process of information barriers and facilitators in supply chain will be included.

The flow of information is also considered in this chapter as essential factor to a well-functioning supply chain management, as well as Enterprise Resource Planning (ERP) systems and Virtual Warehouse System that aids in the dissemination of information flow. The presentation of Just-In-Time (JIT) and Venture Managed Inventory (VMI) models with critical analysis how warehouse management in efficient supply chain can reduce the need for inventory of businesses. This theoretical part also includes advantages and disadvantages of both models in supply chain.

In the third part of the current research the author, first of all, will address theoretical overview of methodological issues of the research. Definition of qualitative research, the evaluation of the process of data collection and its analysis, clarification of the notions of validity and reliability, and finally limitations of the study are presented. In the following chapters, the results of the empirical research will be analysed, and conclusion and implications will be considered.

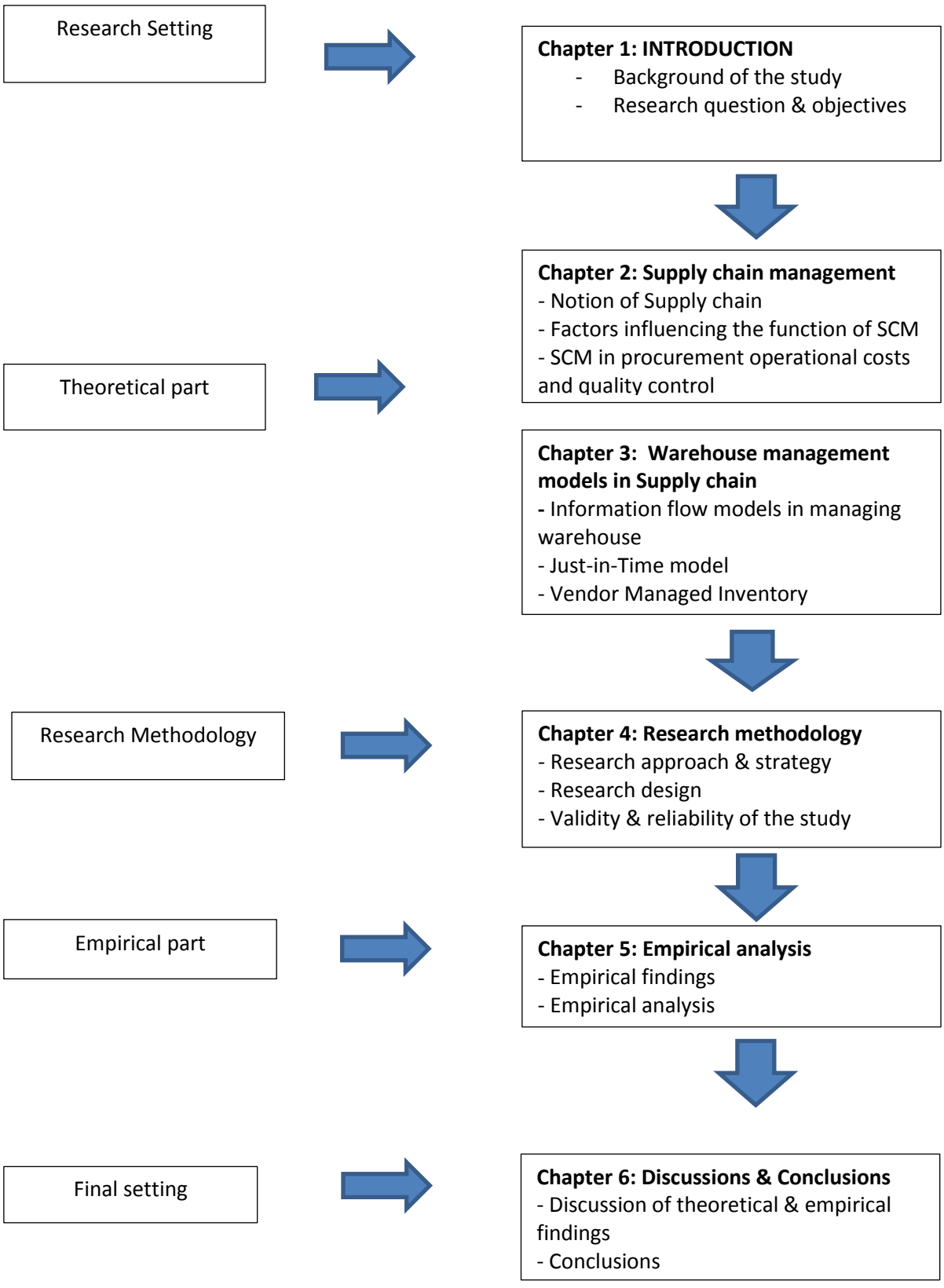

Figure 1. The structure of the study.

2. LITERATURE REWIEW ON SUPPLY CHAIN MANAGEMENT

This chapter is introducing the Supply Chain management and explores its effect on company's warehousing system through key factors. Company's ability to maintain supply chain is centered on warehouse management systems. These networks connect stores, factories, warehouses and trucks into a centralized database that provides decision makers with information about the movement of goods. The need to analyze key factors influencing this network is crucial for business development.

2.1 Supply Chain Management

The term SCM (Supply Chain Management) has been widely used in business environment for more than 15 years, but so far among specialists in logistics and general management there is no consensus on the definition of the concept. Many consider the SCM in operational terms, understanding by SCM material flows. Others believe SCM only as management philosophy, and finally, the third point is meant by SCM implementation of this concept in the enterprise. (Rachan 2013) Below is the most popular definition of SCM:

"SCM is a complex approach that helps to integrate suppliers, manufacturers, distributors and retailers effectively. SCM, taking into account the service requirements of customers, ensures availability of the right product at the right time in the right place at the lowest cost. It is the process of organizing, planning, execution and control flow of raw materials, work in process, finished goods, as well as ensuring efficient and fast service at the expense of current information about the movement of goods. With SCM company can solve problems of coordination, planning and management processes of supply, production, storage and distribution of goods and services." (Christopher 2005:55)

"Supply Chain is the set of units linked to each other with information, cash and commodity flows. The supply chain starts with the purchase of raw materials from suppliers and ends with the sale of finished goods and services to the customer. Some units may wholly belong to the same organization while others - company's counterparties (customers, suppliers, and distributors). Thus, the supply chain usually consists of several organizations." (Herrmann 2012:35)

The supply chain includes not only companies that produce raw materials and components for manufacturers, but also wholesalers, retailers and transportation companies. Information flow and all the supply chain parts often move in all directions in the chain. (Meredith & Shafer 2001: 259) Therefore, another way to define the supply chain is that it consists of a network of companies and organizations participating and cooperating both forward and backward in the flow of materials, products, services. It is the process of funding and dissemination of information right up to the final consumer. (Mentzer et al. 2001)

The rapid development of the market increased competition, the requirement to improve the quality of customer service, put new tasks for companies. The modern company needs to optimize all the processes of cost creation - from raw material to the end-user service in order to maintain the competitiveness and sustain its benefits. To meet these challenges, management of companies refers to SCM solutions. The significant fact is that a business has become globalized in the choice of suppliers. (Munson et al. 1999)

Researchers point out that due to development of SCM, time and quality have become increasingly important in the competition between enterprises, and especially the competition between supply chains (Mentzer et al. 2001; Olhager 2002). Taking a flawless product faster and more reliable than the competition is no longer a competitive advantage, but a requirement, in order to exist in the market. Customers simply become more demanding when it comes to a flawless product delivered quickly and on time. To succeed in meeting these requirements, it is necessary to work closely with all parties within the supply chain. (Mentzer et al. 2001; Olhager 2002)

Uncertainty in the market due to the economic situation in the world, rapid development of technology and increased global competition, leads to high demands on the flexibility of companies and their supply chain. In identifying the term Supply Chain, such obstacle as complexity of different level division can be seen. Mentzer (2001) mentions three types of supply chain by number of its members. Direct supply chain is the simplest form, where the supplier, manufacturer and customer are participating in the production flow.

"Extended chain includes a direct provider of a company, direct client and consumer, and thus, including inbound and / or outbound flow of goods, services, cash and / or information" (Semchi-Levi et al. 1999:48).

The ultimate supply chain includes all participants involved in the flow of goods, services, information and funds from a direct supplier to the end user. This supply chain consists of the parent company, suppliers and customers, but also one additional party is a logistics provider, which has a contact with the customer and the company. Its mission is to plan all logistics and distribution terms.

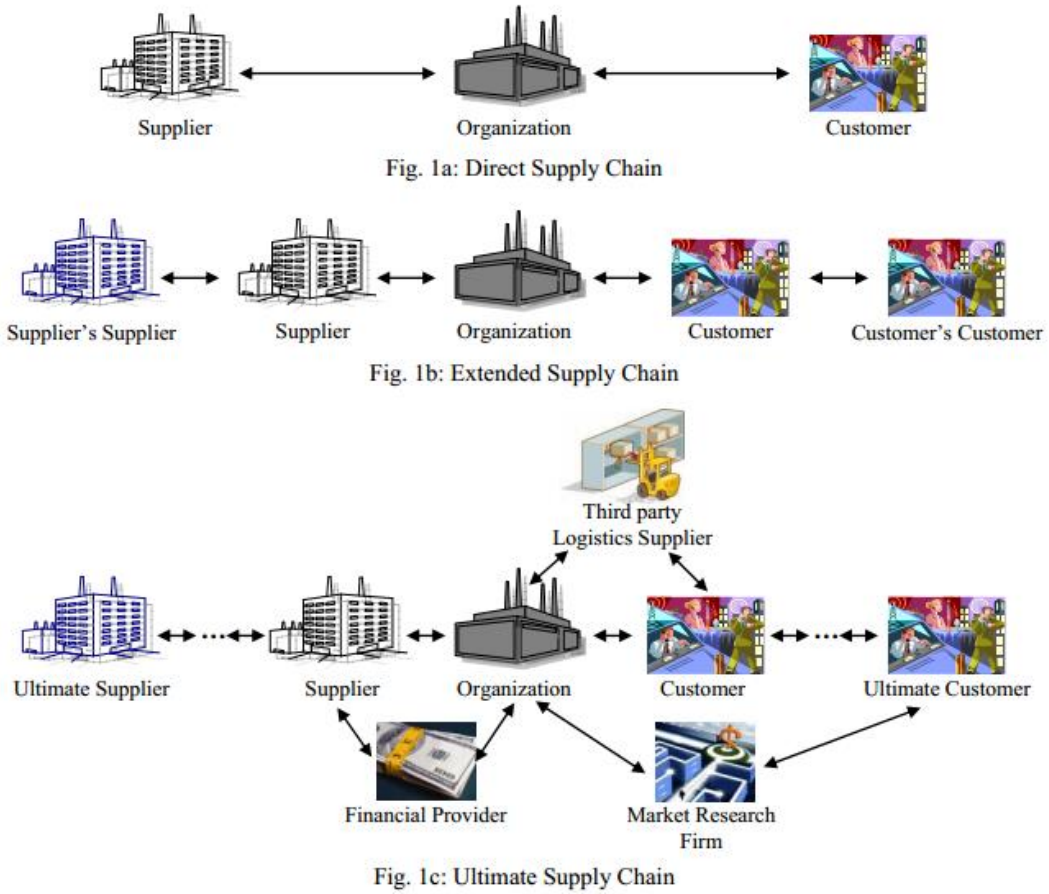

Figure 2. Ultimate Supply chain (Adapted from Semchi-Levi et al. 1999: 49).

One of the main forces in the SCM is coordination among all parties in the supply chain. Each party directly or indirectly affects the performance of the entire chain and the participants individually (Mentzer et al. 2001). The goal of SCM is to deliver the right products on time in the right place at the lowest cost and the most benefit for the company. (Meredith & Shafer 2001). To achieve this goal, a number of factors must be taken into account.

2.2 Factors influencing the function of SCM

Prerequisites for successful SCM vary greatly from company to company. There are several factors that influence its function. In the following subchapter, next factors analyzed through the literature overview: trust, communication, cooperation and conflict, and cultural differences.

2.2.1 Trust

Supply chain has frequently been demonstrated in the literature with frameworks including different participants, in which they need to work together with one or more accomplices. This cooperation gets to be more viable when operators can pick their accomplices focused around the trust factor of the participants. Trust is characterized as the conviction a participant has that the other partner will satisfy its guarantees; it is giving the likelihood that the accomplice may desert to get higher profits (Chetty & Wilson 2003). There have been a few proposed methodologies for including trust models into SCM.

This factor was added to the framework to determine the company's characteristics for the choice of the supplier and initial willingness to cooperate with the company. Reputation of the firm within the market serves as a good indicator of the trustworthiness for the partner. In connection with the following factor that is going to be discussed next, the factor of trust can be viewed as a signal for bigger or lesser intentions to act opportunistically in the relationships. Expertise of the company shows that the experience the supplier had during the projects could be effectively used for fulfilling client's needs and offering customized decisions. (Doney & Cannon 1997: 37-38)

Centeno et al. (2009) propose a notoriety component focused around hierarchical ideas and individual standards, with which executors characterize their inclination about potential collaborations. On the other hand, this data is not sufficient for adaptively learning trust models, since operators don't show their trust in the data they get from different executors.

Lin et al. (2005) form a trust model focused around encounters with suppliers; trust is measured regarding item quality, request process duration and cost. They sum up these elements to the dynamic ideas of benevolence, honesty, and capability. Other SCM trust

components have been examined too, though a considerable amount of them are centered on particular SCM businesses.

Paterson et al. (2008) considered twelve trust components, recognizing three variables that are discriminating to the inventory network: imparted qualities, purpose of offer data, and trustworthiness and honesty. The above mentioned points arrange a few parts of trust model; however, numerous trust structures don't utilize probabilistic routines, inclining towards valuation plans (Sabater & Sierra 2001).

Smith and Jardins (2009) proposed a probabilistic trust model based on decision making. This model permits an operator to choose whether or not to communicate with an alternate executor by anticipating the reliability of the executor. Framework based on trust independently demonstrates trustworthiness and can handle situations where result differs. Capability is displayed as the likelihood that a given participant can execute an activity in a specific circumstance. Trustworthiness is a participant's feeling towards its responsibilities and is influenced by the apparent possibility that cooperation will be continued.

Laeequddin et al. (2012) in the conceptual framework of trust factor in SCM suggest evaluation of risk-worthiness in relationship with possible partners. Researchers suggest in this model, that company should take into consideration level of risk before making any commitment. Lower risk level is increasing the credibility of the partner company. In this model company use mostly predictive way of choosing the suppliers, such as financial risk calculations, environmental analysis and SWOT-analysis.

The recent researches on trust models in supply chain concentrates mostly on meeting certain criterions for building trust. The weight of each criterion is defined by accurate mathematical calculations individually by a company. (Hossain et al. 2013) The main criteria for analysis were as follow:

- Honesty,
- Credibility,
- Predictability,
- Transparency,
- Commitment.

Comparing the Trust models in supply chain through recent years, the trend of strong statistical and mathematical methods of assessment could be seen. In order to show the changes through years, Table 1 shows the key factors of each model.

Table 1. Comparison of trust models.

Author	Trust model factors
Centeno et al. (2009)	Hierarchical ideas, individual standards. Trust is based on sufficient information flow
Lin et al. (2005)	Trust model is based on encounters with suppliers, product quality, lead time and cost
Paterson et al. (2008)	Imparted qualities, purpose of offer data, and trustworthiness and honesty
Smith and Jardins (2009)	Probabilistic trust model based on decision making. Perception of capability to operate in unexpected circumstances
Laeequddin et al. (2012)	Evaluation of risk level as a base for the trust model. Company is relying on correct financial calculations along with risk planning for building trust.
Hossain et al. (2013)	Analytical and mathematical assessment of different criterions. Trust is considered in the model on the base of commitment, predictability and transparency in operation

Company should have efficient level of trust towards other parties in the case of not performing actions that might lead to a negative process for the other parties in the supply chain (Fynes et al. 2005). In order to succeed in creating a strong trust between the parties, it is equally important that the people involved know each other well on a personal level. Partners learn how the different companies operate individually and in cooperation (Gadde & Hakansson 2001).

A company that wants to develop relationships based on trust should be thinking about this already in the choice of partners and choose those with similar values as the company itself. A trust relationship works best if it is informal and flexible. This means that trust relationships often work best without lengthy and detailed contracts. There are many examples of business conditions with no contract. For example, the majority of wholesale distributors in Japan appear without a contract. Following conditions hold together distributors without a contract: mutual obligations and opportunities (Kumar 1996).

2.2.2 Factor of power in the supply chain

Power and trust are two factors that are interrelated. There are major differences in conditions that are based on trust and relationships built on power. Culture, people, attitude, and the leadership are quite different in a relationship of trust than in building business based on power (Kumar 1996).

Power, however, is always present in the company, and it's difficult to take into account all kinds of conditions that affect its relationship with the SCM. Power can be determined as company's ability to influence other companies (Maloni & Benton 2000).

There are many reasons why a company may have power over the others. In Maloni and Benton's article (2002) listed six different power bases:

- *Reward:* One party has the opportunity to reward the other party, for example with new or renewed contracts;
- *Punishment:* On a party is able to punish the other party, for example by terminating business conditions;
- *Knowledge*: The one party has access to the knowledge that the other party needs;
- *Reputation and status*: The one party has a good reputation or high position in the area, where the other party wants to identify itself as well;
- *Licensed power*: the one party sees itself as subordinate to the other party. This can be the case at a licensed branch in another country;
- *Power by law*: one party has the legal right to influence the other party, such as through signed contracts.

Munson et al. (1999) in his article mentions similar model of power influence on supply chain:

- The power of the company in supply chain is strong because of counterparts' dependency on this chain in order to fulfill their essential needs;
- Power of control on financial resources;
- Central role in supply chain;
- Company has no substitutes;
- Power reduces uncertainty.

Power naturally affects relationships within the supply chain. For example, factors that are influenced by power are teamwork and commitment, conflict and conflict resolution. These factors are crucial especially in the introduction and establishment of relationships within the supply chain, which means that power is a decisive factor in SCM.

If a company has the power, but not aware of this or do not understand how power affects the rest of the supply chain, this can lead to an inefficient production flow. However, if the organization has the power in the supply chain to streamline and integrate it, this leads to a greater opportunity for development. Supply chain's competitiveness brings benefits to all parties involved in the chain (Maloni & Benton 2000; Munson et al. 1999).

Common case where power arises is when dependence between parties in the supply chain exists. This type of relationship often leads to that one party which is not dependent on the others has the most power in supply chain. In such circumstances, the dependent parties have limited opportunities to influence in various situations, such as negotiations on prices and deliveries, etc. In such situation, the common outcome for the weaker parties is that they are forced to adapt to the party that they depend on, what often makes them even more dependent (Nielson 1998).

The factor of power often creates ethical problems within the supply chain. Firms in the supply chain don’t have to follow the rules of fair trade, except the ones that are mentioned in a contract or law. This is something that often leads to conflicts as companies use each other more common through the short-term relationships rather than in long-term relationships (Munson et al. 1999).

2.2.3 Communication

Communication is another very important factor in a successful SCM. Through both formal and informal communication between parties in the supply chain, the information flow goes throughout the whole SCM. It is important to communicate frequently and regularly with all parties in the supply chain in order to prevent and resolve conflicts. Communication is also needed to increase understanding between the parties and that all participants will know which level of performance is expected (Fynes et al. 2005).

Communication should be mutual between all parties in the supply chain. As between the participants, it should also include sharing strategic information. Through the sharing of information, such as warehousing forecasts, sales and marketing strategies, the uncertainty between the parties in the supply chain reduces significantly (Mentzer et al. 2001). Communication will be discussed more detailed in Chapter 4 for information dissemination.

2.2.4 Cooperation and conflicts

In well-functioning SCM, partners are willing to cooperate with each other. Cooperation in this term means that the parties work together to achieve common goals. Through cooperation and information exchange between participants, improvements at all levels of the supply chain could be implemented. Moreover, partners have an innovative and cost effective supply chain. (Morgan et al. 1994) Collaboration need not be limited only to ongoing actions. One should strive for cooperation both in various fields and at various levels of leadership between the parties in the supply chain (Mentzer et al. 2001).

A perfect collaboration between the companies is hardly reachable, and often doesn't work on practice, because of arising conflicts between the parties. It is important to take hold on these conflicts as they often reduce the effectiveness of the daily operations within SCM. At the same time, conflicts on the appropriate level, also like cooperation, are necessary for achieving effective relationships between companies (Gadde & Hakansson 2001).

This factor combines such notions as level of coordination, information sharing and similarity, shared values. Joint working serves as an indicator of effective coordination of activities that participating organizations undertake for reaching mutual outcomes. It also stands for engagement of partners into bilateral and combined decision-making with problem solving (Nielson 1998; Laing & Lian 2005).

Moreover, shared views, values and goals might trigger predictability of actions, make inter-organizational boundaries more flexible, and increase ability to correctly and promptly respond to changing internal and external conditions. (Doney & Cannon 1997) Consequently, the level of coordination of activities within the relationships might influence the attitudes and willingness of the parties of the supply chain process to communicate.

Table 2. Levels of cooperation in logistics chains (Adapted from Calchenko 2013:49).

Level of cooperation	**Level of relationship**		
	High	Pleasant	Creative
	Low	Not significant	Hostile
		High	**Low**
	Level of conflict		

In Table 2, the relationship with a low level of cooperation and low conflict could probably be seen of minor importance for the companies involved. Relationship with this combination of collaboration and conflict levels is remaining on the same stage during whole relationship cycle. No improvements are pushed from both sides and likely this is short-term based cooperation, that doesn't require communication and information flow. If a relationship has a high level of conflict, while the level of cooperation is low, it is likely that the relationship will not be supported. The exception might be that the relationship is very important for at least one party. The relationship of this type usually appears on the base of dependency and power factor. Short-terms contractual agreements are the common binder for the parties.

If a relationship has a high level of cooperation, but a low conflict level, companies could estimate this collaboration in terms of a pleasant relationship. However, this is not always having a positive effect because firms in such a relationship often avoid relying on each other. Here problems usually arise on the base of misunderstanding and trying to avoid conflicts. In such a situation companies try to solve any problems by referring to agreement terms. Time factor is the most considered while dealing with difficult situations. If, however, businesses have a relationship with a high level of cooperation and high conflicts, this often leads to a very creative relationship with a high innovation and development level. This requires solving conflicts without increasing the problem situation (Gadde & Håkansson, 2001).

2.2.5 Cultural differences

Depending on the location of the companies involved in supply chain, the cultural differences can be large. This can mean big differences in values, assumptions and how individuals think and work in organizations.

Two presented typologies of the culture levels describe rather profound set of levels that might exist within the society. These typologies have been chosen for the comparison because they consider culture from rather different perspectives. So that would provide wider overview on existing types of culture. Moreover, the work of Hofstede (2005) on cultural issues has been recognized as one of the most influential and comprehensive in its field.

Thus, it would be valuable to consider this typology in order to get an acknowledged perspective. Whereas, King (2008) considered investigating organizational culture in more details that would give deeper overview of the organizational context. Thereby by bringing together these two classifications it will be possible to achieve a more objective and wider understanding of culture itself as well as its potential and existing layers, influencing on SCM.

The typology proposed by King (2008) is focused on determining organizational culture and environment in more sophisticated manner. The author is keen on reflecting the variety of attributes (assumptions, values, artifacts) that can shape different patterns of culture within an organization. Thus, the developed typology shows culture patterns that exist within and at different levels of the organization without proper consideration of other levels.

Meanwhile, the typology proposed by Hofstede (2005) evaluates cultural levels focusing on social factors. Moreover, another feature of the research is choosing for the evaluation larger social groups, such as nations, generations, social classes, etc. Thus, this typology represents wider view and understanding of the culture that is being adopted by people through the social norms and behaviors on the level of the nation. However, minor levels that can exist in smaller groups within the society received less attention.

Table 3. Layers of culture by King (2008).

Level of culture	Description
National culture	The pattern of enduring personality characteristics found among the populations of nations
Organizational culture	Consistency across individuals and units in terms of the elements of a culture: assumptions, values and artifacts
Organizational climate	Reflects a contextual situation at a point in time as well as its links to the behaviors of organizational members, whereas culture is an evolved context within which specific situations are embedded. Climate is less enduring than culture
Organizational subcultures	Mix of "local cultures" with own assumptions, values and artifacts that compose organizational culture. May reflect organizational structure, professional occupations, task assignments, ethnic values, etc.
Team climate	The social-psychological attitudes shared among members toward decision-making, task understanding, and reward structure

Table 4. Layers of culture by Hofstede (2005).

Level of culture	Description
Regional/ethnic/religious/linguistic affiliation level	According to culturally different regional/ethnic/religious/language groups
National level	According to one's country
Gender level	According to whether a person was born as a girl or as a boy
Generation level	Separating grandparents from parents from children
Social class level	Associated with educational opportunities and with a person's occupation or profession
Organizational/departmental/corporate level	According to the way employees have been socialized by their work organization

When cultural differences exist in the supply chain, it is important to be acquainted with the culture of partners. Otherwise, it's easy to take this level connected to national stereotypes (Ford et al. 1998). The Buttery and Leung's article (1998) "*The difference between Chinese and Western Negotiations"* is referred to Hofstede's model and lists five different aspects to consider when looking at cultural differences. These are:

- Hierarchy towards equality, the distribution of power;
- Collectivism against individualism cohesion;
- Feminism against masculinization, differences in gender roles;
- Uncertainty avoidance, risk propensity;
- Long term to a short-term orientation.

Studies have shown that Asian companies are more hierarchical than Western companies. Furthermore, Asian companies are more collectivist compared with the Western, which are very individualistic. The differences between these companies in terms of gender roles are not so strong and noticeable nowadays. When comparing risk avoidance, studies have shown that Asian companies are more willing to take risks than in the West. Studies also referred that Asian firms are stronger in terms of sustainability. Compare to Western, which are more short-term inclined. The different cultures influence each other; however, this means that differences in certain areas leveled somewhat (Buttery & Leung 1998).

For the current study the following cultural levels' structure would be adopted. This division has been chosen as a more simplistic structure but, at the same time, the structure that covers the most significant and commonly used levels. Such structure is also representative for the general overview of the levels on which culture might influence various human activities, including business activities within supply chain.

2.3 SCM's value in the company

The aim of every company in its activities is that each step should provide a benefit for developing. A company's supplier relationships are not an exception, as they also benefit the company. The main addition value that supply chain brings to the company lies in the opportunity to offer products and services what customers want, and meeting deadlines in the right place (Gattoma & Walters 1996).

According to Gattoma and Walters (1996) SCM affects a company's supplier relationships and company's profitability in three main areas. Efficient management of supply chain affects the company's costs, revenue and investment performance. Through an effective SCM, company can improve its accomplishments in these areas, thus receiving a better profitability.

Through SCM company can cut down costs with the help of the next possible steps:

- Reducing the cost of inventory management ;
- Eliminating any “bottlenecks” in the distribution system ;
- Decreasing any activities and middlemen who don’t add any value to the company;
- Reducing transportation costs by managing logistics planning ;
- Decreasing the delays in supply;
- Utilizing efficient company resources;
- Reducing the number of incorrect deliveries and quality problems .

Sales revenue may be affected by an efficient SCM as follows:

- Avoiding situations where products are sold out in the warehouse.
- Minimizing lead times in the supply chain.

An effective SCM by Gattorna & Walters (1996) can also improve a company's investment performance because it allows the company to:

- Improve the reliability of forecasts
- Decrease inordinately large inventory values
- Improve the company reliability.
- Optimize the size and the number of buildings and machinery.

Cooperation with the companies in the supply chain can thus lead to significant cost advantages. However, it’s necessary to take into consideration that these cost advantages can be difficult to identify and measure. This is due to the changes that are made in supplier relationships, and often have a long-term impact on supply chain efficiency. Additionally, changes made in the supply chain lead to benefits in several areas of the business (Ford et al. 1998).

Beyond the purely financial value, relationships with other companies in supply chain provide wide access to the products, components and services with equipment for business needs. But relationships within SCM are also important asset that can be used, for example, to get access to information or to influence others in company's benefit (Ford et al. 1998).

2.4 Procurement operations costs

Procurement operations in business also entail costs. Gadde and Håkansson (1998) in the book *Professional purchasing* identifying an iceberg model showing the direct and indirect costs as purchasing activity means (Figure 3).

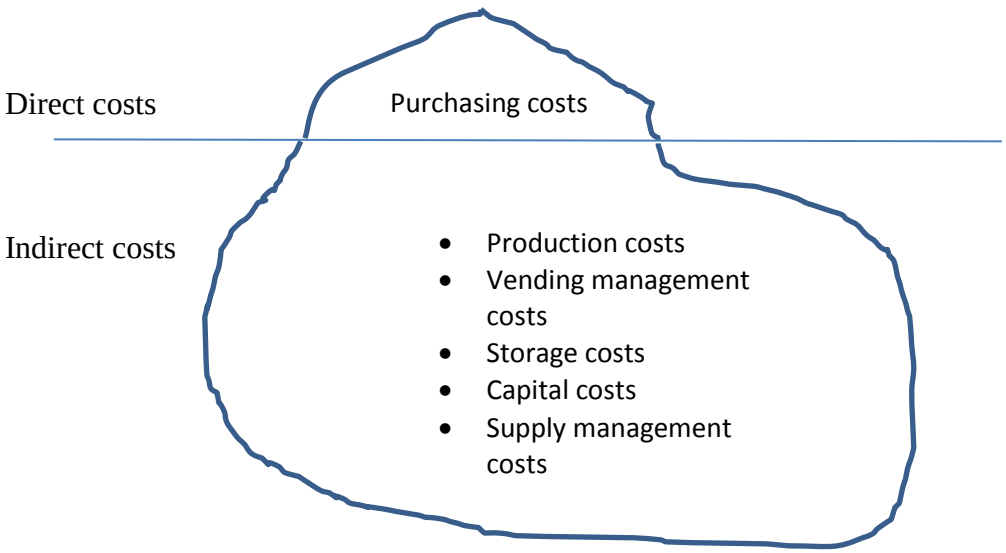

Figure 3. Iceberg model of purchasing costs (Gadde & Håkasson 1998: 56).

The direct cost of an item is the cost that is on the invoice the company pays. Purchasing also included in indirect costs such as costs of production, goods handling costs, storage costs, capital costs, supplier management costs, administrative costs and development costs. These indirect costs could be also reduced by well-functioning SCM.

Meredith and Shafer (2001) also addressed the cost of purchasing and operating to developing process. When the goods arrive there are usually also costs for such activities as handling, transportation and testing with inspection of goods.

2.5 Inventory management

When companies invest in capital, they expect to get a return benefit. An investment in the stock usually provides a much lower return than an investment in the company's core competence. Therefore, it is in companies' interests to reduce the need for inventory as much as possible. The intense competition and the small margins often appear on the market, making it often not sufficient margins to cover large inventory costs. This is one reason that they started applying different models, such as Just-In-Time (discussed more in Chapter 3.4) to reduce the need for inventory (Gattorna & Walters 1996).

Although nowadays the need for reducing the inventory as much as possible is considered as a crucial factor in supply chain, stock still plays a vital role in company’s activity and cannot be eliminated entirely. Stock is a security level that gives companies some protection against unpredictable events. If, for example, the demand for the stocks is varied and the delivery time of products is uncertain, the inventory management still can maintain the sales to the final consumer (Gattoma & Walters, 1996).

It may sometimes also be profitable for firms to stock large quantities of products. Often the case that the unit cost of products is lower when firm receives bigger amount of products from the supplier. In these terms, this way is profitable for e-commerce business with large supplies instead of many small deliveries. It requires, for example that the products do not become obsolete, and they are standardized (Janvier & Assey 2012).

Inventory is always a risk for companies. If a company has too low level of inventory, the risk of running out of stock is highly possible, which is resulting on loss of sales. On the other hand, large stocks can lead to the situation when products become obsolete and useless. Large inventory also means that the risk of damage to the products increases (Gattorna & Walters 1996).

Inventory or warehousing means, as said before, costs for the company. According to Meredith and Shafer (2001), one can divide the inventory costs of different parts: capital costs, storage costs and risk costs. The capital costs include, for example, resources invested in inventories and in buildings with equipment necessary to create warehousing facilities. Inventory costs include, for example, interest, tax and insurance costs at the warehouses and storage costs, which include depreciation and maintenance of warehouses and necessary equipment. Costs for heating of the electricity and are also counted as storage costs. It can be difficult to estimate the whole inventory costs in advance accurately because these costs are often variable. (Meredith & Shafer 2001)

Storage costs can often appear small and insignificant in separation to the total inventory cost, which is ultimately often quite large. According to Meredith and Shafer (2001), studies have shown that for an ordinary company engaged in the manufacture standing, inventory costs take for about 35 percent of the total costs of the production.

2.6 SCM and quality control

In SCM, significant stage is to find if each involved party meets the end-consumer needs and expectations. Therefore, the quality matters in this situation are defined through SCM. In fact, the companies that use own trademark on the product are usually taking the responsibility for product quality problems. It is often the suppliers of the entire product, components, or other types of services are also responsible for the quality control. The highest possible quality level in Supply chain is usually the aim for the production process of a company. This is also applying to suppliers' products and services (Trent & Moncaka 1999).

Sometimes high-quality product is more expensive to produce, but this is often not the case. It is less expensive to make an item appropriately once than if there is a need to do it a few times due to quality issues. There are essentially two different cost-quality issues arise in companies. It is the cost of quality control and the other is the fixing of quality problem starting from the very first stage of defining the reason of the problem. If an organization is keeping the level of quality on high plank, and enhancing it continually, this prompts chain response in an organization. This leads to lower costs and increased market share (Sohal & Mockett 2002).

"SCM is a brief form of total quality management (TQM) and these approaches are focused on reaching consumer satisfaction. TQM conceptual explanation suggests that the forces carried out to improve the traditional business to achieve complete excellence for satisfaction of the customer" (Dharamvir 2013:5).

The overall view indicating requirements of quality management and SCM are as follows on the Figure 4.

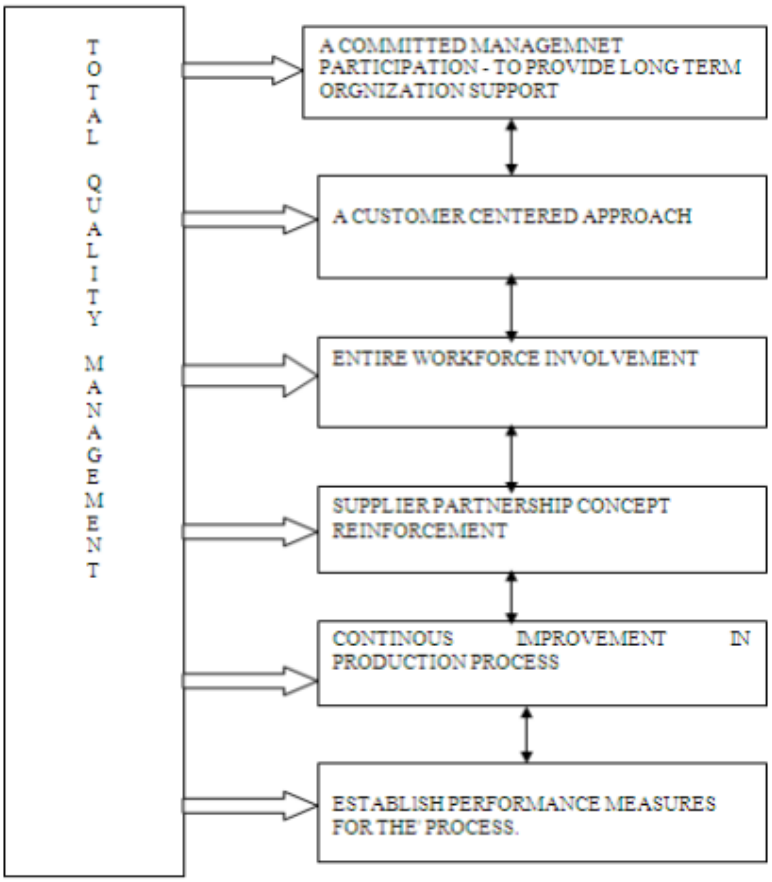

Figure 4. Total Quality Management (Adapted from Dharamvir 2013).

One way to check partners' quality level is to identify if they meet quality standards ISO 9000 and ISO 14000. ISO is the name of the International Organization for Standardization, which is the organization that developed these quality standards. ISO 9000 is brief stated guidelines that a company should follow when it comes to design, manufacture, sales and service of the product. The purpose of ISO 9000 is that if

company chooses a provider that has obtained the quality standard ISO 9000, so this is a kind of guarantee that the supplier is a good practice, at least in the areas covered in this document (Kaipia et al. 2006).

ISO 14000 is in turn a quality standard that focuses on corporate environmental considerations. In order to succeed in getting products with such a quality from trusted providers, it is also important to ensure that the company does not have too many suppliers. By cutting down the number of suppliers, firm can increase control over them. This means there are more flexible circumstances to achieve higher average quality of products. Additionally the choice of cutting the suppliers should be put on the weakest ones, allowing the best suppliers remain and medium quality to reach a higher level (Trent & Monczka 1999).

Another possible measure for the quality of supply chain is the factor of developing business by making long-term contracts with a supplier, what can be a trigger for both parties willing to focus on quality improvements. It may also be a positive side to reward their suppliers when they have made quality improvement measures. Such reward, as extended contracts, offer for new collaboration possibility and new technology to the supplier, can accelerate providers' quality improvement (Trent & Monczka 1999).

2.7 Summary on Supply chain management research

Supply chain management has become a significant aspect of the modern organization for several reasons. Firstly, the reason is in changed balance of power. In the past, producers dictated terms to retailers. Now retailers have set the tone for a sophisticated system. Manufacturers have to meet the growing demands.

Secondly, the factor of time is becoming increasingly important in the overall corporate competitiveness. Speed began to play a major role, whether it is product development, production or marketing. Competition is based on time. Delayed delivery or stop production lines can become a cause of frustration of consumers who immediately turn to another supplier.

The last factor, which increases the value of supply chain management, is globalization. Companies require global supply chains. The raw materials should be arriving at the

most incredible locations of corporations - on time and in the right quantity. For large international companies supply chain management is an extremely complex task, but is critically important for their competitiveness.

In the literature review, authors incline (e.g. Trent & Moncaka 1999; Gattorna & Walters 1996) that such factors as trust and quality control influence the most on the operations within SCM. Therefore, company's competitive advantage dependent on information flow exchange between parties and ability get to a common result. This observation implies that certain factors, influencing on SCM might be used as a trigger for decreasing the need of inventory in the company and speeding up the processes in supply chain. In the following table the factors that might influence the development of relationships and that have been studied in the above mentioned articles are compiled in order to compare and select the most relevant and descriptive ones for the aim of the current study.

Table 5. Comparison of factors influencing SCM.

	Factors				
Chetty & Wilson (2003)	**Trust**	**Cooperation**	**Costs**	Size	
Centeno et al. (2009)	Hierarchy	**Collaboration**	Satisfaction	**Frequency of contact**	**Power**
Lin et al. (2005)	**Level of coordination**	**Reputation**	**Communication**	Satisfaction	
Gadde & Hakansson (2001)	**Relationship benefits**	**Information sharing**	Shared values	**Reputation**	
Trent & Moncaka (1999)	Similarity	**Contact**	**Expertise**	Formality	**Investments**

After a close examination of all articles and factors mentioned in them it became evident that several factors (that in the Table 5 are written in bold) are being repeated and their characteristics are similar to each other to a lesser or bigger degree. Thereby, the following factors have been chosen as the most relevant for the explanation of the relationship development within inventory management.

These factors represent the major forces or effects that might influence the development of SCM and its outcomes. Therefore, they are critical for the aims of the present research and reflect the author's understanding of the process of relationship development.

The first chapter presents the impact of Supply chain management on company's business activities. Due to growing globalization and increasing customer's demand, warehousing efficiency within supply chain is getting more complicated to manage and adapt for growing needs. In the previous research focusing specifically on supply chain management in international companies, the question of information dissemination and exchange received little attention in terms of its impact on inventory management.

The next chapter moves to stated gap. In order to give better overview of information exchange process and warehouse management system, author, with the help of theoretical framework, will be analyzing different models of information dissemination and preparing the base for empirical investigation of the thesis.

3. INFORMATION DISSEMINATION MODELS IN SUPPLY CHAIN

In the following chapter, the integration technologies and models of information dissemination in the supply chain are analyzed. Recently-spread concept of managing information flow between supplier and company reserves the Enterprise Resource Planning (ERP) and models of managing warehouse capacity virtually. In this chapter, the basic definitions in the framework of this concept and technology are analyzed. The technology of information dissemination in the context of the development of supply chain management is evaluated on the base of benefits that can be obtained. Isolated and analyzed the basic aspects that need to be determined when making the decision on the implementation of the discussed models. These key elements are the place of the situation of stocks, monitoring inventory levels and transparency of information, the system replenishment and ownership of the goods. The comparative characteristic stick to Vendor managed inventory (VMI) and consignment. The benefits and disadvantages of the technology for the supplier and the consumer are evaluated.

3.1 Information dissemination

In the previous chapter, the factors influencing supply chain were mentioned. Among them, communication and information dissemination are considered as vital components for successful supply chain. In order to exchange information between all the parties involved in planning, contract period reports and deliveries, stock situations and billing in real-time, company should utilize effectively methods of spreading information. Technology in recent years made it possible, through various information systems, to make updated information available everywhere. This has given businesses a great opportunity to develop and improve the efficiency of their supply chains (Edwards et al. 2001).

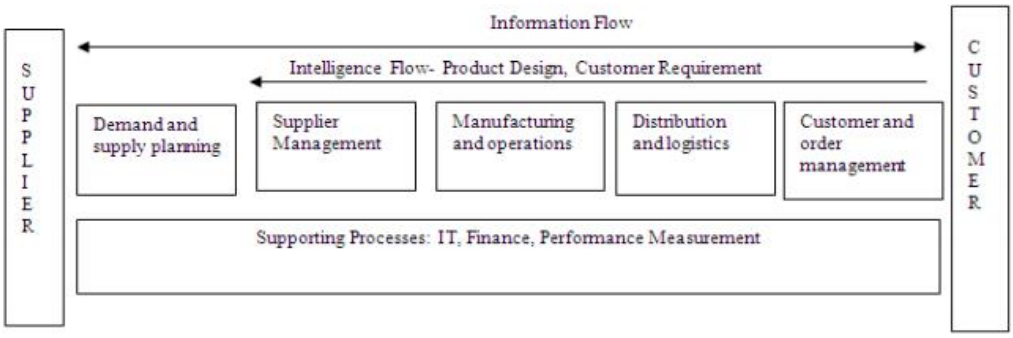

Figure 5. Information flow in supply chain (Dharamvir 2013:15).

The value, which the flow of information gives to an organization, can be calculated as the benefits and revenues that flow of information contributes minus the cost of information flow itself. The cost of the flow of information can include, for example, investments in information and charges to customers and suppliers in order to gain access to information, also it includes communication and administration costs (Maylor et al. 2005).

Information technology has become the primary tool when it comes to running an effective SCM and reducing lead-time in the information flow. The ultimate goal of using information technology in SCM is thus to provide all members of the supply chain access to essential information when they need it (Meredith & Shafer 2001: 275).

Figure 6. Information exchange in supply chain (Balahonova et al. 2008:3).

As the electronic commerce or e-commerce, has become increasingly popular in recent years, this has also brought several different communication and information tools. Meredith and Shafer (2001) list includes such tools as:

- Electronic Data Interchange (EDI)
- Barcoding
- Databases
- Email
- Internet banking
- Intranet
- Websites
- Enterprise Resource Planning system (ERP)

In current work, the author elaborates on ERP system because the current model is the most extensive and involves integrating all parts of the company and its activities. As most of the information channels, ERP is based on information spreads through the company via the intranet, internet and databases. However, it is important to remember that technology is only a tool in the dissemination of information. How good information dissemination function within a company and among its partners will depend on how well the companies are using this technology. It requires knowledge, flexibility and willingness for companies to be able to take and give information both within companies and along the supply chain. To help companies, there are now a variety of systems and software on the market to help with information dissemination (Edwards et al. 2001)

3.2 ERP (Enterprise Resource Planning)

In order to have effective dissemination of information between the companies, they should have appropriate information channels and tools. One of these tools could be Enterprise Resource Planning (ERP) system. This tool is focused on successful information flow in the company about functions such as sales, production and procurement (Edwards et al. 2001).

Using a full-featured unified management of resources can provide enormous benefits to the enterprise and effective management, increase responsiveness to changes in the environment, and also improving the quality of customer service. Possession of such a

system is quite significant for the company, and the benefits of these costs should be carefully designed and analyzed. An ERP system can be described as an ampersand complete software system that enables the company to automate and combine the most of its activities throughout the business (Zheng et al. 2000).

The main functions of ERP-systems by Gradder (2005) are as follows:

- Maintaining the design and technological specifications that define the distribution of produced goods, as well as supply resources and operations necessary for its production;
- Formation of sales and production plans;
- Requirements planning materials and components, the timing and quantity of deliveries to accomplish the plan of production;
- Asset Management and Procurement: maintenance contracts, implementation of centralized procurement, provision and optimize warehouse and shop supplies;
- Capacity planning - from close-up planning to use some tools and equipment;
- Effective financial management, including preparation of the financial plan and monitoring its implementation;
- Financial and management accounting;
- Project management, including planning stages and the resources needed for their implementation.

ERP system can also be paired with the company's external partners, such as the company's suppliers and customers. Main goal of this system is therefore to ensure that the information flow goes smoothly and in real time so that all employees and affected panthers can access the information. ERP system is fully developed so that it can give the company a clear picture of all the materials needed for its operations. Such facilitates of this model as decision-making and flexibility in the company, when it comes to responding to changes in all parts of business, ERP system is not only useful for material procurement, inventory management and production planning. It is also beneficial in various types of financing and personnel management (Meredith & Shafer 2001).

A functioning resource planning system manages and enhances all areas of the company, integrating them in order to obtain an optimal overall solution for the enterprise. How the ERP system works in practice may vary depending on the software

vendor firm has and what parts of the organization are connected into the ERP system. Figure 7 shows a simple example of how an ERP system can be designed, that is, how the various parts are interconnected through a database. In this way, for example, the purchasing department via the database gets updated information from the department store and so on (Zheng et al. 2000).

Figure 7. Example of an ERP system.

ERP is considered a large extent the useful tool in the functioning of most be an SCM. However, ERP systems' primary mission is to contribute to the dissemination of information within the company. In fact, it is, therefore, extremely important that the companies will share the information that the ERP system provides to its partners along the supply chain (Zheng et al. 2000).

The information ERP system gives to the company itself is very valuable. But make the information available for suppliers and customers will be even more crucial for an efficient SCM. When talking about ERP system, company should also consider

appropriate steps and time to introduce an ERP system. To implement ERP systems in enterprises has proved to be very expensive process (Edwards et al. 2001).

Table 6. SWOT analysis of ERP system.

Strength: • Prerequisite for the establishment of strategic maps - development strategy. • The implementation strategy of the company in specific tactical actions involving the control of its performance. • Easy perception for performers. • Ability for graphical interpretation of financial and non-financial aspects of the activities of the enterprise. • Bringing the company's strategy to specific goals for each employee. • Versatility. • Initiation of positive processes in the company in the development and implementation of the ERP. • Binding to the system of personnel motivation, depending on the results achieved.	**Weakness:** • Unclear implementation plan. • The apparent simplicity of use. • The lack of fast results. • The initiative to develop the ERP can only belong to a top manager.
Opportunities: • The need for a versatile tool for the evaluation of the enterprise. • Fast adaptation of the company to a change in market conditions. • Have the prospects for globalization and the internationalization of business. • Strengths	**Threats:** • Attempting to consider the ERP as a decision for all the problems of the company. • Lack of development strategy • A shortage of qualified personnel with strategic vision.

According to Meredith and Shafer (2001), the price of the software amount might vary to tens of thousands of dollars while the implementation cost can be five times as high. It is, of course, the matter of implementation such a system within very large companies. In addition, it has often proved difficult to make all parts of the company compliant with the ERP system, making it a risky investment.

3.3 Virtual Warehouse Management System (VWMS)

The inventory in today's companies is not always concentrated in only one place, but it is quite common to have inventory in various locations with big geographic distance. Therefore, developed information systems facilitate this type of inventory as well. Virtual Warehouse Management System (VWMS) is an example of this system; it can be connected to the ERP system and can provide support for the management of the supply chain.

Warehouses in big companies, which are aimed to get high efficiency and competitiveness, need progressive methods of control - modern IT technologies focused on good planning and coordination of all components of the process (receiving, processing, distribution, storage, assembly, shipping), the control and management of workers with minimal cost. VWMS allows firms to build the most efficient organization of processes of accounting, control and warehouse management.

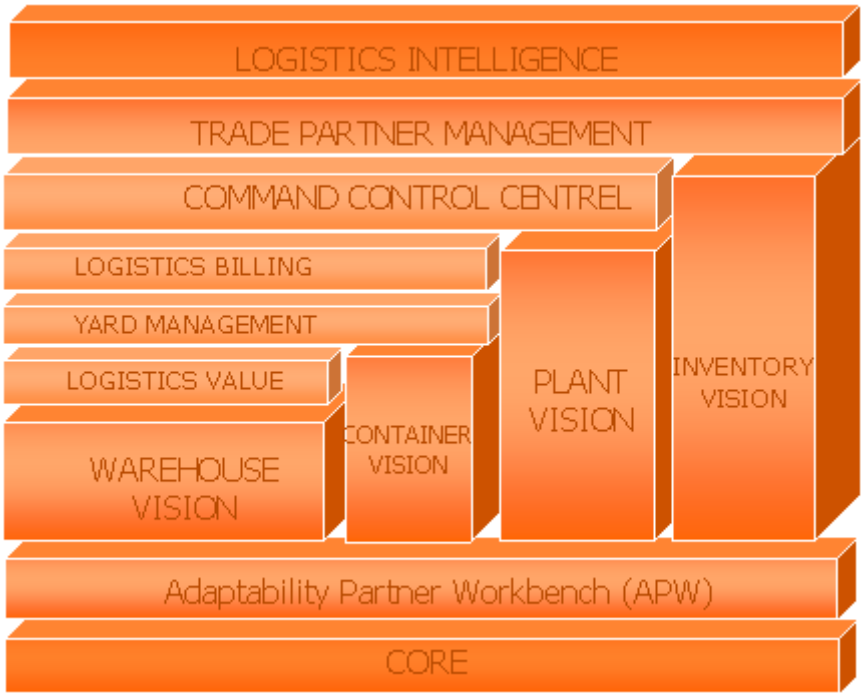

Figure 8. Map of WMI (Adapted from Hvosticov 2014:15).

VWMS is a system built on information technology, where real-time data makes a global inventory as foreseeable as a single layer. Such technology gives companies a significant advantage in terms of performance, precision and control of inventories. However, one should not see the Virtual Warehouse as a complete information system for a company, but as a supplement to other information within the company. (Hvosticov 2014)

The company's distribution network includes, as said before, often different places where products are stocked (such as factories and warehouses). Through the use of systems like Virtual Warehouse, it has become much easier to manage inventory in multiple locations. The VWMS can help better plan warehousing in various locations, and get the right products in the right places, so that receiving the stock is effective and less time demanding. (Ballou 2003)

The advantages of Virtual Warehouse Management system:

- support all business processes
- flexible integration
- implementation deadlines
- adjustment to changing business processes
- the possibility of self-development
- integration of products on various parameters

This system allows a company to reduce the quantity of the goods stored in the warehouse, without reducing its range with a more intensive interaction with suppliers. Interaction based on technology saves time and increase the communication transparency in the company. VWMS system allows automating all warehouse operations, and optimizing business processes, making them more manageable and understandable for building an effective business model. Ultimately, the implementation of the system in controlling the warehouse should create a favorable environment for the rapid development of supply chain. Accordingly, the company will be increasing the efficiency of processes and resources, as well as reduce costs for each warehouse operations. It is also considerably affecting the delivery terms, such as Just-in-Time approach (Hvosticov 2014).

3.4 JIT (Just-In-Time)

Just-In-Time is the system that allows the goods to be delivered when they are needed, in a way that can minimize the storage need without causing delays. JIT was developed in the 1970 by car manufacturer Toyota of Japan. Applying JIT, Toyota managed to reduce the production process for one car from 15 days to only day. This clearly shows how efficiency can be increased by applying JIT. It is widely believed that the system of JIT - it's just proper planning of production, the result of which is the minimum level of work in progress and inventories. But in fact, JIT is a certain philosophy that covers every aspect of the production process, from development of the product to sales and after-sales service (Dong et al. 2001).

This philosophy seeks to create a system that functions well with minimal inventory, minimal space and minimal record keeping. It should be a system that does not lend itself crashes and violations; moreover it should be flexible about changes in the product range and production volume. The ultimate goal is to obtain a balanced system with a smooth and rapid flow of material through the system. (Meredith & Shafer 2001)

JIT applies primarily in supply chains with manufacturing companies that mainly produce relatively standardized products. This system is applicable in the supply chain and competitive only if all companies involved in this chain are working effectively under such factors cost, quality, delivery time, reliability and flexibility. (Olhager 2002) In order for JIT to work in the supply chain, it is, therefore, important to have a close and long term working relationship between the parties. Intercommunication is therefore crucial in a JIT relationship. (Karlsson & North 1994)

Table 7. Elements of JIT system (Adapted from Ydanova 2003:143).

Elements of production	Just-In-Time
Basic structure	Does no change
Production bulk	Small quantities
Stock	Stock is not supported
Planning	From the order receiving
Information costs	Very low
Periods of refilling the stock	Often
Level of control	Decentralized

In addition, the material resources of the environment are served in small quantities directly to the desired point of the production process, and finished goods are shipped directly to customers. Thus, in the "just in time", inventory, as such, are non-existent, allowing you to desist from warehouse system. Insurance and seasonal stocks are also absent. To avoid delays in the supply of inventory and sales of own production relations purchasing and sales are set with a small number of reliable, proven suppliers, transporters, buyers.

3.4.1 Focus areas of JIT system

The central part of the JIT system is focusing on the lead time of provider. Lead is the time it takes for the supplier to deliver a product, i.e., the time from the order has been received until the order's products leave the supplier. In the case that shortens the lead time, it is mainly two factors that researchers are focusing on: installation time (time after receiving an order to produce goods) and production size. These two factors are affected by each other.

Reducing the size of the production often leads to decreasing of the installation time and material flow. Managing size of production is more reliable and decreasing the installation time itself, but it has own drawback of making more of the product series which take more capacity from the company. Lead time is an important part of supply chain in any company, especially for the type of business where demand cannot be predicted in advance, and products have short life cycle or seasonal offer. In these cases, it is important to develop a short lead time to be able to respond as quickly as possible on demand. Lead time should be optimized in a cost effective manner (Olhager 2002).

Company that uses JIT system also sets a high bar on logistics work, as well as on IT system that will work accordingly within supply chain without errors. This model also means smaller but more frequent deliveries. Therefore, effective transport is an essential element of successful JIT relationship. Transportation is taking part in the transferring of material flow in the supply chain, so all the production parts are arranged in an order throughout the supply chain. Studies have shown that there is no prescription for the optimal transport system, but it can differ significantly from company to company how transport system could be handled (Karlsson & North 1994).

Transport distances between the buying company and the supplier could vary greatly, and big distance might be an obstacle to the JIT. But there is often the reason a company chooses not to implement JIT. The risk of shortages arises naturally with the distance increase between parties of Supply chain (Gadde & Håkansson, 1998).

3.4.2 Advantages and disadvantages of JIT

A successful implemented JIT system leads to many advantages. According to Meredith and Shafer (2001), different benefits could be achieved within JIT. These benefits are: cost savings, higher returns, fewer investment needs and efficient problem solving. Cost savings achieved by reducing warehousing, as well as the cost of goods. Another example is that the number of production errors drops naturally, which in turn also leads to cost savings, higher returns on products and better service and quality (Meredith & Shafer 2001).

Studies show that the strategy of JIT is not universal and not always applicable within company. Its implementation constrains important factors such as poor quality products, not following terms of delivery and payment, mistakes and failures in the transmission of information between the company and the supplier. The success of the strategy depends on the number and territorial location of suppliers, their level of responsibility in the performance of contractual obligations. Therefore, the huge costs associated with the implementation of a procurement method "just in time" to be effective only in a stable working in a long-term relationship between parties in supply chain (Dong et al. 2001).

The concept of "just in time" based on the organization of supply without any restriction on the minimum reserve requirements, where the flows of material resources carefully synchronized with the demand for them, which is given by the production schedule of the finished product. Such synchronization is achieved by coordinating supply and production. The benefits of this combination are also shorter lead time and to more rapidly meeting customer needs. Fewer investment needs can be achieved through JIT because in the need for storage rooms and other stock-related activities drops significantly. (Karlsson & Norr 1994)

According to surveys, implementation of this model affects the working environment and, as a result, communication flow between employees is more transparent. This is because the number of errors that occur becomes smaller and a greater number of

participants have access to the data. JIT also puts demands on effective teamwork within a company that leads to productive work. When trying to increase the production speed in supply chain, it is natural to seek out problems that pull down efficiency and solve these problems. This leads to reduced waste of time and reduced costs (Meredith & Shafer 2001).

JIT has been, as said before, an effective system to reduce inventory costs and improve production efficiency for companies, but it also can, of course, create many problems. An example of this situation is the non-standardized range of products for different clients when produced a variety of products that require different production time. In this case, it leads to failure in the system planning and installation time, which is a key element in the system. This model also makes high demands on the relationship of trust and collaboration of partners involved, making actors interdependent. In the event of a strike of one supplier, the entire system may stop. In this case, the partnership based on JIT is usually focused on investing in reliable suppliers.

The biggest problem, results in the failure of the JIT according to research, is a step of implementing the model in the organization. Opinions among researchers about the impact of the model on the company diverge significantly. For example, according to Dong, Carter and Dresner (2001) study has shown that it is often only the purchasing company that takes advantage of the JIT system at the suppliers' expense. The reason it is as this is often a poor information flow between companies and suppliers. The reason could also be that any party fails implementation of JIT and not seeing the whole system in supply chain perspective. It simply seems to be difficult for suppliers to take advantage of a JIT system as long as they do not use it for their needs. According to Karlsson and Norr (1994), it is, unfortunately, the case that the high standards imposed on suppliers in a JIT relationship lead them to increase their own stock to cope with the requirement of the JIT.

3.5 Vendor Managed Inventory (VMI)

Vendor Managed Inventory (VMI) - is the practice of supply management at which inventories are controlled, planned and managed by the supplier on the basis of the expected level of demand and pre-specified minimum and maximum levels of inventory. Traditionally, the success of supply chain management depends on the understanding of key processes and finding a balance between the policies of the

company in respect of the stocks and the level of customer service. VMI projects designed to improve both (Sudeshna 2011).

Today VMI model implemented at least at two levels:

- Distributor manages retailer inventory. VMI is in this context also called Efficient Consumer Response (ECR). The supply chain owns the inventory, despite the fact that the replenishment order is carried out by distributor

- Supplier controls the level of stocks in warehouses of a company. In this case, the company owns the inventory, despite the fact that the replenishment order is carried out by supplier.

VMI concept is based on the belief that the manufacturer takes the best position to manage the inventory because it has more information on the production capabilities and timing. Moreover, the transfer function of the inventory control from the manufacturer to distributor reduces the supply chain, increasing the transparency of supply and reducing the overall level of reserves (Waller et al. 1999).

Traditionally, customers place orders to suppliers. While this process may seem obvious, however it is not effective. Firstly, suppliers have no pre-order information – they are forced to make predictions, whereby forced to store large enough insurance stocks. Second, the provider is often faced with unexpected short-term fluctuations in demand, which leads to permanent changes in product range, delivery schedules and, accordingly, additional logistic costs. As a result, consumers suffer from the inevitable higher price level (Sudeshna 2011).

At the present stage of development of supply chain, partners have an alternative way of inventory management. Instead of placing orders, the consumer simply communicates with the supplier. This refers to the actual demand or sales of products available from the current stocks. Any details of additional marketing activities, such as, for example, promotion of goods on the market are in free access as well. On the basis of this information, the supplier takes the responsibility for restocking the consumer. Before placing orders, customers already will be informed about the lower and higher limits of stocks that they are allowed to have. Contractor shall be responsible for the maintenance of the required amount of orders of consumer. Such logistical system of demand management and replenishment called Vendor Managed Inventory (VMI). In such a

model of managing supply chain, the agreement is based on close cooperation between customer and supplier (Edwards et al. 2001).

VMI seriously begun used by Wal-Mart and Procter & Gamble in the late 1980s. VMI has been successful mainly in the food and textile industries. The Proctor & Gamble pleaded first VMI on hygiene and as the VMI has proven to be a good solution as it has expanded the use area. In 1998, Procter & Gamble applied VMI at 40 percent of their products. In addition to the Wal-Mart and Procter & Gamble, VMI has also been successful in companies like Johnson & Johnson and Barilla (Waller, Johnson & Davis 1999; Cooke 1998).

Consumers have advantage to reduce inventory while significantly decreasing the risk of shortages. In addition, it often happens that the buyer does not pay the seller until products were sold or used. The advantage of the supplier is in access to information on real demand, which is distributed by means of electronic exchange of information. It can more accurately plan the production schedule, and distribution, thus increasing the volume of the effective use of material resources (sales of finished products); and at the same time reducing the level of back-up stock (Sudeshna, 2011).

VMI sometimes also called as supplier managed inventory, based on the same principles as JIT, i.e., to provide product that "float" through a whole production process, without unnecessary inventory and delay time. The main difference between VMI and JIT lies between responsibility and power of suppliers and company of managing the stock information. Supplier in VMI model has the responsibility for warehouse replacement and purchase orders of the client company. All the activities are monitored by distributor (Kapia et al., 2002: 17.23: Waller et al., 1999: 183).

The suppliers make their decisions about when and how much to deliver on the base of company’s inventory information. The purchasing company also sets goals for what to include in its inventory. Inventory information can be electronic or in case of close physical distance to the warehouse, could be obtained in real time from managers. (Kaipia et al. 2002: 18; Waller et al. 1999: 3) Key factors for suppliers to take into account are the quantity of supplies and shipping scheduling. Although VMI has been studied extensively for many years, it has not yet become the standard model for supply management among suppliers. (Kaipia et al. 2002: 17)

3.5.1 VMI system's advantages

Angulo et al. (2004) lists several beneficial outcomes that according to the implementation of VMI are leading to:

- Reduced costs through better use of resources in the production and transportation of goods;
- Reduced cost of buffer stock and unnecessarily high supplies
- A higher level of service through to better coordination of replenishment deliveries;
- Shorter lead times and faster stock turnover, which means that the purchasing capability reduces the risk to leave with outdated goods in the warehouse;
- Fewer situations where warehouse is running out of stock, and variations in demand are observed;
- Space-saving through reduced quantity of products in stock;
- Higher loyalty between the parties, by developing long-term relationships and trust. Improvement of the total information flow in the organizations.

(Angulo, Nachtman & Waller, 2004: 102-103)

Comparing the benefits of using VMI model to JIT (Chater 3.4 above), advantages of both models is quite similar. For a VM1 system applying to supply chain is more likely to bring benefits to all participants of the chain, including the purchasing company. Unlike JIT system, VMI relationship benefits mostly for suppliers (Kapia 2002: 23)

From a supplier's point of view, the VM1 is better in terms of planning production for more consistent demand. VMI is also more flexible in meeting all customers' orders on time without delivery delay. Such delivery is not lacking time, so supplier can concentrate on another delivery that it is more critical in terms of delivery time. By using VMI, the supplier may simply balance the deliveries depending on the needs of their clients, without compromising the reliability of supply to any individual customer. (Waller et al., 1999: 184-186)

According to Waller et al. transport costs decrease in an efficient VMI system. This happens, because in VMI it becomes easier to plan transport and thus using carriers' capacity in an optimal way. By making as full loads as possible, company can reduce the transportation cost per unit delivered; this allows transport companies to plan their routes effectively so that they also benefit from the system. (Waller et al. 1999)

3.5.2 Requirements for a working VMI system

In order to have operational VMI system, the flow of information between the parties within one supply chain should transparent and going in all directions. Information that should be shared between the parties in a VMI is mainly inventory information, sales and sales forecasts, capacity and schedules for production and delivery. In terms of information flow and supply chain, two problems should consider. One is information latency, and the second is reliability of the information. Information latency is the time it takes for information transferred from a sender to be used by the receiver. If the problem with the information delay occurs, it indicates a for a VMI system inadequate communication between the parties (Angulo et al. 2004: 102).

Problems with the reliability of the information in turn can arise if, for example, the purchasing company has little control on the stock situation or because of poor planning. This naturally impacts along the entire supply chain. Supplier has the primary responsibility for information delay while the purchasing company has the primary responsibility for the reliability of the information. For a functional and operating virtual machine, the involved parties should have access to a certain level of technical equipment (Angulo et al. 2004: 102).

According to Dong (2007) studies have shown, however, that Electronic Data Interchange (EDI) works effectively together with the VMI. This is a technology for automated exchange of electronic messages in standardized formats between business partners. At the same documents that are in the original paper as a convenient and a specific form for each firm, transparently transmitted between the different partners in the standard "electronic" format. Technology ensures the accuracy of data exchange, and the very delivery of messages to recipients and the sequence of message delivery. This ensures the accuracy and confidentiality of the transmitted information. In the classic form of EDI involves fully automated interaction between information systems partners, excluding the part of human force involved. Each side can act as sender and recipient of messages. This integration option gives the maximum effect in the implementation of this technology (Dong et al. 2007).

Nowadays, the development of EDI technology provides not only cost effectiveness, but also helps to analyze and streamline decision-making process and managerial tasks, as well as optimize and improve business administration (Gadde & Håkansson, 2001: 73).

3.5.3 Criticism of VMI

Although there are many examples of successful implementation of VMI systems, it does not mean that this system always succeeds. A common obstacle to a successful system is a lack of trust between cooperating parties and uncertainty about the benefits of a VMI system (Kaipia et al. 2002: 19). Prevalent in VMI system is the belief that it is the purchasing company that is taking advantage of the system suppliers' expense. This is also true in failed VMI system where inventory costs have moved from the purchasing company to the suppliers (Cooke 1998).

In order to avoid lack of confidence and uncertainty, it is important to be able to prove that the VMI system helps with benefits for all parties involved. This is also important to remember that VMI is not something that can be applied to all supply chains. The benefits of the system can vary greatly between different supply chains, and there may also be situations where VMI does not add any value to the supply chain. (Kaipia et al., 2002: 19)

VMI system requires that all parties involved are investing considerable time and effort to operate. (Cooke 1998: 53) It is also important to VMI not become too complex. Studies have shown that a too complex model with difficulties in information dissemination leads to complicated decision-making process. In such cases, VMI has the opposite effect, i.e., increased inventory costs (Kaipia et al. 2006: 101).

3.5.4 Analysis of the VMI

The model of VMI allows all parties involved significant advantages for their work. How then company can convince all parties that the VMI system is a positive solution? It is necessary to show all the benefits of the parties VMI collaboration provides and disadvantages of using the traditional way of managing orders and shipping. In order to convince all parties, therefore, the analysis of the VMI system required (Kaipia et al. 2002: 19).

Kaipia et al. presents in the article "VMI: What are you losing if you let your customer place orders?" a time-based model to analyze VMI. The results provided by the model are that the time by the purchasing company's traditional order delay is eliminated with the suppliers’ arrangement of deliveries. On the base of the stock situation and the sale

of the purchasing company, the goal of the analysis is thus to show how much time for planning supply chain obtainable by a VMI ratio (Kaipia et al. 2002: 19).

Kapia's analysis consists mainly of five steps which will be briefly explained as follows:

- The first step is to describe the current situation, and describe an alternative ways of solving arising problems by adjusting to the current situation;
- The following step is to gather information about the demand with the help of different methods;
- The third step is to make the demand calculations for each product with the help of various methods, in order to organize sufficient buffer stock.

Reaction time also is counting in different models, which means the time that the supplier has to produce and deliver to the client's company orders. In the current situation, this time may be confused with delivery time, while the reaction time in the alternate method of calculating the time between receiving stock information and the time a replenishment delivery should be delivered in order to avoid a product shortage.

In this case the next step is to calculate differences between the use of the current situation and the alternative method. There are mainly two calculations done. One is the time difference, i.e. the difference between the provider's response to the current situation and the alternative model.

The second calculation is about the current situation and the alternative method's impact on the bullwhip effect. This is done by dividing the current situation in the stock on average demand with the alternative method. If the result then becomes by numerical mean equal 1, so there is no difference between the current situation and the alternative method. But if the result is equal number 2, for example, it means that the supplier delivers twice as many products to the buying company as it sells to its customers.

The fifth and final stage in Kaipia et al.'s model is to combine the results into clear graphs for identifying the differences between current stock situation and the alternative method. (Kapia et al. 2002: 19-20). Currently, VMI is gradually evolving towards strategic partnerships. This affects the way companies manage their inventory, focusing on collaborative planning, forecasting and replenishment. Prior to initiating the practice of VMI, it is necessary that both the manufacturer and distributor feel complete comfort and benefit from its use.

3.6 Summary of the theoretical framework

After determining major hypotheses of the research and providing foundation and explanation for their choice theoretical framework of the study can be adjusted by the factors which will be used in the empirical part for conducting interviews, evaluating the results and providing final conclusions of the study.

Chapter 2 has dealt with the term Supply Chain Management in general. Significance and impact of SCM's value in the company is showed at the present time. Moreover, the important factors for the functioning of SCM had been gone through with an explanation for their choice on the base of scientific research. Quality is here also an important factor to take into an account. Since product and service quality can be affected by the quality of SCM, author of current work chose to use theories of quality improvement in Chapter 2. One of the key success factors for improving supplier collaboration is information dissemination, which was discussed more in the following chapter.
Therefore, the term of information dissemination was also discussed in Chapter 3 in general theories of information dissemination and its value to businesses treated information technology. Information flow development was emphasized as an important part of corporate information dissemination and various dissemination tools presented. Following part of this chapter is defining how using SCM improve the company's effectiveness in warehousing management. It is important to manage the flow of products in inventory management, as it usually associated with costs and large investments.

Different planning systems were presented in these terms since these models are considered the premier and most comprehensive tools for internal communication. Following Table 8 is briefly showing the map of factors and models of information dissemination in supply chain that were discussed through the whole chapter in order to give better overview on complicated issue of warehousing operations.

Table 8. Theoretical framework of the study.

Supply chain		
Information dissemination model	**Influencing factors**	**Effect on warehousing efficiency**
ERP (Enterprise Resource Planning)	• Transparency in informational exchange • Accessibility of data for all participants • Internal communication strategy	• Clear planning and goal-setting process • Production processes are better organized in terms of lead time.
Virtual Warehouse Management System (VWMS)	• Geographic distances in warehousing facilities • Modern IT technologies focused on good planning and coordination	• Minimal costs for receiving, processing, distribution, storage of the products • Allows automating all warehouse operations, and optimizing business processes • Increasing the efficiency of processes and resources, as well as reduce costs for each warehouse operations
JIT (Just-In-Time)	• Applies primarily in supply chains with manufacturing companies • Standardized products • Focusing on the lead time of provider. installation time	• Lead time should be optimized in a cost effective manner. This means smaller but more frequent deliveries
Vendor Managed Inventory (VMI)	• Responsibility and power of suppliers of managing the stock information • Quantity of supplies and shipping scheduling • Transparency of supply and reducing the overall level of reserves.	• Fewer situations where warehouse is running out of stock, and variations in demand are observed • Space-saving through reduced quantity of products in stock • Reduced cost of buffer stock and unnecessarily high supplies • Transport costs decrease in an efficient VMI system

Therefore, Chapter 3 was analyzing ERP, JIT and VWMS models, which is a common system for the intensive supplier collaboration to reduce inventory requirements and inventory costs. JIT was developed also to the VMI (Venture Managed Inventory) based on the same theories as JIT, but is more developed, with deliveries starting from suppliers' decisions, which in turn is based on the purchasing information. VMI has in recent years become more useful and up to date as an alternative to JIT, as information technology is developing. Supply Chain Management is a very broad area, but with the limitation to the models and factors influencing the inventory efficiency in Chapter 2 and Chapter 3 author is intended to fulfill the research aim for current work.

4. RESEARCH METODOLOGY

This chapter is aiming to discuss the methodological approach which was chosen for the empirical part of the study upon defined factors that influence warehouse efficiency. The study will start with analyzing that type of research approach would be the most appropriate for the aim of the study and its goals. Next to discussing the research approach, strategy and design of the research will be described. Moreover, information will be given about the aspects of validity and reliability.

4. 1. Research Approach

In order to link theoretical part with empirical research, the three formal methods in accordance with the literature could be chosen: deduction, induction and abduction. Current subchapter is going to provide analytical comparison of all these models in order to give an explanation of the research approach choice for this study.

4.1.1 Deduction

Deductive research approach is based on the choice of already existing theories and testing them in own investigation to see if they hold empirically. Saunders, Lewis & Thom Hill (2007: 117) refer to the five steps that one goes through in the deductive research approach. These steps are:

1. Make a hypothesis based on the theory.

2. Processing of the second hypothesis in functional terms. Which variables should be identified and how to measure these variables?

3. Testing the hypothesis with chosen survey method.

4. Analysis of the results of the investigation. The result leads to either ATI or confirmed the theory that the hypothesis is false and the theory in need of modification.

5. Theory is modified when necessary

Deductive approach implies the development of a theoretical framework that is to be further tested. It is meant for the explanation of causal relationships between different variables and generalization of findings. This research approach is the least risky of research approaches. One disadvantage of the deductive approach is that it presupposes what the outcome will be (Saunders, Lewis & Thornhill, 2007: 120).

4.1.2 Induction

In contrast, inductive approach aims at generating theory from data and observation. Therein data gathering and analysis would anticipate theory building. Induction is used to obtain understanding of the meanings humans attach to various events (Saunders et al., 2007: 120).

Thus, one can say that in the inductive research approach is based on an amount of one single observed case, and starting from the connection which have been observed in these cases, it is felt that the relationship is generally valid. The inductive research approach has often been criticized for the final theory contains only what is in the empirical material. A requirement for successful inductive study is that the person making the investigation doesn't have any personal attitude towards it, which is very difficult because they often have preconceived notions about the subject in making the survey (Maylor et al. 2005).

Lately, however, the inductive research approach has become more popular. The reason for this is the need of inductive research approach in the exploratory surveys. It has also changed in correlation with use of computer programs in research. These computer programs are often based on correlations in the input data and make conclusions based on inductive approach (Maylor et al. 2005).

4.1.3 Abduction

Abduction can be seen as combination of induction and deduction. According to Maylor (2005) abduction is a way to draw conclusions about what is the cause of an observation or what is preceding the observation. Abductive reasoning is most often used to open the empirical laws that establish the need for regular communication between the observable properties and relations of phenomena.

Theoretical laws cannot be investigated in this way, because they contain abstract concepts that cannot be observed experimentally. Therefore, the way it lies through hypothesis or system of hypotheses that are tested, usually by inference from these empirical laws.

Abduction is a similar method to induction, but the reason is to find causal factors without the ability to manipulate them. The advantage of the use of abduction as a research approach is that by abduction forms a better understanding of the survey results. (Maylor et al. 2005) In the natural sciences, the deductive research approach dominates while the inductive research approach is widely used in the humanities (Eisenhardt & Kathleen, 1989).

4.1.4 Selection of Research approach

In current research, deductive research approach would be the most appropriate, because of a wide range of literature that deals with the supply chain and SCM. In addition, it is good to acquire as much knowledge as possible about the topic before the research itself. In this study, such drawback of deductive research approach as only theoretical analysis would be displaced along with comparison of how the problem could be solved on practice.

However, the deductive and the inductive approaches are not mutually exclusive as proposed by Ghauri & Grønhaug (2005: 16), with induction including elements of deduction and vise versa. According to Saunders et al. (2007: 119) it is not only possible to combine both approaches within the same research, but it is often advantageous to do so. Combination of the deductive with the inductive approach allows eliminating weaknesses of both methods. Therefore, such objectives as identifying types of communication and ways of information dissemination will require more general answers from the interviewees and thus can be approached on a more deductive way.

It leaves the room for generating new or improving existing theories by induction approach. The research also can be described as exploratory, since the thesis has the objective to find new insight and achieve better understanding on the warehousing efficiency within supply chain (Saunders et al. 2007: 133).

Ghauri & Grønhaug (2005: 111) stated that a qualitative research method is most suitable when conducting exploratory studies. But presentation and analysis of research design will be described in the next subchapter.

4.2. Research Design

After selecting research method and to begin the survey it is necessary to choose the empirical investigation method. Two survey methods for empirical investigation could be identified. For an overview of the difference between qualitative and quantitative research the key differences are presented in the figure in more detail (Lundahl & Skärvad 1992: 82).

Table 9. Comparison of research approaches (Saunders et al. 2007:472).

Quantitative survey	Qualitative survey
- Information is based on data and figures	- Information is transferred through words and verbal communication
- A collection of information is provided in standardized and numerical way	- A collection of data is non-standardized
- The analysis of the results is made by using graphs and statistics	- Analysis of results is done by comprehension and perception

4.2.1 Quantitative research

Quantitative survey as by Saunders figure (Table 8) shows that in this type of study numbers are resulting the generalization of the results. However, this need not be always numbers, like those of a quantitative survey. Quantitative research is the collection and analysis of primary data. Studies of this kind are usually carried out when needed accurate, statistically verified numerical data. At the heart of quantitative methods always lay clear mathematical and statistical models to be as a result of precise quantitative values of the studied parameters (Trost, 1997: 8). A quantitative study may be relevant, for example if there is a need to enter the frequency of the case parameters. Study applies if a certain percentage of the population need to be divided on the base of

one or more conditions. The quantitative models often also require qualitative text to be complete (Trost, 1997: 15).

4.2.2 Qualitative research

Qualitative research is mainly being used for increasing the researcher's understanding of certain issue (Maylor & Blackmon, 2005: 220). Additionally as claimed by Ghauri&Grɯnhaug (2005: 110) qualitative research is conditioned by uncovering a person's experience or behavior, or understanding a phenomenon about which little is known.

Moreover, the qualitative data serve as a source of rich descriptions and explanation of processes that occur in a particular context (Maylor 2005). Thus undertaking qualitative research will be justified in order to get in-depth insight into the concept of supply chain itself as well as the processes and activities that take place within it. Evaluations and interviews are several types of qualitative results that could be based on. An interview usually implies an interviewer asking questions into a dialog with one respondent. The answers and statements that the respondent give are the survey raw data. (Trost, 1997)

4.2.3 The choice of research method

In current work, the most appropriate research method is considered as qualitative survey method due to direct number of survey participants. The goal of the study is not to compare the objects studied with each other, because the investigation objects are very different. Qualitative research method is most suitable when conducting exploratory studies.

The survey will also include five of Dermoshops' main suppliers. The reason that it was just these five companies is that it is of variable size and operates in different parts of the world, i.e. all for the different companies. This set a condition that totally different suppliers will be conducted through a questionnaire sent by email.

4.2.4 Survey Implementation

For conducting the qualitative research, there are several possible strategies to be employed. The decision of a suitable methodology will be molded by the specific exploration inquiry and targets of the study. (Saunders et al., 2007: 135) The main question of the current study is to explore the models and factors influencing warehousing efficiency in supply chain. Moreover, other important aspects to be investigated are the ways information dissemination in supply chain.

Since the research question and objectives of the study are more of an explanatory nature, i.e. asking such questions as what and how, then the case study method as a research strategy is favored (Ghauri & Grønhaug, 2005: 115). Related factors on warehousing efficiency in supply chain. According to Yin (2003: 13) a case study is the most suitable method when research problem and objectives of the study answer the questions “how” and “why”.

Furthermore, the exploratory what-questions can be well explained by case study research (Yin, 2003: 6; Ghauri & Grønhaug, 2005:115). A case study is a preferable choice for investigating contemporary event, but when there is no chance of influencing the relevant behavior (Yin, 2003: 7). The case study method also allows attaining the holistic and meaningful characteristics of the real-life event, such as individual life cycles, organizational processes, etc., which exactly serves as the purpose of the current research.

According to Yin (2003: 39) there are four different ways of how the case study can be designed. This method can be distinguished between a single and a multiple as well as an embedded and a holistic design. A single case study is recommended when looking at the representative or typical case. The target here would be to capture the conditions and circumstances of common or everyday situation so that the case would be informative about the experiences of the average person or institution. (Yin, 2003: 39, 41)

Regardless of which endeavor is to be chosen, there is a need to focus the unit of investigation. In this case the unit of analysis are experts of a company specialized in e-commerce in several different countries with a variety of suppliers around the world (Yin, 2003: 22).

Regarding the research design, Yin (2003: 8) claims that the advantage of case studies is their exposure to a broader variety of evidences: such as documents, artifacts next to direct and participant-observations. In the present research, some of the above-mentioned patterns were utilized. Data about the case company in relation to the research topic was collected through personal interviews and documentary information. A weakness of a case study might be the development of narrow and idiosyncratic theory which in turn leads to a lower level of generality of the theory (Eisenhardt, 1989: 547). Nevertheless these problems can be eliminated by a comprehensive case study design consisting of sufficient measures in order to preserve validity and reliability.

Data was collected by semi-structured interviews with three expert advisers. Additionally, five supplier companies were interviewed. Semi-structured interviews are the most favorable for conduction qualitative research due to their advantage to provide an opportunity to follow the predefined set of themes, meanwhile leaving the room for a specific conditions or context of each particular case. This interview form is also appropriate for this research, allowing creating a personal contact and collecting profound data in a limited period of time (Saunders et al. 2007: 313-317).

The data collection for this study was conducted over the course of two months. First initial data was collected from secondary sources such as company reports and publications. After this interviews were conducted. The chosen qualitative data collection method is interviews because this allows the researcher to focus on a small sample of subjects, and it allows gathering valid and reliable data that is relevant to the research questions and objectives (Ghauri & Gronhaug 2005: 140-142).

Each interview lasted about one and a half hours. Interview consisted of open-ended questions that covered such themes as supply chain interaction, purchasing development, logistics services, etc. Questions were mainly built based on the theoretical framework of the study. The use of open-ended questions allowed the interviewees to define and describe important situations and events (Saunders et al. 2007: 329).

The open-ended questions allowed the researcher to attain a deep insight and gave the interviewees opportunity to share their experiences in a more open manner about the relationship with a client and knowledge transfers within it. Interviews were based on a prepared set of questions, the form of which can be found in the appendix of the present research.

First, general information related to the firm and interviewees' background and responsibilities was asked. Further, the interviewees were asked to choose specific case from their experience in order to elaborate on both successful and unsuccessful projects. Notes were taken during the interview in order to help forming the case study protocol. Additionally, firm website, press releases and informational leaflets were utilized as sources of secondary data. According to Saunders et al. (2007: 478) there is no standardized approach to the analysis of qualitative data.

4. 3. Reliability and Validity

To ensure the quality of the obtained results the aspects of validity and reliability need to be carefully considered and the conditions to be preserved. Validity is referred to as an accuracy of conducting research, whereas reliability is considered as a research consistency, i.e. the replication of the research results in a different point in time by different researcher (Maylor & Blackmon 2005: 158-159). When referring to case studies, there is a need to preserve construct, internal and external validity together with the safeguarding reliability (Yin 2003: 34).

Construct validity implies establishing correct operational measures for the concepts being studied (Yin, 2003: 34). According to Yin (2003: 35-36) the tactics of providing multiple sources of evidence, establishing a chain of evidence during the data collection and composition help securing the construct validity. To preserve construct validity, this study utilized multiple sources of evidence by attaining and examining company website, press releases, and informational leaflets next to interviews. Additionally the aspect of preserving the chain of evidences was accomplished by the mixture of case data, description, interview notes and records.

Internal validity is concerned with establishing a common connection, how certain circumstances are shown to lead to other conditions (Yin, 2003: 34). Yin (2003: 36) claims that internal validity is only a concern for explanatory research. External validity aims at establishing the domain to which the study findings can be generalized (Yin, 2003: 34). For single case studies this can be done by providing comprehensive theoretical inferences during the design of the research. External validity implies attaining analytical instead of statistical generalization therefore “striving to generalize a particular set of results to some broader theory”. (Yin, 2003: 37) In the case of the

present study the attained results will be used to assess the quality of the theoretical inferences and apply them for a wider range of companies.

Reliability shows that the operations of the study can be repeated, with the same results. The way to safeguard reliability is to use a case study contract and develop a case study database during the data collection period. During this research, case study protocols were utilized. In addition, case study database was worked out (Yin, 2003: 34, 38).

Regarding supplier questionnaires, the objects studied were relevant to case company activities. Something that had raised the validity of the results of supplier questionnaires had been consistent interviews because the answers to the questionnaires had varying degrees and not so full. Through personal interviews with the suppliers, the answers would be certainly comprehensive and more truthful, and misunderstanding of the questions could have been more avoided. However, geographic distances were too great for personal interviews to be conducted.

5. FINDINGS

Following chapter presents the findings of the current study, as well as analysis of gathered data through the interviews with suppliers of the case company and CEO, purchasing and logistics managers. Following the structure of the theoretical framework, the empirical data is analyzed. For the full overview of related findings, the chapter is introducing firstly the case company and its main business field of operations.

5.1 Description of the Case Company

The Dermoshoup group story started with the clothing company Pantaloni Fashion Ab in 1983. In 1988, the company changed its name to Handelshuset Finn Comfort Ab in order to go into skin care products and cosmetics with three employees. The product name Dermosil was launched in 1987. In 2004, the company name was changed into Dermoshop Ltd and was by then selling skin care products and cosmetics as well as a small amount of accessories, all under the product name Dermosil. At present, the group has 72 employees, of which 39 work within the parent company. In addition to the daughter companies Dermoshop in Sweden, Estonia and Russia, the group consists of Guest Comfort Ltd, Vivisanté Finland Ltd and Peter Pak, the latter three operating within slightly different sectors than Dermoshop.

Dermoshop.com Finland's largest web shop in cosmetics and skin care products was founded in 1996 when Backlund made contact with Mikael Ostling, who today owns Turku based Mios. The first version of the website was created by Ostling, and this became the foundation for a web shop, which today has about 5000 individual visitors per day (Dermoshop under the skin 2008: 42-44).

Dermoshop meets currently two international certification standards. ISO9001:2000 is a standard for quality management, which among other things, emphasizes the company's customer focus employee involvement and continuous improvement.

ISO 14001:2004 is an environmental standard that sets requirements for control, organization and monitoring of the company's environmental impact (Dermoshop under the skin 2008:67). Dermoshop Ltd is also a member of the Environmental Register of Packaging PYR Ltd and holds an AAA-rating Dun& Bradstreet Finland Oy is the company that classifies registered companies in Finland. The demands made to achieve

the best AAA credit classification, include demonstrating better ratios than the industry average and positive payment behavior. Dermoshop Ltd has had AAA rating since 1996 (Backlund 2014).

5.2 The group's subsidiaries

5.2.1 Dermoshop AB

The parent company has operated in Sweden since 2002 through its subsidiary Demoshop AB. The company operates under the same concept as in Finland: selling skincare products and cosmetics directly to selected customers. The parent company currently has two people working with it. Its customer service department and warehouse are in Korsnas. The company has own customer magazine and own web shop. What differs from the parent company's marketing strategy is that the Swedish subsidiary has made use of advertising sections and insets in newspapers.

5.2.2 Dermoshop OU

The subsidiary Dermoshop OU works according to the same principles as also parent company and Demoshop AB in Sweden. The company has existed in the Estonian market since 2005 and has two employees at their office in central Tallinn, as well two sales representatives. The company also has a contact person in Korsnas, Ann-Sofie Grandell, who maintains daily contact with the office in Tallinn. Customer service is in Tallinn, but the warehouse is in Korsnas. Postal connections between Finland and Estonia are relatively good, despite the warehouse's location. Because part of the population in Estonia is Russian-speaking, the company produces both the customer magazine and web shop in Estonian and Russian. It is unique for a company to market itself in both languages in Estonia. Dermoshop OU has also made use of advertising sections and insets in newspapers, and participated in various types of fairs. Turnover has increased every year, and in 2014, the turnover was approximately 280,000 Euros (Grandell 2014).

5.2.3 Dermosil LLC

The Russian subsidiary Dermosil LLC was founded in 2006 in St. Petersburg, Russia. The company was originally named OOO Dermoshop, but the company name was changed in August 2009. Between 2006 and 2009 there was no actual business done in the company. In June 2009, the Dermoshop-group decided to hire two persons to the company and to rent an office in St. Petersburg at Business Center Senator. The aim for the company was to start selling in January 2010 with the same sales-concept as the parent-company. Since then the warehouse in Gorelovo, just outside of St. Petersburg city area was rented, and now the office has ten people operating on online sales and logistics.

5.2.4 Guest Comfort Ltd

Dermoshop subsidiary Guest Comfort Lid designs and sells hygiene products, accessories and PR-products, mostly for hotels airlines and cruise lines. The company is the market leader in Finland and Russia within its field. Dermoshop and initially one company, called Handelshuset Guest Comfort were Finn Comfort Ltd. The first hotel products were developed in 1988 in 1990-1991 that part of the activity moved first was to Espoo and later to Helsinki. The market expanded to Estonia, Latvia, Lithuania and Russia. In 1994, the company was divided into Handelshuset Finn Comfort Ltd and Finn Comfort Ltd. In 2004, Finn Comfort changed its name into Guest Comfort Ltd, and Handelshuset Finn Comfort became Dermoshop Ltd. Nowadays, Guest Comfort has four employees.

5.2.5 Vivisanté Finland Ltd

The Group's other company in Helsinki is Vivisanté Ltd, which was bought in December 2006. At that time, the company was called Orendo Ltd. The company has among other things, four own series of nutritional supplements and skin creams. The best known of these are Viviscal and Vivida. Vivisanté's products are sold in health food stores such as Life, in pharmacies and department stores such as Sokos and Stockmann. The company has six employees and in 2014, the sales turnover was 1.8 million Euros (Backlund 2014).

5.2.6 ZAO Peter Pak

The company has worked in the packaging industry in St. Petersburg, Russia since 2000. Among other activities, the company packs hotel soaps, which are sold by group's subsidiary Guest Comfort.

The company has ten employees at the production unit in St. Petersburg. 60% of the company is owned by Dermoshop Ltd and 40% is owned by Grand Comfort in Russia. Grand Comfort has about 1,000 hotel customers in Russia and branches in St. Petersburg, Moscow and Sochi. Peter Pak's turnover was approximately 600,000 Euros in 2014 (Backlund 2014).

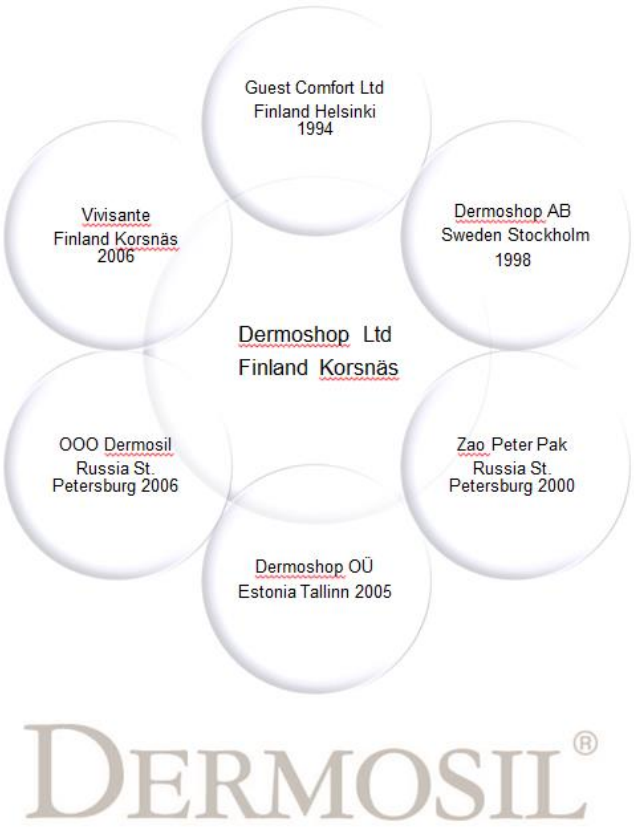

Figure 9. Case company structure.

5.3 Web shop

Dermoshop is one of Finland's largest web shops selling skincare products and cosmetics. The company is also the second largest Finnish-owned brand in the cosmetics industry. Dermoshop is ranked as number one in a survey which studied the most appreciated web shops on the Internet in the category of skin care and cosmetics. It was also rated number five all web shops in all sectors, and among companies such as Net Anttila. Hennes & Mauritz and Suomalainen kirjakauppa ended up behind Dermoshop (Backlund 2014).

It may sound paradoxical to be the best in web shopping, when the company is located in Korsnas, but the company has detailed rules on how Dermoshop must establish trustworthiness. CEO Henry Backlund stresses that his company must provide more information than any other company in the industry. Backlund also says, it shows that the threshold to communicate via e-mail, increasingly lower. It is important that the answers are trustworthy and that the company respects its customers' integrity. Approximately 75% of orders done via the web, but customers have often read a customer magazine at their workplaces before they order. Dermoshop's information manager Hanna Ristimaki points out that these two channels support each other (Dermoshop material). In 2013, the company had approximately 470.000 orders and sales of approximately 21.2 million Euros via the parent company. The company's goal is to constantly have different activities on the web. Dermoshop is aspiring to have the latest news before its competitors.

Figure 10. Web-shop development.

5.4 Supply chain operations of case company

In the current chapter situation reflected in the theoretical framework analysis based on the Dermoshop interviews and sent out questionnaires on Dermoshop suppliers. Since it is not publicly allowed to give information about company's suppliers, the current study will be using the results from providers anonymously.

5.4.1 Dermoshop purchasing operations

Dermoshop has a total of 18 vendors who supply their products. According to Backlund, is not currently up to date to expand or reduce the number of suppliers. It happens, however that any vendor fails, and someone is going to replace the failure, but the number is likely to be remaining the same in the near future. From these 18 providers, the five, who account for most deliveries to Dermoshop, have been selected for the survey. These five vendors are supplying about 85 percent of Dermoshops products. The providers in the current thesis are presented as supplier 1-5.

In theory chapter 2.4 was presented a model of the iceberg purchasing activity costs, which can be reduced by developing SCM. As the author of the study considers that costs are easier to reduce if company is aware and have control on ongoing costs, so I asked the question if Dermoshop controls purchasing costs. This question was answered by purchasing manager Asa Styris. From an interview, she explained that information about purchasing costs is constantly monitored, but that information is not foreseeable, and influence of the environment cannot be predicted.

Backlund also believes that the information, in terms of the indirect purchasing costs, should be specified during the various purchasing activities involved in SCM process. He was describing the difficulties in comparing indirect purchasing costs to large purchase price. During the interview, the fact of constant trying to reduce purchasing costs was mentioned. This is done, for example, by removing the products from the range that sold badly, for that way to eliminate unnecessary procurement costs that cause slow and poor returns. During the current study, the aim of the empirical part is now also an attempt to get more frequent deliveries from suppliers to reduce inventory costs.

The purchase price of Dermoshops products is affected by the purchase amount. The purchasing load affects the price, and how big a difference will be, varies from supplier to supplier, and also varies between different productions from the same vendor says Backlund. Some of the Dermoshops providers also store products for Dermoshop, and when the products become more expensive, supplier intend to stock bigger quantity bought in advance. Styris believe that the ultimate considering the purchase price would be to bring in larger amounts of products all the time on an order, a range between 10,000 and 30,000 products mean a price difference of about 8 to 12 percent.

On Dermoshops products also exists variations in demand, sometimes quite large variations. Of course, this is something that also complicates purchasing. For example, a new product in the range usually has a big demand in the introduction, but demand usually falls after a time. How demand will look after is difficult to determine in the introduction phase. New products will be added in Dermoshops catalog every month, and important factor for consideration is that the rest of these products can affect the demand. Some products also have seasonal variations in demand, but a large part of these variations can be anticipated when using the forecasts, if products have been in the range for some time and believed CEO. (Backlund 2014)

Joakim West, the logistics and IT manager, also adds in the interview that Dermoshop's customer magazine, which is sent out to customers every two months, and in which the various products are presented, also influences demand. This must also be included in the prediction. Dermoshop has two main sales peaks. These occur in May and at Christmas sales in November and December.

How long sales forecasts made up varies between providers, says West. As for the suppliers included in the survey, forecasts for half a year ahead are done with the suppliers 2 and 4. Suppliers 1 and 3 make forecasts for the next year and the supplier 5 performed no prediction at all, because its' products are not included in the fixed range due to fluctuation in the need of them. (West 2014)

5.4.2 Quality awareness at Dermoshop

Theory part in Chapter 2.6 (p.25) is discussing the influence of quality awareness in the supply chain, and that it is the company whose name is on the product, usually takes the responsibility for the quality problems. However, there might be a situation that these problems are occurring as fault of suppliers. This is something that Dermoshop is

mostly concerned about in their daily operations. The quality is therefore something that is very important for Dermoshop and their products.

"We have a threshold for complaints to the vendors, and they have a close control and a great follow-up of product quality" - says Styris.

Backlund says one interview that quality control of suppliers is carried out on the site once per year. The products are quality checked carefully at launch, but also continuously by sampling at least once a month. Control of the products is also occurring at the packing of customer orders in the case of quality defects in products. In the case of defects and any quality problems, everything is documented and discussed with suppliers. In the case of large deviations in quality, special actions required to the level of mutual satisfaction of company and clients. In some cases, it may be appropriate investments to address quality problems, but the investment is then usually the responsibility of providers.

According to Meredith Shafer (2001: 79-80) the quality standard ISO 9000 and ISO 14000 environmental standards are the measure of corporate quality. Dermoshop holds the ISO 9001: 2000 and ISO 14001: 2004. Backlund also believes that Dermoshop has gone beyond the suppliers of systems and procedures for quality thinking. The exception to this is for the supplier 5. Backlund believes that quality thinking is functioning very well. Among surveyed suppliers also only supplier 5 has received the ISO 9001: 2000, which gives an indication of the quality standards says something about the company's quality. The relationship between Dermoshop and supplier 5 is otherwise also very good, which could show a correlation between the achieved quality standards, teamwork and trust.

Author believes that getting international certificates for the other suppliers to achieve quality standards could increase trust between the companies. Backlund does not believe that the achievement of quality standards among suppliers is important as long as they are working under the contract.

5.4.3 Dermoshop's stock situation

Dermoshop stocks products are placed in two different locations. These are controlled by a careful examination of incoming and outgoing shipments and regular surveys four

times a year; according to the inventory, value is adjusted. Inventory management is also done by some of the vendors, such as the supplier of certain type, supplier 1 and supplier 2 and 3. In the theoretical part presented the Virtual Warehouse system in chapter 3.3, which would facilitate the inventory at multiple locations. This is not at issue in the present situation, since the main stock movement takes place in the main warehouse in Korsnas. There is very little movement in the other layers, making them much that is easily controlled.

Dermoshop stores events and stores information value in its computer system, which is updated continuously as customers place orders. Purchasing Manager Styris Asa believes that stock information is clear and accessible. She also checks the inventory statistics daily. With the control and documentation of stock events, it is also possible to make reliable predictions for the sale. According to West, monthly comparison of habit changes and months' sales makes it more transparent to predict and analyze the situation on the stock. If changes occur, there is a need for checking the causes and outgoing orders, in order to combine information into up-to-date forecasts.

In the theoretical part was emphasized, among other things, by Edwards et al. (2001: 3), the importance of the sharing of their information to all parties in the supply chain. Therefore, the logistics manager and CEO were asked if Dermoshop share inventory information with suppliers. Answering the question, the respondent Backlund states that Dermoshop publishes its inventory information to supplier 1, which also stocks products for Dermoshop, once per week. To other providers company gives stock information as needed, such as when the stock situation is becoming critical, so provider can understand the situation and react accordingly. The information conveyed by the e-mail exchange.

5.4.4 Dermoshop’s supplier relationships

The theory part (Chapter 2.2) was discussing five factors that are important for a supply chain as to function and be successful. Author will be going through what the situation is in Dermoshops-supplier relationships, based on trust factor, factor of power, communication, cooperation and conflict, and cultural differences. Suppliers were also asked how they feel that cooperation with Dermoshop works. All of the providers surveyed were satisfied and felt that the collaboration works well.

Trust

According Fynes et al. (2005: 3304) the trust between the parties is very important for a supply chain to operate successfully. Backlund says in the interview that the Dermoshop's side always strives for long-term and trusting relationships with their suppliers. Backlund also goes into how trust more specifically looks formal at Dermoshop and also suppliers included in the survey. He argues that there exist a lot of trust between Dermoshop and supplier 1. This is understandable, because, in cooperation between Dermoshop and supplier 1, supplier 1 can almost be seen as a partner company. Backlund is also included in supplier 1's board and he has access to both accounts.

Between Dermoshop and supplier 2, the relationships are good and confident too. Supplier 2 also very careful to ensure that the trust exists between them and their customers. Backlund says this was noticeable especially in the beginning of the cooperation with supplier 2 because it is very important to get to know the client before business cooperation begins. Dermoshops confidence supplier 3, believes Backlund, is lower than for the other suppliers in the survey. The reason for this is that it has often been carelessness and misunderstanding from supplier 3's side. Backlund says that the result of the poor confidence is that the relationship between suppliers 4 and 3 does not develop, and willing to avoid extending cooperation with Company 3. Company 4 is relatively new as a supplier to Dermoshop, which means no more confidence yet had time to build up, but both companies are in a trial phase.

Dermoshop has great confidence in the supplier 5. Company 5 closely follows the clear and precise rules that described in agreement. Backlund tells that company 5 is one of oldest suppliers of Dermoshop, suggesting that cooperation and trust has been good over the years. Purchasing Manager Styris agrees with Backlund on trust between Dermoshop and suppliers. She adds however that sometimes there are major problems with trust in suppliers. This is usually due to late deliveries and quality problems. According to Gadde & Håkansson (2001: 107), it is important for companies' representatives know each well on a personal level so that they manage to achieve a high level of confidence. Backlund also meets vendors in person at regular intervals.

Power impact on the supply chain

In the theoretical part, it appeared that the power is a hard factor in all kinds of conditions and that power also affects relationships within the supply chain. (Maloni & Benton 2000: 51, 53) how the power relationship between Dermoshop and suppliers looks, varies from case to case, says Backlund. He went on the interview through how the power relationship looks like between Dermoshop and suppliers in the survey. In the theoretical part also presented Gadde & Håkansson (1998: 51) theory that power often arises from dependencies and then it is plain that the weaker party is forced to adjust to the stronger. CEO was also asked how this dependence looks in Dermoshop's relationships and if either party adapts to the other.

Table 10. Supplier's total production for Dermoshop.

Supplier	Location of facilities	Percentage of total supplier's production for Dermoshop
Supplier 1	Sweden	50-60%
Supplier 2	Danmark	5%
Supplier 3	Spain	10%
Supplier 4	United Kindom/ Asia	1%
Supplier 5	Asia	5%

Backlund notes in the interview that between Dermoshop and supplier 1 is a special kind of relationship, based not only on trust, but also on the partnership agreement. A large part of both their business depends on cooperation, which means that both are highly interdependent. Backlund thinks the relationship works well, although small conflicts sometimes arise. In planning strategy for a common future CEO also believes that supplier 1 adapts to Dermoshop because of their mutual customer collaboration. According to supplier survey, between 50 and 60 percent of 1's supplier production goes to Dermoshop, confirming that supplier 1 is highly dependent on Dermoshop.

The relationships between Dermoshop and supplier 2 are more difficult to define, as they are not so dependent on each other. Backlund says that supplier 2 is not

irreplaceable, but their products are a great addition to Dermoshops product, which makes supplier 2 for a good partner for the business. Supplier B states in the supplier questionnaire to about 5 percent of their total production goes to Dermoshop.

The relationship between supplier 3 and supplier 4 is difficult to define properly. The supplier 4 is more dependent on Dermoshop than supplier 3. Reversing this statement will show that supplier 3 has no willingness for accepting any changes in cooperation. This is obviously not so good for the relationship between supplier and Dermoshop. As previously mentioned, Dermoshop avoids extending cooperation with supplier 3. According to supplier 3 answers in supplier survey represent approximately 10% of their production deliveries to Dermoshop making it incomprehensible; provider 3 does not handle the relationship with Dermoshop better.

Company 4 is still such a new supplier for Dermoshop, so power of relationship is difficult to define. Supplier 4 is a big company and hardly dependent on Dermoshop. According to the survey, about 1 % of the supplier 4 total production is deliveries to Dermoshop. Despite the percentages, there is a great mutual interest between the companies and interest of supplier 4 gladly initiative to develop the relationship between the companies, which is very positive factor.

Supplier 5 is a large company and, according to Backlund, should not depend on Dermoshop. Despite this, he means that the supplier 5 of Dermoshop thinks that's a very important customer and values the cooperation with Dermoshop high. Approximately 5.5 percent of supplier's total production goes to Dermoshop by supplier survey, a surprisingly large proportion given by this company.

Communication

According to Fynes et al. (2005), communication is the most important tool for supply chain resolve conflicts, but also to increase understanding between the parties to the communication between Dermoshop and their suppliers are mainly made by e mail and telephone communication. But personal visits are also important during the interview, tells Backlund. Also review how often the personal meetings take place with the suppliers included in the survey. Supplier meetings are regularly occurring about once a month. Supplier 2 will visit roughly every two months. With supplier 3 meeting are held approximately twice a year. Supplier 4 also has this meeting twice a year. Supplier 5 will have a meeting with Dermoshop at least one time per year.

The geographical distances obviously play significant role, defining the frequency of meetings. In some cases it will also increase the number of personal visits. This may be the case, for example, when misunderstanding in product development must be resolved. Mentzer et al. (2001: 8) writes in his article that it is important that the communication is mutual between the parties in the supply chain. A mutual communication leads namely the reduction in uncertainty between the parties.

Backlund notes in the interview that Dermoshop not satisfied with the information received from the suppliers. There are cultural differences in terms of how to handle the information. He also goes specifically into how providers transfer and exchange this information to the Dermoshop. Supplier 1 will inform quite good according to Backlund. The amount of information is sufficient, but the format of the information is less successful. One example connects to the fax machine, so that the information is not always so easy to handle that would be in an electronic form.

Backlund adds that supplier 1 responds quickly. Information from vendor 2 is mediated by e-mail and telephone. Supplier 2 also is quick to respond to the email. In the interview with the purchase manager Asa Styris, was said that supplier 2 information has been pretty bad before, but after a change of contact type it got better, and she now believes that it is at an acceptable level.

Backlund is not satisfied with supplier 3 information. The information conveyed by e-mail and supplier 3 is not always so quick to deliver information. The amount of information obtained is small, and the one that comes out is often difficult to interpret and fuzzy both linguistically and culturally. Styris agree with Backlund, but nevertheless considers current supplier is getting better all the time. She says, however that all cooperation with provider 3 must constantly be controlled from Dermoshops supplier works side because there is no else can rely on.

The information from supplier 4 comes via email, which according to Backlund works fast and the amount of information is large enough. However, there have been problems with the communication between parties because the information was sometimes incorrect. Sebbas also believe that the information from supplier 4 can be improved. However, one should remember that this supplier is a relatively new supplier to Dermoshop.

By supplier 5, both Backlund and Styris are very pleased. Information via email goes smooth and without delays, there is nothing to complain about. It means that company is careful to keep their customers informed. CEO states, for example, that after sending a request to the supplier 5, one can get an answer within a couple of our from a contact person. As information exchange should be mutual in the supply chain, so analysis of current work is also going from the interview to the question of what kind of information does Dermoshop share with suppliers.

The general information Dermoshop gives to suppliers in their purchasing manual (Appendix 1). This document is given to all partners in the introduction of the relationship. In addition to this, they are quite open to their suppliers. It gives company possibility to get an estimated forecasts information on selling products and also stock information. With supplier 1 company has fairly extensive exchange of stock information. Suppliers 2 and 3 also store some extent products for Dermoshop. Providers 4 and 5 don't keep goods for Dermoshop, and there is not gained any exchange of information about the stock.

Cooperation and conflict

Fines et al. (2005: 3305) emphasizes in his article the importance of a good partnership in the supply chain, noting on cost-effective supply chain, good cooperation, the foundation of innovating approach affecting on suppliers' relationships generally. Backlund mentions that those above mentioned factors are considered in his company. Cooperation with suppliers of Dermoshops is good enough, however, he is hesitant when it comes to supplier 3, where from all information breakdown are coming. Styris and West also believe that cooperation with suppliers, also for supplier 3 must be controlled entirely from Dermoshop's side. The reason for this type of cooperation is lying in how structuring the partnership.

The supplier 1 is the one type of supplier, where the long-term relationships are discussed through the contract. Cooperation with supplier 2 is based on project scheduling or product demand. Backlund still believes that it will be possible in a close future to plan and invest in long-term cooperation with this supplier.

Supplier 3 is working also by product or project scheduling. There is also a framework for cooperation between supplier 3 and Dermoshop, but this should be in the form of

reconsideration, says Backlund. With supplier 4, collaboration also works by product and project scheduling.

Collaboration works very well with supplier 5. Also in this case it has been contracted by product and project. Nor has the supplier Email a detailed contract for cooperation between the firms, however, there is a "supply agreement", which is at a more general level how the collaboration will work.

On the question of whether the conflict situations occur between Dermoshop and suppliers, both Backlund and Styris noted that the conflict is something that occasionally occurs with all suppliers. Backlund mentioned, however that an exception to this is the supplier 5, where conflicts occur very rarely, and if it does so scooped immediately at the onset. According to Gadde & Håkansson (2001: 104-105), the conflict situations are not something negative, as long as they are kept at a manageable level. Conflicts can also entrust positive for cooperation.

With supplier 3, there have been many conflicts and the team has been critical, but Styris thinks it has to be better than work without any improvements. Company is steering cooperation from the terms with supplier 4, there were conflicts in the beginning of the cooperation, but the understanding has improved between companies and they have started to think more cooperation in the long term.

In the conflict situation with supplier 5, as it was said previously, was no problem to solve any questions. When it comes to conflict resolution, Backlund says that one should always try to find peaceful solutions to conflicts.

"*You try to compromise of sorts, but when all else fails take it sometimes also to power and threat, for example by refusing to pay the bill, and so on. In most cases it solves conflicts; the system is sensitive to but considering Dermoshops operations and the criticality of being without inventories. This means that conflicts often threaten to major consequences. "– Henry Backlund*

Cultural Differences

Dermoshops suppliers are located in different places of the world. Suppliers that included in the current survey is in Scandinavia, Europe and Asia. Supplier 1 is located

in Sweden, supplier 2 in Denmark, supplier 3 is in Spain and supplier 5 in Asia, supplier 4 located in the UK and Asia.

Presented theories by Ford et al (1998: 30) that show the culture awareness, appear during the analysis of an interview with Backlund. CEO is very aware of the cultural difference among suppliers. According to Backlund, author will find cultural differences among all providers, as during the interview he also goes specifically into each vendor in the survey.

- Supplier 1, which is a Swedish company, has a different culture than the Finnish even though it is so close. As an example, Backlund states, that decision-making is quite slow in comparison with Finnish companies. According to Styris, about deadlines Swedish companies are not so strict, and they do not always follow those.
- Supplier 2. Which is in Danmark, differs significantly in cultural terms from Finnish companies. According to Backlund, Danish people are straight and fast to deal with. But they are also arrogant, determined, dictatorial, making the problem occurred be deeper than it is in reality. Styris also believes that Danish people are quite difficult to work with. They act unexpectedly and often look only to their own beneficial sides.
- The Spanish supplier 3 is difficult to deal with. Backlund says that Spaniards often are impulsive and have difficulty keeping time and planning. This often causes problems, which makes them difficult to work with. Styris agrees that Spanish providers do not have the same view of time as they have in Finland. She also believes that the Spanish are slow, which often causes problems.
- Company 4 has operations in several different places in the world. It is therefore international firm in their actions, making that cultural problems are not very common cooperation with supplier.
- Supplier 5, which is in Asia, has a special culture, but their way business is reminiscent of Finnish way. Backlund is also very positive to work with Asian companies. He believes that supplier 5 is very similar to Finnish companies and acts very structured.

5.4.5 Information dissemination within Dermoshop

Dermoshop is a relatively small organization, which means that it might not require so large and advancing information system to use for work. Program Lotus Notes provides all that is needed for intensive information exchange, active in access to events of calendar and email, so that everyone knows what will happen within the company. In Dermoshop also arranged staff meetings once a month where all employees are getting information about the current goals and discuss specific problems and issues.

The company's operations are largely concentrated in only one program that everyone uses. This program takes care of everything from invoicing and ledger to purchase ordering and stock. This also means that all the information is available as needed. Therefore, this program is somewhat comparable with ERP because ERP system's main aim according to Meredith & Shafer (2001: 327) is to make information available to all employees and partners. Dermoshop is investing in information technology and new software. As the organization has been relatively small previously, the information flow was spreading well. But taking into account the fact that the company has grown rapidly in recent years and the number of subsidiaries increases, CEO thinks that probably company should look at the dissemination of information so that all employees have access to important information in all parts of the Group in the future.

Information Dissemination between Dermoshop and suppliers

In the supplier, questionnaire was questioned if suppliers have own proposals for change in collaboration with Dermoshop. From the results, it is mentioned that all providers except supplier 5 found the flow of information is something they should work on and improve. Author of the current study believes that the information flow between Dermoshop and suppliers is something that could be improved. Backlund says during the interview that Dermoshop doesn’t have interconnected systems with any of its suppliers. This is something that could be worked on. The providers in the study also seemed to be a positive about development in this area, aside from supplier 4. How this should be done, however, was something that the suppliers did not know and which they felt was the big problem.

Creating individual flow of information for all providers become too laborious and complicated, but giving more than sending emails, would be advantageous for providers

to get the knowledge on the part of Dermoshops' activity, not just direct connected flow only in the area of provider's responsibility.

In supplier questionnaire, provider 5 is the one that would like to have access to more information from Dermoshop, for example, about Dermoshop's magazine. This shows that from the suppliers side is also interested in more information from the case company. The author of the thesis believes that any improvement of information flow would reduce misunderstanding and increase trust between Dermoshop and suppliers.

5.4.6 Development of the supply chain

In the theoretical part, such systems as JIT and VMI were brought up as useful systems for the supplier relationship and achieving a functioning supply chain and cost-effective storage. The results from the questioners and interviews with Dermoshop and suppliers gathered opinions and conditions of the following systems.

JIT development

During the interviews with purchasing manager and CEO, the question about organization of logistics system was asked and if it fulfills the company requirements. Both Styris and Backlund believe that it works well, which according to Karlsson and Norr (1994: 49-50) extremely important to fit functioning JIT system. Backlund also believes that current logistics system is quite optimized, although it certainly can be improved. Styris also reports on the delivery times of the investigated suppliers.

From supplier 1 the transport time is approximately one day and delivery is done once a week. From supplier 2 transportation time is taking 2-3 days and shipping done two times per month. From a supplier 3, the products are taking about five days journey and delivery done once per month. From the supplier 4 where the delivery time is about five days the orders are taking place roughly every four months. From the Asian supplier 5 the transportation time takes approximately 1 month, and deliveries are constantly planned every month.

In the survey, Dermoshop's suppliers were asked about the delivery procedures. Providers confirmed the delivery frequency. Styris adds that this development is going on the terms where the aim is more frequent deliveries. Both Styris and Backlund are satisfied with the suppliers. Based on interviews information, author is analyzing the

possible use of any JIT systems. Here Backlund specifies that prototype of JIT system could find out in the relationship between Dermoshop and supplier 1. In that case, delivery will be made once a week, and Dermoshop have a five-week buffer stock for vendor's 1 products. Styris' point of view differs that the relationship with supplier 1 in a situation of implementing JIT function properly must be closely monitored all the time. She does not believe that the system is running smoothly.
Applying JIT systems, based on purchasing manager information, is difficult in Dermoshop's case, because the relatively high growth company has had in recent years, making it difficult to forecast for the future the product development. In addition, the manufacturing time of the suppliers varied and sometimes is quite steam.

Responding as fast as possible on the orders that case company makes is quite challenging task, because the delivery time after the order has been received may vary from supplier to supplier. Only supplier 2 both stock and manufacture at the same time the products for Dermoshop's order. According to supplier's 2 responses, lead time is approximately 2-3 weeks from the time the order is placed until it is delivered. Vendor 2 does not believe that this time may be decreased. Company 3 also stocking the products for the case company and manufactures the order. The time from the order is placed until it is delivered about two months according to provider's response. Supplier 4 answers in the questionnaire state that they hold stock and manufacture to order as well. In supplier 4's case, it suffices approximately 3-4 months from order to delivery. Supplier writes, however, in the survey response that this time can be shortened by ordering additional components at the first order that can quickly be filled at the following orders.

Company 5 produces only ongoing orders. The time from order to delivery is 30-35 days but provider add in the survey response that a new factory is planning to be opened and hope to reduce that time to about 25-30 days. As mentioned, the delivery time varying and sometimes also is taking quite long. A short lead time was something that according Olhager (2002: 684) was very important for the JIT to work in the company with variable demand. The provider survey also asked it is possible to reduce the size of the supply and increase the number of deliveries to Dermoshop, which is the main purpose of a JIT system.

The replies from supplier 1 and 2 were quite similar, what supply size is now at a moderate level and is difficult to change. Manufacturer 4 and 5 refer to the minimum limits on the order for increasing the delivery frequency. In the case of ordering from

supplier 4, minimum quantity is 15,000 units query and in the case of supplier 5 5000 units. With this scope system delivery guarantees to their customers that there is no risk of running out of stock with long lead time. After analyzing the JIT system, the conclusion is drawn by author that this option is not suitable to apply for all the providers in the company.

Obstacles in implementing VMI system in Dermoshop

In an interview taken from Dermoshops CEO and purchasing manager view on VMI and the opportunity to use it in Dermoshop's supply chain. Both Backlund and Styris believe that VMI would cost much more effort to make the system more efficient to supply store. Both of them are quite negative to the system, because in this case the VMI brings more risk to supply chain. Risks are becoming simply too large in Dermoshops case because it constantly requires products to be in stock. Author of current work agrees that fully developed VMI would be too risky. But with a better flow of information and greater confidence between Dermoshop and suppliers, everyone involved could gain by partially developing the cooperation. But with the risks associated with the system and external environment changes, Backlund is hesitant to develop this system.

With supplier 1, he believes, however, that system could be developed quite far. Styris, on the other hand, considers that it's impossible to let the providers be responsible for deliveries. Arranging the delivery have to be controlled from Dermoshop. Having VMI itself, depending only on suppliers will require a high level of trust and clear transparency in the current situation from the both sides. According to Kaipia et al., (2002: 19) lack of trust was considered as a common barrier for implementation of VMI. Styris also adds that the company's growth depends on the development of VMI. With a steady demand, a VMI system will be more possible for implementation. According to the responses from suppliers, they all were skeptical towards delivery, based only on Dermoshop’s provided information. They believe that now all orders should be made by Dermoshop because they do not have insight into case company’s planning. Some also felt that the result of VMI implementing would be a larger variety of products in stock at Dermoshop.

Based on the research data, the possible positive attitude from suppliers could be assured if the information flow in addition to inventory data would also increase. Developed information dissemination between Dermoshop and suppliers would

increase the mutual benefits for both parties. Even if case company and suppliers do not use VMI in practice, author considers developing the information system in the future, so that a VMI system would be theoretically possible. This would allow providers to predict the order and would avoid misunderstandings and ambiguities. Ultimately, such an information system will increase trust between Dermoshop and suppliers, which would open possibilities for more development in the future.

5.4.7 Summary of the results

Presentation and analysis of results began with a general overview of the case company. The reason for this was to create an image of Dermoshop's activities and current situation, as well as essential areas for development. Then followed outbound is researching case company's supplier relations based on the theoretical part of the study concerned supply chain.

Factors mentioned in the study were examined through survey results, and, as were expected, most of them were on the level, that does not need any improvement. However, the level of trust and communication with suppliers is the base to be analyzed further for more improvement. Chapter for information dissemination within Dermoshop presented case company's information tools at a generating and disseminating information within the company. Author analyzed that information systems dissemination tools are appropriate for Dermoshop's current size and operations. The key findings of the study are summarized in Table 10.

However, information dissemination is something that regarding the company growth, in the future could be changed, as providers also felt that improvements could be made in this area, and possible start with discussion on how to make relevant information to run smoothly between the companies. Analysis of possible use of JIT and VMI systems showed that both of these systems are not implemented, but part of each system is working in supply chain. Current study showed that JIT could be used to the greatest extent in the current situation and business set up of the case company with several suppliers. In addition, study is aimed for possible outcome of getting more frequent deliveries from suppliers. In this matter, developing VMI collaboration with suppliers is something that both parties are rejecting. Survey showed that Dermoshops' confidence to suppliers is not sufficient for such a system at this time. The situation also changes all

the time and with Dermoshop's rapid growth rate, what makes the company have a good control on information flow.

Table 11. Summary of the Key Findings.

Key information dissemination factors	Case company view	Suppliers' view
• Purchasing operations	- Not considering expand or reduce the number of suppliers - Indirect purchasing costs, should be specified - Attempt to get more frequent deliveries from suppliers to reduce inventory costs.	The purchasing load affects the price, and how big a difference will be, varies from supplier to supplier Some providers store products for Dermoshop, and when the products become more expensive, supplier intend to stock bigger quantity bought in advance.
• Quality control	- Takes the responsibility for the quality problems. - Quality control of suppliers is carried out on the site once per year. - Holds the ISO 9001: 2000 and ISO 14001: 2004.	Getting international certificates for the other suppliers to achieve quality standards could increase trust between the companies. (only suppler 5 is working with ISO 9001:2000)
• Stock information	- Stock information is clear and accessible - Publishes its inventory information to supplier 1, which also stocks products for Dermoshop, once per week - The information conveyed by the e-mail exchange.	Informational exchange considered as inefficient and lacking precise data Limited access to stock information exchange
• Relationships with suppliers	- Level of trust is built on the base of the company-suppler relationship and time of cooperation - Power impact is considered in a percentage that Dermoshop takes from overall deliveries in supplier activities. - Cultural and geographical differences affect the respond time	Mutual interest in developing the relationship with the case company shows the deviation in dependency roles Cooperation is based on contract terms and time factor affects it greatly Working based mostly on Project scheduling
• Information dissemination	- Dermoshop gives exact amount of information concerning stock	Suppliers would like to get more precise and often information updates
• Just in Time approach	- Not implemented by company as demand for various products is unpredictable.	Different geographical distances affect lead time, what makes it difficult to implement JIT system
• Implementing VMI system	- VMI would cost much more effort and it's risky. - It's impossible to let the providers be responsible for deliveries.	Expectation that information flow (in addition to inventory data) would also increase With a steady demand, a VMI system will be more possible for implementation

Developing supply chain by reducing the inventory value and inventory needs of Dermoshop is very problematic at the current stage. As the company is growing and the product range is constantly increasing, the extension of Dermoshop's stock is inevitable. Improving the flow of information and cooperation between Dermoshop and suppliers would increase the trust between the companies. To increase confidence could also concentrate on getting the suppliers to work with quality improvement to achieve quality standards. In this way, author suggests that by improving collaboration company will reduce the effort and need for expansion of stock.

6. SUMMARY AND CONCLUSIONS

Current chapter summarizes the main findings of the thesis and refers to the objectives settled in the beginning. Managerial implications along with suggestions for future studies are also discussed on the basis of the empirical data analysis.

6.1 Theoretical Contribution

The study was completed according to its theoretical and empirical objectives that were aimed on analyzing how different factors and models of information dissemination were influencing the warehousing efficiency. To reach these goals, a literature review of relevant works was made. Competitive, logistics and cultural dimensions of supplier-customer communications were investigated and a theoretical framework for selecting, planning and managing warehousing activities was created. Furthermore, an empirical part was included to the study to analyze the practices of a Finnish manufacturer (Dermoshop). Concerning selecting, planning and managing warehousing efficiency, five main suppliers of Dermoshop were interviewed to include their point of view on the topic.

Business today is exceptionally dependent to supplier's chain, and how cooperation functions is of incredible value for corporate intensity and achievement. There are numerous variables that impact on how organizations succeed in SCM. Among the most important variables is communication between the actors and the proper flow of supply chain. The purpose of the work was to analyze supply chain of the case company and find out how information dissemination models and factors in SCM can improve warehousing efficiency and the flow of goods. At current stage, the analyzed factors and models are presenting the results that fulfilled the objectives of the study. Table 10 presents key points on how the empirical part of the thesis contributed to the answering the research questions.

This research was conducted to answer the following research questions:

- Which factors of supply chain management contribute the most to the growth of the company without expansion of storage facilities?

- How developing the information flow within the company and among company's suppliers can streamline warehouse management?
- What models of information dissemination contribute the most to the development of collaboration between parties in supply chain?

The main research question was to find out how information dissemination affects on warehousing efficiency. Figure 11 clearly shows the analyzed factors and information dissemination models through the current study.

The aim of the study was fulfilled and author was attempting to identify weaknesses in the current situation and ways of improvement. The weak sides were found during the survey, and they are primarily communication and information sharing between Dermoshop and suppliers. The lack of confidence in providers is the largest in problem in case company's supply chain. Through improved communication and information dissemination confidence and trust between parties would be increased, which would have positive effects on the entire supply chain and the flow of goods. Figure 11 is wrapping up the key suggestions for improving warehousing efficiency based on stated previously objectives.

Communication and trust were presented in the theory part as the cornerstones of a successful supply chain. Survey theory considered general theories and can be applied to all companies working in different fields of business and having more than 1 supplier, but results and data gathered in the study is unique to Dermoshop and Dermoshop's supply chain. SCM was analyzed through the main factors and models influencing the warehousing efficiency and thus also highlighted its weaknesses. The work can be the basis for the future development of the supply chain within the companies with extended supplier network.

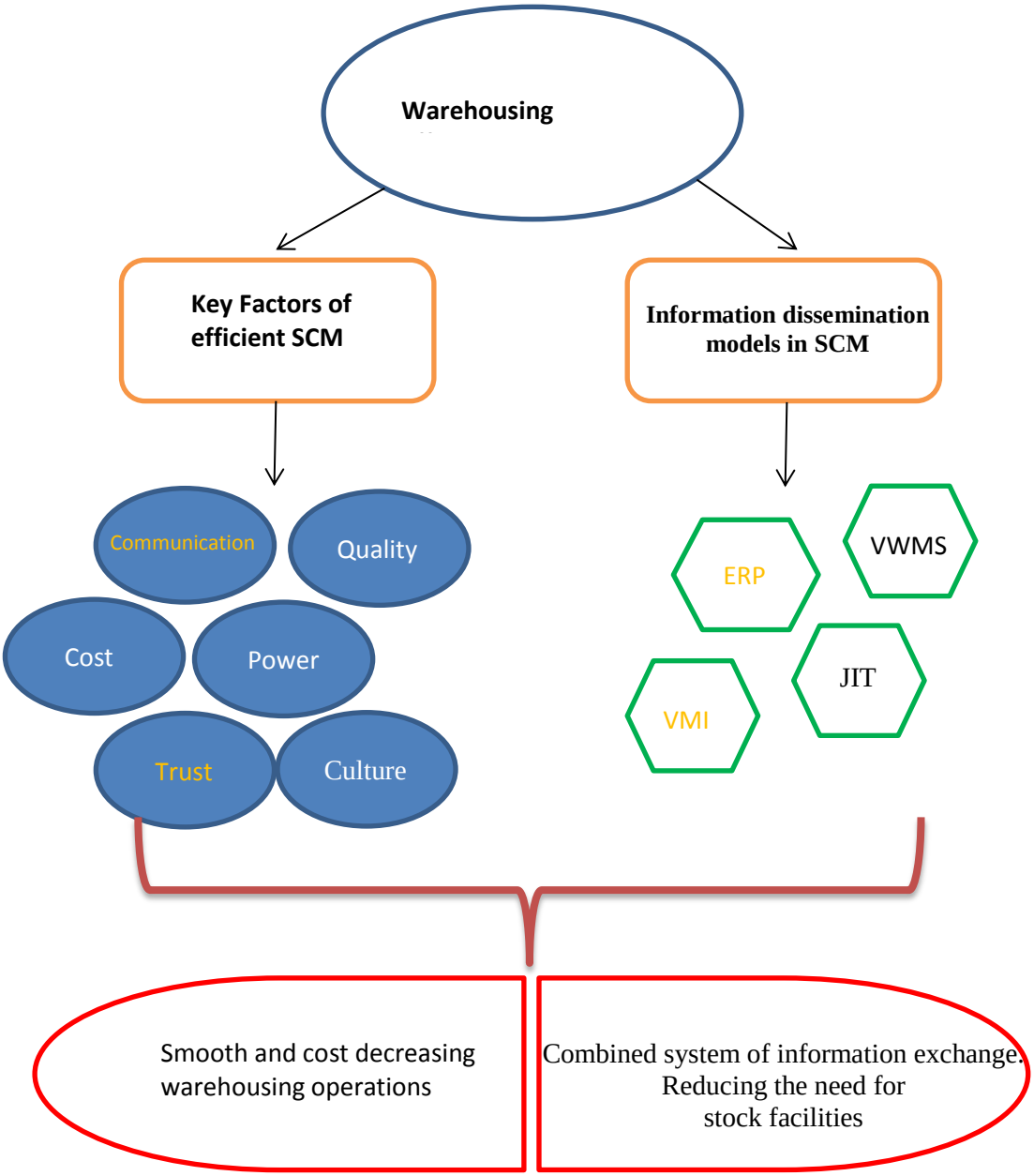

Figure 11. Information dissemination in Supply chain.

The company's supply chain is something that can always be improved and evolved. In the case of Dermoshop supply chain, the possible suggestion for future research could be by communicative work with partners to develop an information system for a more efficient exchange of information. Furthermore, also concrete cost analyzes and activities and vendors in the supply chain could be performed to identify and eliminate the brake pads in the system. Regarding Dermoshop's stock, here based on survey and

expansion plans, the growth is inevitable, proper planning is needed. The summary part includes the main conclusions of the study and the recommendations provided to Dermoshop on managing inventory and increasing stock. The summary is done according to Table 13, which illustrates the framework of an overseas manufacturers and case company shaping their practices of selecting, planning and managing stock efficiency.

Based on relationship-specific perspective and the systems of information dissemination in supply chain, this paper explores how these models facilitate the warehousing efficiency in a company that has more than two suppliers in different countries. The study examines how information flow and functioning supply chain could develop a relationship with suppliers and how those specific models and factors contribute to the firm`s inventory management.

Studies have been carried out from various perspectives that attempted to explain how models of information dissemination facilitate the warehousing efficiency in a company that has more than two suppliers in different countries. This study revealed the main factors for consideration while working in complex network of supply chain and helped to understand their role in the company` overall planning inventory. The study also researched how company can manage the information flow between many suppliers with different background. To add more value to the thesis, it studied the perspective of the case company and suppliers at different relationship building stage, starting from very close and well established to new and suppliers in the stage of building trustworthy business.

6.2. Managerial Implications

Managerial implications for this study are provided in the form of recommendations given for a Finnish manufacturer Dermoshop which was one of the case companies in this study. This company was provided recommendations considering its policy in selecting, planning and managing inventory with suppliers. It should be helpful for other companies to get additional knowledge about managing their stock and supplier relationships, as environment and cultural dimensions of operation countries might differ from their suppliers. Also, the information about warehousing efficiency and

managing inventory can be used by international companies from the countries other than Finland.

An important implication of this study is to create a system for evaluation of the whole competitiveness of the company based on decision making and resource allocations of the company by implementing information dissemination models, which were proposed in this work. They are JIT and VMI methods. In addition, technology level model is used in order to support the competitive level of the organization. Such a system helps managers to understand general situation of the company as well as each department in it.

The practical implication of this work has possibilities to make it eventual from the whole company perspective. This internal evaluation of the company helps to reduce information gap and ineffective decision making starting from the company operation performance to the strategic direction between suppliers. Every supplier is evaluated in order to see the general performance, how efficient resources are located and used, what operational strategy is put to use as the main, and what the risk level is. Thus logistics managers can make decisions for the future of the company based on this kind of information in order to develop and strengthen competitiveness of the company in the market.

6.3. Limitations and suggestions for future research

The first limitation of this study is that only one case company and its five distributors were analyzed - Finnish company Dermoshop and its five main distributors. Therefore, the results of the analysis cannot be generalized, because the number of case companies in the study is insufficient for making any generalizations for Finnish market or for any other markets. Another limitation of the study is that the author is a participant of working relations between the case company and its suppliers; she works in Dermoshop Group as a Key Account Manager and Logistics Manager. Therefore, the generalizability of the study has to be made with caution, as the aim of the study was to learn about the contribution of applying different information dissemination models to firms` warehousing operations.

The language aspect could be mentioned as one of the limitations for the current study. The interviews with CEO, logistics and purchasing managers were conducted in English and partly in Finnish which was a foreign language for the interviewer, as well as getting the answers from vendors in English were one of the challenges due to possible misunderstanding and cultural aspects. Although case company's interviewees are fluent in English, misunderstandings occurred in collecting data from suppliers because of unclear and distant answers.

Nevertheless, to minimize the bias, it can be suggested that future research should continue investigation of the field of inventory and information dissemination between a case company and its foreign suppliers. If more empirical data is collected about Finnish manufacturers selecting, planning and managing their supply chain, generalization of the results can be made. Furthermore, it can be recommended for scholars to analyze how suppliers are selected, planned and managed in a home country and to compare this with the results of the study of current suppliers. Lastly, it can be of interest to analyze the inventory activities of the Finnish case company Dermoshop after a certain period of time, to observe how the recommendations provided in this study influenced its working relations with suppliers and how the warehousing efficiency was managed.

The field of information dissemination in warehousing operations of companies is not widely studied at the moment; therefore the research possibilities are broad in this field. Because this is a case study research, further studies could be wider and larger in order to be able to generalize the research results. This study was focused to increase the understanding of the information dissemination influence on warehousing efficiency. It was found out how different factors are reflected in supply chain operations, thus further studies could concentrate on some specific area of warehousing in order to get even deeper information about the issue.

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Discussions

Backlund, Henry, CEO. April 21st , 2014, June 2nd 2014. Dermoshop Ab. Korsnas. Discussion

Grandell, Ann-Sofie, business controller. April 14th, 2014. Dermoshop Ab. Korsnas. Discussion

Styris, Asa, Purchasing manager. April 14th, 2014. Dermoshop Ab. Korsnas. Discussion

West, Joakim, Logistics and IT manager. May 12th, 2014. Dermoshop Ab. Korsnas. Discussion

APPENDIX 1. Interview questions for Dermshop.

1. How many vendors have Dermoshop? Does it plan to expand or reduce the number?

2. Where the suppliers are located, and are there large geographical distance between them and Dermoshop?

3. How can you describe the communication process with suppliers?

4. Which type of the information does Dermoshop send to suppliers?

5. Are you satisfied with the amount of information from the suppliers? Development plans?

6. What is the trust between the Dermoshop and suppliers? Have you encountered problems? If so, what kinds of?

7. What is the level of power and dependency relationship between Dermoshop and suppliers? How does this affect the relationships (adaptation)?

8. What types of collaboration does Dermoshop have with its suppliers? What kind relationships is this: short or long term? Contract?

9. What about the level of cooperation between company and suppliers?

10. What kind of conflicts usually occurs between Dermoshop and suppliers? How are they resolved?

11. Are there cultural differences between Dermoshop and suppliers? In such cases, what problems have arisen due this?

12. Has Dermoshop encountered other problems when it comes to supplier management?

13. Does Dermoshop use ERP systems or other up-to-date and comprehensive information about the business and what functions cover this system?

14. Is there a track of how big the indirect purchasing costs in Dermoshop? How big are they compared to the purchase price and what is done to reduce these?

15. How does purchase amount purchase influence on price of Dermoshops products, and to what extent?

16. Which products Dermoshop is getting from their suppliers? Is the type of products standard or they change frequently or from delivery to delivery?

17. Do you experience the large fluctuations in demand in your daily operations? Is it possible to predict variations (planning)?

18. How Dermoshop is managing warehousing? How updated stock values and how quick changes are noticed in demand?

19. Does Dermoshop have inventory at multiple locations?

20. Will the quality checks on products and suppliers who does control what is being done on Dermoshop to improve quality?

21. Which quality standards does Dermoshop have? Are the suppliers at the same level?

22. How logistics is organized in the company? Are there opportunities for improvement?

23. Does Dermoshop use any kind of JIT system with their suppliers and how does it work?

24. Does Dermoshop consider the possibility of allowing providers to be responsible for deliveries to Dermoshop?

25. What advantages/disadvantages do you think VMI system will bring to a company?

APPENDIX 2: Interview Questions for Dermshop's suppliers

1. How big a share of your total production is delivered to Dermoshop?
2. How often do you deliver products to Dermoshop(a year)?
3. Are you keeping ready products in stock for Dermoshop or do you produce them when you receive the order?
4. What do you think about the cooperation with Dermoshop? Do the communication, troubleshooting and logistics work well?
5. Is the information flow between you and Dermoshop sufficient? Do want you access to further information from Dermoshop? Suggestions?
6. What do you think about the possibility to connect information system to Dermoshop's information system for a more effective information flow?
7. What's the average lead-time for a standard product to Dermoshop, from the point when you receive the order until it is delivered? Is it possible to reduce the lead-time?
8. Is it possible to cut down the delivery amount and instead increase the number of deliveries to Dermoshop?
9. Do you prefer delivering complete products or just components and raw material?
10. How do you cooperate with your suppliers? Are using systems such as Just-In-Time (products are delivered when needed)?
11. What do you think about the possibility for you to decide yourself what and when to deliver on the basis of information about Dermoshop's inventory? Which advantages disadvantages could this lead to?
12. Do you have any suggestions for how to improve the cooperation between you and Dermoshop?

APPENDIX 3: Dermoshop purchasing manual

Dermoshop information to the supplier– to be carefully followed

Company introduction

– Founded in 1983
– Head owner Henry Backlund (mr)
– Subsidaries: Dermoshop OÜ (Tallinn Estonia), OOO Dermosil (St. Petersburg Russia), Guest Comfort Ltd (Helsinki Finland), ZAO Peter Pak (St. Petersburg Russia), Vivisanté Finland Ltd (Helsinki Finland)
– Quality system: ISO 9001:2000 and ISO 14001
– Financial rating: AAA
– Eco-cert certified

Business idea – the concept

Dermosil skin care and beauty at dermoshop.com
To sell skin care products through our webshop to personnel groups and end consumers. The webshop is also promoted by our own magazines (yearly
6 editions) including a lot of product samples.

Products

Policy: low prices for high quality products!

Quality level: better or as good as the "big" brands, in our own tests 30% better than the benchmarked product
Price level: always lower than the benchmarked product

Ingredients:
– Base: vegetable (no mineral oils or their derivatives)
– Preservatives: low bases, no parabens
– Perfumes: free from the "26", our own registration: "hypoparfum"

Origin of contents: Europe (or Scandinavia)

Product launching: new products (every or) every second month!

The company has today about 350 products in the following lines and their specific features/key words:

Dermosil Classic: base, family, ”medical”
– Sensitive skin (approved by finnish Allergy&Asthma organization)
– dermonature (Ecocert)
– Scandinavian hair care
– Dermotek
– Vitamin E
– Dermosil Health

Dermosil Primo: luxuary, fragrance, “strong” active ingredient/s
Dermosil For Faces: high quality products for facial care
Dermosil Designs
Dermosil Arctic Berries Concepts: seed oils of artic berries
Dermosil Skin Comfort: mature skin (care)
Dermosil Foot Therapy
Dermosil Man
Dermosil Fresh Balance: young skin (care)
Dermosil Makeup: color cosmetics
Dermosil D: accessories

Information to be carefully followed

Preferably the supplier has got quality (and environmental) certification (ISO9001:2000 (and ISO14001) and Cosmetics Good Manufacturing Practices (ISO22716).

Product development process

Process
Once a product development process starts up, it is always required to agree upon a product development process including time tables and responsible persons.

Dermoshop makes the plan including lead times and the plan should be approved from both sides. (See sheet ”H/DOK/Project/”). 100% certainty is demanded regarding deliveries – the concept would never allow a product to be out of stock.

Product safety

All information regarding the ingredients of the product and their effects shall be provided. Test results (stability-, compability-, challenge- and traditional droptest) are to be available.
All batches shall be traceable.

Packaging

Product packages are purchased in Europe and Asia, the company has got some own moulds for plastic packages.

All layouts are provided by the Dermoshop – however we demand that the partner is fully responsible for the INCI and that it is made according to the contents.

The supplier is responsible for printing the best-before dates according to
our standard:
– Month (2 numbers) + year, i.e. 12-2014 means December, year 2014

Special features

Samples when possible or on demand, which means that the supplier should pro-vide bulk to a very low price. The sampling is essential for the success and supports future orders for the product itself.

Communication and documentation

Names and contact details of responsible/contact persons to be sent in written form.

Complaints

Possible complaints must be handled in written form within 10 days or as agreed with our Chemical technical manager.

Supplier agreement between supplier and Dermoshop is preferable.

Purchases, production issues and logistics

Capacity figures to be informed.

All orders shall be confirmed by written order confirmations including confirmation of delivery date.

100% certainty is demanded regarding deliveries – the concept would never allow a product to be out of stock.

Delivery note and invoice to be send to Dermoshop by e-mail after pickup or at the latest before delivery arrives at Dermoshop.

Pallets
EUR-pallets, maximum height 1400 mm

Marking on pallets:
– Delivery address, Prod. NO. and name, Batch, EAN, pcs/pallet

Batch barcode (best before date and batch), CODE128
– Ean code, EAN13
– Total quantity on pallet, CODE128

Outer cartons
should be as follows in size:
– L390mm x W160mm x H185mm, with removable (separate) lid
Or
– L285mm x W175 x H185mm, with removable (separate) lid

To be marked with a label including following data:
Product number and name (dermoshop)
Content
product number (supplier)
Batch barcode (best before date and batch) – CODE128
EAN13 code

Delivery address, if no further notice: Dermoshop Ltd, Västanlid,
FIN-66200 Korsnäs, FINLAND

Communication and documentation

All information regarding the ingredients of the product and their effects shall be provided.

- All batched shall be traceable.
- Test results are to be available.
- Capacity figures to be informed.
- All orders shall be confirmed by written order confirmations.
- Names and contact details of responsible/contact persons to be sent in written form.
- Possible complaints must be handled in written form within 10 days or as agreed with our chemical technical manager.
- Preferably the supplier has got quality (and environmental) certification (ISO9001:2000 and ISO14001).

Product development process

Once a product development process starts up, it is always required to agree upon a product development process including time tables and responsible persons.

Dermoshop makes the plan and the plan should be approved from both sides.

Special features

Always samples when possible, which means that the supplier should provide bulk to a very low price. The sampling is essential for the success and supports future orders for the product itself.