VMI and its Effects on the Small and Medium-sized Supplier

Maria Danielsson & Anna Lundqvist
Background
Today, collaboration between actors in a supply chain is often a necessity if a business wants to remain competitive. Moreover, efficient sharing of information is vital for success in this collaboration. One way of sharing demand and inventory information between the customer and supplier in a supply chain is by utilizing vendor managed inventory, VMI. The recent focus on VMI has produced a great number of articles on this subject, however, few of them give the whole picture of the VMI relationship. The VMI literature tends to have its focal point on the large customers in a supply chain, failing to cover the effects of VMI for the small and medium-sized (SME) supplier.

Purpose
The purpose of this thesis is to study VMI and its effects on the small and medium-sized supplier. The thesis will look at VMI from an electronic information sharing perspective.

Realization
The study has a qualitative approach and is based on qualitative interviews conducted with representatives from three SME suppliers and one of their largest customers. In addition, interviews were conducted with VMI experts.

Results
The study shows that the prime motive for SME suppliers to enter into a VMI partnership is the demands of the customer. The fact that the SME supplier gains competitive advantage and gets access to information when joining a VMI collaboration are further reasons. For a successful implementation, the SME supplier must know his prerequisites, understand the goal and vision of the collaboration, participate in the design phase of the collaboration, and use the VMI information efficiently. In the long run, VMI normally leads to reductions in inventory, production, transportation and administrative costs for the SME supplier. Any absence of benefits can be due to the logistical knowledge being isolated to a few individuals. The VMI collaboration must bee seen as a strategic matter and a long term investment.

Keywords
VMI, SME, logistics, supply chain, information sharing, Jörgen Dahlgren
A Word from the Authors

This thesis is the result of ten weeks of long, laborious, but very interesting work, where we have studied the effects of VMI on the small and medium-sized supplier. Now our last step of the International Business Program at Linköping University is finished and it is time for us to let go of the sheltered academic world and face the tough reality.

We want to thank one and all who have contributed to the result of this master thesis. Without your involvement and help the thesis could not have been conducted! We especially want to raise our glasses to

our helpful interviewees, who have devoted their time to our information-gathering process,

Fredrik Stahre, not only for participating as an expert respondent, but also for showing great interest in our research process. Your engagement and ideas were of great help, thank you for letting us steel some of your time!

Jörgen Dahlgren, for your support and guidance as our supervisor!

Our fellow-students, for giving us good advice and remarks during the research process!

Last but not least we wish to thank You for having shown interest in our thesis. Enjoy the journey!

Linköping, January 2004

Maria Danielsson & Anna Lundqvist
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1 Introduction

1.1 Background

Today’s business environment is characterized by tough global competition, rapid deployment of technology and aggressive customer demand. In addition to dealing with these matters, companies of today must also handle countless requests from their stakeholders. Companies are demanded to lower their prices and reduce their cost at the same time as the customer’s demands for quick, safe and flexible deliveries are increasing (Aronsson et al, 2003). In order to stay competitive, it is important for companies to learn how to meet these requests.

The recent trend is for companies to look beyond themselves and include other actors in their supply chain to remain competitive. Collaboration between actors in the supply chain has even been called a necessity in successfully satisfying the end customer. (Schary & Skjøtt-Larsen, 2001) In order for the actors to collaborate efficiently, the sharing of information is required. But until recently, it has been uneconomic for collaborators to disseminate vast amounts of information. However, not sharing information leads to each echelon in the supply chain only having information about the needs of their immediate customer and not having information about the needs of their end customer. This can result in a mismatch between the product availability and order quantity, leading to higher costs because of larger stocks held or lower customer service due to insufficient stocks (Daugherty et al, 1999). In reaction to the lack of visibility of real demand and because of the advancement of technology, many companies have felt the need to improve their operations by sharing demand and inventory information with their suppliers and customers (Disney & Towill, 2003a). Through sharing this information the visibility in the supply chain increases, thus diminishing the actor’s uncertainty of demanded quantities. The increased awareness of demanded quantities will lead to decreased inventory costs, due to the fact that there is no longer a need of large safety stocks. But it is still possible to satisfy a high customer level as there is a better match between product availability and order quantity.

One way of sharing demand and inventory information is by utilizing vendor managed inventory, VMI. In a VMI relationship the sharing of information between the partakers is required, as the supplier replenishes the customer’s stock based on this information. VMI focuses on ensuring that products are replenished in the most efficient way, without orders having to be transferred between customer and supplier. Instead, the supplier keeps track of the current stock level and customer demand, either physically or
electronically, so that he can determine when it is time to refill the stock to avoid stockouts for the customer. Because of the availability of demand information, the supplier has the possibility to better plan his production and delivery process. When utilizing VMI it is thus possible to reduce production costs and transportation costs as well as keeping inventory levels low throughout the supply chain.

One of the first companies to adopt the VMI business approach was the consumer-products supplier Procter & Gamble Co in the 1980s. This large supplier started its employment of VMI with a regional grocery chain and later extended the VMI program to involve the two retailing giants Kmart Corp and Wal-Mart Stores Inc. The VMI concept soon spread to other industries where interest for the approach is still progressing. (Cooke, 1998)

1.2 Problem Discussion

The recent focus on VMI has produced a great number of articles debating this business approach. For the most part, the articles have a positive focus, presenting VMI as a concept on the rise having nothing but a bright future. The concept has attracted great interest in the business world, and seminars about the subject are spreading across the globe. Many companies have already implemented VMI, whereas many others have shown an interest in the business approach and are starting to look at the consequences and possibilities of VMI.

Even though VMI is portrayed as an integral part of the current business environment, few articles and books give the whole picture of the VMI relationship. The literature often has a focus on the advantages the customer experiences with VMI, thus disregarding the supplier’s role. When reading articles that do cover the function of the supplier, one gets the feeling that the supplier has a tough role to play in a VMI collaboration. Quotes such as “[VMI is] by no means painless for vendors” (Nannery in Daugherty et al, 1999), “the supplier bears the cost of implementation, but the customer reaps the benefit” (Clark & Hammond in Disney & Towill, 2003b, pp. 627) and “VMI can be both a blessing and a curse [for manufacturers]” Cooke (1998, p. 52) do not appear infrequently. The literature also lets us know that several large companies (cf. Daugherty et al, 1999 and Cachon & Fisher, 1997) have improved their operations by employing VMI and gives us detailed information proving this fact. But despite the vast number of articles and books discussing VMI, little is known as to how VMI affects a smaller company, such as a small and medium-sized enterprise, SME.
As seen, the VMI literature defines VMI as something positive and shows large customers obtaining substantial benefits from the approach. The fact that the existing literature mainly focuses on large corporations can cause it to be hard to absorb and relate to for businesses of smaller size. This is because an SME often has a different situation and runs its business under different circumstances than a large corporation does (Ramström, 1975). Since the supplier also has been partly neglected by the VMI literature we can consider the existing theories only covering part of our business world.

What the VMI literature fails to tell us is how VMI affects the SME supplier. Considering the fact that VMI is a business concept on the rise, as well as the fact that supplying SMEs make up a great part of the world economy¹, this question is of great relevance. The question is how the supplying SME should relate to the current expansion of the VMI concept and if they have the possibility to be part of this development considering their limited opportunities.

Our previous problem discussion has lead us to the following research questions:

1. What are the motives for a small and medium-sized supplier to use VMI?
2. What aspects affect the implementation and utilization of VMI for the small and medium-sized supplier?
3. What consequences does VMI have on the small and medium-sized supplier?

¹ SMEs are recognized as an important part of the economy as they create jobs, are a source of innovation and create competition. In Europe 99% of all registered enterprises in the European Union are SMEs. The SMEs contribute to a considerable part of the EU’s economy (60% of added value business) and also employ a large number of the union’s labor force (67%). (Hillary, 2000)
1.3 Purpose

The purpose of this thesis is to study VMI and its effects on the small and medium-sized supplier. The thesis will look at VMI from an electronic information sharing perspective.

1.4 Disposition

In our introductory chapter we have opened with some background information about our topic, giving a setting to the subject of the thesis. The current problem leading to our research questions was discussed. In the end of this chapter the purpose of the thesis was presented.

The second chapter of the thesis is meant to serve as a map of the realization of our study in order to facilitate the reader’s judgement of its trustworthiness. The chapter begins by presenting our starting point and research approach, where after the practical information-gathering process is described. In the end of the chapter we discuss the credibility of our research and the sources of information. The methodology of our research lies behind all remaining chapters as a supportive role.

The theory chapter begins by introducing the reader to inter-organizational relationships and the idea of partnership as a way to collaborate in the supply chain. Furthermore, the importance of information sharing will be presented, followed by the main subject of the thesis: vendor managed inventory. Vendor managed inventory will first be explained in its own section, and then linked to the context of the SME.

In the fourth chapter we aim to describe the four interviewed companies and the two experts that have been the focus of our empirical study. We start by presenting basic information of the SME suppliers, where after we shortly introduce our experts. This chapter is based on information found on the homepages of respective company and also on the information gathered in the interviews of the businesses and experts.

The next chapter contains the collected empirical data from our interviewed VMI experts, SME suppliers and their customer. The chapter starts off by introducing general findings about VMI and VMI in the SMEs perspective. A short explanatory background of the VMI collaboration between Ericsson and their suppliers subsequently follows, before the specific information about the three SME suppliers are illustrated. The findings of the SME suppliers are divided into company specific sections that follow the
structure of “motives for VMI”, “implementing and utilizing VMI” and “consequences of VMI”.

In the following chapter the theory about VMI and SME, and the empirical findings of the special situation of the SME intertwine in order to create an analysis of the studied topic. This chapter also follows the structure that was used when presenting the specific situation of the three studied SME suppliers.

The analysis will subsequently lead to our final conclusions, where the answers of our research questions are to be found. This chapter also contains the generalization of our study, as well as a direction for further research.
2 Research Journey

2.1 Taking Off

This thesis is a product of our thoughts, interpretations and understandings. When considering this, it is important to remember that the world can never be looked upon from an unprejudiced perspective, but that our ways of perceiving things comes from a setting of certain conditions, which is called our preunderstanding. Different backgrounds and experiences shape our individual frame of references, which is an essential requirement to make the understanding of occurrences in our surroundings possible. With our preunderstanding, we are able to interpret information about a phenomenon, create a meaning of it and develop an understanding. (Gilje & Grimén, 1994)

Some parts of our preunderstanding, like language and values, we have successively been acquiring during our lifetime. Others have been obtained more recently in the academic world of Linköping University. We have experienced different cultures through spending time and living abroad, which has opened up to seeing the world from new perspectives.

We now have slightly more than four years of university studies under our belt, a logistic course covering ten weeks being part of this. The possibility for us to study a topic of our choice has certainly been influenced by our preunderstanding, since we, before starting this research process, had acquired a picture of VMI, which gave us an idea about where to start and direct our research. Our preunderstanding of our research topic has been essential when choosing research purpose and research questions, and our experiences and values have from the very start colored this research process. They have been fundamental for our way to think and act when dealing with and interpreting the information that has been collected and used in this study. Our different backgrounds and thus interpretations of situations in different ways, we do not see as a disadvantage, but rather as a benefit as we better complement each other.

2.2 Research Approach

Depending on the nature of the research questions, a study is carried out with focus on either quantitative or qualitative method. Whereas the quantitative approach is associated with the quantification of phenomena, the qualitative approach emphasizes
the gathering and analysis of text or the direct observation of behaviour. (Cassell & Symon, 1994) Our research problems are of qualitative nature, and because of this, also our conclusions must be qualitative. As we want to create an understanding in qualitative terms, we use a qualitative approach of our research.

According to Yin (1994) some qualitative research relies on quantitative and not qualitative data, and consequently it is not the difference between qualitative and quantitative data that necessarily lead to a distinction between the two approaches. Very early in the research process of this thesis, it was decided that qualitative interviews with a few respondents would be the method used for the collection of empirical data. Even though we decided to use qualitative interviews, we do not doubt the possibility to solve our research questions with a quantitative data collection method, using structured questionnaires to gain information from a larger number of interviewees, thus increasing the breadth of the study. We did, however, consider it unachievable within the timely frameworks of this study. This because of the time consuming process of sampling and interpreting questionnaires. The quantitative approach would also not give the depth of the study that we desired.

When preparing for the data collection, we chose to conduct three types of interviews. Firstly, we wanted to interview SME suppliers, in order to study the topic of investigation very concretely. Secondly, we wanted to have a general discussion of VMI from the SME’s perspective with VMI experts. Thirdly, in addition to the supplier interviews, we made the decision to also interview their customer. We wanted to look at the VMI relationship from both parties’ perspective, because we believed that this would give us a more objective view of the VMI partnership. This information was used to understand the overall features of the VMI relation, not to investigate what the VMI program has meant for the customer. These findings have not been presented separately, but have been given a supporting role in the discussion about the VMI relationship.

2.3 Research Method

2.3.1 Selection of Cases

The sampling logic in qualitative research clearly differs from statistical sampling. Instead of focusing on the empirical representation of a large group of individuals, qualitative research relies, according to Mason (2002), on strategic sampling, which creates a relevant sample in relation to the population. Silverman (2001) calls this purposive sampling, which allow us to critically consider what metrics of the population we are interested in and then choose our sample accurately on this basis.
According to Stake (1995) the first criterion of selected cases should be their ability to maximize what we can learn from them. When starting this research process, we reflected upon what cases and what characteristics would likely lead us to understanding the pressing issue. As we focus our research on SME suppliers, the fundamental criterion was that the cases fell within the category of being an SME. In this thesis, we have chosen to follow the EU’s Commission Recommendation of May 6, 2003 concerning the definition of micro, small and medium-sized enterprises (2003/361/EC). We consequently define SMEs as an enterprise that employs fewer than 250 persons and has an annual turnover under 50 million EURO (c.f. Appendix 1). Another criterion for the selection of our cases was that the enterprises must have been part of a VMI relationship for more than one year, so that, maybe not all, but at least some of the effects arising from VMI would have appeared.

When designing our research we decided to study more than one enterprise, as we saw limits in representativeness and generalizability with having a single case. We came to the conclusion that it would be sufficient for our research with a sample of three SME suppliers, and considered it possible to accomplish qualitative interviews with all within the frameworks of this thesis. Note, however, that this choice was made to make the empirical study broader, not to facilitate a comparative study.

Through the Logistics Management division at Linköping University, we were informed about Ericsson AB’s involvement in our area of research. We contacted Ericsson who provided us with the names of three of their suppliers. Two of the suppliers directly fulfilled the criteria that we had defined. The third supplier, however, fell outside the boundaries of being an SME when considering the number of employees, having a total of 350. The decision to keep this enterprise as an object for our research was based on two reasons; firstly because the company’s turnover stays within the limit of EU’s Commission Recommendation of 50 Million EUR; secondly because of the fact that the enterprise claims to be operated and managed as a small company (www.elektromekan.se).

The respondents at each company were chosen carefully. They all have managerial positions within the purchasing department, are involved in the implementation and use of the VMI program and they also have daily contacts with Ericsson. Because of their knowledge of VMI we believe that the interviewees are suitable respondents. Also his or her knowledge about the performance of the company’s operations would help ensuring the value of their answers.

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2 This Recommendation replaced Recommendation 96/280/EC January 1, 2005. Appendix 1.
2.3.2 Selection of Experts

For our collection of empirical data we saw the need to further broaden our perspectives and bring in the opinions of two experts within the area. The decision for including experts in our study was made for two reasons: *firstly* because we believed the experts would complete our empirical findings by sharing facts of a different angle than the SME suppliers would; *secondly* because we have noticed that the literature available within this area is limited and we hoped that we with the help of experts we would be able to fill the gap.

We were fortunate to find one of the experts of VMI right in our backyard, i.e. Linköping University. The other expert was found in an invitation to a seminar about VMI on the Internet. The expert’s relevance to our study was verified from several sources.

2.3.3 Interviews

Our intentions at the beginning of the research process were to conduct all of our company interviews in person, since we felt that it gives a better feel of the company. But due to certain circumstances, only three of the four company interviews were conducted in person. We wanted to interview the fourth company by telephone, but since they preferred to answer our questions by E-mail, we accepted their request. One expert was contacted via telephone, due to the time aspect and the fact that we did not consider a personal interview to be a necessity. The second expert was visited in person, thanks to his near location.

The contacts with the selected suppliers went smoothly, as Ericsson had informed them about us wanting to contact them. Ericsson and the selected suppliers were accommodating and willing to contribute to our information-gathering process. The experts also quickly responded affirmatively to our request of using them as information sources.

When deciding about how to conduct the interviews, we felt the undertaking of an informal interview was suitable. But, as we still wanted to make the data collection systematic for each respondent, we chose to use the interview guide approach suggested by Quinn Patton (2002). The interview guides were the same for all suppliers (c.f. Appendix 2), but the conducting of the interviews differed between the respondents. This is due to the fact that the interviews were conducted as a discussion and also because we constantly learned more about the research topic. Consequently we learned
how to better ask the questions to attain the information we desired. For the interview at Ericsson we had, of course, to adjust the interview guide to deal with their perspective of the VMI partnership (cf. Appendix 3), the same goes for the experts (cf. Appendix 4).

The interview guide, along with a description of the purpose of this study, was sent at least one day ahead to the respondents. We felt that this would make the respondent more relaxed and open during the interview, because of him being more prepared and aware of the research area. The questions in the guide were meant as a starting point for a more or less open discussion depending on the respondent and the atmosphere. When appropriate, follow-up questions completed the interview guide, to make sure that we had understood the respondents correctly. We made sure to discuss all questions of relevance for the particular respondent during the interviews. It did not, however, matter to us in what order the questions were treated, or from whom the questions were asked. The interview guide helped us to ensure that all essential issues were discussed with each respondent.

While interviewing the enterprises, and the one expert we visited in person, we both participated actively in the discussion. During the telephone interview (conducted over a speaker phone), in contrast, one of us had main responsibility for asking the questions, while the other had a more passive role. The passive one was however constantly listening and noting, and asked follow-up questions after the active one and the respondent had finished their discussion.

When it comes to the interviewed experts, their findings will not be presented in their own paragraph. Instead, the elements that we found added to the discussion were presented in the section about general empirical findings.

2.3.4 Recording and Compilation of Interviews

As we did not want to rely entirely on our notes and perhaps misinterpret the answers given by the interviewee, we chose to tape record the interviews. Another reason was that it permitted us to be more attentive to the interview, since we did not have to write down every word that was said, which Quinn Patton (2002) stresses as an important aspect when conducting interviews. When interviewing the experts, the use of a loudspeaker telephone enabled tape recording. All the respondents were asked if the usage of a tape recorder would be appropriate and all approved. Consequently, we do not believe that the use of tape recorder have influenced the answers as all respondents seemed comfortable with the situation.
The transcription of the interviews was made directly after the interviews. Because of the fact that some minor parts of the interviews were not of relevance to us, our approach was to concentrate on the facts that were relevant for our thesis and to transcribe these parts word-by-word. The interviews were thus not transcribed in full and sent to the respondents for examination, but so was the assembled data that used in the thesis. We believe that we can rely on our capacity of extracting the data that were most suitable for our study.

2.4 The Credibility of our Research

2.4.1 Generalization

It is significant to determine if our thesis can be generalized outside the specificity of the executed case studies. The question is whether the conclusions we have arrived at are of the nature that they can be generally applicable to other situations, or if they only are valid under particular circumstances. Generalization is the extent to which we are able to make a wider claim on the basis of our research and analysis. Qualitative research relies on theoretical generalization, which is based on theoretical logics that are grounded within the empirical investigation of the research. There is therefore not an emphasis on generalization from the analysis of one empirical sample to a wider population, so called empirical generalization, which often is the case in quantitative methods. (Mason, 2002)

Relevant for the generalization of this thesis is to prove the accuracy of our analysis and conclusions. The starting point for this is that we must demonstrate the correctness of our method, and the validity of both our data and our interpretations. The prerequisite for the transferability of the results to other situations is the thesis’ reliability and validity, which we have discussed earlier in this thesis (c.f. section 2.4). Further, the generalization of our research is dependent on our sampling strategy. We do not consider it likely that we have chosen cases that fully represent the SME supplier population, as our sample e.g. is biased towards suppliers operating in the telecom industry. However, we have based our study on sampling units that we believe express key characteristics of the topic of investigation. By analysing accurate data from carefully selected companies we are, according to Mason (2002), able to test and develop theoretical propositions. We are of the belief that the results of this thesis can be applied to other organizations operating under the same circumstances as the organizations in the thesis. That is to say small and medium-sized enterprises, SMEs, that utilize or are about to utilize a VMI program. This defined organization should be able to adopt the ideas, methods and opinions of this thesis.
2.4.2 Validity and Reliability

The validity of a research method describes to what degree the researcher measures what was intended to be measured (Mason, 2002). We have of course strived to create valid research, i.e. to actually collect data on and make an analysis of VMI in an SMEs perspective. We believe that one fundamental feature for this has been our carefully conducted selection of cases. If we would not have had the chance to choose our supplier based on them being SMEs and them having utilized VMI for a period of time, our cases would not have been accurate enough to study VMI within the context of SME suppliers. A bias could have been implied because Ericsson made the selection of SME suppliers for us from the prerequisites we gave them. Nevertheless, we are of the opinion that the selection of suppliers gave us the possibility to study enterprises that were well representing the group we were interested in.

When developing our interview guides existing literature, such as previous theses and articles, were of great help. To further validate the relevance of our questions, they were discussed with people at the Linköping University, who have personal experience of the research area. We have appended our interview guides, in order for the reader to make an evaluation of our thesis correctness himself.

During the interview we had the possibility to reformulate and ask the same question again if we felt that the answers were doubtful or not sufficient. We are aware of the fact that our respondents, for several reasons, may have chosen not to tell the truth. But, we believe that the description of our purpose in connection with the first contact, has contributed to honest answers, as the respondents were aware of the seriousness of this academic research. However, when discussing our thesis, we avoided to expose too much of our own ideas and believes about the topic, as we feared that this could influence the respondents to answer in line with our thoughts, and not telling their experience. We consequently tried to let the respondents drive the interview and avoid leading questions.

For the validation of qualitative research Silverman (2001) further suggests respondent validation, which involves sending back the empirical findings to the respondents for verification. We considered this matter to be important and sent the data as late in the research process as possible, as we wanted to make sure that the information that was validated was the information that we were about to use as the base for our analysis. We state that the fact that all interviewees have confirmed the correctness of the empirical data in our thesis, or corrected wrong interpretations, have contributed to a higher degree of validity of our research. Otherwise our conclusions could maybe have relied
on incorrect interpretations of the reality. The data that was to be confirmed was written in English, which could have resulted in the respondents not correctly understanding the information. We stressed though the importance that they could contact us if there were any uncertainties, and as no one did so, we have the reason to assume that they have apprehended our interpretations.

Reliability is about diminishing errors and biases in a study, and measures the degree to which research methods and research tools are accurate. The logic behind high reliability is that if the same phenomenon is measured more than once with the same set of techniques, the same results would occur. According to Mason (2002) reliability in this sense is more associated with quantitative research, where standardization of the research process and techniques is more common than in quantitative research, but still, we must handle the overall question of accuracy in our research practise. By carefully accounting for our research process we can claim that our research approach has both been appropriate for the research questions and that it was carefully implemented.

Silverman (2001) claims that the reliability of the interview guide is a central question in qualitative research and that it is important that each respondent understands the questions in the same way. We cannot assure that all supplier respondents have understood all questions in the same way, and their interpretations of the questions can certainly have differed. We can, however, claim that all respondents have understood the questions in a way that was appropriate for the research. There were constantly, both during the personal interviewing as well as during the telephone interviews, a possibility for the interviewees to ask for further explanation if they did not understand the questions. That fact that the interview guides were sent in advance, made it possible for the respondents to prepare for the interview, thus leading to a higher reliability in their answers.

As we have described, we have tape recorded all interviews and carefully transcribed these tapes. By doing so, we could easily return to what was said during the interviews, and thereby the analysis can be considered to be based on the original source of the information and so increasing the reliability of our interpretations.

### 2.4.3 Criticism of Sources

Some of the literature that we have chosen for our theoretical framework is titled “small business” and the like, and can appear to be irrelevant for our research since we are studying the small and medium-sized enterprise. However, judging the literature by its title alone does not reveal its contents. Considering the fact that the SME are defined
differently in different countries, the label “small” can include the EU’s definition of SME. We have examined the literature we have used in our SME section of the thesis thoroughly to assure that it concludes our definition on SMEs, e.g. less than 250 employees with an annual turnover under EUR 50 million, therefore we must claim that we have used the literature accordingly. One of our bibliographic references refers to the SME and the Environment, and its relevance for our research topic could be questioned. However, we have only used general facts about SMEs from this book, and made sure that these facts were not taken out of context. When reading the VMI literature, we have tried to remain objective not to be caught up in the way the literature is written, often illustrating VMI as one of the best business concept of today. We have of course carefully selected all the literature used in this thesis and tried to guarantee serious sources. All articles have been selected from serious business journals.

In this thesis we refer to the empirical data as something our selected enterprises express. One can question how it is possible to collect the opinions of a juridical person. As mentioned, the respondents at each company hold a relevant position and presumably also have the required knowledge to supply our thesis with accurate information. There is, however, a risk that the information has been subjectively biased, reflecting the respective interviewee’s personal, rather than the whole company’s, thoughts. We consider it impossible to conduct a total objective interview, but by choosing respondents carefully, we claim that the respondent’s thoughts also reflect how the company actually works with the topic discussed. We are aware of the fact that the more people are interviewed, the more objective the big picture would become, and it would also have been preferable to conduct more interviews within each company. But, we did not consider the resources set aside for this thesis to be enough to give cause for a more in-depth study of each enterprise.

Since the experts in our interview are likely to obtain part of their income from their involvement in VMI, their attitude towards the business concept can be seen as biased. The information attained could therefore have a more positive ring to it than if this was not the case. We have tried to solve this matter by using information about VMI from more than one source and to critically assess the information that has been given to us.

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3 For example, where as Austria defines an enterprise an SME when employing up to 100, the USA, France and Germany do so all the way up to 500 employees. (Julien, 1999)
3 Vendor Managed Inventory

3.1 Inter-organizational Relationships

The inclination for the future is that companies will compete as networks or chains, rather than as individual entities. Companies that are aware of this are starting to identify potential partners and develop organizational and technological capabilities to facilitate the flow of goods and information (Gattorna, 1998). Collaboration in the supply chain can provide a competitive edge that enables the partners to grow and to jointly gain a better understanding of the future product demand and implement more realistic programs to satisfy that demand. (Sahay, 2003)

One way to collaborate with other companies is to enter into a partnership. What is specifically characterizing for a partnership in comparison to a traditional relationship is that a partnership includes elements of mutual trust, joint commitment and joint risk taking as well as partaking in each others activities. Moreover, a partnership is distinguished by a two-way relationship involving shared exchange of information, goods and services beyond what traditionally can be found in a typical business relationship. (Mattsson, 2002) When it comes to the matter of trust in the partnership, it is vital that the customer trusts the supplier’s ability to deliver on time without the customer having to go out of stock. In turn, the supplier must trust that the customer will give long-term business and provide them with all required support, such as information about demand patterns, in order for them to manage the job effectively. The importance of both partners experiencing benefits in the relationship is thereby evident. (Varshney & Gupta, 2002)

Mattsson (2002) argues that companies in today’s competitive world have a number of reasons for entering into a partnership. It is for instance a very important initiative when wanting to guarantee quality and delivery performance and when wanting to integrate operations and operations systems. It seems that partnership has become more of a strategic move for organizations, rather than just a cost-saving device (Sahay, 2003).

When it comes to manufacturers and customers co-operating in partnership, the focus is on demand planning and inventory replenishment. The purpose of the manufacturer-customer partnership is to jointly develop an understanding of demand at the point of consumption, followed by creating a mutually agreed replenishment plan. This approach helps to ensure that consumer requirements are met more efficiently. To successfully
collaborate on demand planning, the business partners need to share and modify each other’s demand plans and forecasts electronically. (Sahay, 2003)

### 3.1.1 Sharing Information

When the partners in a partnership do not share information and co-ordinate orders among themselves in the correct manner, a problem of distorted demand orders can be seen. (Disney & Towill, 2003b) Distorted demand information is referred to as the “bullwhip effect” (see Figure 1), where the orders to the supplier tend to have larger fluctuations than the actual sales to the buyer. The demand order variabilities move up the supply chain in an amplified form and the distortion subsequently propagates (Disney & Towill, 2003b). The bullwhip effect often leads to a situation where the product availability and order quantities fail to match up, leading to a number of problems like excessive inventory investment, poor customer service, lost sales opportunities and inefficient scheduling (Daugherty et al, 1999). Some of the generated variations could be of psychological nature arising when the communication between the supplier and customer is insufficient. (Mattsson, 2002)

![Figure 1. The Bullwhip Effect. Source: Fisher in Disney & Towill (2003b, p. 633)](image)

As explained earlier, the sharing of information between the business partners in a cooperation can diminish the bullwhip effect. Sharing demand information can be seen as a necessity to experience a successful partnership between manufacturers and customers (Sahay, 2003)
There are many ways to share information and considerable growth in communications technologies, including the Internet, has provided cost-effective methods to establish a real-time partnership between the customer and supplier. (Varshney & Gupta, 2002)

*Electronic Data Interchange*, EDI, is a technology that uses two computer systems to transfer data in a predetermined and standardized format. Because the data is predetermined and standardized, the receiving system knows how to interpret and process the information. But in order for the creating system that sends the information to communicate with the interpreting and revising system they both have to use the same standard format. (Mattsson, 2002) EDI is mainly used between companies that have regular and recurrent exchanges of information. EDI is foremost designed for frequent exchanges of large quantities of information. The implementation of EDI is fairly costly and the technology is complex and requires a high level of IT competence in order to work properly, this is why it mostly is employed in large corporations. (ibid)

*WebEDI* is a combination of the Internet and EDI that has made it more feasible for smaller companies to communicate via EDI. With this technology a computer, an Internet connection and a browser is all that is required. A company has the ability to produce a delivery schedule that via the Internet is sent as a standardize EDI format message to the EDI customer. The customer on the other hand can have their EDI message transferred into a format that is accessible to the supplier on the Internet. Commonly the web portal in the system has forms already filled out by the customer so that the supplier easily can complete the remaining information. The information is thereafter sent as an EDI message to the customer’s business system. When having a VMI collaboration online, the suppliers is connected to the customer’s business system through the Internet. The problem with this is that the supplier needs to be educated about the customer’s business system making the solution hard to implement on many customers. (Mattsson, 2002)

Yet another way to share information is to utilize *software*. The software is installed in both of the trading partners’ operation and makes the information required for the collaboration easily available for both customer and supplier. The partakers can either enter their information into the software system manually, or have an interface between the VMI software and the regular business system that automatically updates the software with required information. VMI software can be considered a costly solution for sharing VMI information and it gets more expensive when a company wants to

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4 The most implemented formats today are; Edifact, Odette and Ansi X.12. The EDI formats are different in different countries and industries.
integrate the software with their regular business system through an interface. (Interview with Comhat-Provexa, Hellmer and Ericsson)

As discussed earlier in the chapter, trust is a very important aspect of a partnership. If a partnership lacks trust, it can have cost implications on the entire value chain. Even if partners share more information in the supply chain than before, it is important that the partners trust that the information is accurate. Icasati-Johanson (in Riddalls et al, 2002, p. 259) describes trust as “the basis for a good, sound working relationship and as a crucial pre-requisite for operating effectively in a highly competitive and fast moving environment…”. It is important that the supplier feels that they can trust the information they get, so that they do not start to plan after their own guesses, leading to the customer not getting deliveries when demand arises. The customer on the other hand, has to feel that he can trust that their supplier uses the information accordingly and that the information does not get into the wrong hands. It is also of importance that the customer does not blow up the forecasts he gives a supplier he mistrusts to guarantee that he does not stand short of products. (Riddalls et al, 2002)

3.2 Vendor Managed Inventory

As we could see earlier in this chapter, in a partnership of manufacturers and customers the focus is on demand planning and inventory replenishment. One way for partners to do this, is for them to collaborate and integrate their operations through vendor managed inventory, VMI. Vendor managed inventory refers to a collaboration between business partners where the supplier, with help of the customers demand and inventory level information, manages and replenishes the customer’s inventory. In this kind of collaboration, no orders are placed by the customer, but the replenishment is solely based on the information the supplier makes available to the supplier. If implemented correctly, VMI programs has the ability to improve the supply chain operations within the company and thus help a company to better coordinate their product flow to their customer. (Lapide, 2002) VMI is thereby considered a promising solution when experiencing a supply-demand mismatch (Gattorna, 1998).

VMI has only been around for a couple of decades, but it is not until fairly recently that the necessary information and communication technology has become economically available to truly enable the business concept (Disney & Towill, 2003a) In addition to this, any of the technology costs associated with VMI are declining. Implementation of EDI with business partners for example, is becoming considerably less costly due to the availability of webEDI software. (Waller et al, 1999)
3.2.1 Defining VMI

A traditional order-delivery process is based on the principle that the customer defines the amount and timing of deliveries of each product needed from the supplier. The task of the supplier is then to fulfil this as exactly as possible. (Kaipia et al, 2002) However obvious the logic of this might seem, it has immanent inefficiencies. Firstly, the supplier has no advance warning of requirements but is forced to make forecasts about them. These forecasts often lead to the supplier carrying an unnecessary high level of safety stock. Secondly, the supplier is often faced with unexpected short-term demands for products which leads to frequent changes in their production and distribution schedules and thus adding costs. The paradoxical end result of all this is that customer service suffers because of higher level of stock-outs. (Christopher, 1998) Mattsson (1999) presents vendor managed inventory as an alternative to the traditional order process and claims that the concept can come to terms with these predicaments and render more effective processes in the supply chain. In figure 2, the traditional ordering process is put side by side with VMI. Figure 2 shows us how the customer places an order in the traditional ordering process and how the supplier electronically has immediate access to demand information when using VMI.

![Figure 2: The Traditional Ordering process vs. VMI](image_url)

There are several alternative definitions of vendor managed inventory. The alternatives differ, among other things, in the matter of the supplier’s responsibility, level of integration between customer and supplier and ownership of the inventory. However, in each of the alternative levels of vendor managed inventory, the supplier has access to
the customer’s information which is essential for the ability to manage inventory. The information is transferred from the customer to the supplier via some form of IT solution. (Mattsson, 2002) Most authors do argue that the information sharing in a VMI relationship is done electronically, whereas Waller et al (1999) claim that the information can be shared either physically or electronically. Lapide (2002) defines VMI like this:

“Where a supplier manages its customer’s inventories of its products, including setting inventory level targets, usually based on achieving a level of service specified by the customer. The inventories might be held on consignment (i.e., owned by the supplier) or owned by the customer”.

Source: Lapide, 2002, p. 11

Mattsson (2002) identifies three categories of vendor managed inventory. In the first category, co-managed inventory (CMI), the vendor controls and plans the replenishment of the customer’s inventory from his own facilities. The customer has to confirm the order before shipping and both parties are responsible for keeping account of the inventory level. In this case the customer owns the inventory and the supplier invoices his customer at the time of delivery. The owner of the inventory is also responsible for waste, possible dead stock, stocktaking and costs related to divergence in stock. The second category is identified as vendor managed replenishment (VMR) and differs from the CMI category in the matter that the supplier is in full control of the customer’s inventory, meaning that no confirmation is required prior to shipping. Instead, the inventory is regulated by rules of minimum and maximum levels. The amount of accepted inventory is determined by the customer’s service level related to storage and by the amount of inventory the customer is willing to pay for. The supplier has full freedom to manage the customer’s inventory, in regards of delivery time and batch-order size, within the predetermined lower and upper levels of the inventory. The customer is the owner of the inventory in this category as well and is therefore responsible for waste, possible dead stock, stocktaking and costs related to divergence in stock. The third and last category is named vendor managed inventory, VMI, and has the supplier as the owner of the inventory at the customer’s site. Here, the supplier is completely in charge of the inventory management but still has to comply with the service level set by the customer. Because the supplier owns the inventory, agreements have to be made regarding stocktaking, responsibility for waste and other tasks.
3.2.2 Motives for VMI

The motives for bringing about a partnership are clearly different for the customer and the supplier. Looking at the partnership from the supplier’s perspective, it is generally believed that it contributes to guaranteeing a future market for the supplier’s products. Other reasons mentioned are: better access to prognoses and other information about future demand and also a wish to reduce transaction costs between the parts. (Mattsson, 2002)

Specific motives for entering into a VMI partnership can be found in a study made by the Electronics Supply Chain Association (ESCA) and ChainLink Research Inc (2003). In this study it can be seen that there is a difference in motives for why a customer in contrast to a supplier decides to collaborate with VMI. The study shows that the most common motive for a supplier to implement VMI is “because their customer demands it” (ca 70%). “Increase customer loyalty” and “offering a differentiated service to the customer” are motives number two and three in the study (at 10% each). “Increasing inventory and demand visibility” is not that high on the list with only a few percent. Lapide (2002) supports the most common motive of suppliers “just because their customers demands it” and claims that he has met several companies that state that their company uses VMI just for that reason. Daugherty et al (1999) agree that “offering a differentiated service to the customer” is an important motive and argue that practitioners need to be prepared to offer VMI also as customer service and relationship implication. Varshney & Gupta (2002) also claim that from the supplier’s point of view, VMI is a value-added service offering that ensures a long-term relationship with the company. Dong & Xu (2001) say that suppliers also consider strategic and managerial matters, such as strengthening competitive advantage, tightening buyer-supplier relationship or simply surviving, when deciding whether to adopt VMI or not. They further do believe that the bottom line in the motive discussion is if VMI eventually could save costs or generate revenues for the suppliers.

The motives for VMI for the customer differ substantially from the supplier’s motives. The most common motives are “increase inventory turnover”, “increase return on assets” (ca 30 % each) and “improve service levels” (ca 20 %). Close thereafter comes “decrease liability” with about 15 %. The least common motive for customers to implement VMI is “decreased lead times” at a few percent. (ESCA & ChainLink, 2003)
3.2.3 Implementing VMI

Information sharing between partakers is a necessity when implementing VMI. When sharing information in a VMI collaboration a number of issues are brought to light. For example, the supplier and the customer have different incentives and performance measures. Issues also arise concerning confidentiality, trust, technology investments and expenses, inventory ownership, and antitrust regulations (Angulo et al, 2004). Sandell Jöne (2002) explains that companies about to enter into a VMI partnership needs to know the goal and vision of the partnership, to what extent support and assistance is needed and if the considered partners are mature for this kind of collaboration. It is then important to make sure that the organization incentives and metrics correspond to the goals of VMI. (Waller et al, 1999) The choosing of a common metrics in the collaboration is important so that comparisons easily can be made and progresses easily can be seen. (Sandell Jöne, 2002) The metrics should be set by individuals that have knowledge about the range of products and a feel for how the demand changes. They should also be well-informed about how the VMI program and know the ideas of logistics. When supply members overcome these issues and jointly define the information to be shared in the VMI collaboration, the vendor is faced with the challenge of using that information effectively (Angulo et al, 2004).

A successful implementation of a VMI program often depends on technological requirements such as computer platforms, communications technology and product identification and tracking systems. Many suppliers and customers already have these systems in place. Software systems on the other hand are often non-existing and they are important because they facilitate decisions of the VMI process, such as replenishment quantity and timing, safety stock levels, transportation routing, and inter-facility transhipments. (Waller et al, 1999) Waller et al explain that Electronic data interchange, EDI, is an enabler, but not a requirement for VMI. Nevertheless, Waller et al make clear that it has been found to be very effective when coupled with VMI. O’Brien (2003) is of the opinion that EDI is not necessary for low-volume companies. Many of the technology costs associated with VMI are declining. Implementing EDI with trading partners for example, is becoming dramatically less expensive with the availability of Internet EDI software. (Waller et al, 1999) The importance of looking over the IT solutions and making sure that they have the sufficiency to handle the new business approach is argued by Sandell Jöne (2002).

Successful implementation of the VMI program is not solely based on the existing technology but depends on sound business processes and interpersonal relationships as well. The benefits of VMI can not be attained if the people in the program are not
considered. Effective teamwork is required with strong participation by both the supplier and the customer. (Waller et al, 1999) The importance of the people in the organization is emphasized by Sandell Jöne (2002) as well. Sandell Jöne suggests that a VMI project should be wide and include everybody that is affected by the change. Kuk (2003) claims that firms that only invest in technology and ignore the difficulties of the implementation of the VMI program, are likely to be disappointed and experience a gap between the perceived and expected values of VMI initiatives.

Other aspects to reflect upon when implementing VMI, is to consider a trial period of VMI before entering into a VMI partnership. Waller et al (1999) argues that a pilot project allows for both parties to assess their true needs. Waller et al further explain that a pilot project postpones investment in technology until the cost-effectiveness of the technology has been demonstrated.

Lapide (in Småros et al, 2003) suggests that some manufacturing companies have trouble benefiting from VMI, and that the main reason for this is because they only have implemented the execution part of VMI, i.e. the sales and distribution transactions. Lapide claims that the companies have not managed to link the demand information, i.e., the customer sell-through information available, to their production planning and inventory control systems.

### 3.2.4 Consequences of VMI

Dong & Xu (2001) claim that there is evidence that VMI is beneficial to both a buying company and a supplying company. However, they further stress that the supplier “may take a longer period of adjustment and reconfiguration before the benefits of VMI can be realized” (p. 76). Dong & Xu’s study shows that VMI’s direct benefits to the buyer’s side are straightforward whereas those to the suppliers are more divers and controversial. Dong & Xu further claim that the buyer will typically enjoy a solid gain in its profit through a long-term adjustment under VMI, while the supplier’s financial gain is much less evident.

One of the main consequences of the implementation of VMI is that it reduces the bullwhip effect. Disney & Towill (2003a) explains that VMI potentially offers two possible sources of bullwhip reduction. Firstly, there is the elimination of one layer of decision-making since the customer no longer sends orders to the supplier. Secondly, some elimination of the information flow time delays can be seen. Vendor managed inventory surely helps increase the visibility in the supply chain allowing for more
accurate, more rapidly available, and more level demand information (Småros et al, 2003).

Because of the fact that the supplier takes on to do more tasks than before using VMI, a redistribution of costs in the customer-supplier relation can be seen. However, the employment of VMI does in most cases mean that the overall costs of the entire customer-supplier relation decreases due to increased visibility. (Mattsson, 2002) Waller et al (1999) explains that with VMI, the frequency of replenishment usually is increased from monthly to weekly, resulting in the supplier seeing a much smoother demand signal at the factory. VMI thus helps dampen the peaks and valleys of production, allowing smaller buffers of capacity and inventory.

From the customer’s perspective, service is usually determined by measuring product availability, i.e. customer service. This is because if the product is not on the shelf when the customer wants it, a sale is lost. With the help of VMI, the supplier is able to coordinate their replenishment orders and deliveries across several customers and thus improve the level of service. The supplier has the ability to balance the needs of their customers and always pay attention to the one with the most critical needs. The most attractive projects in the supply chain are those that improve both inventory cost and customer service level; VMI is certainly one of those (Waller et al, 1999)

The following paragraphs treat VMI’s consequences on different costs both for the customer and the supplier. Table 1 illustrates how these costs are affected.

<table>
<thead>
<tr>
<th>TYPE OF COST</th>
<th>CUSTOMER</th>
<th>SUPPLIER</th>
<th>TOTAL FOR RELATIONSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>Unaltered</td>
<td>Decreased</td>
<td>Decreased</td>
</tr>
<tr>
<td>Warehousing</td>
<td>Decreased</td>
<td>Unaltered</td>
<td>Decreased</td>
</tr>
<tr>
<td>IT-costs</td>
<td>Increased</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Production</td>
<td>-</td>
<td>Decreased</td>
<td>Decreased</td>
</tr>
</tbody>
</table>

Table 1. VMI’s Consequences on costs.

If the supplier is responsible for the transportation, a decrease in transportation costs for the supplier is expected, whereas it remains unaltered for the customer. Thereby the total cost for the relation is reduced. (Mattsson, 2002) The reason for this is that when VMI is managed properly, the approach helps to increase the percentage of low-cost full truckload shipments and eliminate the higher-cost less than truckload shipments. This is achieved because the supplier has the ability to coordinate the re-supply process instead of responding automatically to orders as they are received. The supplier also has the
option to plan their transportation routes more efficient, e.g. a truck can make multiple stops to replenish inventories for several nearby customers. (Waller et al, 1999)

In a VMI collaboration, the warehousing costs, i.e. the costs for the physical storing and handling of the products in the stockroom, are expected to diminish somewhat for the customer, whereas the supplier for the most part does not experience any changes in these costs. The warehousing costs are altered this way because of the fact that the supplier now has better opportunities to optimally manage the total inventory both at his own place and at his customer. By working this way, the matching of demand and stocks can more accurately be achieved and a more flexible production with fewer buffers is expected. (Mattsson, 2002) Dong & Xu (2001) agree that a cost reduction in total for the partnership does not necessarily mean that there will be a cost reduction in the supplier’s inventory system, rather the costs are likely to increase since the supplier handles the combined inventory system. Dong & Xu further state that there, however, is a possibility that the supplier’s inventory-related costs with VMI are less than that without VMI. Waller et al (1999) on the other hand has done a study that shows that the VMI approach reduces inventory for all participants, without comprising service. He explains that most of the inventory reduction can be credited the more frequent inventory reviews, order ranges, and deliveries that characterizes this approach.

IT-costs can be expected to increase somewhat both for the customer and the supplier. This increase is due to the increase in information exchange between the two partners. And in some cases due to the investment in new VMI solutions. (Mattsson, 2002)

The research of Waller et al (1999) shows that VMI allows the manufacturer to diminish excess capacity and achieve high production efficiencies without increasing inventory or reducing order fulfillment objectives. Mattsson (2002) agrees, and claims that the supplier’s manufacturing process becomes more flexible and that the increased flexibility creates opportunities for the supplier to better make use of his capacity and thus decrease the production costs. Better information about customers’ needs and better long term planning also gives opportunities to diminish set up times in the production through better co-ordinated production processes. This too leads to diminished production costs for the supplier. (ibid)

It is however important to be aware of the fact the VMI benefits can not be realized without financial resource and time investments or significant managerial commitment (Ellinger et al, 1999).
3.3 Small and Medium-sized Enterprises and VMI

As this thesis focuses on the role of the SME in a VMI relationship, it is important to introduce the business concept into an SME context. This chapter means to explain the specific situation of the SME and link this information to the utilization of VMI.

In the last few decades, the importance of studying small and medium-sized enterprises has come to be recognized not only by researchers and universities (Julien, 1999) but also by society and other organizations (Ramström, 1975). Various reports and developing efforts have contributed to deepening the interest and gaining better insight in SMEs. However, some people have not been impressed by this new attention on SMEs and still believe that the same concepts and theories can be applied to small businesses as well as to their larger counterparts (Julien, 1999). The following sections will show that SMEs do have their own characteristics, even if they are hard to generalize about.

3.3.1 Characteristics of an SME

The SME is commonly known as having an advantage when it comes to providing a lower volume of products or specialized products. They are also perceived as being more flexible and adaptable to changes in demand and technology than large enterprises (European Commission, 2003b). But the more exhaustive the research about SMEs has become, the harder it has been to make these kinds of generalizations about them. Specific characteristics of SMEs are not always applicable when confronted with reality, thus leaving us with an unfocused picture of what an SME really is. The generalizations that have been gathered so far are still accommodating, but it is important to keep in mind that the characteristics the literature presents, not always are applicable to all SMEs (Ramström, 1975). Julien (1999, p. 15) too emphasizes the difficulty of finding a truly general typology, but has nonetheless made a generalization about SMEs and their characteristics and among other things claims that they often have a low level of specialization.

Sundin (2003) explains SMEs importance for the economy and them being a supportive group for the larger corporations by being sub-suppliers and standing for the flexibility that the larger corporations tend to lack. Sundin further states that small companies are seen as innovative and their products and services can easily be tested on the market because SMEs are no as bureaucratic as the large ones. Through their littleness they are close to the market and can listen to customers and consumers’ needs. In them and
through them, new ideas can be tried. They are the lubricant of the economy. (Sundin, 2003)

SMEs and their Financial Situation
Financial problems affect all businesses irrespective of size. However, financial problems tend to be amplified by other difficulties when looking at the SME (Beaudoin in Julien, 1999). Beaudoin investigates the four most discussed financial problems that SMEs encounter. We are going to cover the two problems that are most relevant for our study; limited access to financial resources and financial risk and financial leverage.

When discussing SMEs and their access to financial resources, Beaudoin (in Julien, 1999) comes to the conclusion, in defiance of most SME literature (cf. Tamari, 1980, p. 20), that the frequently cited funding supply problems for SMEs does not seem to exist. That is, the funds are out there, but the SME might not have the right documents or the right knowledge to attain it. A recent report from the Observatory of European SMEs (European Commission, 2003b) shows that almost all European businesses feel that national governments and/or the European Union could do more to help small enterprises get access to finance. The report explains that the main area of improvement should be for SMEs to easier access financial support services. This because SMEs usually have small accounting departments and the entrepreneurs themselves may lack financial administrative skills. The entrepreneurs might also be busy with everyday business matters resulting in the documents required by the bank being neglected. Thus, small enterprises need counselling and assistance to produce the required information. But SMEs also need to get better information from their banks. When it comes to the financial risk and financial leverage, Beaudoin (in Julien, 1999) suggests that SMEs are overcharged, either by the imposition of higher loan charges or by the inclusion of more restrictions in loan arrangements, but that this does not impose a higher financial risk for the SME, but rather a higher business risk. Beaudoin suggests that the “typical” SME does not exist; further that research about their financial problems must take into consideration that the firms differ widely concerning their development stage, size, industry sector and profitability.

Other characteristics are also mentioned in the SME literature; in Ramström (1975) for example, the reoccurring topic of profitability is discussed. Glader and Lindström (in Ramström, 1975) explain that the profitability figures within the Swedish SME sector are widely dispersed. Even though the average profitability information for the SME sector often shows acceptable figures compared to the rest of the Swedish industry, a large number of the Swedish SMEs experience losses or have an unsatisfying profitability.
Another topic that often turns up when discussing the economic situation of SMEs is their equity ratio. SMEs are commonly known for having a low equity ratio and Ramström (1975) claims that the equity ratio of the smallest enterprises often falls under 15-20%. The Observatory of European SMEs (European Commission, 2003b) on the other hand maintain that there are no link between the equity ratio and firm size, and demonstrate that the equity ratio of small enterprises is lower than in medium-sized enterprises in some EU-countries and higher in others.

As the literature shows, many SMEs have a difficult financial situation. If we presuppose that SMEs in general have poor financial prerequisites, a predicament can be seen for SMEs wanting to utilize VMI. Vendor managed inventory is often a costly matter, meaning that lack of financial resources, high loan charges, a low equity ratio and poor profitability can overturn an SME wanting to use VMI. Since SMEs in general have difficulties acquiring financial resources due to lack of resources and time to produce the write documents, an expensive VMI solution such as software or EDI could be a hard hit for them. Due to the SMEs specific characteristics, the integrating of their operations with a partner in a VMI collaboration could therefore be tough or even impossible.

SMEs and Knowledge
According to Julien (1999), SMEs commonly have poor specialization skills among their employees and management. Fredriksson & Lindmark (in Ramström, 1975) claims that this factor has contributed to the common development of SMEs working as subcontractors. Fredriksson & Lindmark claim that this development explicitly rests on the SME’s low level of marketing skills.

Even though the SME literature often emphasize that SMEs have poor specializations skills, the future gives an impression of knowledgeable SMEs. The Observatory of European SMEs (European Commission, 2003a) explains that human capital is increasingly recognized as a key engine for economic growth. Enterprises in general and SMEs in particular are increasingly aware of the importance of key words such as knowledge, skills or competencies for assuring their competitiveness. The observatory defines competence as “a mix of human knowledge, skills and aptitudes serving the enterprises’ productive purposes and therefore its competitiveness” (2003a, p. 9). SMEs at the present take charge and develop their competences continuously. The report from the observatory shows that up to 80 % of European SMEs take a number of initiatives to improve their competence base available within their in-house human resources and formal methods linked to courses provided by external trainers. According to the report, SMEs have identified a number of advantages from being involved in competence
development. These advantages include increased competitiveness and productivity as well as staff retention and motivation. SMEs belonging to several Nordic and Central European countries (Norway, Finland, Sweden, Iceland, Liechtenstein and Austria, as well as Ireland) are especially engaged in the competence development and show a high involvement in formal and non-formal competence development activities as well as a wide selection of methods for developing their in-house competence base.

As the literature shows, SMEs have been known for lacking specialization skills even though they currently are gaining ground within that area. To achieve all the benefits of a VMI relationship and really tweak the system, logistic knowledge is a prerequisite. A company without this knowledge surly can attain some benefits with the help of their customer of even the VMI solution in use (e.g. through a VMI software), but the true benefits are only requires with logistic skills.
4 Description of Companies and Experts

4.1 Hellmer Industries AB

Hellmer Industries in Norrköping\(^5\) and Hellmer Die Casting in Hultsfred are the two operating businesses in Hellmer Group AB. Hellmer Group AB is a family-owned company established in 1906, and the current CEO is a member of the fourth Hellmer generation. Hellmer Group AB has its head office in Norrköping, where the largest production facility also is to be found (13,500 m\(^2\)). When including Hellmer Die Casting, the company has a total production area of more than 17,000 m\(^2\).

Hellmer is a sub-contracting manufacturer that has positioned itself in the telecommunication and medicine technology industries. Hellmer supplies high-tech companies with complete units of electronic products. Metalworking skills have always been at the heart of the company, and today they are specialized in aluminium products. All steps in the manufacturing process are handled in-house.

At the moment Hellmer employs approximately 200 employees and in 2004 Hellmer’s turnover was estimated to 300 million SEK. Hellmer’s largest customer is Ericsson AB in Borås\(^6\) that comprises 80 percents of Hellmer’s turnover. Ericsson can thereby be considered to be a very important customer to Hellmer. Hellmer started supplying Ericsson with products back in 1975\(^7\) and today they supply Ericsson with approximately 120 items through the VMI program.

For being a small company, Hellmer judge that they are well ahead in understanding the advantages of employing the thoughts of logistics. Hellmer claims that they have acquired competitive advantages through actively working with logistics, they have e.g. all the manufacturing processes of their products in-house and not outsourced on other companies. (Burström, 2004; www.hellmer.se)

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\(^5\) Referred to as Hellmer in the thesis
\(^6\) Hereafter referred to as Ericsson
\(^7\) In actuality Hellmer started supplying Ericsson Microwave Systems AB in Mölndal 1975, but since Ericsson in Mölndal works closely with Ericsson in Borås and they are part of the same corporations, we will consider Hellmer as a supplier of Ericsson in Borås since 1975
4.2 Comhat-Provexa AB

Comhat-Provexa is a privately funded company that was established in 1956 as E.M.ESS AB. Comhat-Provexa started as a painting facility and has expanded its business to include the telecom industry. In 2001 the company changed its name to Provexa AB, and by acquiring Comhat AB in early 2002 the name not only changed to Comhat-Provexa, but the company became a world-class company focused on supplying microwave antennas. Comhat-Provexa’s head office and production site are located in Ödsmål, north of Gothenburg.

Comhat-Provexa operates in two business areas: the manufacturing of microwave antennas and the sub-contracting of other telecommunications products. Comhat-Provexa’s main products are radio-link antennas, based on patented technology, and frames and covers for radio links, microwave filters and coated components. Additionally, Comhat-Provexa provides solutions in powder coating and wet painting e.g. for the military and the food processing industry.

The employee number and turnover of Comhat-Provexa have varied over the last few years. The number of employees has gone from 150 to the current number of 80 in just a short amount of time. The turnover has gone from 280 Million in 2000 to 120 Million in 2003 and 96 Million in 2004. The negative development in turnover is mainly due to the tough business environment of the telecommunications industry. Despite a few problematic years, Comhat-Provexa has several customers within the world’s leading telecommunication companies, including Ericsson, LGP, Viking Telecom, SAF, and Allgon. Customers within other industries include IKEA, Saab, Kongsberg, TetraPak and Kitron. Ericsson is one of its largest customers representing 65 % of its sales. Comhat-Provexa has been supplying Ericsson with products since 1993. (Hagberg & Mammouch, 2004; www.comhat-provexa.com)

4.3 Elektromekan AB

Elektromekan AB was founded in 1969 as a mechanics industry company. In 1979 the business expanded into the electronics industry and electronics have been Elektromekan’s operation since 1999. Elektromekan is a sub-sidiary of Westergyllen. Elektromekan’s main office and production facilities are located in Årjäng in Värmland, close to the Norwegian border. The company has a sub-office in Karlstad and another production facility outside Budapest, Hungary.
Elektromekan is one of Sweden’s largest sub-contractors of electronics components and other products for the telecom industry. Elektromekan’s customers can mainly be found in the telecom industry of the Nordic countries. Other important segments of business for Elektromekan are the electronics industry and the manufacturing industry. Ericsson AB, Husqvarna AB, Timberjack AB and Samhall are some of Elektromekan’s most important customers.

Elektromekan has over the years successively broadened its product offering. Earlier Elektromekan only offered the actual manufacturing of the product, whereas they now are able to meet the customers’ needs with a complete solution including all steps from product development to distribution and aftermarket. Today Elektromekan’s operations are divided into three fields: Mobile Systems; Mobile Communication; and Industrial.

The number of employees at Elektromekan has varied during the recent years, depending among other things on the ups and downs in the telecom industry. This also reflects the development of Elektromekan’s sales. In the fall of 2003 Elektromekan approximately employed 350 people and in the year of 2003 its turnover was 380 million SEK (415 million SEK in 2002). The sales to Ericsson approximately represent 20 % of the total sales. Elektromekan has been supplying Ericsson since approximately seven years. (Annebjörk, 2004; www.elektromekan.se)

4.4 Ericsson AB

Ericsson AB is the largest supplier of mobile systems in the world and supports all major standards for wireless communication. The world’s 10 largest mobile operators are among its customers and approximately 40 % of all mobile calls in the world are made through Ericsson’s system. Ericsson has been active worldwide since 1876 and is today represented in more than 140 countries. In 2003 its net sales comprised approximately 118 Billion SEK. Its headquarters are located in Stockholm. Ericsson in Borås, the customer of our interviewed SME supplies, is part of this international company. This business unit has 1200-1300 employees and produces microwave links and modems. (Janson & Elmquist, 2004; www.ericsson.com)

4.5 Experts

Stig-Arne Mattsson, adjunct professor at the Engineering Logistics division within the Department of Industrial Management and Logistics at Lund University can be considered and experts within logistics and VMI. Mattsson is also a consultant within
the area, focusing on the logistic issues of the manufacturing company. Mattsson came in detailed contact with the concept of VMI approximately three years ago and has announced a number of articles and published several books within the field of logistics. Mattsson has been the chairman of The Swedish Production and Inventory Management Society (PLAN)\(^8\) and is a popular speaker at logistic seminars all over Sweden. (Mattsson, 2004)

Fredrik Stahre has been part of the Logistics Management division at Linköping University since 1993. Stahre has been engaged in VMI since approximately 1996, and has carried out projects where VMI has been part of the research. Stahre conducts research within the fields “Electronic commerce and logistics consequences”, and “Distribution strategies and Logistic replenishment strategies” (Vendor Managed Inventories, Cross docking etc.), and teaches Logistic Analysis. (Stahre, 2004)

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\(^8\) PLAN is a non-profit organisation with interest in the areas of Production Management and Logistics.
5 Empirical Findings

5.1 Motives for VMI

When looking at VMI as a large, sophisticated inventory management system where the focus is on highly advanced VMI solutions, it has until recently been utilized mainly by larger players, Stahre states. But during recent years, the development of the Internet and other technologies have provided new VMI solutions, opening up the opportunity for SME’s to take part in the VMI discussion (Mattsson). Mattsson claims that these more affordable alternatives to EDI and software, e.g. webEDI and E-mailing Excel spread sheets with demand and inventory information, are highly applicable for the SME. According to Stahre

“The new VMI solutions have opened up many possibilities for SME suppliers, and forwarded the utilization of more advanced VMI systems among smaller firms without leading to large costs.”

The new affordable VMI solutions could thus be seen as a motive for SME’s to enter into a VMI partnership.

Mattsson explains that many customers essentially demand their suppliers to participate in VMI collaborations. This can be a problem as some SME suppliers worry about what a VMI partnership may involve and may also suffer from a lack of knowledge about how VMI is utilized. The implementation of a VMI program can therefore be a difficult matter for an SME.

One important motive for an SME supplier in implementing VMI is an increase in competitive advantage, Stahre claims. He further states that it is also an opportunity for the supplier to get access to information that he otherwise would not have access to, e.g. current inventory balances, more frequent forecasts, and customer consumption.

Nevertheless, Stahre maintains that today it often is the large customer that initiates a VMI partnership. The small supplier often has no choice but to accept this change if he wants to stay in the game. Mattsson continues that

“If the suppliers cannot see the benefits that exist within a VMI partnership, they cannot reap them either.”
Mattsson is of the opinion that it would be more suitable for a supplier to initiate a VMI collaboration on his own as a service in connection with the products he delivers. However, Stahre sees a problem in this, as eventually the customer can come to see VMI as part of the basic offer that should be included in the price, regardless of whether the customer had to pay extra for the service at start.

5.2 Implementing and Using VMI

One thing to remember when starting a VMI collaboration is that it should be thought of as a long term investment, Hellmer states. Hellmer further declares that

"VMI is a co-operation without a definite end."

Mattsson also emphasizes the fact that VMI is a long term alliance. Mattsson claims that engagement in VMI is not about “improving the balance sheet” or “raising profitability for the next quarter”, but rather about developing a long-term relationship in a win-win situation. This is especially important when it comes to IT-solutions, since a company can not easily change from one solution to another, due to the high costs involved. A company that invests in a VMI solution wants to make sure that the VMI relationship is long-term so that their investment will pay off.

Collaboration and management are two keywords for a VMI partnership, Stahre claims. Mattsson agrees by saying

“If the customer has knowledge about VMI and its usage, he should support the supplier in utilizing VMI, as this in the end will benefit the customer. It is about working together.”

As seen earlier, Mattson argues that the customer should avoid introducing a solution that favours himself and hurts his supplier. If a participant in the VMI program is disfavoured, this should to be compensated for through discounts or price adjustments. Comhat-Provexa also points out the importance of making sure that the profits of a VMI collaboration are fairly shared and claims that

“A VMI partnership should provide benefits to the supplier and the customer; if it does not, the one partner worse-off should be compensated economically through a higher or lower price.”
It is true that the suppliers may feel that they benefit the least, but in the end they benefit from having successful customers, Mattsson says. It is always the big picture for both parties that should be discussed and consequently every participant in a value chain should co-operate so that the combined efforts have a positive effect at the end point. Mattsson explains that

“It is the sum of the costs in the total [value] chain that determines if the consuming end customer will put their money into this chain or not.”

Ericsson notes that in the VMI relationship the focus should be on additional training and education to help all parties to understand the purpose and concept of the VMI collaboration. VMI should not just be a clause in an agreement that the suppliers are forced to take part in. For an SME supplier to truly benefit from this concept they must understand it well and know how to use it. It is not just a program, but a logistical way of thinking. Hellmer claims that to implement a VMI project successfully both parties must have faith in the customer-supplier relationship. They further claim that both parties must be mature and believe that the other partner has the required knowledge to use the VMI program.

Stahre claims that VMI is about distributing roles and activities between the participants in the VMI program, such as forecasting, stock-keeping, stocktaking, determination of stock levels, transportation, and replenishment. Comhat-Provexa emphasizes that there must be carefully prepared agreements for the regulation of the VMI partnership, e.g. for unused stock.

Even though customers normally choose suppliers for VMI partnerships that have good logistical knowledge, the customer most often decides on the settings of parameters in the program, i.e. maximum and minimum levels of inventory, delivery frequencies, and order quantities etc., Stahre claims. He continues that

“It is rare that the customer trusts the supplier’s logistical qualifications and ability to manage the inventory efficiently.”

Stahre thinks that it is very important for the SME supplier to have the possibility to truly manage the customer’s inventory. If they do not have this possibility, it is not about management anymore but replenishment, where the supplier simply replenishes the inventory according to the customer’s wishes. In a VMI partnership the supplier should have the possibility to influence the design of the VMI project, which is rarely the case today. Above all, it is when both the customer and the supplier are responsible
for and able to decide about certain things that both parties can derive advantage from this kind of inter-organizational relationship, Stahre claims. When the VMI arrangement is too customer driven, the supplier does not have the possibility to realize the advantages of VMI for itself and indirectly for the customer, e.g. better production planning and inventory management.

Mattsson also emphasizes the importance of the supplier in actively influencing the VMI collaboration. Mattsson, however, considers it acceptable for the customer to set a minimum and maximum level for the inventory, but that the customer in that case should be generous and contribute to the collaboration by setting a reasonably high maximum level. But, when the customer owns the inventory, a low maximum level is typically desirable, to keep minimized capital tie-up, Mattsson explains. When the range between the maximum and minimum is small the supplier will have few opportunities to reap the advantages of the VMI collaboration and most of the value of VMI and the benefits of logistic efficiency will be lost, Mattsson says. Consequently, Mattsson emphasizes that

“It is important that the supplier manages replenishment. Otherwise he will not achieve the increased flexibility that is one of the major advantages of the VMI program.”

The ownership question is another dimension in the VMI relationship that must be agreed upon. Stahre claims that:

“If the supplier owns the customer’s inventory, it is reasonable that the supplier can influence the management of the inventory.”

But Stahre points out that the ownership question is very situation specific, i.e. dependent upon the other agreements. The supplier owning the inventory does not necessarily mean that the supplier ties up more capital, firstly because the supplier owns the customer’s inventory according to its own prices; and secondly because the supplier then has the possibility to streamline the management of the inventory, e.g. more frequent deliveries, Stahre states. However, this requires that the customer, who could suffer higher costs for goods receiving and stock keeping, agrees to the more frequent delivery. When the supplier owns the inventory, the customer can not draw advantage from the lower resulting capital tie-up, but more frequent deliveries entail a lower need for storage space. By owning the customer’s inventory, the supplier can also increase the inventory level to make a higher service level possible, Stahre says. He is of the opinion that the customer should make decisions about the desired service level for the
products, but if the supplier wants to increase that service level by keeping a higher level of inventory the supplier is able to do so if they own the inventory. Stahre sees it as a bargaining situation to optimize the results for both parties.

It is fundamental to the success of a VMI program that the management see active logistics development as a competitive means to be realized for substantial surplus value, and not only as a marketing action, Comhat-Provexa claims, and further states that

“The VMI matter should become a strategic issue rather then an overhead cost matter.”

The software that Hellmer implements can be used towards both customers and suppliers. Hellmer attempts to implement it with other suppliers and customers but finds it difficult, as the company is small and does not have impact on larger companies.

Comhat-Provexa claims that to be able to employ the VMI program to a degree where a real surplus appears

“It is important to make sure that the management is actively involved, and that it sees the logistical development as a competitive device.”

If the management does not support this undertaking and see this as a strategic move, the supplier should probably refrain from implementing, because of the responsibility and risk that a VMI program brings. Stahre also stresses the importance of thinking of VMI as a strategic issue because

“If the supplier only sees VMI as a technical solution, and not as a strategic matter, he will not get far.”

One fundamental way of making the VMI partnership work properly is for the customer to be willing to give more information than just inventory balances, Stahre claims. Otherwise the effects that arise for the supplier are limited. There is however a problem with this as SME suppliers often fall short on logistic knowledge and consequently may not be able to make use of the information properly, Stahre claims.

Many SME suppliers probably want to integrate their VMI software or webEDI with their business system after some time, when they realize that it would be better to be able to read off the information there instead of working with two systems in parallel,
Stahre says. The problem with the many different VMI solutions is that the suppliers may have to utilize different solutions with different customers, depending on which systems the customers demand. This not only makes a VMI system laborious to use, but also expensive. This is true above all when it comes to the integration of the VMI solution into the supplier’s business system, as an interface between each VMI system and the business system is necessary, Stahre maintains.

Stahre states that customers often choose suppliers that they believe are familiar with logistics, but it could be dangerous for an SME supplier to enter into a VMI partnership. In case they cannot reach the new demands that are made on them because of lack of logistic knowledge, the risk of ruining the customer relationship is significant.

Ericsson stresses the fact that an interface between the VMI software and the supplier’s internal business system facilitates the utilization of the VMI program, otherwise the VMI software becomes another device that must be managed.

5.3 Consequences of VMI

Small suppliers must believe in the advantages of VMI, because there are benefits for SME’s, Comhat-Provexa argues. It emphasizes the importance of actively participating in the VMI process by declaring that

“The suppliers have better opportunities in the VMI collaboration if they push the VMI question themselves, and not just act as a passive receiver.”

Comhat-Provexa suggests that the supplier should attempt to make demands on its customer. One possibility could be for the customer to provide the supplier with the information needed directly into the supplier’s own business system, instead of the supplier getting the information from where the customer finds it easiest.

After having implemented VMI, Comhat-Provexa stresses the continuous fine-tuning of methods and metrics to actively push towards optimization of the VMI collaboration. This is an important way to regulate cash flow, especially for suppliers, Comhat-Provexa says.

There is no doubt that it is easier for large suppliers to earn money when using VMI, Mattsson argues. But he thinks that a small supplier can take advantage and utilize VMI in a better way, thanks to their higher degree of flexibility compared to larger firms. If they see to plan the collaboration carefully and use VMI wisely, small suppliers can
reap greater benefits from VMI than larger suppliers, if they are not too tightly governed by their customers, Mattsson says. Hence, he sees no reason for small companies not to get on the boat, but considers the fact that there is a cost element that must be considered. Mattsson insists that the less costly VMI solutions might not give as many advantages and effects as the traditional EDI solutions, and argues that

“The more advanced the VMI solution is technically, the better chance the parties have to succeed, but it could be expensive. “

One of the benefits of having access to the customers’ inventory balance is that the supplier can give priority delivery to the customers that need it most urgently, rather than follow the committed delivery date and possibly deliver to a customer that has a sufficient stock at the moment, Mattsson states.

Stahre believes that SME suppliers are often skeptical in the beginning of a VMI collaboration, not experiencing any effects other than keeping the customer. However, after one to two years they start to notice the advantages of VMI, and then they change there attitude towards the VMI partnership. Deriving an advantage from the real effects of VMI concerning the production and transportation planning could take up to 6-10 years, Stahre claims.

The initial effects that SME suppliers experience from the VMI collaboration are due to the fact that the SME supplier goes from not having thought of its inventory management or logistics to doing so. Stahre sees this as one of the opportunities of VMI partnerships for SME suppliers, because

“SME suppliers utilizing VMI are forced to develop and utilize their logistics knowledge, it is a push in the right direction!”

### 5.4 Basic Facts of the VMI Collaboration

Under this heading we present the basic facts of the VMI collaboration between Ericsson and its suppliers. This information is needed to understand the coming discussion about Ericsson’s relationship to its VMI suppliers. All facts are derived from the interviews conducted with Ericsson and the three SME suppliers. In this section we will mention Ericsson in Mölndal as well, as they are part of the same corporation as Ericsson in Borås and they work closely together. However, the VMI relationship that is studied in this thesis concerns Ericsson in Borås, and Ericsson in Mölndal is only
Empirical Findings

Ericsson in Borås began utilizing VMI in 2001. One purpose for Ericsson was to give its suppliers more demand information than before, thereby giving the suppliers a better chance to plan their operations. Thanks to the exchange of information in the relationship, Ericsson could also improve its internal planning. Today, approximately 15 suppliers participate in the VMI relationship and Ericsson has focused on involving its larger suppliers in this relationship. Ericsson’s strategy is to not include suppliers whose existence is highly dependant upon Ericsson as a customer, this has however not always been the case. The VMI partnership was also seen as a means for Ericsson to provide its suppliers with real demand information, thus leading to a more optimized supply of products. Ericsson concentrated on the visibility argument, i.e. that the suppliers are directly able to see Ericsson’s changed demand due to the orders Ericsson gets from its customers, when trying to sell the concept to suppliers. Also the argument of creating a tighter relationship was important. However, Ericsson did not get a sufficient response from their suppliers, and as a consequence of this, Ericsson changed its strategy towards both its current and new customers. Today VMI is part of every new agreement and is mandatory for further business. The fundamentals for the VMI partnership are that the suppliers are responsible for supplying the required items to Ericsson according to the given requirements in the VMI agreement, while Ericsson is responsible for sharing the correct information with the supplier. Ericsson owns their inventory at the facility in Borås, and intends to continue to do so, as this is necessary for enabling fast customer deliveries, Ericsson claims. Consequently Ericsson does the stocktaking and is accountable for waste.

Ericsson uses a software system for the exchange of real time information with the three suppliers that are the focus of this thesis. The suppliers are able to choose how often they want to check the inventory balances in the VMI software. In the software the suppliers can see not only Ericsson’s current inventory level, but also the short term demand of Ericsson’s customer, as these are reflected in the figures of Ericsson’s inventory levels. The long term demand forecast, on the other hand, is sent as an Excel document by E-mail to the suppliers, it can also be obtained on the Internet once a month. Figure 3 explains the VMI collaboration with the software; Data about the current inventory balance is reported into the VMI software by Ericsson and sent automatically to the suppliers through the VMI solution. The information is updated every 15 minutes, i.e. in real time. For the order processes the VMI program uses software metrics to calculate a suggested order quantity for the supplier to deliver. The metrics, which are based on time, are set in cooperation between Ericsson and the...
respective suppliers. As both parties are able to change the metrics, an agreement must precede a change in the metrics. The suppliers confirm the suggested order by sending an order confirmation through the VMI software, and after this the ordered good are delivered to Ericsson. Ericsson has no administrative work concerning the ordering process, due to the fact that they use so called self-billing. This system means that when the supplier confirms its delivery an order is automatically created in the VMI software. When the goods have arrived at Ericsson an invoice confirmation is automatically sent by fax to the supplier. Consequently, Ericsson never places orders or gets invoices from the suppliers that take part in the VMI partnership.

![Figure 3. Information sharing in the VMI Collaboration between Ericsson and their VMI suppliers.](image)

There is a logistical agreement underlying the VMI partnership that regulates all issues regarding the VMI collaboration. Ericsson decides on the maximum and minimum inventory levels for all products, and settles on whether or not to place a safety stock at their facility. Today, Ericsson declares that safety stocks are needed both at the supplier and at Ericsson, in order to keep up service levels, as Ericsson does not trust the suppliers to keep the inventory level in the preferred range. In the future, however the safety stock at Ericsson is to be diminished, as the claim on the suppliers managing Ericsson’s inventory better will be increased. For the supplier, the commitment normally means that they should fulfil forecasts, keep safety stock at their facility, and should further be able to respond to a 30 percent increase in demand. This agreement also regulates what metrics should be used in the software system for all different items. Even though Ericsson decides on a great deal of the issues in the agreement, there are large possibilities for the suppliers to influence.
Ericsson claims that through the VMI partnership, the suppliers get a better insight into Ericsson’s business, as they now can see Ericsson’s real demand in advance and not only respond to orders. As a consequence of this, Ericsson no longer has to defend large order quantities. Today the parties can discuss solutions to common problems, rather than simply discussing the problems, and due to this their relationship has grown stronger, Ericsson claims. However efficient the collaboration on the daily level is, the relationship is brought to a head when it comes to strategic issues, due to the fact that the strategic purchase is managed by Ericsson in Mölndal. Ericsson claims the fact that the suppliers have the relationship with Ericsson in Borås, but Ericsson in Mölndal decides about long-term agreement issues, makes a difficult situation for the suppliers.

Ericsson claims that there have also been internal difficulties in implementing the utilization of VMI, as many of the purchasers at Ericsson have not seen the advantages of the VMI collaboration. However, Ericsson claims that they need to improve their knowledge of the VMI collaboration and conduct better follow-ups in order to show the suppliers what they truly want with the VMI partnership and help them in getting there. It is necessary that Ericsson takes its responsibility and actively works with improving the VMI relationship and provides the suppliers with more accurate information, as this is fundamental for the suppliers’ possibility to manage the inventory, Ericsson claims. This would give the suppliers a chance to take more responsibility and would make the deeper utilization of the VMI collaboration possible.

5.5 Hellmer Industries AB in Norrköping

5.5.1 Motives for VMI

Hellmer states that the company was more or less demanded by Ericsson to enter into a VMI partnership. First, several questions and uncertainties arose at Hellmer when Ericsson started talking about the VMI collaboration. Questions like: “How does this work in reality?”, “What will this lead to” and “Is it worth the money?” were not far away, Hellmer claims. After a few clarifications from Ericsson and the VMI software provider, Hellmer did however see possible benefits coming to their company in terms of cost reductions and competitive advantage against other supplies.
5.5.2 Implementing and Using VMI

Hellmer started supplying Ericsson with products back in 1975\(^9\) and today supplies Ericsson with approximately 120 items through the VMI program. For being a small company, Hellmer judges that they are well ahead and that they understand the advantages of employing the principles of logistics. Hellmer claims that the company has acquired competitive advantages through actively working with logistics, and have all the manufacturing processes of their products in-house and not outsourced on other companies.

Bearing in mind that Hellmer considers itself to be well-informed when it comes to logistics, VMI was not an unknown concept to them. The company was well aware of the meaning of VMI as a logistic approach, but the comprehension of what effects VMI would have on Hellmer was smaller. Today, Hellmer is proud of their VMI partnership with Ericsson and maintain that few companies of Hellmer’s size have a working VMI program with their customer.

Regarding the technology needed for Hellmer in order to utilize the VMI program, a VMI software was needed in addition to a new server and some application software. Hellmer and Ericsson shared the cost for the VMI software, but Hellmer naturally had to pay for the additional required technology themselves. The installation of the VMI software was done in cooperation with the software provider and an in-house IT professional, and went without problems.

Because of the fact that Hellmer does not have an interface\(^10\) between its business system and the VMI software, it has to enter all additional information coming from the VMI software into its business system manually and vice versa. The company claims that

“It would be great to have an integrated system and interface so things would happen automatically. This way we would be spared the duplicated work. But, such an investment is too expensive and has too long of a pay-off time that we do not consider it worth the money at the moment.”

\(^9\) In actuality Hellmer started supplying Ericsson in Mölndal 1975, but since Ericsson in Mölndal works closely with Ericsson in Borås and they are part of the same corporations, we will consider Hellmer as a supplier of Ericsson in Borås since 1975

\(^10\) The interface is a system, which allows for information to be transferred between two unrelated systems.
Hellmer emphasizes the importance of getting correct information when working together in a VMI partnership and commend the type of information accessible in the VMI software. Hellmer claims that Ericsson’s information is of very good quality and is very credible and has no reason to doubt the accuracy of the information.

5.5.3 Consequences of VMI

Given that Hellmer have not made a follow-up on how the VMI collaboration has affected their business, no information on possible cost reductions in their inventory could be collected. Even though no actual numbers can be shown, Hellmer do claim that VMI has helped them lower their inventories. Nominally, the inventory has not decreased because of the large increase in sales, but Hellmer argue that the inventory would have been much larger had it not been for VMI.

Within the production division Hellmer have noticed better resource utilization and declare that VMI forces them to stay at a high level of flexibility. The VMI software is also available in the production facility as it is installed in almost every terminal in the corporation, allowing the production employees to have access to the available information about customer demand. The person in charge of the production can consequently plan the production better and move people to where they are needed. Hellmer are proud of this and assert:

“We have come a long way in this area for being an SME.”

Every morning the logistics manager meets up with the outbound logistics personnel to discuss shipping issues and to plan transportation. As it is visible throughout the whole organisation how much Hellmer are about to ship, they can decide how many trucks are needed, and the transportation can be well-planned. As a result of this Hellmer have the possibility to decreasing their transportation costs. There is, however, no possibility to co-ordinate transports to other customers.

Because of the use of self billing, the invoice confirmation is sent automatically to Hellmer by fax after the items have arrived at Ericsson. Hellmer then have to match the invoice confirmation with its order confirmation. This process did not exist before the VMI collaboration, and so creates additional administrative work and costs for Hellmer, as compared with before. Hellmer let us know that some administrative processes are new, while others have been taken away. Today, the administrative work is different, but Hellmer consider the net effect on costs to be nonetheless the same as before.
Hellmer think the relationship between them and Ericsson has become closer and more secure since the VMI collaboration. Today Hellmer phones their representative at Ericsson a couple of times a day, not to discuss inaccurate orders, but rather to discuss how to prevent problems. Hellmer claims: “We work much closer with Ericsson now, as we are both very dependent on them selling products.” The trust between the two has always been good, Hellmer claim, but has improved since the VMI relationship.

“Even though we almost feel like we were compelled to the VMI collaboration with Ericsson, we are not bitter because of that today,”

Hellmer say, and call attention to reality of where the company has been given a competitive advantage and doubled its turnover in the last 18 months mainly thanks to the collaboration between the two parties.

Hellmer explains that the implementation of the VMI program has forced the organization to think in terms of logistics. Hellmer say that the VMI collaboration has been good for Hellmer and believes it could bring more benefits if more time is spend on optimizing the program. Though Hellmer states that they don’t have the resources, knowledge or capital to work with this as much as a larger supplier might have, and consequently the optimization is hard.

Even though Hellmer has been employing VMI for several years, they still consider themselves to be in the start-up phase of the VMI collaboration and further claim that they are just now starting to see all of the advantages with the approach. However, Hellmer also emphasizes the fact that they were an early partaker when it comes to VMI and that other companies of the same size might have fallen behind when it comes to this fairly new logistical concept.

### 5.6 Comhat-Provexa

#### 5.6.1 Motives for VMI

Comhat-Provexa started supplying Ericsson with products in 1993. In 2001, when Ericsson started to look for suppliers to be part of their VMI collaboration, Comhat-Provexa was chosen as one of the pilot suppliers in the VMI program. One of the reasons was that Comhat-Provexa already had an extensive knowledge of logistics. The pilot was in progress for two weeks, where the traditional order system ran parallel to the VMI program. Comhat-Provexa did not quite see what benefits they could get from a VMI program, as they already had a worked-out logistic program in work. Instead
they saw VMI as a pure service that they could give Ericsson, a very important customer to them.

Another motive that could have pushed Comhat-Provexa into taking part of this collaboration was that their position as a supplier to Ericsson was in danger. Comhat-Provexa being the single supplier of a specific product was about to change, and Comhat-Provexa joined the VMI collaboration to be able to remain competitive and attractive among the other suppliers.

A further purpose was to increase the competitive advantage of the whole supply chain, or as Comhat-Provexa says

“We wanted to become strong together in our supply chain and be able to offer short lead times, without tying up capital.”

5.6.2 Implementing and Using VMI

Comhat-Provexa has long had a very high knowledge of logistics, and both IT and logistics are strategic questions for them. They have, for example, developed an internal system for managing their customer orders. Comhat-Provexa argues that having a system that fully supports the processes in the business helps them not only to manage the company itself very well, but also the relationships with customers and suppliers.

Comhat-Provexa had to obtain VMI software for the collaboration. The installation turned out to be costly, mainly because Comhat-Provexa also had to provide integration routines to be able to integrate its business system with the VMI software. The external costs arising concerned the integration between the systems and development of the existing system, installation and training, as well as new server and firewall matters. The internal costs (programming, meetings and other costs for the extra work) appeared to be almost as high as the external ones. The installation was done by a consulting firm and the running management, when needed, is done by Comhat-Provexa.

In principle the VMI collaboration concerns all items Comhat-Provexa sells to Ericsson. The exceptions are special products. Today Ericsson purchase 15 items through VMI software, that all are very critical for Ericsson’s production, Comhat-Provexa claims. At most, Comhat-Provexa had 68 different products in the VMI system. These products are very critical to Ericsson.

As mentioned in the beginning of this chapter, the VMI software calculates a suggested order quantity in combination with the metrics. Comhat-Provexa has an interface
between the VMI software and their business system, which means that there is no registration of orders needed, just the approval. On the contrary the suggested order is automatically exported from the VMI system into the business system, and Comhat-Provexa never has to actually check the VMI system. When Comhat-Provexa is able to deliver the suggested quantity on time, an order confirmation is sent back to the VMI software, where Ericsson can see the confirmation. Sometimes when delivery of the whole suggested quantity is not possible, Comhat-Provexa can have a look in the VMI system to check whether the inventory balance is high enough for Ericsson to get out anyway. Comhat-Provexa see self billing as an advantage, but to be able to use self billing an adaptation of the business system was required to make it possible to identify the payment from Ericsson.

The information Comhat-Provexa get through VMI is used for every day meetings about planning purchase, production and delivery. Comhat-Provexa let us know that shipping occurs once a week, which requires a lot of planning in advance. Comhat-Provexa check on the inventory through the VMI software, as long as there are no troubles or complaints, where a manual check up on the inventory level is necessary.

Comhat-Provexa trusts the information from Ericsson to large extent. The VMI collaboration gives Comhat-Provexa much better information about the real customer demand, without giving them any extra work. On the contrary, Comhat-Provexa claim the information seeking has declined as the information today is more easily accessible. Further, by using the VMI software Comhat-Provexa can get into the system and chose only to utilize the information they need for the moment.

5.6.3 Consequences of VMI

The VMI collaboration has not given any improvement on inventory levels or warehousing costs at Comhat-Provexa. Comhat-Provexa, though, claim that they have a feeling that these two costs have been reduced at Ericsson.

Today Comhat-Provexa has more time for production optimization, because of the fact that the time margin from order to delivery has increased, thanks to better long-term planning.

In the beginning of the VMI collaboration, when Comhat-Provexa still was a high volume supplier, they were able to optimize transports, as they then could choose to deliver as much as the truck was able to hold. Today, when delivery is done once a week, there is no possibility to optimize transports.
The administrative costs, according to Comhat-Provexa, are approximately the same, because of the set-off between partial routines. The order registration is, thanks to the automatization, faster with VMI. Comhat-Provexa does however experience some drawbacks with VMI on administrative work, mainly because there is an individual invoice for every item, and not as before for every shipment, which makes it difficult to manage invoice deviations.

The decision to form the VMI cooperation has strengthened the trust between the two parties, Comhat-Provexa claims. But as this introduction took place quite some time ago, the trust strengthening effects are fading out. There is a possibility to adjust the metrics in the VMI program more exactly, thanks to a better dialog, insight and understanding.

To sum up, Comhat-Provexa are of the opinion that the net value of the VMI project is not that large. But as Comhat-Provexa claim this net value tends to increase over time, until the next updating takes place. Today, when the order volume is small, Comhat-Provexa do not find it worth an update as the cost per item then becomes too high. If Comhat-Provexa decide to update their version of the VMI software it will then be a pure customer service and, as Comhat-Provexa declares, only when Ericsson says: “Take it or leave it”. Comhat-Provexa would prefer a different solution than the chosen one to cooperate for a win-win situation.

5.7 Elektromekan

5.7.1 Motives for VMI

Elektromekan had several motives for entering into a VMI relationship. The main motive was the fact that the VMI collaboration would make the company even closer to Ericsson than without the VMI partnership. This would enable them to meet customer demand in a way that would be good for both of them. Elektromekan wanted to become a more attractive supplier in the future and saw possibilities to reduce costs in the long run thanks to the VMI co-operation.

The official VMI collaboration started immediately, hence there was no pilot period taking place. Elektromekan claims, this is due to the fact that both companies consider themselves as companies with “superior knowledge about logistics”, and also because the relationship between the two is very stable.
5.7.2 Implementing and Using VMI

Elektromekan has a well worked-out logistics strategy, which is constantly developed and improved. This is why Elektromekan consider themselves as having a good understanding of logistic thinking.

Slightly more than one year ago, Elektromekan started to supply Ericsson with three products through the VMI collaboration. Beside these, Ericsson buy other products from Elektromekan, for which orders are placed in the traditional way.

They have a positive attitude towards the implementation of the VMI system, as they state that the implementation process went very smoothly and without problems. The only system component Elektromekan had to obtain for the VMI collaboration was the VMI software itself. Elektromekan informs us that they handled the installation, after having been instructed by the software provider. Also the running management of the VMI system Elektromekan accomplish themselves.

Elektromekan claims that, because of their previous knowledge and experiences they have the ability to quickly estimate whether the information they get from Ericsson through the VMI software is right or wrong. Sometimes, though, when uncertainties arise, Elektromekan get into contact with Ericsson by telephone or email, to make the situation clear. Elektromekan is of the opinion that their co-operation with Ericsson is excellent, and continues that Ericsson wholly trust Elektromekan to not abuse the information they are given.

The check-up on the inventory levels is mainly done electronically. Though, Elektromekan claims, that once in a while a physical check-up at Ericsson in Borås is necessary.

For those three products used in the VMI system, self-billing is used. For other products, which are not in the VMI system, a normal ordering and invoicing process are used, where Ericsson sends orders to Elektromekan, who then delivers an invoice along with the shipped items.

5.7.3 Consequences of VMI

Elektromekan have observed a better inventory management, with lower inventory levels, since the start of the VMI partnership. They continue to claim that, as they have
access to information about real demand, they have freedom to plan and organize the production procedures as they find it most properly.

According to Elektromekan, the administrative costs have declined since the VMI collaboration started. This is mainly due to the fact that there are no longer as many order confirmations as before.

Elektromekan is of the opinion that their relationship with Ericsson has grown stronger thanks to the VMI.

They describe the VMI collaboration with three key words: clearness, transparency & user-friendliness. Their total comment on the system is that it is very good to minimize costs, and also to tie actors in a supply chain closer to each other, and also that the collaboration becomes very good. The only negative comment is that Elektromekan thinks this VMI collaboration should have been started much earlier.

### 5.8 Summary Matrix on VMI Partnership

<table>
<thead>
<tr>
<th></th>
<th>Hellmer</th>
<th>Combat-Provexa</th>
<th>Elektromekan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motives</strong></td>
<td>Customer demanded it</td>
<td>Customer demanded it</td>
<td>Work closer with their customer</td>
</tr>
<tr>
<td></td>
<td>Cost reductions</td>
<td>Competitive advantage for the supply chain</td>
<td>Be a more attractive supplier</td>
</tr>
<tr>
<td></td>
<td>Competitive advantage</td>
<td>Service for the customer</td>
<td>Reduce costs</td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td>Good logistic knowledge</td>
<td>Pilot study</td>
<td>Well worked-out logistics strategy</td>
</tr>
<tr>
<td></td>
<td>New IT</td>
<td>IT and logistic are strategic questions</td>
<td>Smooth implementation</td>
</tr>
<tr>
<td></td>
<td>No interface</td>
<td>Expensive installation</td>
<td>Confident relation</td>
</tr>
<tr>
<td></td>
<td>Correct information important</td>
<td>More information facilitates business processes</td>
<td>Excellent co-operation</td>
</tr>
<tr>
<td><strong>Consequences</strong></td>
<td>Lower inventory</td>
<td>Lower Inventory</td>
<td>Better inventory</td>
</tr>
<tr>
<td></td>
<td>Flexible Production</td>
<td>Better long-term planning</td>
<td>management</td>
</tr>
<tr>
<td></td>
<td>Well-planned transportation</td>
<td>Other routines</td>
<td>Flexible production planning</td>
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<td></td>
<td>Extra administration</td>
<td>High trust</td>
<td>Lower administration</td>
</tr>
<tr>
<td></td>
<td>Closer relation</td>
<td>Net value not that high</td>
<td>Stronger relationship</td>
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</tbody>
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6 Analysis

6.1 Motives for the SME Supplier to Use VMI

According to the literature, the most common motive for suppliers to join a VMI collaboration today is that the customer demands it (ESCA & ChainLink, 2003). Stahre and Mattsson (2004) agree to the fact that this is a common reason. Both Hellmer and Comhat-Provexa claim that they were more or less compelled by Ericsson to collaborate in a VMI partnership. Both companies further argue that they had a genuine fear of losing their customer if they did not consent in this matter.

All three suppliers saw competitive advantage as a motive for implementing VMI. The competitive advantage was seen as something that could be used against both other suppliers of Ericsson and on the market. Stahre claims that the possibility for SME suppliers to increase their competitive advantage is a prime motive for them to participate in a VMI collaboration.

One of the motives for Comhat-Provexa to start implementing VMI was as a pure service to Ericsson. This motive, according to Daugherty et al (1999), is very important, and suppliers should be prepared to offer this to their customers.

Stahre explains that the opportunity to attain more information through a VMI partnership can be seen as yet another motive for a supplier to join in. Since the visibility in the supply chain increases when the partakers share information, manufacturing and transportation can be planned in a better way, thus diminishing these costs. (Waller et al, 1999) Both Hellmer and Elektromekan see the possibility of decreasing their costs in the long run as one of their motives for VMI. Mattsson (2002) mentions the possibility to reduce transaction costs between the partners in a VMI collaboration as a motive. None of our interviewed companies saw the potential of reducing transaction costs or gaining better access to information about future demand as a motive for VMI, but as we see later in this section, this turned out to be one of the consequences of the VMI collaboration.

Disney & Towill (2003a) claim that the necessary information and communications technology for implementing VMI has become more affordable in recent years. Due to this, new VMI solutions can be found, and Stahre and Mattsson (2004) see the development of technologies as motives for SME suppliers to start implementing VMI. The Internet has for example made it possible for companies to share information via
web-portals or by emailing Excel spread sheets. Stahre claims that this has lead to an increase in utilization of VMI among SMEs.

Another motive mentioned is the integration of the supply chain. Elektromekan sees VMI as a means for achieving a closer and more end customer oriented cooperation with Ericsson. Comhat-Provexa called attention to the intention of increasing the supply chain’s competitiveness towards the end customer, as well. Mattsson (2004) also stresses the importance of thinking in terms of the supply chain. Mattsson claims that it is the entire chain’s collective efforts that decide if the end customer will put money into the chain or not.

By summarizing the motives for an SME to implement VMI, we are able to see a pattern. We claim that the principal motive for suppliers entering into a VMI partnership today is that the customer demands it. This demand must often be agreed upon in order for the supplier to remain the sub-supplier of the customer. This matter is important for all suppliers in the competitive environment of today, but we claim that this issue has a specific role in the situation of the SME supplier. We base this argument on the fact that an SME that does not accept the proposition of the VMI collaboration can easily be beaten out of the game and loose its position as a sub-supplier. The consequences of losing a customer are dependent on the customer structure of the supplier. Hence the consequences of losing one of several smaller customers are not as hard as losing one out of a few larger customers. In the case of our three suppliers, Ericsson did make up a rather large part of the suppliers’ total sales at the actual time of this debate. Hellmer, Comhat-Provexa and Elektromekan are all of the opinion that there was a genuine risk that they would suffer the loss of their large customer if they did not comply and start to utilize VMI. We cannot assert that all supplying SMEs have this customer structure but it is, as we can tell from the empirical findings, so for some. Losing a customer could clearly put the supplier in a difficult situation. The issue of selling your products is certainly essential for all enterprises, or else the company’s business will decline which could lead to bankruptcy. SMEs are generally known as having poor marketing skills (Fredriksson & Lindmark, in Ramström 1975), which we see as something that could make the process of attracting new customers tough and resource consuming for the SME supplier.

We consider the customer demanding it the overall motive for joining a VMI partnership. We believe that as time passes and the VMI matter is digested, SME suppliers are able to see other motives for using VMI than the primary one and several “sub-motives” are born out of this prime motive. Figure 5 presents this prime motive accompanied by its sub-motives that will be discussed in the following section.
During our interviews we could see new motives emerging from the prime motive as the company came to terms with the fact that the VMI partnership was about to take place. The companies started to see the advantages that VMI could have on their own organization. In our study we can see that all three companies saw a competitive advantage in the VMI partnership. We are of the opinion that this motive is a consequence of implementing VMI. Our studied companies not only mentioned the fact that they had an advantage against other Ericsson suppliers that did not utilize VMI, but also of the fact that VMI made them an attractive sub-supplier on the market. Hellmer was especially proud of how far they have come with VMI and claimed their new knowledge to be something out of the ordinary for a supplying SME of today. The companies keeping their position on the market by complying with Ericsson on the VMI matter has also been of great importance to the companies. As Ericsson is one of their largest customer, and considering the fact that Ericsson make up a big percentage of their sales, a loss like this would be substantial. Our interviewed companies would quickly loose their position on the market if they were to loose their largest customer. We are also of the opinion that an SME supplier that has a well-known customer gains a certain reputation on the market that can give new customers. An SME supplier that looses their most important customer would then maybe become an insignificant supplier on the market, if it does not attract new customers quickly.

Comhat-Provexa claims to provide VMI as a pure service to the customer. Comhat-Provexa thus sees themselves as a fair supplier that offers this extra service to the customer, giving the customer the advantage of not having to place orders. However, we would like to argue that there is a danger for the supplier in looking at VMI as a pure
service and not considering utilizing it for their own profit as their own advantages of the VMI then would diminish. We ask ourselves if this is an approach that is applicable for all SMEs. VMI does require a lot of resources when it comes to time, money and knowledge, and these resources are often scarce for an SME supplier. Thus, if the SME supplier only sees the VMI relationship as a customer service and cannot understand or reap the benefits that the collaboration would bring for him, this would be unendurable in the long if providing this service to several different customers. Consequently, the SME supplier must believe in the available advantages for him to be able to acquire them (Mattsson, 2004).

We see access to information as yet another sub-motive for VMI today. This motive is very important and gives the supplier access to information that earlier was unavailable to him. The increased availability of information, can lead to more efficient internal planning and optimal resource utilization when the information is well used. This could reduce costs, which leads to the motive of reduced costs that was mentioned by Hellmer and Elektromekan. The possibility for SMEs to absorb and utilize this information in the best manner will be discussed under “consequences” below.

The development of technology has not been seen as a motive for the studied companies to implement VMI. We, however, believe that this will become a motive for SMEs that have considered adopting the VMI concept, as the newly developed VMI solutions are more affordable and less complex than earlier ones (Mattsson, 2004). These two features we believe could be decisive for an SME supplier that earlier have not had the sufficient funds or the sufficient competences to adopt a VMI concept.

Utilizing VMI for the sake of integrating the supply chain and making it more competitive is a motive emphasized by Comhat-Provexa and Elektromekan. It is of course of great importance that the end customer be satisfied, as he determines the existence of all companies in a supply chain. For an SME supplier that experiences low specialized skills and has scarce resources, a connection to a larger actor in the supply chain can help their situation. However important we feel it is to think in terms of supply chains, we question the ability for the SME to really see any effects of a more competitive supply chain since the VMI partnership only makes up a small part of it.
6.2 SME Suppliers Implementing VMI

6.2.1 Distribution Roles and Activities

According to Stahre, VMI is, among other things, about *distributing roles and activities* between the supplier and the customer. Due to the fact that the supplier takes on more tasks in his relationship with the customer than before VMI, it consequently increases his costs (Mattsson, 2002). One of the most important roles to distribute is who should determine the minimum and maximum stock levels for the customer’s inventory. In the studied VMI relationships, Ericsson sets the minimum and maximum inventory levels for all products part of the VMI program. According to Stahre the customer rarely trusts the supplier’s logistical qualifications and ability to manage its inventory effectively, even though the suppliers that the customer chooses for participation in a VMI collaboration normally have good logistic knowledge. We question if Ericsson sets these parameters because they do not trust their supplier’s knowledge, or if is done for other reasons. Ericsson does claim that their suppliers will be given more responsibilities in the future to facilitate a deeper utilization of the VMI collaboration.

Some are of the opinion that when the range between the minimum and the maximum inventory level is set too small by the customer, the true benefits for the supplier are hard to achieve. Stahre claims that the supplier then loses its freedom to act as an inventory manager thus diminishing his possibilities to plan his production and deliveries. The potential cost reductions within these operations are thereby more difficult to attain. Stahre claims that this collaboration gives the impression of being pure *replenishment* rather than *vendor managed* inventory. Lapide (2002) is also of the opinion that a collaboration of this sort should not be named VMI if it does not involve the supplier setting the inventory levels.

Stahre stresses that the supplier should have the opportunity to influence the design of the VMI project because it is first when both parts are responsible, that both can arrive at benefits. We are of the opinion that however good it sounds for the supplier to participate in the design of the project it could have problematic effects for an SME supplier because he might lack the knowledge about how to efficiently employ a VMI project. The implementation of VMI requires logistical knowledge as well as time and financial resources that for some SMEs are scarce. (c.f. Beaudoin in Julien, 1999 and Glader & Lindström (in Ramström, 1975) Mattsson (2004) emphasizes that the customer should support the SME supplier in the implementation of a VMI program, since a successful implementation for the supplier would be beneficial for the customer as well, e.g. in form of inventory reductions.
Consequently, we see that a well working VMI relationship not only relies on the SME supplier’s ability to implement the VMI project, but also on the customer’s understanding of it and its capacity to share its knowledge with the SME suppliers. The understanding of the VMI collaboration within Ericsson has been insufficient. Ericsson’s employees have had a hard time truly supporting the suppliers in this matter, since they have had difficulties of their own seeing the advantages of the VMI collaboration. We are of the opinion that if the customer does not recognize the implication of VMI, it can threaten the VMI collaboration. When the customer does not support the VMI program sufficiently, we do not believe that an SME supplier in need of VMI support can manage this matter efficiently on his own. Due to this we claim that the customer’s understanding of the VMI partnership could be essential for the success of the partnership. Consequently, it is important that the customer understands his role in the VMI relationship.

### 6.2.2 Sharing and Using Information

One essential issue when it comes to VMI, according to Angulo et al (2004), is the sharing of information. Waller et al (1999) claim that the information can be shared either physically or electronically. In this thesis we study a VMI relationship where the information is shared through VMI software, i.e. electronically, which is why we will only discuss the electronic sharing of information in our discussion.

Technological solutions are most often a necessity for making a VMI relationship work properly. Even though EDI is not a requirement for VMI, it has been shown to be very efficient when coupled with VMI (Waller et al, 1999). EDI is a VMI solution that is considered to be a fairly complicated way to transfer information. This is due to the fact that it requires standard format messaging and advanced technological components. EDI is therefore seen as a rather costly way to share information between two entities (Mattsson, 2002). We claim that there are at least two issues that influence an SME’s possibility to implement EDI, the cost issue being one of them. This is due to the fact that SMEs generally have a weak financial position. The second characteristic of the EDI technology is that its complexity can lead to it being hard to implement successfully in SMEs due the fact some of them lack the specific knowledge in this area. (Julien, 1999)

However, VMI users now have the possibility to utilize newly developed VMI solutions that consist of information and communications technologies that are of less complicated nature and thus is more affordable to implement. (Disney & Towill, 2003a) Varshney & Gupta (2002) claim that the growth in communications technologies has
opened up cost-effective solutions for real-time information sharing between the VMI participants. Along with EDI we now find webEDI and other Internet-based VMI solutions. The fact that the costs of VMI solutions are on the decline (Waller et al., 1999) makes it easier for an SME in a less fortunate financial situation to adapt its business to the required technology and successfully implement VMI. Most of today’s companies already have the majority of the technological requirements in place before the VMI program is implemented, e.g. computer platforms, communications technology, and product identification and tracking systems (Waller et al., 1999). This makes it easy to adapt a webEDI solution, for example. When it comes to VMI software systems however, the software itself often needs to be acquired and this can be a costly matter. Mattsson (2004) however, claims that a more advanced solution brings better chances for the VMI partnership to succeed. However, the more technically advanced solutions are more expensive.

VMI software is a fairly expensive VMI solution. This can be seen as a tough situation for the SME that lacks the ability to attain sufficient financial resources, or for the SME that has low margins or low profitability. This, however, did not seem to have a substantial effect on our studied suppliers. We do therefore ask ourselves if the SME’s situation is not as bad financially as the literature tells us and if the SME of today actually has no difficulties within this area. Another answer to the seen results could also be that the SME’s operation’s can be hard to generalize due to their different industries, customers and size etc. For an SME that does have financial problems, an investment in VMI software is not a possible solution. The new more affordable solutions, such as webEDI, are then a good alternative.

Regarding the investments in technology that the studied companies had to undertake for the VMI collaboration, there is quite a different picture between the three SME suppliers. All enterprises had to invest in the chosen VMI software that was essential for the information transfer between the customer and the supplier as none was employing it before the partnership with Ericsson. Hellmer also had to, in addition to the VMI software, purchase a new server and some application software. Comhat-Provexa had to purchase integration routines, for the integration of the VMI software with its internal business system. The only system component Elektromekan had to obtain for the VMI collaboration was the VMI software itself.

We can see that there are differences regarding what technological components our SME suppliers had to acquire in order to implement and utilize the VMI program. This difference is due not to the acquisition of the VMI software, as all three suppliers use the same software, but due to the current technological holdings of respective enterprise...
before the VMI collaboration. Today, we can claim, with support from Waller et al
(1999), that companies tend to hold a set of basic technological solutions, e.g. business
systems and internet access, which are needed to facilitate their everyday business. This
should be true also for SME suppliers, and consequently also for the three SME
suppliers that are the focus of this thesis. Depending on the companies’ existing
technology, the costs that arise could differ between companies. For example, a
company that is well equipped would expect a lower need for new technological
investments, and this would subsequently imply lower costs.

We can understand that there is a difference between the supplying companies; firstly
regarding what they want to achieve with the VMI program, i.e. what goals they have
for their internal businesses, and secondly considering the amount of money the
company is willing and able to spend on this investment. For example, Comhat-Provexa
wanted to integrate the VMI software with its internal business system and
consequently needed to purchase integration routines to make the transformation of
information between the two systems possible. Hellmer, on the other hand, claimed that
they could not afford to integrate their internal business system with the VMI software,
however much they would like to. By not using an interface Hellmer has to enter the
information from the VMI software into their internal business system by hand in order
to use the information in its internal planning. Consequently, we see that if an SME
supplier does not invest in an interface, he is has to battle duplicated work and higher
costs when utilizing the VMI software. We can see that the suppliers have to make yet
another decision when it comes to the matter of acquiring an interface for the VMI or
not.

After deciding which VMI solution to use, it is important to know how to use the information in the organization. It is important that the collected information be used efficiently, e.g. to help in the planning of production and deliveries. We believe that it is of great importance to know what to do with the information and know how it is best used, because if the information is not used, the work put into sharing it would be lost. We question if an SME has the ability to do use the information in the most appropriate way, as the SME in general lack organizational skills, time and resources. When the SME lacks this ability and when the customer fails to show them how to do this, we doubt that the benefits of VMI are easily reached.
6.2.3 People and Relationships

Companies that are about to enter into a VMI partnership must know both the goal and vision of the collaboration (Sandell Jöne, 2002). Thanks to the good understanding of logistics matters that the responding companies claim to possess, it could be assumed that they were aware of what was to come when entering into the VMI collaboration. Yet Hellmer mentions that they did not recognize the effects that VMI would have on the company at first. We argue that even if a company does have a wealth of knowledge in logistics, it can be hard for them to see what a specific business approach such as VMI will imply for their company.

Sandell Jöne (2002) mentions that the issue of the maturity of the customer and the supplier in a VMI collaboration should be reflected upon. This is also argued by Ericsson who stresses the fact that the supplier must have the required knowledge and understanding of the VMI program to be able to implement and use it properly. Hellmer also mentions the importance of having a mature partner for making the VMI partnership work properly. Hellmer says the in order for a successful implementation of VMI to take place, you must trust your partner’s maturity and ability to understand and utilize VMI.

Hellmer also emphasizes the importance of seeing the VMI co-operation as a long term event. Mattsson (2004) stresses that VMI is a long term relationship that should remain a win-win situation. A VMI relationship could therefore be seen as a “safe” situation for the SME supplier. We base this argument on the fact that when an SME supplier joins a VMI collaboration they can be rather sure to keep this customer for the immediate future. Fredriksson & Lindmark (in Ramström, 1975) state that SMEs generally have low marketing skills, and due to this we believe it is especially important for SMEs to keep customers, because it can be assumed that they do not attract customers as easily as companies with specialized marketing skills. When it comes to the VMI relationship between Ericsson and their suppliers, it can be seen that Ericsson has a very tough approach towards their suppliers. The suppliers in this case can not be considered “secured” as long term suppliers because of their participation in the VMI collaboration, but they are always in danger of being terminated. We argue that a danger can be seen for the SME if Ericsson too easily exchanges their suppliers in the VMI collaboration. Mattsson (2004) supports this argument by claiming that SME suppliers in particular are affected by this situation. This is due to the fact that the supplier can not only lose a customer, but also the money invested in the VMI solution, which is especially hard for an SME that already in a hard financial situation. It is therefore important to the SME to
calculate the pay-off time for the invested IT solution and to evaluate if the existing partnership will last for this period of time.

For the successful existence of a VMI collaboration Waller et al (1999) stress the importance of including the individuals that are part of the relationship. Sandell Jöne (2002) states that every person that is affected by the changing of a traditional customer-supplier relationship into a VMI project should be regarded. Effective teamwork, where both the supplier and the customer actively participate, is a matter that Waller et al (1999) mention. This is, in addition to information sharing and existing technology, essential for a well implemented VMI partnership. Waller et al further claim that without regarding the individuals in the relationship, the benefits of VMI can never be attained. Stahre also emphasizes the importance of collaboration in a VMI partnership. Ericsson (2004) underlines that both entities in the partnership must understand the purpose and the concept of VMI, which is why there should be a focus on more training and education of the individuals in the VMI relationship. This is because VMI not only is a program, but a way of thinking logistically.

Kuk (2003) claims that firms that only focus on attaining the right technology, and fail to take the more difficult steps of implementing the VMI program, will not experience the expected values of a VMI relationship. Stahre agrees to this and says that to implement a VMI program efficiently one must treat it as a strategic issue, and not only as a technical solution. Comhat-Provexa explains that the role of the management is central when implementing VMI, the importance of managerial commitment is also stressed by Ellinger et al (1999). Comhat-Provexa further claim that if they are not actively involved and consider this logistical development as a competitive device, the real advantages of a VMI relationship will not occur.

According to Stahre many enterprises today focus on integrating their supply chain. Those that do not participate in a VMI relationship with their customer could lose its competitive strength. We must however claim that there is another issue facing the SME suppliers concerning the integration of the supply chain: the utilization of different VMI solutions. When more and more customers push supplying SMEs to take part in VMI cooperation, the information sharing through technological solutions consequently increases. When different customers utilize different solutions, i.e. webEDI, software, etc., the situation could be hard for the SME suppliers to handle. Firstly it would be a costly matter if the supplier had to acquire several VMI solutions because they are not able to use the same solution towards different customers, i.e. the asset specificity is
Hellmer states that even though they would like to initiate the implementation of the VMI software with other customers, they find it difficult because most of them already have a VMI solution of their own. Secondly, it requires the SME supplier to be able to handle every VMI solution properly. We are of the opinion that the main issue is not that it would be unaffordable for the SME supplier to acquire the different information sharing devices, even though this is a matter that should be reflected upon. Rather the fact that different solutions are designed differently makes the issue of learning how to administer all systems the largest hurdle to overcome. After all, most SMEs do not have rich specialization skills within their organization (Julien, 1999), which could make the proper understanding and utilization of each VMI solution very time and resource intensive. As with all enterprises, SMEs are tackled with every day business issues that we believe take precedence of the task of learning to administer the VMI solutions properly.

Angulo et al (2004) describes other issues that arise from information sharing in a VMI co-operation, among them being confidentiality and trust. As a fundamental indicator for a well implemented VMI program, Hellmer mentions the importance of getting the right information. It is, as we can see it, of highest relevance for the supplier since if he does not trust the information given by his customer, he could make little use of the VMI program, since the additional information cannot be used properly for his planning. Consequently, the supplier must still take precautionary measures in order to compensate for the fact that he believes the information given to him is incorrect. The size of the precautionary measures will depend on how inaccurate the supplier evaluates the information to be. We see the correctness of the VMI information to be very important for the SME supplier, since investing in a VMI partnership while still making safety precautions is a very expensive and inefficient situation. For the SME supplier that may lack financial resources this situation would be intolerable. Subsequently we see a large need for the customer to provide the supplier with the correct information, which the supplier also believes to be correct. For this situation we are the opinion that trust and communication between the parts decide how this will be treated. If the relationship between the customer and the supplier is confident, the supplier also would think of the information as confident. Elektromekan is an illustration of this, since it claims that there are few uncertainties concerning the information from Ericsson, thanks to Elektromekan’s previous knowledge and experiences from the relationship with Ericsson. The issue of trust is also a reason for why we stress the importance of thinking of VMI as a long term relationship, as we believe it is legitimate to conjecture that trust increases over time.

11 Asset specificity relates to the degree to which an asset can be redeployed to alternative uses without sacrificing its productive value (Williamson in Cooper & Slagmulder, 2004).
6.3 Consequences of VMI on the SME Supplier

The collection of the information concerning the consequences has been somewhat hard to come by, due to the fact that all three companies have failed to make calculations about the effects. Therefore there have not been any real figures available for the discussion. We believe that the non-existence of the calculations could be due to a limited amount of time and resources or because the calculations are considered to be of little significance for each SME supplier. Regardless of the absence of actual figures, all studied SME suppliers have more or less a feel about what consequences the VMI relationship has had on their operations. These are discussed in the next section.

6.3.1 Inventory

Hellmer says that thanks to VMI they have been able to lower their warehousing costs. Elektromekan has also experienced better management of their inventory and hence lower inventory levels and warehousing costs. Based on these examples, evidently SMEs have the possibility of lowering their inventory levels and consequently lowering their warehousing costs. This also seems to be true when the VMI collaboration is more or less customer driven, as it is in the case of Ericsson and the three SME suppliers. We believe this is because when Ericsson’s demand is visible to the suppliers, they have the possibility of planning production of Ericsson’s goods better in order to avoid producing them against a growing stock at their facility. When the time between production and delivery is small the items do not create as high warehousing costs as in the opposite case, as the suppliers possess the goods as long as they are in their stock which among other things results in high capital tie-up.

If the suppliers would have larger possibilities to influence the design of the VMI project, for example by deciding about maximum and minimum inventory levels, the SME suppliers would have larger opportunities with the VMI collaboration, according to Stahre. But as we can see it, this requires that the SME supplier has sufficient knowledge about how to do it, and the ability to take on such a large responsibility.

Comhat-Provexa, on the other hand, has not noticed any improvements in inventory levels or warehousing costs. At the moment Comhat-Provexa supplies Ericsson with only three items, i.e. a small quantity of goods, which we consider to be the reason for this “failure”. When the marginal savings on each item is small, then the collected effect would also be small if there are only a few units. In other words, for an SME supplier to be able to markedly lower its inventory costs for the items in a VMI relationship, it should involve a larger number of units. Hellmer stresses that a traditional ordering
system is sufficient when the number of items is low. We therefore cannot see a clear advantage of investing in a VMI collaboration if the supplier is a low-volume supplier, as we presume to costs for the SME supplier would outweigh the benefits.

### 6.3.2 Production

Hellmer mentions that the VMI collaboration has contributed to better resource utilization within their production division, and has forced the company to keep a high degree of flexibility in this division. Hellmer is able to conduct more efficient production planning thanks to the installation of the VMI program on every terminal in the organization, thus spreading the concept of VMI throughout the whole organization. We see Hellmer’s integration of the VMI program within the organization as a way of thinking of VMI as a strategic matter. Obviously Hellmer’s management has emphasized and supported the implementation of the VMI collaboration and we see this has led to positive effects. We see this as a demonstration of the importance that management be involved in VMI, which Comhat-Provexa emphasized as being fundamental for the successful utilization of VMI. We claim that when the management realizes the impact VMI can have on the organization of a supplying SME, and works for supporting it actively, positive consequences can arise early after the start of utilization. We see however a problem in this for many SMEs which, according to Julien (1999), might have a poorly skilled management. The question is whether the management of an SME supplier has the possibility to actively concern themselves with logistical development, considering how much time and resources are needed on their everyday operations. We have however seen that the spending of resources on VMI is a road to cost reductions, which we believe should be emphasized. Consequently, the management should think of VMI as a way to strategically create competitive advantage, but not only through the keeping of the customer. We further see Hellmer as a proof for the fact that a successful implementation of a VMI partnership requires that the people in the program be regarded. Thus, we consider the activity of both the employees and the management is crucial to see the effects of VMI.

Comhat-Provexa declares that through the VMI collaboration the time margin from order to delivery has increased, which has allowed more time for production optimization. Elektromekan feels the earlier access to real demand information has lead to better organized production processes. Consequently, all three suppliers are able to see positive consequences of VMI when it comes to production. Stahre claims that the effects of VMI begin to arise after one to two years, but that the real effects of VMI concerning the production planning could first show after 6 years of utilization. However, none of the suppliers have been utilizing VMI for more than a few years, but
still they can see some of its effects, which we find to be very notable. It is generally claimed that SMEs are lacking of specialized skills (Julien, 1999), and we therefore believe that an implementation of a VMI relationship could be hard and take time for an SME supplier. As a result of an SME supplier lacking specialized knowledge in the area of logistics, we see a slow implementation process and inefficient utilization of a VMI program, and consequently few positive effects arise from the partnership. However, it is also stated that SMEs are flexible (Sundin, 2003), which could be claimed to be the reason for the three SME suppliers having responded so quickly to the VMI program.

6.3.3 Transportation

All of the three studied suppliers pay for the transportations to Ericsson. When the supplier is responsible for the transportation of the deliveries to the customer’s facility, it is expected that the transportation costs for the supplier decline when a VMI collaboration is introduced, Mattsson (2002) argues. This is, according to Waller et al (1999), because VMI co-operations that are well managed make well planned transportations, e.g. full truckload shipments are possible, avoiding the need for expensive shipments done by less-than-full trucks. Comhat-Provexa explains that when the company was a high volume supplier to Ericsson, optimization of transports were possible, and hence the transportation costs decreased. Today, no such optimization is possible, due to the fact that the delivery of the lower quantity is done once a week. Consequently, saving on transportation costs is no longer possible. When it comes to transportation, we must claim that a VMI collaboration seems so have more advantages when implemented with a high quantity of goods. Due to the fact that SMEs are known as being flexible and being providers of highly specialized low volume products, we question their possibility to benefit from a VMI partnership concerning transportations. It is consequently hard to co-ordinate transportations when the products are specific for the different customers.

6.3.4 Administration

In a VMI relationship the suppliers take on some of their customers’ tasks. One of the tasks that the customer no longer needs to do is placing orders, as these are created automatically in the VMI program. Due to the fact that self billing is used by Ericsson, the suppliers have an additional administrative process in the VMI collaboration, which implies an additional cost for them. However, Comhat-Provexa and Hellmer have also seen a positive effect on the administration costs due to fewer transactions between them and their partner. The net effect of the VMI partnership on administrative costs is however more or less zero, Hellmer claims. Comhat-Provexa shares Hellmer’s opinion
of administrative costs being about the same, because of the off-set between partial routines. For example, the automatization of the order registration has contributed to a faster order registration process, but the creation of an individual invoice for every item involves extra work when looking for deviations. Elektromekan claims that, thanks to the VMI collaboration, they can draw benefits from automatic order confirmations and therefore have lower administrative costs.

6.3.5 Relation

Hellmer thinks the VMI collaboration has strengthened the relationship between them and Ericsson. Today, the two entities no longer discuss details about deliveries, but how to solve common problems concerning orders and deliveries. Elektromekan also mentions a stronger relationship with Ericsson thanks to the VMI co-operation. Comhat-Provexa claim that with VMI there is a better dialog and understanding between them and Ericsson, which enables an adjustment of the VMI software metrics.

Overall, the phenomenon with the experienced consequences is especially remarkable in the case of Elektromekan, since this supplier joined the VMI collaboration with Ericsson only slightly more than one year ago. Stahre argues that the initial effects of a VMI collaboration that an SME supplier can experience are due to the fact that the SME supplier starts to consider logistical matters rather than because of VMI itself. However, we do not think this is true in the case of Elektromekan, as the company claims to have “superior knowledge of logistics”. It could be correct to think of them as having good background knowledge about how to implement the VMI co-operation in order to realize the advantages, as they claim to have a well worked out logistical strategy. We further think that none of our studied cases have started from the standpoint of not having had any logistical knowledge within the organization, since all state that logistic questions are thought of in the organization. However, in the case of SME suppliers this could be of frequent occurrence, thus joining a VMI relation could bring high initial benefits. We claim that to be able to draw advantage from VMI in the long run, an active approach to VMI is important.
7 Conclusion

What are the motives for a small and medium-sized supplier to use VMI?

The prime motive for an SME supplier to enter into a VMI partnership today seems to be that their customer demands them to do so. It can be argued that SMEs have a hard time declining this invitation, since it could imply that the SME supplier loses a customer. SMEs are generally known as having an unsteady financial situation, and consequently losing a customer and thus losing sales, could have devastating effects on an SME supplier. In order to compensate for lost sales the SME supplier would have to attract new customers. However, since SME suppliers often lack marketing skills this could be laborious and resource consuming. From the primary motive, sub-motives arise for the SME. The fact that the SME supplier gains competitive advantages towards other suppliers on the market when joining a VMI collaboration is one of them. When the SME supplier increases its competitive strength it should consequently improve its financial situation as the SME supplier more easily can keep and attract customers.

Another motive for forming a VMI collaboration is as a pure service to the customer. This motive could be seen as dangerous if the SME supplier does not consider the positive consequences the VMI collaboration could have on his operations. A VMI collaboration requires that resources be spent on technological solutions and if the SME supplier does not derive an advantage from it, it is a threat to their already poor financial situation.

In the upcoming years, the development of technology can be seen as a motive for the SME suppliers to adopt VMI. The newly developed VMI solutions are more affordable and less complex than earlier ones. Due to the fact that the new solutions have these characteristics possibilities of an SME implementing VMI have increased.

Access to information is a motive that can be considered important when wanting to efficiently plan production and deliveries as well as other operational processes. These could lead to a reduction in costs. This motive could be seen as important for an SME with a poor financial situation, since this could increase profit in the organization. Utilizing VMI for the sake of integrating the supply chain and thus making it more competitive is a motive of large importance as the end customer determines the existence of all companies in a supply chain.
What aspects affect the implementation and utilization of VMI for the small and medium-sized supplier?

When implementing VMI the goal and vision of the collaboration should be clear to the SME supplier. In order to achieve the desired effects of a VMI collaboration the SME supplier should know what benefits are available and what requirements these benefits involve. Thus, it is important that the SME supplier knows the prerequisites.

The customer and supplier should design the VMI collaboration together, as this is how the SME supplier best can achieve these benefits. This could however be seen as a problem for an SME supplier that lacks knowledge about how to efficiently implement a VMI program. When the supplier lacks this knowledge, the customer should actively support him in the collaboration to guarantee advantages for both parties.

The sharing of information is a fundamental part of VMI. There are several technological solutions geared at enabling the sharing of information in a VMI collaboration, some more costly than others. The development in technology in recent years have made less costly solutions available on the market, this can be seen as a great thing for an SME that does not have a sufficient budget to purchase the more expensive solutions, but still want to be part of VMI. To ensure the success of the VMI collaboration it is essential that the customer shares the right information, and further that the supplier trusts in its correctness. The VMI information must be used efficiently by the supplier or else the advantages of a VMI collaboration would diminish.

The proper use of the VMI information depends largely on the supplier’s knowledge about how it is used, which often differs between SME suppliers. The SME supplier should reflect on what claims could be made on them in a VMI collaboration, in order to estimate how well the VMI collaboration could be implemented for the SME supplier. Consequently, the SME supplier should know how it should divide its time and resources in the VMI collaboration.

In order to have an efficient VMI experience, the entire organization should to be involved in the program, since a VMI program cannot rely on one single person. The involvement of the management plays a central role, since the successful implementation of a VMI relationship largely rely on it being a strategic question. Both the customer and the supplier must think of the VMI relationship as a long term investment.
What consequences does VMI have on the small and medium-sized supplier?

VMI normally leads to reductions in inventory, production, transportation and administrative costs for the supplier, as visibility in the partnership increases. Commonly, the cost reductions are not seen immediately but emerge after a period of time as the company develops their knowledge of VMI and the understanding of the different aspects on VMI and actively worked on these. Sometimes large reductions in inventory can be seen as an immediate effect of the VMI program. These effects are often due to the increased logistical thinking rather than VMI itself. For SMEs this can often be the case, since they generally do not spend a lot of thought on logistics. Therefore, it can be claimed that the suppliers that spent a lot of time optimizing their inventory and production before the collaboration has seen less effects of VMI than those who didn’t.

The absence of benefits for the SME can be due to the fact that the logistical knowledge in the organization often is isolated to a few individuals, meaning that they are the only ones that know how to optimize the system. Since the knowledgeable individuals can not spend all their time optimizing the VMI program, the VMI collaboration could suffer, and thus lead to fewer benefits. It is very important to recognize that involvement is a crucial element for the success of VMI.

Other consequences from a VMI partnership can be a strengthened relationship and a better dialogue between the two partners. A strengthened relationship can be specifically important for an SME collaborating with a larger customer, since this customer keeps the supplier’s operation alive.

7.1 Future Research

We find that it would be interesting to develop our research and make a comparative study between a customer and a large supplier, and the same customer and a small supplier in order to investigate differences and similarities between the two relationships. Further, it would be interesting to see how successful both of the relationships were, and consequently to see how well VMI can be implemented and utilized in the two relationships.
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Small and Medium-sized Enterprises

In this thesis, we have chosen to follow the EU’s Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (2003/361/EC). This Recommendation will replace Recommendation 96/280/EC as from 1 January 2005.

The following is an excerpt from the Recommendation:

Article 2
Staff headcount and financial ceilings determining enterprise categories
1. The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.
2. Within the SME category, a small enterprise is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million.
3. Within the SME category, a microenterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million.
Supplier Interview Guide

Background/History
1. For how long have You been supplying Ericsson?
2. How well does Your company understand the thoughts of logistics?
3. What were Your motives for joining the VMI collaboration with Ericsson?
4. What thoughts/hopes/fears did You have before joining the VMI collaboration?
   Why did You have these thoughts/hopes/fears.

Implementing VMI
5. For how long have You collaborated with Ericsson on the VMI matter?
6. What products does this collaboration include?
7. Did You have a trial period (pilot) using VMI before the “official” collaboration with Ericsson?
8. Do You have a clear agreement with Ericsson regarding the VMI collaboration?
   If so, what does this agreement include?
9. Do You feel that You have free hands when it comes to fulfilling Your part of the agreement?
10. Elucidation of Your VMI collaboration with Ericsson:
   a. Ownership of inventory
   b. Determination of the size of the inventory
   c. Inventory is managed physically or electronically?
   d. Stock-keeping, responsibility for waste and dead stock
   e. Transportation
   f. Information
      i. what kind of information do You have access to?
      ii. in what time range do You get Your information?
      iii. do You get Your information in real time?
      iv. to what degree do You consider the information given to You to be accurate?
      v. to what degree do You consider Ericsson trusting You in not misusing their information?
   g. The managing of the inventory
      i. what VMI solution do You use in Your collaboration with Ericsson?
      ii. what components that the company already owned could be used with this VMI solution?
      iii. how big were the investment costs of this solution? (including supporting components to the system and other installation costs)
iv. who handled the installation of the solution?

v. who is in charge of the everyday operation of the VMI solution?

vi. to what degree do You consider that You can used Your VMI solution to other customers?

11. Have You seen any advantages or disadvantages with the VMI collaboration concerning the:
   a. Inventory
   b. Production
   c. Transportation
   d. Administrative costs
   e. Other advantages/disadvantages

**Other Questions**

12. How well do You consider that the implementation of the new VMI program took place?

13. What other initial expenses did VMI conclude other than the purchase of the VMI solution?

14. How do You spontaneously feel about the VMI collaboration?

15. How do You feel about Your relationship with Ericsson?

16. Pay-off time for VMI?

17. What would You have done differently, regarding the implementation and other aspects of the VMI collaboration, if You got to start over with a new VMI collaboration today?

18. What can You give other SME suppliers standing for a VMI collaboration for advice?

19. Overall judgment of VMI? What has VMI meant to You?

20. Other comments.
Customer Interview Guide

Yesterday
1. What were Your motives for starting a VMI collaboration with Your suppliers? What thoughts/hopes/fears did You have before the VMI collaboration? Why did You have these thoughts/hopes/fears
2. What suppliers did this VMI collaboration concern? Why these? How did the react on the collaboration plans? Did any suppliers drop out?
3. What articles was the collaboration to include?
4. How did the implementation for the VMI take place? Who was in charge of what?
5. Did You have a trial period (pilot) using VMI before the ”official” collaboration started? If so, is any of the pilot companies part of the current VMI collaboration?
6. How well do You consider that the implementation of the new VMI program took place?
7. How big were the investment costs of this solution? (including supporting components to the system and other installation costs)

Today
8. How do You spontaneously feel about the VMI collaboration today? Do You feel that Your hopes have been fulfilled?
9. What costs do You have for the VMI collaboration today?
10. How does the inventory management work today after the initial implementation? How are the suppliers doing? Was it worth the investment?
11. Have You seen any advantages or disadvantages with the VMI collaboration concerning the:
   a. Inventory
   b. Production
   c. Transportation
   d. Administrative costs
   e. Other advantages/disadvantages
12. How do You feel about Your relationship with Ericsson? Has it changed since the start of the VMI collaboration? What has the VMI collaboration meant to Your operation?

Tomorrow/Other Questions
13. What expectations do You have for the future VMI collaboration?
14. What expectations do You have of Your supplier and on Your relationship with them?
15. What would You have done differently, regarding the implementation and other aspects of the VMI collaboration, if You started over with a new VMI collaboration today?
16. Overall judgment of VMI? What has VMI meant to You?
17. How do You think that VMI collaboration like Yours differ considering if the suppliers are of a small or large size?
18. Other comments.
Expert Interview Guide

VMI – General Questions
1. What advantages and disadvantages can You see with VMI
   a. for the customer?
   b. for the supplier?
2. In what situations do You find it most necessary/appropriate to invest in a VMI collaboration?
3. How long after VMI has been installed can you expect to see the effects of it?
4. How long do You consider a VMI collaboration should be for it to benefit all parts?

VMI for SMEs
5. Comparing over time, how has the usage of VMI changed?
6. What effect has this change had on the SME?
7. How does the advantages and disadvantages of a VMI collaboration differ between an SME supplier and a large supplier?
8. What VMI solution do You consider gives the most benefits and least disadvantages for the SME supplier?
9. What is Your experience of SMEs and VMI? What is the trend today? What solutions are utilized?
10. What possibilities do You see for SME suppliers today when the focus on the supply chain is getting more and more relevant?
11. Who do You see as the winner of a VMI collaboration? The customer or the supplier? The large supplier or the small supplier? And who pays for it?