



JÖNKÖPING INTERNATIONAL BUSINESS SCHOOL
JÖNKÖPING UNIVERSITY

Postponement in Retailing Industry A Case Study of Elgiganten

Master Thesis in Logistics and Supply Chain Management

Author: Ali Raza & Syed Mohammad Naqvi

Tutor: Helgi Vlaur Fredrikson

Jönköping June 2009

Acknowledgements

We would like to take the opportunity to thank our supervisor Mr. Helgi Valur Fredriks-son, for his guidance and valuable suggestions. Your kind concern and keen guidance was there for us throughout the process of writing, and it made possible the completion of this study. We thank you for providing us this platform and opportunity to work on and to contribute to the existing literature of postponement.

Our acknowledgment is not completed without thanking the Manager of Elgiganten (Jonkoping), Mr. Peter Karlsson. The gathering of empirical data was made possible by him. You provided us with your permission for using the data, your valuable insights and your expertise helped in giving sound foundation and structure to study.

We owe our gratitude to the Warehouse Manager of Elgiganten at Torsvik, Mr. Roger Hallberg. Your sharing of thoughts and data was helpful in empirical findings and analyses.

Last but not the least we are thankful to Almighty Allah for His blessings and Kindness, which is always there for us whenever we need and whenever we want.

We share the findings and hope you will enjoy while reading it.

Ali Raza & Syed Mohammad Naqvi

Jonkoping University

2009

Master's Thesis in Logistics and Supply Chain Management

Title: Postponement in Retail Industry

Authors: Ali Raza & Syed Mohammad Naqvi

Tutor: Helgi Valur Fredriksson

Date: May 2009

Key Words: Speculation, Postponement, Customer Order Decoupling point, Retailing

Abstract

Problem: The Swedish consumer electronics market is growing but is facing saturation because of standardized products strategy. This is resulting in the loss of sales and customers. With the increasing need for quick response towards consumers' demands, the choice of operational strategies for retailers are becoming crucial and critical. Recognizing the advantages because of postponement strategies and the risks offered by full speculation strategies current study is designed to analyze the importance of postponement strategy, how it may relate to potential solutions.

Purpose: We have discussed the increasingly important question of supply chain strategy for global operations. This study is done in retailer's perspective, to identify and describe the use of "*Postponement strategy for Swedish electronic retailing firms to attain flexibility in logistic operations*".

Method: In this thesis we have adopted the case study approach. Elgiganten is the biggest electronic retailer not only in Sweden but in the Nordic countries with the group of Elkjop. The data was collected with the help of open ended interviews from Managers of Elgiganten at Jonkoping and Torsvik.

Results: Elgiganten is facing the problems of wastes in the form of lost inventory, high costs; they have the additional problems of lost sales and customers because of their speculative approach. Based on the findings postponement is suggested for few product categories depending upon the needs and characteristics of those product categories. Our findings and analysis show that Postponement for retailers can bring a lot of benefits by making the whole supply chain flexible. .

Table of Contents

1 Introduction	6
1.1 Background	6
1.2 Problem Discussion	7
1.3 Purpose	7
1.4 Research Questions	8
1.5 Outline of Thesis	9
2 Frames of Reference	10
2.1 Retailing	10
2.2 Retail strategies	11
2.2.1 Postponement	12
2.2.2 Speculation	13
2.3 Previous Literature on Postponement	13
2.4 P/S Matrix	14
2.5 Profile Analysis	16
2.5.1 Determinants of Postponement Strategy	16
2.5.2 Profiling and Analysis:	18
2.6 Customer Order Decoupling Point	19
2.6.1 Positioning the CODP	21
2.6.2 Postponement and CODP	21
2.7 Benefits of Postponement	22
2.7.1 Supply Chain Flexibility (SCF)	22
2.7.2 Benefits of Supply Chain Flexibility	22
2.7.3 Postponement and Supply Chain Flexibility	23
2.8 Working Model	24
2.8.1 Enlightenment of Working Model	25
3 Methodological Considerations	27
3.1 Research Method	27
3.2 Research Strategy: <i>Case Study</i>	27
3.2.1 Case Selection	28
3.2.2 Case Design	28
3.3 Data Collection	29
3.3.1 Theoretical Focus	29
3.3.2 Interviews	29
3.5 Research Process	34
3.6 Credibility	33
3.7 Generalization of Research	36
3.8 Limitations	36
4 Empirical Findings and Analyses	37
4.1 Case Presentation	37
4.2 Application of Working Model	38
4.2.1 Identification of Retailing Strategy at Elgiganten	38
4.2.2 Identification of CODP at Elgiganten	38
4.2.3 Profile Analysis of Products	39
4.3 Effects of Speculative Approach on Elgiganten	45
4.4 Redefining Retail Strategy and Repositioning CODP of Elgiganten	46
4.4.1 Decision for P/S Strategy and CODP for Elgiganten	46

4.4.2 P/S Strategy for white goods, small white goods and the brown goods	47
4.4.3 P/S Strategy and CODP of Telecom	
4.4.4 P/S Strategy and CODP of Computers	49
4.5 Postponement and Supply Chain Flexibility	49
5 Conclusions	51
6 Discussions for Future Research.	52
7 References list :	53
8 Appendix.....	57

List of Figures

Figure 2-1: P/S Matrix	15
Figure 2-2 : Concept of Profile Analysis	16
Figure 2-3: Use of Profile Analysis	19
Figure 2-4: Relation between Postponement & CODP	21
Figure 2-5: Working Model:	25
Figure2-6: Steps to be followed for Working Model	26
Figure 3-1: Modified Profile Analysis	33
Figure 3-2: Modified CODP Location	34
Figure 3-3: Steps for Research Process	35
Figure 4-1: CODP of Elgiganten Now	39
Figure 4-2: P/S Strategy and CODP of White, Small White and Brown Goods of Elgiganten	48
Figure 4-3: P/S Strategy and CODP of Telecom of Elgiganten	48
Figure 4-4: P/S Strategy and CODP of Computer of Elgiganten	49

List of Tables

Table 2-1 Some practical and successful examples of postponement application	13
Table 2-2 Operating Scenarios either side of the Material Flow De-Coupling Point	20
Table 3-1 Details of Issues Explored	31
Table 3-2 Details of Interviews at Elgiganten	32
Table 4-1 Profile Analysis of White goods	40
Table 4-2 Profile Analysis of Small White Goods	41
Table 4-3 Profile Analysis of Brown Goods	42
Table 4-4 Profile Analysis of Computer	43
Table 4-5 Profile Analysis of Telecom	44

1 Introduction

This chapter presents the background, research problem, purpose, research questions and outline of thesis. The main purpose of the chapter is to introduce to the topic and to make the reader understand about the problem studied.

1.1 Background

In Europe and in Sweden retailing serves one third of all private consumption (Freatly, 2003). Today retail business requires constant change; the consumer electronics industry is characterized by increasing variety of products, technological changes, reduced prices and short life cycles of products (Fisher, 1997). For survival, there is need to adapt to the changes as globalization, IT and changing customer demands has increased the difficulties and possibilities for the actors in the market (Fisher, 1997). In retail industry these challenges are critical as consumers quickly go for substitutes if they do not find their specific products (Christopher, 1998). Effective Supply chain management strategies have effect on the supply chains, and the strategies for supply chains as mentioned by Pagh & Cooper (1998) vary between postponement and speculation.

The challenge for consumer electronics retailers is that if they do not want to be out of stock they have to carry high inventories which increases investment in inventories (Bowersox & Closs, 1996). To answer this challenge Van Hoek (2001) suggested that activities should be postponed to the latest point in the supply chain. Postponement refers to delaying of activities until demand realizes (Bucklin, 1965; Van Hoek, 2001). Postponement has the potential to improve responsiveness by reducing costs and inventories (Yang *et al.*, 2004a). The opposite concept of postponement is speculation, which holds that inventories should be forwarded at the earliest possible time in anticipation of customer demand (Bucklin, 1965).

Postponement helps in keeping the inventories at acceptable levels and meeting the consumers' demands responsively. In a sense this solution of postponement allows the retailers to be more flexible in their ability to increase or decrease production, inventory, to plan against uncertainty and to meet the consumer's demands (Fisher, 1997). This phenomenon of being more responsive supply chain is given the name of supply chain flexibility (SCF) by Gilmore & Pine (1997). Gilmore & Pine (1997) suggest that SCF is important for several reasons. Reasons such as mass customization, reduced costs require-

ment by customers etcetera require supply chains to be more responsive and flexible (Gilmore & Pine, 1997). To be more agile companies are moving from push to pull systems (Kaminsky et al., 2008) and the reason for this is that companies want to meet the individual requirements and demands by customers (Ballou, 2004). So, postponement offers a lot of benefits and advantages which we put under the head of flexibility and being more adaptive as proposed by Kong & Allan (2007).

1.2 Problem Discussion

Due to the pressing demands from customers towards customization, researchers started to look for competitive operational strategy (Skinner, 1969). Comstock (2004) described these trends as the ones that emphasized that customer-demand specific products which suite to their individual needs. Assemble-to-order, when actual order from customer is received, is becoming a strategy of the market leaders. . Customer responsiveness cannot be achieved through the simple buildup of inventories because product life cycles are shorter and greater profit margins can only be made by customizing products. This trend of mass customization has shortened the product life cycles. These changing trends brought the researchers to postponement and customized operations and to focus on quality and flexibility and not just cost minimization. The concept of postponement was first discussed by Bucklin in detail in 1965. There is a lot of research that has been conducted on postponement, however few researches have been conducted to operationalize the theory of postponement and speculation (P/S) in a way that could help and contribute to managerial decision making (Cooper, 1993) and especially in relation to Supply Chain Flexibility in the context of Swedish retail companies. This gap in research area motivates us to research how postponement possibly can help in making the supply chains more responsive, flexible and agile. So we intend to research the effects of *Postponement in Retail Industry of Sweden*.

1.3 Purpose

Postponement offers benefits which are put in the head of flexibility and it helps the organization in being more adaptive as proposed by Kong and Allen (2007). The purpose of this thesis is to identify how postponement can help the electronic retailers to adapt to customers' demand, address uncertainty and be more agile, responsive and flexible. The case company for this study is Elgiganten. Elgiganten is a Swedish retailer for consumer electronics.

1.4 Research Questions

Depending upon the purpose we have defined two research questions which are as follows,

What are the main determinants and need for using postponement strategy?

How postponement can effect or has affected performance of Retail Company in Sweden and specifically their Supply Chain Flexibility?

In short this extensive study is meant to answer our questions about postponement and its impacts on the flexible decision-making of the firms and its scope in helping the firms to be more adaptive.

1.5 Outline of Thesis

In order to give an overview of the structure of the thesis, an overall scheme of it will be made in the form of a chart from chapter 1 to the conclusion part, chapter 5.

Chapter 1 “Introduction”

This chapter provides the background that familiarizes the reader to the subject. The thesis’ research problem is formulated and defined, and followed by purpose. Further, we give a description of the term speculation and postponement strategies and supply chain management and logistics as these terms will commonly be used throughout the thesis.

Chapter 2, “Frame of reference”

This chapter to conclusions chapter, all serve to answer the purpose of this thesis. This chapter states the theories related to the formulated questions, and also presents the structured results from previous similar studies done in other countries. This will be used for the final analysis in Chapter 4.

Chapter 3, “Methodology”

In this chapter, we explain how the different steps of the research study has been designed and how the empirical work has been formulated. We also give motivations and argue different point of views and method approaches as: qualitative versus quantitative, choice of population; survey type, validity and reliability.

Chapter 4, “Empirical Study and Analysis”

This chapter demonstrates the retrieved empirical findings. The frame of reference (chapter 2) is used as a tool when analyzing and comparing the results with former studies; the methodology part (chapter3) is served as a base for conducting the study.

Chapter 5 “Conclusions and Discussion”

This chapter presents the results of this study and also presents recommendations for future research.

2 Frames of Reference

This chapter, as the framework chapter, focuses on Retailers and Postponement related literature, theories in the context of retailers and distribution channels and previous studies. The chapter goes through chosen theories related to Postponement, determinants of postponement, processes, types, and the Postponement strategies. These theories are used as tools to help understand the problem and the way of approaching the problem. These theories have the purpose of being used as eyeglasses when we in Chapter 4, attempt to analyse the empirical facts.

2.1 Retailing

Retailing as part of distribution channel involves the activities of selling goods and providing services to consumers for uses like personal or business activities (Kotler & Keller, 2003). Fernie, Fernie and Moore (1999) investigate and compare the traditional and recent changing roles of retailers. They state that now retailers are more than resellers and they design and control supply chains and thus act as key decision makers in the decisions concerning manufacturing, demand and in adapting to end consumers' choices. Benedict and Margeridis (1999) also commented on these changing roles of retailers and suggested that now retailers can play important and key roles in reducing costs and in having proper inventory management strategies. By having influential role in decision making for inventory strategies retailers can have the opportunity of reducing costs (Shewchuck, 1998). Retailers have direct contact with consumers, they buy and sell goods. Retailers generally deal with different varieties of goods (Kotler & Keller, 2006). They have to perform functions like storage of goods, buying and assembling, providing credit facility, after sales services, display of goods etcetera (Kotler & Keller, 2006). Sometimes they also have to bear risks of fire or theft, changing trends etcetera. Besides the above consumers' functions they also have to perform some supply chain functions like providing information for demand and market (Kotler & Keller, 2006). Kotzab (2005, pg. 22) mentions different categories of retailers as 1) Non store retailing 2) Store based retailing and 3) Hybrid retailing. Perreault and McCarthy (1999) defined four types for retailers. These are (1) Expanded assortment and services (for example, specialty shops) (2) Expanded assortment and reduced services (e.g. discount stores, super markets) 3) Added conveni-

ence/higher margins/less assortment (e.g. telephone/ e-shopping, door to door, convenience stores) and 4) expanded assortment/reduced margin/more information (e.g. internet).

2.1.1 Competitive dynamics For Electronic Retailers

Electronic retailers are involved in the reselling of electronic equipments and components. Ernst (2000) includes both software and hardware for electronic equipments and components. But in present study we have considered only the hardware of electronics for the study. Understanding competitive dynamics for electronic retailers is very important as Ernst (2000) state that electronic industry can have better opportunities for economic growth, competitiveness and productivity. Even if the sizes of electronic companies are bigger it does not ensure stability as mentioned by Borrus (2000) who states that surprisingly concentrations fail in sustaining stable position. Firm's competitive position in electronic industry depends upon the demand management and Christensen and Overdoff (2000) mentions that nature of demand keeps on changing because of changing technologies. Sustaining the competitive edge requires both products and solutions for individual customers (Goldman & Nagel, 1993).

Fernie et al. (1999) state that inventory turnover is a very critical indicator for assessing the competitiveness. Ernst (2000) states that combination of cost reduction, product differentiation, customization, supply chain coordination and time to market are important for electronic industry. Quicker specialization of capabilities, lowering of costs and coordination with market segments are of critical importance for electronic companies (Ernst, 2000).

2.2 Retail strategies

As mentioned above that retailer's roles are changing and increasing with changing trends and consumers' behaviors. Because of these trends retailers now have to reduce costs, manage consumer demands and manage inventories accordingly. So this means that retailers' roles are more than just reselling. These changing roles of retailers are also leading to changes in the strategies of retailers. Ernst (2000) state that changing technologies, breakthrough innovations and new inventions in electronics industry make consumers' demands more volatile.

Benedict and Margeridis (1999) state that retailer's right strategies for inventory management aim to safeguard organizations from uncertainties in managing consumer demands

and deliveries. Shewchuck (1998) emphasized the importance of retailers' strategic direction for inventory management as this can help in taking excess inventories out of supply chains. These results not only help in maintaining appropriate volume of inventory but also contribute to lowered costs and shorter lead times (Shewchuck, 2006). Fernie et al. (2008) suggest that if retailers do not plan the stock related strategies then this results in lost revenues and lost customers. Afuah (2003) defines the state of complexity in electronic companies and the main factors contributing to this complexity according to him are changing technologies, globalization and abrupt and unpredictable changes in consumer behaviors that make the demand more volatile. Management debates in US and Europe these days revolve around the issues of flexible specialization against mass production (Borru, 2000) i.e. postponement and speculation.

The changing roles of retailers because of competitiveness have started questioning the traditional strategies used by retailers. These strategies as captioned above revolve around postponement and speculation. Below the concepts of postponement and speculation i.e. no postponement are explained.

2.2.1 Postponement

Postponement means delaying of activities in the supply chain until customer orders are received with the intention of customizing products, as opposed to performing those activities in anticipation of future orders (Van Hoek, 2001). Postponement is a strategy that has taken different forms and allows the supply chain to postpone their functions until customers orders are received by the companies. There are practical examples where postponement has been utilized successfully. Different examples of successful postponement of Benetton, Whirlpool and Hewlett Packard are mentioned in the literature (Dapiran, 1992; Waller, Dabholker & Gentry 2000; Feitzinger and Lee, 1997).

Table 2-1: Some practical and successful examples of postponement application

Examples of Companies	Postponement Application until customer order is received	Benefits
Benetton (Dapiran, 1992)	Dyeing of clothes	<ol style="list-style-type: none"> 1. Better response to end user demand 2. Reduced Excess Inventory 3. Improved customer satisfaction

		4. Getting rid of unpopular colors.
Whirlpool (Waller <i>et al.</i> , 2000)	Shipment of appliances	1. Reduction in transport cost 2. Reduction in inventory
Hewlett and Packard (Feitzinger and Lee, 1997)	Desk Jet Printer	1. Closer to Customers 2. Efficient Production 3. Minimized Costs for transport 4. Minimized costs for Logistics

2.2.2 Speculation

Speculation is the converse concept of postponement and it is the strategy where companies do not see postponement as a natural or suitable practice for their businesses (Bucklin, 1965; Zinn & Levy, 1988; Pagh & Cooper 1998).

Speculation holds that inventories should be forwarded at earliest possible time to reduce overall supply chain costs (Bucklin, 1965). Speculation helps in gaining economies of scale in manufacturing and logistics operations (Pagh & Cooper 1998) because goods are distributed in the lot sizes (Bucklin, 1965) but on the other hand obsolete products and transshipments may occur (Pagh & Cooper, 1998). This strategy is traditionally most often used by companies (Zinn & Bowersox, 1988). The reasons why companies have moved to postponement are risks of speculations (Kong & Allan, 2007) like obsolete products (Cooper & Pagh, 1998). These risks create challenges to operational efficiency (Kong & Allan, 2007).

2.3 Previous Literature on Postponement

There has been extensive literature on postponement and its application. Some of the articles are referenced below. This extension of postponement thought is significant in that it suggests opportunities for postponement in the supply chain. Earlier researches on postponement in supply chain's perspective are contributed by various authors (Schary & Skjott-Larsen, 1996; Yang & Burns, 2003; Appelqvist & Gubi, 2005; 2005; Brown, Lee & Petrakian, 2000; etc).

Main types of postponement mentioned in the existing literature are three and these are defined by Bowersox and Closs (1996) as; Time postponement: delaying the forward

movement of inventory until customer orders are received, Place postponement: storage of inventory at centralized locations until customer orders are received, Form postponement: delaying product finalization and their functionalities until customer orders are received. Zinn and Bowersox (1998) mentioned five types of postponement: Labeling, Packaging, Assembly, manufacturing and time. Labeling is the strategy in which products are not labeled until order is received, packaging refers to different types of packaging depending upon customers requirements, assembly has its focus on distinctive features, manufacturing postponement can be seen as an extension of assembly postponement and finally time postponement happens when products are delivered to the warehouse closer to the end customers (Zinn & Bowersox 1998).

2.4 Postponement and Speculation (P/S) Matrix

As mentioned above that Pagh and Cooper (1998) defined four types of postponement and speculation strategies, and these strategies are shown in Figure: 2-1 below.

- **Full Speculation Strategy:** Based on inventory forecasts, full speculation of all manufacturing and logistics operation is practiced. As a result of decentralized inventories, the inventory investment will be high, the highest of all the four P/S strategies (Pagh & Cooper, 1998).
- **The Logistics Postponement Strategy:** In this strategy manufacturing is based on speculation and logistics is based on postponement. This is based on direct distribution of fully finalized products from a centralized inventory to final retail/customers. The centralization of inventory reduces the stocks required (David & Maister, 1976).

Manufacturing	Logistics		
	/	Speculation Decentralized Inventories	Postponement Centralized Inventories and Direct Distribution
	Speculations Make to Inventory	The Speculation Strategy	The Full Logistics Postponement Strategy
	Postponement Make to Order	The Manufacturing Postponement Strategy	The Full Postponement Strategy

Figure 2-1 : Supply Chain strategies (Cooper and Pagh, 1997, pg.15)

- **The Manufacturing Postponement Strategy:** In this strategy final manufacturing operations are deferred until a customer order is received (Pagh and Cooper, 1998). This strategy could also be named the post factory manufacturing strategy, as described by Schary and Skjott-Larsen (1996).
- **The Full Postponement Strategy:** This strategy represents the highest level of postponement application among the P/S matrix. Both manufacturing and logistics operations are customer order initiated (Pagh & Cooper, 1998). The result of employing the full postponement strategy is low manufacturing costs and reduction of inventories in distribution systems.

2.5 Profile Analysis

Profile analysis is a managerial tool that assists the managers in selecting the appropriate P/S strategy as presented in the matrix above. The profile analysis has two steps as given by Pagh and Cooper (1998).

1. Defining the determinants that effect supply chains
2. Profiling and Analysis

Figure 2-2: Concept of Profile Analysis (Pagh & Cooper, 1997, pg.24)

Some important P/S-decision determinants			Generic P/S-strategies			
			The full speculation strategy	The manufacturing postponement strategy	The logistics postponement strategy	The full postponement strategy
P r o d u c t	Life cycle	Stage	Introduction	Growth	Maturation	Mat./Decline
		Volume	Low/Med.	Med./High	Med./High	Low/Med.
		Cost/service strategy	Service	←→	←→	Cost
	Product characteristics	Product type	Standard	←→	←→	Customized
		Product range	Narrow	←→	←→	Wide
	Value	Value profile	Initial stages	←→	←→	Final stages
		Monetary density	Low	Low	High	High
	Market and demand	Relative delivery time	Short	←→	←→	Long
		Delivery frequency	High	←→	←→	Med./Low
		Uncertainty of demand	Low	←→	←→	High
Manufacturing & logistics	Economies of scale	Large	Small	Large	Small	
	Special capabilities	Yes	No	Yes	No	

2.5.1 Determinants of Postponement Strategy

There are different factors that have been investigated by several authors. The main factors effecting the postponement are demand uncertainty (Aviv & Federgruen, 2001; product life cycles (Pagh & Cooper, 1998), product variety (Su, Chang & Ferguson, 2005) and customization (Chiou, Wu & Hsu, 2002). The increased interest in postponement is most likely a combination of many factors including response to growth in competition, more sophisticated consumers, growing product varieties, and shortening product life cycles (Bowersox, Closs & Daughtery, 1999).

- **Consumer Behaviors:** The changing behaviors of consumers is the main factor that is moving the retailers from speculation to postponement. Because of fast changing behaviors of consumers forecasting now is more difficult for electronic retailers. The changing behaviors of consumers have their effect on demand, product variety and product life cycles.

- **Demand Uncertainty:** Postponement can be integrated and intensified in the distribution channel depending upon changing demand as suggested by Yang and Burns (2003) who state that customer related uncertainties i.e. demands uncertainty increases because of market turbulence, changing technologies and consumer behaviors. This results in integration of postponement in supply chains. Yang, Burns and Backhouse (2004) state that demand uncertainty can be dealt with by applying logistic postponement. In electronics industry, consumers' demands are very unpredictable. Consumers want new colors, new designs, new shapes and new technology and Boone , Craighead & Joe (2007) insightful of the above very well states that growth in postponement is partially reflective of the increased demand for customized products.
- **Product Life Cycle:** The marketers are taking these changing demands and trends as an opportunity. They introduce new products according to the needs and desires of consumers and end users, and fast and rapid developments in technology are shortening the product life cycles. New inventions and innovations are coming in the electronic industry for both white and brown goods. (We have explained the different categories of goods that our case company deals in the empirical part).
- **Product Variety:** The changing behaviors of consumers and technology have now contributed to the variety of products. Now ford T-model no longer works, end users want variety in their home appliances and in the entertainment goods.
- **Lead Time:** According to Chopra and Karla (2006, p. 361) 'Lead time is the gap between when an order is placed and when it is received.' Customer lead time is the time between the point when a customer orders for a product and the point of time when the order is received by this customer (Suna, Suna & Wanga, 2008). Manufacturing lead time is time between the point when work orders are released to the shop floor and the point of time when the orders are ready to be shipped (Bowersox, Closs & Cooper, 2007). Shingo (1989) states that the sum of the processing time to convert raw materials into finished goods and the delivery time from the manufacturer to the customer constitutes the manufacturing lead time. 'Intuitively, production lead time can be viewed as an internal performance measure that monitors the efficiency of the production control system' (Sun *et al.*, 2008, p.944). 'A firm's strategic impact is directly affected by lead time perfor-

mance and firms that compress lead times and control or eliminate unexpected performance variance exhibit greater flexibility to accommodate customer requirements' (Bowersox *et al.*, 2007, p.92). Lead times get increased by logistical failures which introduce unexpected delays. Uncertainty in lead times leads to increase in the inventory safety stocks as the timing of the customer's demand does not match the firm's ability to deliver the correct assortment of products at the right time and place. (Bowersox *et al.*, 2007). Also, lead times that are long holds companies back from moving into high profit margin custom markets (Treville, Shapiro & Hamerani, 2004). It has also been shown that lead times are positively related to the bullwhip effect and its severity (Lee, Padmenabhan & whang, 1997) which means long lead times contribute more in the development of such effects. If lead times get compressed, it leads to improved customer services (Suna *et al.*, 2008).

- **Mass Customization:** As mentioned above the rapid technological developments are adding to the complexities of processes and also they are to be adapted fast by electronic retailers to keep pace with competition in market. These rapid developments require the electronic retailers to adopt the trend of mass customization which according to Borrus (2000) is nowadays the main issue for debate by management in US and Europe. Mass Customization as defined by Hart (1995) is the process of using flexible approaches and flexible organizational structures to produce varied, customized and tailored products. Mass customization makes the demand more volatile (Hart 1995) and unpredictable, and this means that consumers now want the tailored products according to their exact needs and requirements.

2.5.2 Profiling and Analysis:

The second step mentioned by Pagh and Cooper (1998) is of profiling and analysis. It shows the alignment of strategies of postponement and speculation. Pagh and Cooper (1998) state, straighter the line the better will be the alignment and consistency with one P/S strategy. The Figure 2-3 shows the hypothetical example for logistic postponement strategy.

Figure 2-3: Using the Profile Analysis (Pagh and Cooper, 1998, pg.25)

Some important P/S-decision determinants			Generic P/S-strategies			
			The full speculation strategy	The manufacturing postponement strategy	The logistics postponement strategy	The full postponement strategy
P r o d u c t	Life cycle	Stage	Introduction	Growth	Maturation	Mat./Decline
		Volume	Low/Med.	Med./High	Med./High	Low/Med.
		Cost/service strategy	Service	←→	←→	←→
	Product characteristics	Product type	Standard	←→	←→	←→
		Product range	Narrow	←→	←→	←→
	Value	Value profile	Initial stages	←→	←→	←→
		Monetary density	Low	Low	High	High
		Relative delivery time	Short	←→	←→	←→
	Market and demand	Delivery frequency	High	←→	←→	←→
		Uncertainty of demand	Low	←→	←→	←→
Economies of scale		Large	Small	Large	Small	
Manufacturing & logistics	Special capabilities	Yes	No	Yes	No	

2.6 Customer Order Decoupling Point (CODP)

As suggested by Boone et al. (2007) that the newly created supply chain structures often involve time postponement or delaying product differentiation points until customer orders have actually been received. This introduces the concept of customer order decoupling point and Towill (2005) suggests that decoupling point is closely related to postponement. Scholars define a customer order decoupling point (CODP) as the point of separation of forecast-driven production and customer order-driven production in the goods flow (Wikner and Rudberg, 2005). Wortmann, Munstlag & Timmerman (1997), Sackett, Maxwell & Lowenthal (1997) and Porter, Mathews and Rollins (1999) discuss four types of customer order de-coupling points in a traditional CODP typology. These are: engineer-to-order (ETO), make-to-order (MTO), assemble-to-order (ATO) and make-to-stock (MTS). Customer demand information and the CODP influence decisions in an organization (Wikner & Rudberg, 2005).

According to Wikner and Rudberg, (2005, p.212) "The CODP is normally defined as the point in the goods flow where forecast-driven production and customer order-driven production are separated." Hoekstra and Romme (1992, p.66) define CODP as "the point that indicates how deeply the customer order penetrates into the goods flow". The above

definitions are based on the fundamental concept of the $P:D$ ratio (Shingo, 1989). ‘In the $P:D$ ratio, both “P” and “D” are lengths of time, where P measures the production lead-time and D measures the delivery lead-time (the time from order to delivery)’ (Wikner & Rudberg, 2005, p.212). The $P:D$ ratio helps in determining the amount of planning and production that may be based on speculation (Wikner& Rudberg, 2005). Thus, ‘if D is very short relative to P , production needs to be performed on speculation, i.e. with uncertain information concerning customer demand.’ (Wikner & Rudberg, 2005, p.213).

It would be of great value to us to look at the Table 2-4 and understand how various businesses look like once we apply the decoupling points .Profits are maximized by just satisfying customer demand by optimally combining the process characteristics listed in Table 2-2.

Table 2-2: Operating Scenarios Either side of the Material Flow De-Coupling Point for supply chain competitiveness (Towill,R. D., 2005, pg.38)

Business Attribute	Business Processes Before the De-Coupling Point	Business Processes After The de-Coupling Point
Delivery Philosophy	Lean –level the schedule	Agile-produce to order
Scheduling	Forecast Driven	Demand Driven
Order Volatility	Small	Large
Order Variety	Small	Large
Volume	High	Low(per option)
Value Added	Low	High
Business Objective	Driven by Cost	Driven by Availability
Integrated Supply Chain Objective	Wide Ranging Products Available at reasonable Price	

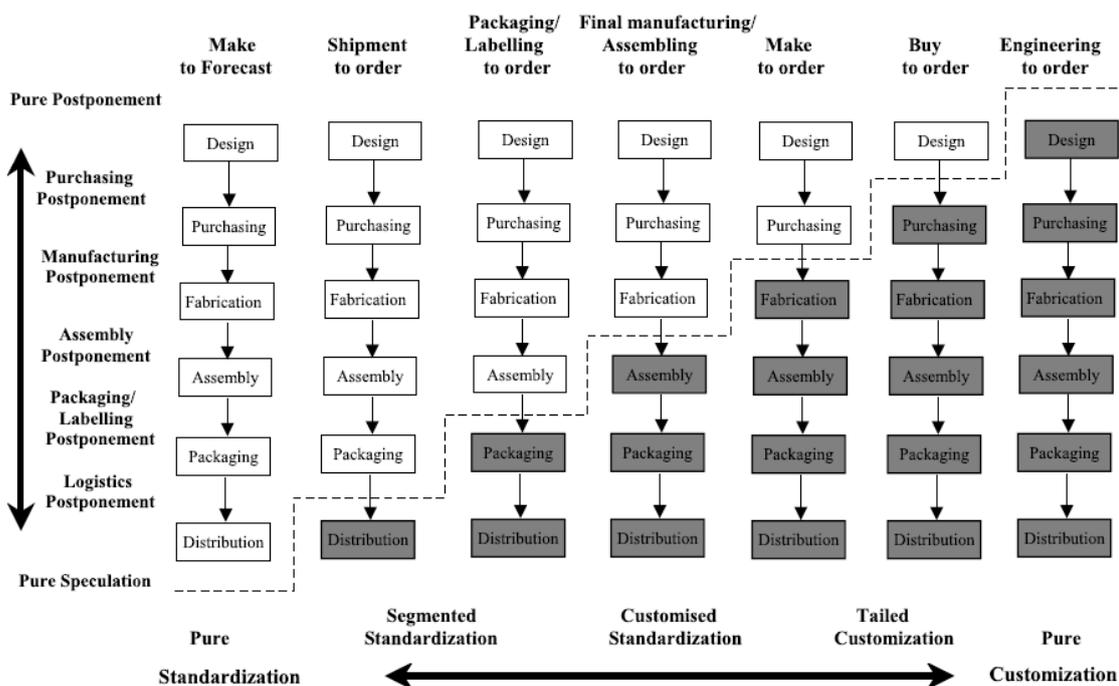
2.6.1 Positioning the CODP

According to Olhager, Selldin and Wikner (2006), the factors that should be considered for positioning of CODP are the delivery lead times, demand unpredictability, customization and size and frequency of customer orders. All these factors given by Olhager et al. (2006) fall in the two counter balancing forces mentioned by Rudberg and Wikner (2004) for positioning of CODP i.e. productivity force and flexibility force. Productivity force i.e. (P) and Flexibility force i.e. (D) will position the CODP between postponement and speculation. Rudberg and Wikner (2005) further elaborate this concept that positioning of CODP depends upon the retailers ability of separating the order driven flow and the forecast driven flow i.e. postponement and speculation.

2.6.2 Postponement and Customer Order Decoupling Point

Postponement as mentioned above is the process of delaying activities because of unpredictable and uncertain customer demand. On the other hand CODP is the point where the customer order penetrates the supply chain. So the relation between postponement and CODP is that the missing information of customer order and demand results in delaying and postponement of activities and the postponement decides the positioning of CODP. Figure 2-4 depicts the relation between postponement and decoupling points.

Figure 2-4: Relation between Postponement and Decoupling Point (adapted: Yang and Burns, 2003, pg. 476).



2.7 Benefits of Postponement

According to Appelquist and Gubi (2004, p.734) 'Postponement is known as a way to reduce risk and inventories while still providing high product variety and acceptable response times.' They suggest that postponing variety creation for high volume, low variety products can decrease the inventories for such products by 40-80 percent. Fisher (1997) states that there is high product variety, short product life cycles and decreasing prices in consumer electronic industry and at the same time its crucial to have availability of products at retail to avoid product substitution by customers (Christopher, 1998). This may increase the retail inventory stock and thus the investment (Bowersox & Closs, 1996; Dubelaar, Chow & Larssen, 2001). Thus to adequately answer the dual challenge of providing high product availability and keeping inventory levels low at the same time, the solution of product variety postponement is suggested by Feitzinger and Lee (1997) and van Hoek (2001). van Hoek (2001) states the benefits of postponement as reduction in inventory, reduced operational complexity and increase in responsiveness which occurs as a result of final customization cycle time reduction

2.7.1 Supply Chain Flexibility (SCF)

Winkler (2008) defines flexibility as the ability to cope and adapt to internal and external uncertainties and being more proactive and reactive. Vickery, Calantone and Droge (1999) defines it as directions and dimensions of firm which directly impact customers. Duclos, Vokurka and Lummus (2003) defines SCF more precisely as the flexibility within and between all of the partners in the supply chain, both internal departments and external partners like suppliers, third party logistics etcetera. For retailers Winkler (2008) outlines SCF as a process to gather and exchange information on consumer demands to the supply chain. Wadhwa and Chopra (2000) emphasized the dynamic reconfiguration of flexible structures as a route towards agility. Goldman and Nagel (1993) defines four principles for SCF and agility and these are (a) enriching the customer, (b) mastering change and uncertainty, (c) cooperation, and (d) leveraging the impacts of people, information, and technology. Yusuf, Sarhadi and Gunasakeran (1999) in comprehensive definition of agility takes market, product, and competition into consideration as important factors for agility.

2.7.2 Benefits of Supply Chain Flexibility

Agile organizations are able to move quickly and choose the most useful situation specific approach (Nagel & Dove, 1991). Supply chain flexibility provides certain benefits to the

whole supply chains and to the retailers. These benefits (Nagel & Dove, 1991) are as follows,

1. **Customer service gets improved** as a result of enhanced visibility from beyond the point of consumption to planned replenishment shipments and in-transit materials.
2. Having placed the control points for identification of right products being shipped to right location and at the right time leads to **reduced errors** in the supply chain.
3. Increase in visibility and optimization of processes leading to **Lower inventory levels**.
4. Automated information exchange among all partners, decision support capabilities and consolidated visibility of the end-to-end process leads to **improved operational efficiency**. A one network environment and an efficient transactions and information sharing framework removes the bottlenecks and complexity from the supply chain.
5. **Lower total cost of ownership** because of reduced investments in inventory.
6. **Greater responsiveness** allows all partners to be more responsive in events that are critical at any supply process

2.7.3 Postponement and Supply Chain Flexibility

In the literature there have been efforts where postponement has been linked to both efficiency (Yang & Burns, 2003) and responsiveness (Yang et al. 2004; Christopher, 2000) through customization, customer enrichment and cross functional efforts (van Hoek 2000). Based on this it can be said that postponement can be seen as the concept that incorporates both lean and agile approaches.

On the other hand if we look at SCF then we can see that it also contributes both to efficiency and responsiveness as Nagel and Dove (1999) states that SCF has the ability to manage and apply knowledge effectively, recognizing the importance of information in firm decision-making and demand management. When demands are predictable and stable then lean approach is utilized (Christopher, 2000) but when demands are volatile then a different approach is called for and this approach is of agility (Nagel & Dove, 1991).

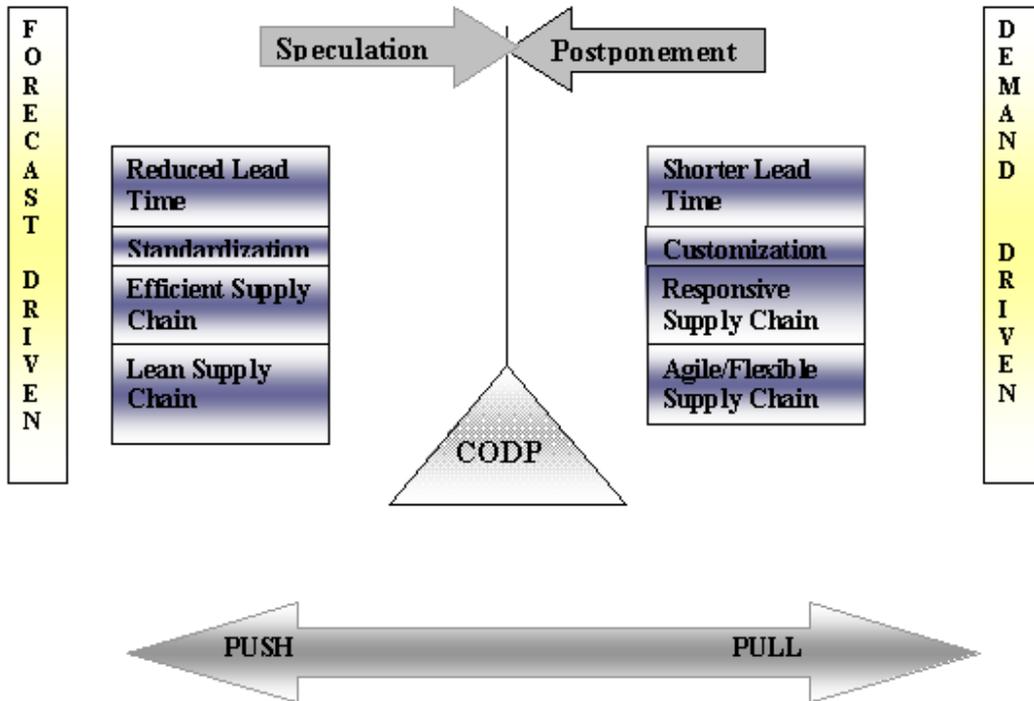
This link of lean + agile brings us to the concept of leagility. van Hoek (2000) sees leagility as a combined way of efficiency and responsiveness and suggests that its implementation at the operational level helps the postponement process.

Christopher and Towill (2000) present the matrix below (Figure 2-6) to explain the concept.

2.8 Working Model

In the light of literature surveyed and studies done the authors attempted to construct a working model for the present study. This working model serves as a base for analysis and for presenting findings later in the study. The working model incorporates the concepts of speculation, postponements and their possible effects on the CODP and their effects on the overall performance of retailers. The main purpose of this thesis was to identify what are the possible benefits of applying postponements on retailers. The main components of this tailored framework are as follow,

Figure 2-5: Working Model: Comparative Effects of Postponement and Speculation on positioning of CODP and Retailer's Supply Chains

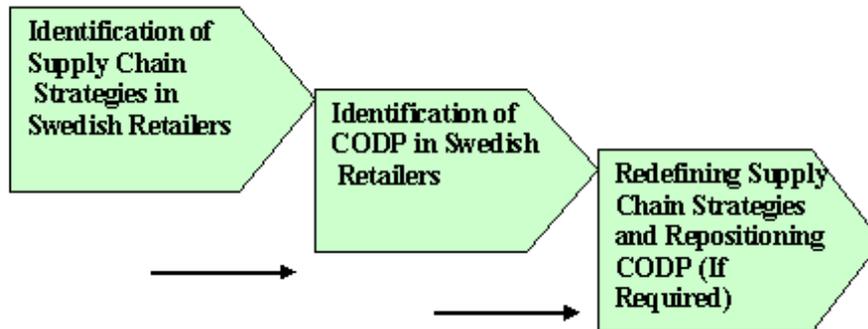


2.8.1 Enlightenment of Working Model

This tailored framework explains the two main strategies of supply chains i.e. speculation and postponement. Speculation is the strategy that is forecast driven and applies the push forces on the supply chain. The products are made and pushed towards the end consumers. This also means that the products are standardized in pure speculative approach which makes the supply chain efficient and lean.

On the other hand the opposite approach is of postponement where customization is observed and cost is not the main consideration for decisions as was in speculation. Here the decisions are to be more responsive and agile towards the consumers, thus adopting the pull forces and demand driven approaches.

Figure 2-6: Steps to be followed for Working Model



Both of these strategies have impacts on the CODP. CODP is the point that separates the speculation and postponement. When postponement is observed at high levels then CODP penetrates in the supply chains at the initial stages, thus moving the supply chains on the mass customization side, but when its speculation then CODP moves on the opposite side and it is closer to the consumers which promotes standardization in supply chains. As these strategies are to be checked in Swedish Retailers so the working model can be illustrated in the steps of the figure above (figure 2-7).

3 Methodological Considerations

This chapter, as the methodology chapter, will examine different research methods, such as qualitative versus quantitative. The steps of the research study are presented and choices are argued for. The chapter ends up with an identification of issues under discussion.

3.1 Research Method

In order to answer the purpose of our study we investigated what research method is best suited to understand and answer our research problem. In this process of investigation we came across the concepts of qualitative and quantitative research methods. The research method we used in this study is qualitative. The reason for pursuing qualitative research is that qualitative research methods, as according to Walker, Cooke and McAllister (2008), are rich and help in analyzing the complexities and in analyses and understanding of the concepts holistically. Qualitative method is useful when concepts are unexplored and for general understanding. Same views were also given by Haberman and Danes (2007). This is a case with the concept of postponement, as this concept is explored in theories and articles but is underutilized at the organizational level in Sweden's retail industry, especially electronics retailing. Our thesis has adopted the qualitative research method and the reason for this is that the main purpose was to understand the concept of postponement and the practices of Swedish retailers. Now this could only be well understood by us when we had the opinions and views of the retail management. Data collection and data analysis both required the concepts from previous literature and the application of those concepts in reality. So it was natural to select qualitative method for our thesis.

3.2 Research Strategy: Case Study

When the research is qualitative then case study is an option to conduct such research (Yin, 2003). It is the best strategy when questions like "what", "why" and "how" are asked for any event (Chetty, 1996). As the purpose was to understand the concept and then analyze it in real settings, the study became conceptual and case study. Thesis was conceptual as previous theories related to postponement; traditional strategies of retailers, need of postponement in retailer's perspective were studied. It would have been hard to make an observation about how the Swedish Electronics Retail is implementing postponement strategies without the participant's opinions and responses. And also there was no sufficient existing data for us to examine so the choice of adopting a case study ap-

proach with interviews became very relevant for us. Yin (2003) also states that when phenomenon gets complex, then there arises the need for the strategies like case studies.

Chetty (1996) considers case study as a very natural and suitable option when the exploration of an issue is required. The present study has to answer the exploratory research questions to find out the strategies prevailing in Swedish retail industry. For this reason the choice of case study approach comes naturally to answer the questions in relation to practicality and reality. Saunders, Lewis and Thornhill (2007) also supports the idea that case study strategy has natural ability to generate answers to the research questions in detail.

3.2.1 Case Selection

Case study method can have single or multiple cases for analysis (Yin, 1994). Furthermore Yin (2003) elaborates that for complex situations case studies are suitable ways and surveys can make the situations more complex. So a single case of Elgiganten at Jonkoping was selected. We studied Elgiganten and its retailing strategies. Elgiganten is Swedish Electronic retailer and is part of Elkjop group of companies. The ELKjop group is the Nordic's biggest retailer within consumer electronics and is owned by DSG International (Karlsson, 2009, personal.communication., 7th May).

The single case selection also posed certain limitations which are explained later under the heading of limitations.

3.2.2 Case Design

We used case study method as it is helpful in providing descriptions, testing theories and for generating answers to research questions (Chetty, 1996; Saunders et al., 2007). The interest here is in description and testing the theory. We have studied this case with the help of interviews conducted with managers of Elgiganten at Jonkoping and Torsvik. Torsvik has the central warehouse of Elgiganten and is located at some distance from Jonkoping city. Different theories have been used to analyze our main problem statement. Inductive approach is about building the theories (Hyde, 2000) and the researcher has to find theories in order to approve or reject the hypothesis and be able to stand up for and defend it (Cooper & Schindler, 2001). The present research is more qualitative in nature and so is inductive.

3.3 Data Collection

For qualitative researches data may be extracted through interviews, observations and documents (Patton, 2002). Before data searching, the information need was identified and research questions were designed to define research direction and data focus. This first hand direction was useful in getting relevant support of data later in analysis and findings portion. For gathering data primary and secondary sources were used.

3.3.1 Theoretical Focus

For secondary data the sources utilized were previous researches on postponement, articles and websites. For better understanding of retailing and the functionalities we also visited the case company and its warehouse. This was also to enhance validity of study through multiple sources (Yin, 2003).

3.3.2 Interviews

Darlington and Scott (2002) explain that interview study gives deeper understanding of the subject and in-depth interview is the most used technique for data collection in the qualitative approach and takes the belief that people are specialists in their own experience. Yin (1994) also has considered interviews to be most suitable to qualitative and case study based researches.

For our thesis we preferred in depth interviews by already defining the issues to be discussed. We preferred in-depth discussions because we wanted to have detailed point of views and information from our respondents and also wanted to be unbiased and uninfluential. So the main method adopted for the interviews was that we outlined the issues and asked our respondents the open ended questions. This method provided authors to avail the opportunity for getting more knowledge on technical aspects of product and competence architecture without getting deviated from core focus. Silverman (2001) states that open ended interviews provide insights into the interviewees' perception of situation. This instrument was also selected to avoid rigid relationship between interviewer and interviewee as in structured interviews. The relative strength of in-depth interviews is that it has a benefit with the face-to-face interviewing regarding the intimacy with the person being interviewed (Darlington & Scott, 2002). According to Darlington and Scott (2002) in-depth interview is the most used technique for data collection in the qualitative approach and takes the belief that people are specialists in their own experience. In-depth

interviews are especially practical when there is problem with a direct observation (Darlington & Scott, 2002).

3.3.2.1 Interview Process

According to Darlington and Scott (2002) the interview process consists of five different stages: 1) Finding and selecting participants, 2) Making a connection (establishing rapport), 3) The initial contact, 4) The Interview and 5) Ending.

3.3.2.1.1 Finding and Selecting Participant

Following the above mentioned process in a step wise manner we started with the first step of finding and selecting the participants. We had predefined our geographical limits to Swedish retailers in Sweden. For this we contacted different retailers through emails to get appointment. We were encouraged by Elgiganten to pursue our study with them. The choice of Elgiganten suited us as it is a biggest retailer in Nordic Countries and studying it was an insightful experience.

3.3.2.1.2 Making a Connection

After their willingness and our investigation to search their profile we asked them for appointment through email. We discussed our thesis problem and the need for carrying out their study. All of these conversations and connections were virtual. These connections were very useful for not only building and establishing our rapport but also in understanding the subject from Elgiganten's perspective and what they think of the scope for carrying out this study. After their willingness for cooperation and encouragement we headed towards the next step of initial contact i.e. formal appointment with Elgiganten's Manager. Throughout this process we were in connect with Mr. Peter Karlsson.

3.3.2.1.3 Initial Contact

The first formal meeting with the Manager of Elgiganten, Mr. Peter Karlsson was carried out on May 7th, 09. In this meeting we discussed in detail the direction of our study with the manager. And we also tried to understand the profile of Elgiganten, their branches, networks, etcetera. In this meeting we were provided the details of central warehouse of Elgiganten at Torsvik for Nordic countries. The Manager and his contact information at warehouse of Elgiganten is as follow; Roger Hallberg, warehouse manager, Elgiganten, Torsvik.

In this initial meeting we decided the schedule and the issues to be discussed for the forthcoming interviews. It was decided that we will complete the information in three interviews by breaking down our issues to get maximum of information.

3.3.2.1.4 The Interview

The interviews as mentioned above were in-depth to get maximum information. For this we divided our interview into three sections. First interview was to understand the retailing process and the types of goods in detail in which Elgiganten deals. The time for two interviews (2nd & 3rd) was one hour, fourth interview went for one and a half hour and the first meeting lasted for two hours. For remaining interviews the main research issues which we had discussed were identified from the previous literature on Postponement strategy. We broke the main issue of postponement in supply chains into several smaller issues to generate specific research questions. By comparing with other previous studies carried out in other countries and in Sweden as mentioned in the second chapter we conducted the profile analysis for Elgiganten and also, according to our model, we discussed the CODP of Elgiganten.

The main questions of our thesis were defined according to our working model and the steps defined in Chapter 2.

The main objectives of interviews were identification of retailing strategies of Elgiganten and identification of CODP to see where they stand and what type of strategy they are using and if any repositioning of CODP and retailing strategy is required for them. To fulfill our objectives we intended to conduct the profile analysis, first, for overall and then for the categories of goods they deal in. For this profile analysis the issues asked were same and are as follow,

Table 3-1: Details of issues explored¹

Important Determinants for P/S Strategies			Effect of determinants on P/S Decisions	Effect of determinants on CODP
Product	Market and Demand	Capabilities	P/S Strategies	Position of CODP
Life Cycle	Lead Time	Economies of Scale	Full Speculation	Upstream

¹ Questionnaire attached in appendix

Stage	Delivery Frequency	Special Capabilities	Manufac. postponement	Down stream
Volume	Uncertainty of demand		Logistics. postponement	
Cost/Service Strategy			Full Postponement	

The details of interviews schedule, time, place, person and the topics discussed are as follows,

Table 3-2: Details of Interviews at Elgiganten

No. of Interviews	Dates of Interview	Interviewee Name & Rank	Time in Hrs.	Place of Interview	Issues Discussed
First Interview	7th May, 09	Peter Karlsson, Manager	2 (9:00-11:00)	Elgiganten (A6, Jonköping)	Problem discussion Elgiganten Profile, network.
Second Interview	13 May, 09	Peter Karlsson, Manager	1 (10:00-11:00)	Elgiganten (A6, Jonköping)	Overall Elgiganten Retailing strategies, types of goods they deal and CODP and consumer behaviors
Third Interview	18 May, 09	Roger Hallberg, Manager	1 (1:00-2:00)	Warehouse Elgiganten (Torsvik)	Inventory Management and Strategies followed
Fourth Interview	22nd May, 09	Peter Karlsson, Manager	1.5 (2:00-3:30)	Elgiganten (A6, Jonköping)	Discussion of questions one by one for all categories of products which Elgiganten deal

3.3.2.1.5 Ending

In this way we were in a position to extract all possible and relevant details for our research. It led us to the empirical findings and analysis which we have mentioned in chapter four. We thanked our interviewees formally and, on their request and interest, we intend to send the copy to Elgiganten to share our findings and for practical implications.

3.4 Empirical Analysis

For empirical analysis we used the data that we collected through interviews along with the existing literature mentioned in frame of reference. Ultimate purpose was to apply the working model on Elgiganten in a way that could explain the retail strategies practiced in Elgiganten and their effects on the performance of Elgiganten. To apply all the steps of working model as explained earlier we used the “profile analysis” (Pagh and Cooper, 1998, pg.24) and “CODP location” (Can, 2008 pg. 40). In the attempt of doing so we did not used the figures in their original forms, but modified them according to the needs of study. The modification is slight and it is the removal of P/S strategies from the horizontal axis. This modification has changed the overall purpose of the original analysis. The original analysis was used for the alignment of P/S strategies. But this profile analysis was done depending upon the situation of Elgiganten. As they do not have any other strategy except the Speculation so alignment of strategies was no longer required in Elgiganten case. Instead we worked for the profile of different product categories to find the suitable P/S strategy accordingly. The modified profile analysis is as follows,

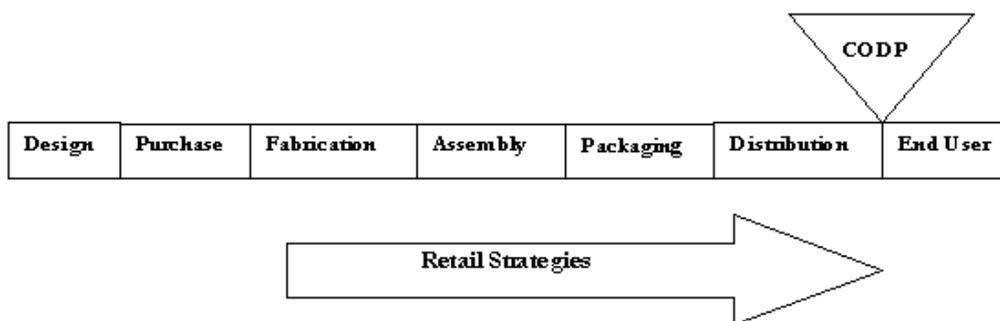
Figure 3-1: Modified Profile Analysis (Adapted from Pagh & Cooper, 1997, pg. 24)

Some important P/S decision Determinants						
P R O D U C T		Stage	Introduction	Growth	Maturation	Mat/decline
	Life cycle	Volume	Low/med	Med/high	Med/high	Low/med
		Cost/service strategy	Service			Cost
		Product type	Standard			Customized
	Product Character.	Product range	Narrow			Wide
	Value	Product profile	Initial stages			Final stages
		Monetary density	Low			High
Market and demand	Relative delivery time					

	Delivery frequency	Short			Long
	Uncertainty of demand	High			Med/low
		Low			High
Manufacturing and logistics	Economies of scale	Large			Small
	Special capabilities		Yes		

For the analysis and visual presentation of CODP Location following figure was used after modifications,

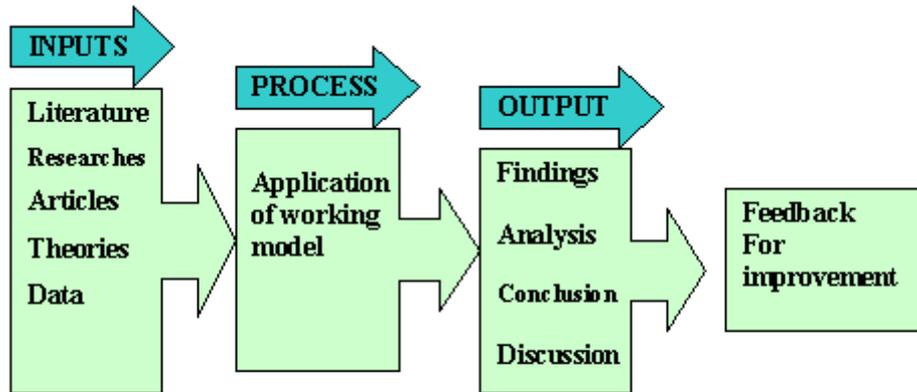
Figure 3-2: CODP Location Modified and Adapted from Can (2008, pg. 40)



3.5 Research Process

For the whole research we started with problem definition. Then accordingly we went through the relevant previous studies and found data about usage of speculation and postponement strategies in different countries carried out by different authors at different times. This means that we represented the already done research within the subject and also other relevant studies in postponement strategy. We also went through the previous theoretical frameworks related to postponement strategies in the relevant researches. Then we contacted the organization under study for data collection. We identified the issues under discussion from the previous literatures, previous theoretical frameworks, data collections, etcetera. This ultimately provided us with Findings, Analysis and Discussion.

Figure 3-3: Steps for Research Process



3.6 Credibility of Data

As qualitative data is affected because of subjectivity, so credibility of data is important (Walker et al., 2008). For enhancing the credibility, reliability and validity are important (Saunders et al., 2007).

Reliability refers to the consistency of results produced by a calculating tool when it is used more than once in a comparable situation (Carmines & Zeller, 1982). Reliability is the extent to which an experiment, test, or any measuring procedure yields the same result on repeated trials. Validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. According to Carmines & Zeller (1982) validity is the ability of the instrument measuring what is supposed to be measured, or be able to foresee what it was meant to foresee, or the actions of observations. Validity and reliability are important to give trustworthiness to research and help in generalization and transferability of data; but the main issue is that in qualitative researches these concepts of reliability and validity cannot be applied as they can be applied in quantitative studies. To handle this issue Ghauri and Grønhaug (2005) state that researchers should present their data collection method and the questionnaires for their qualitative researches to enhance credibility. For this reason the questionnaire and the

responses are attached in appendix. Also the responses are stated in empirical analysis. Yin (2003) suggested that multiple sources and links to previous literature are also important for constructing validity. To fulfill this requirement we did interviews from the Managers of both, Elgiganten retail store and its warehouse. We visited the Retail outlet of Egiganten at Jonkoping (A6) and the warehouse at Torsvik. The basic purpose was to add credibility to the study through utilization of multiple sources i.e. Interviews, visits, observations, profiling etc.

3.7 Generalization of Research

Generalization of research findings is about the extent to which findings in one setting can be generalized to others (Silverman, 1997). Research is done for a Swedish Electronic Retailer for analyzing their strategy towards inventory management (Postponement). It may contribute to the literature of retail management of electronic Swedish retailers so we intend to generalize the theoretical part of research only for Swedish Electronic Retailers.

3.7 Limitations

There main limitations which we have for this study are the study was conducted on single retailer Elgignaten as a case. This poses a limitation because all the research was conducted on this single organization. As a consequence the feedback from other retailers was not part of this thesis. Because of unfamiliarity to Swedish language of both of the authors, the interviews were conducted only in English.

4 Empirical Findings and Analyses

This chapter represents the empirical findings and by utilizing the working model, theories and literature presented in the frame of references.

4.1 Case Presentation

Elgiganten belongs to Elkjop , which trades under different names and brands in Nordic countries. It has 264 store across Nordic countries. In 2008 Elkjop sales reached £1,6 billion. In Sweden it trades nder brand name “Elgiganten” which means (Electronic Giant). Elgiganten sells five categories which are white goods, small white goods, brown goods, computers and telecom (Karlsson, 2009, personal communication., 7th May).

- **White Goods:**

In white goods major home appliances are included like dishwashers, washing machines, Fridge, Microwaves, and Ovens etc. (Karlsson, 2009, personal communication., 13th May).

- **Small White Goods:**

Small white goods include the electric kitchen goods like juicer, sandwich makers, chopper, electric kettle, toaster etc. (Karlsson, 2009, personal communication, 13th May).

- **Brown Goods:**

For brown goods they have TV, Hi-FI, CD players, DVD players, entertainment goods, etc. (Karlsson, 2009, personal communication, 13th May).

- **Computers:**

In computers they deal in laptops, printers, scanners, cameras, desktops and accessories. (Karlsson, 2009, personal communication, 13th May).

- **Telecom:**

In telecom mobiles, GPS, phones and other related accessories are included. (Karlsson, 2009, personal communication, 13th May).

4.2 Application of Working Model

The working model mentioned in the chapter 2 was applied on Elgiganten step wise as explained in methodology (chapter 3). The extracted information in steps is explained below.

4.2.1 Identification of Retailing Strategy at Elgiganten

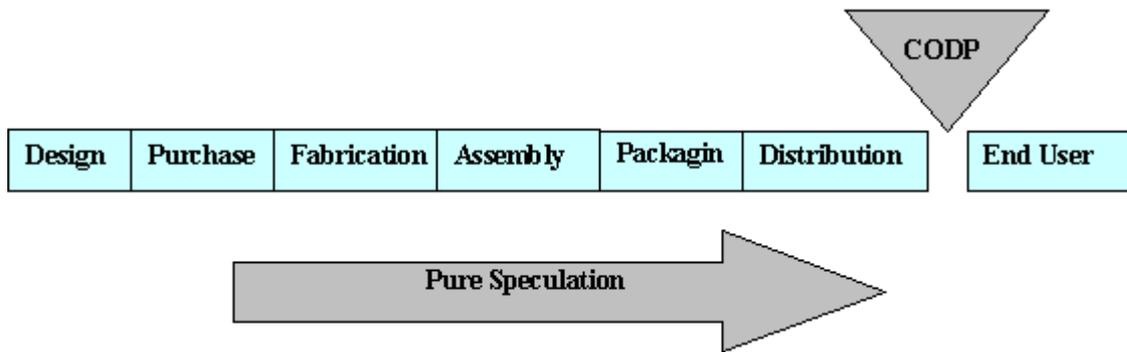
The process of Elgiganten supply chain strategy is that they are forecast driven retailing company; which means they are using pure speculation for all the five categories of their products. Inventory management is based upon historical data which means that they forecast on the basis of previous trends of market and purchase patterns of customers. They always look to forecast demand and so do they with inventory. On these grounds they predict demand by considering the upcoming events. Inventory management is based upon the estimated budget. Elgiganten has variety of goods but they come in less volume which results in loosing the potential sales and this is the result of speculative measures, as they can not forecast exact demand. Uncertain demand is the problem for them in having loss of sales and profit. The main procedure is that Elgiganten forecasts for the inventory before 3-4 days and sends the inputs to the vendor and then they send the products and goods to Elgiganten. No reconfiguration is observed by Elgiganten. They are currently focusing only on the customization of PC at very initial level. Because of demand uncertainty, 10-15% of sales and 5 % of customers are lost. Elgiganten has central buying all over Nordic countries and the ceteralized warehouse is located at Torsvik near Jonkoping (Karlsson, 2009, personal communication, 13th May; Hallberg, 2009, personal communication, 18th May).

4.2.2 Identification of CODP at Elgiganten

As Elgiganten is using pure speculation for all the five categories of products so the CODP for all products lie after distribution. (Karlsson, 2009, personal communication, 13th May; Hallberg, 2009, pers.comm., 18th May).

So if we visually look at the CODP of Elgiganten overall then the visual presentation is as follows,

Figure 4-1: CODP of Elgiganten Now (modified from Can, 2008, pg. 40)



4.2.3 Profile Analysis of Products²

These profiles were made in light of the interviews we conducted and the questionnaire we asked from the managers. The original figures drawn by the managers and the interview questions are attached in appendix. The profile of products is considered in the light of different characteristics which are mentioned in methodology. The three main characteristics were of product, market demand and manufacturing and logistics. We have discussed each category one by one.

4.2.3.1 White Goods

For profile analysis of white goods we asked questions related to the characteristics mentioned in the diagram below. The figure for the profile of white goods we got is drawn below. First we asked what are the trends for the white goods, and then after marking the specific trends and characteristics we joined the arrows. The figure below shows that the white hoods are at stage of growth which means that that these products have high market scope and the market is not yet saturated. This has resulted in high volume and sales of the white goods. The volume of the product means that products are also purchased in bulk by Elgiganten. The Cost/Service strategy shows that Elgiganten provides service strategy for the white goods. This means that the products are standardized and not customized. (Karlsson, 2009, personal communication, 22nd May).

² Original drawn by Elgiganten's managers are attached in appendix.

Table 4-1: Profile analysis of white goods

Some important P/S decision Determinants White Goods						
P R O D U C T	life cycle	Stage	Introduction	Growth	Maturation	Mat/decline
		Volume	Low/med	Med/high	Med/high	Low/med
		Cost/service strategy	Service			Cost
		Product type	Standard			Customized
	Product Character.	Product range	Narrow			Wide
	value	Product profile	Initial stages			Final stages
Market and demand		Monetary density	Low			High
		Relative delivery time	Short			Long
		Delivery frequency	High			Med/low
		Uncertainty of demand	Low			High
Manufacturing and logistics		Economies of scale	Large			Small
		Special capabilities	yes			No

The variety and range of products is widely provided by Elgiganten. The value profile i.e. the value added features are at initial stages. This means that Elgiganten provides only the after sales services, warranty or home delivery not more than that for the white goods. The high monetary density in white goods shows high investments and high costs. The lead time is short for the white goods and the delivery frequency and the sales are frequent and are at high level. The demands from consumers relating to the white goods are highly uncertain. Elgiganten seeks special in built capabilities for its white goods from the

manufacturers. The economies of scale in case of white goods are at medium level, and this means that they are having relatively higher costs for their white goods.

4.2.3.2 Small White Goods

The life cycle of small white goods is at the maturation stage but the volume in terms of sales and purchasing is high. Same as white goods the service strategy is followed by Elgiganten for their small white goods. Products in this category are standardized. The range offered by this product is narrow, not wide like white goods. According to the Manager of Elgiganten this category is their highest selling one as compared to other four product categories. The lead times, because of central buying, are short i.e. 24 hours. The demand uncertainty and delivery frequency both are high (Karlsson, 2009, personal communication, 22nd May).

Table 4-2: Profile analysis of small white goods

Some important P/S decision Determinants Small White Goods						
P R O D U C T	life cycle	Stage	Introduction	Growth	Maturation	Mat/decline
		Volume	Low/med	Med/high	Med/high	Low/med
		Cost/service strategy	Service			Cost
		Product type	Standard			Customized
	Product Character.	Product range	Narrow			Wide
	value	Product profile	Initial stages			Final stages
Market and demand		Monetary density	Low			High
		Relative delivery time	Short			Long
		Delivery frequency	High			Med/low
Manufacturing and logistics		Uncertainty of demand	Low			High
		Economies of scale	Large			Small
		Special capabilities	yes			No

Monetary density is low, not high like those the one for white goods. Large economies of scale are achieved for this category.

4.2.3.3 Brown Goods

For brown goods the profile is as follow. These are at the growth stage like white goods. Volume of sales is high in this category as well (Karlsson, 2009, personal communication, 22nd May).

Table4-3: Profile analysis of brown goods

Some important P/S decision Determinants						
Brown Goods						
P R O D U C T	life cycle	Stage	Introduction	Growth	Maturation	Mat/decline
		Volume	Low/med	Med/high	Med/high	Low/med
		Cost/service strategy	Service			Cost
		Product type	Standard			Customized
	Product Character.	Product range	Narrow			Wide
	value	Product profile	Initial stages			Final stages
Market and demand		Monetary density	Low			High
		Relative delivery time	Short			Long
		Delivery frequency	High			Med/low
Manufacturing and logistics		Uncertainty of demand	Low			High
		Economies of scale	Large			Small
		Special capabilities	yes			No

Order winning criteria for brown goods is their cost. Elgiganten deals in standardized brown goods and provides a wide variety for them. The value added requirements by customers is high for brown goods. Lead time is short and delivery frequency is at high level. Demands are highly uncertain. Economies of scale are large and special capabilities are manufactured for Elgiganten brown goods.

4.2.3.4 Computers

Computers are at growth stage with high sales volumes. The order winning criteria is cost; product trend is towards customization from Elgiganten. Product range is wide and value profile is high for computers. High monetary density is present for this category and lead

Some important P/S decision Determinants Telecom

P R O D U C T	life cycle	Stage	Introduction	Growth	Maturation	Mat/decline
		Volume	Low/med	Med/high	Med/high	Low/med
		Cost/service strategy	Service			Cost
		Product type	Standard			Customized
	Product Character.	Product range	Narrow			Wide
	value	Product profile	Initial stages			Final stages
Market and demand		Monetary density	Low			High
		Relative delivery time	Short			Long
		Delivery frequency	High			Med/low
Manufacturing and logistics		Uncertainty of demand	Low			High
		Economies of scale	Large			Small
		Special capabilities	yes			No

Product range is wide and monetary density is high. In this category Elgiganten is facing very low demand uncertainty, in fact the lowest of all the five categories of the products. The delivery lead time is long and delivery frequency is high. The economies of scale are large and there are no inbuilt special capabilities required by Elgiganten for this product category (Karlsson, 2009, personal communication, 22nd May).

4.3 Effects of Speculative Approach on Elgiganten

“There are certain problems which Elgiganten is facing” said Karlsson (2009, personal communication, 22nd May). If we closely look into these problems we can see that these problems are because of the speculative measures of Elgiganten. Overall these problems are related

to the inventory, uncertain demands, loss of sales, customers' loss and space requirements.

- **Development in new products and areas is blocked**

The too much focus on forecasting and speculating demand and then managing the excess inventory, Elgiganten is finding it hard to focus on the development of new visions, creativity and expertise. *"Elgiganten is not going for customized products although we offer variety but do not seek it intentionally"* (Karlsson, 2009, personal communication, 22nd May). *"We are following strategy for product standardization"* (Hallberg, 2009, personal communication, 18th May)“.

- **Loss of Inventory**

With the Speculative techniques Elgiganten is having more capital investments in purchasing and this is resulting in a loss of inventory. They are constantly faced with the risk of not selling the products or not being purchased by customers. Even if products are not sold they are replaced continuously as we were told by Hallberg (2009, personal communication, 18th May). *"We forecast with the margin of 3-4 days, and replace the inventory on weekly basis. In this process of quick and continuous replacement, we face the problem of unsold goods"*.

- **Excess Inventory**

"Elgiganten has a central warehouse and we have finished products at our warehouse, when we send the forecasted figure we get the goods for the whole week" (Hallberg, 2009, personal communication, 18th May)”. Products are stored in warehouses and they are in a queue not adding any value to the supply chain. This suffers the flow and supply chain flexibility by not having agility and responsiveness. This also refers to the over production and again that is a hindrance to the agile supply chains.

- **Space**

"We do not have unassembled goods in part" *"we have finished inventory at our ware house"* (Hallberg 2009, personal communication, 18th May)“This means that large amount of finished equipments, goods and electronics cover a lot of space.

- **Loss of Sales & Customers**

In response to question related to consumer requirements Hallberg (2009, personal communication, 18th May) responded that *“nowadays customers want customized products, they need different colors, different designs and packages. We do not offer any tailored products so customers also go for substitutes. This problem is increasing as our sales have decreased from 10-15% and we have lost almost 5% of our customers in total”*. So speculation is resulting in loss of customers.

4.4 Redefining Retail Strategy and Repositioning CODP of Elgiganten

By keeping in view the problems of Elgiganten, it seems that they have to be very responsive to address uncertainty of demands from customers. And they also need to address the issue of individual requirements of the customers to avoid further decrease in their sales. In their situation postponement seems to be a very natural solution. Now the question is what kind of postponement they need to apply as there are different types of postponement. This issue of Elgiganten can be answered by estimating the level of uncertainty in demand that is faced by them, the products that need to be customized, where in their supply chain should the CODP be positioned and how lead times can be reduced. By doing this Elgiganten can have the opportunity to address new visions, new product areas and new developments. Postponement could be a useful tool for enhancing the agility and flexibility of Elgiganten by being more responsive and further would be helpful in improving the functionality of the Elgiganten supply chain.

4.4.1 Decision for P/S Strategy and CODP for Elgiganten

We suggest that Elgiganten supply chain strategies can be extended towards a mid way between the speculation and postponement. This means that partial postponement is a possible solution for Elgiganten as suggested by Bucklin (1965) that activities cannot be postponed forever. As Elgiganten is a giant retailer and it is closest to the end users in the whole supply chain, so the role played by Elgiganten in designing and implementing the supply chain strategy would be very influential. Although Elgiganten is having a centralized inventory distribution system, but still they are not following the Logistic Postponement. They can adopt it as they are very close to it but they do not penetrate the inventory at their outlets after customer order is initiated, rather forecasting is again the main basis for their decision. So, Logistic postponement can be the possible strategy for Elgiganten which they can incorporate in their supply chain quickly. This will also help in moving the CODP point from the below the distribution point to above the distribution

function by moving the Elgiganten's strategy from pure speculation to segmented postponement.

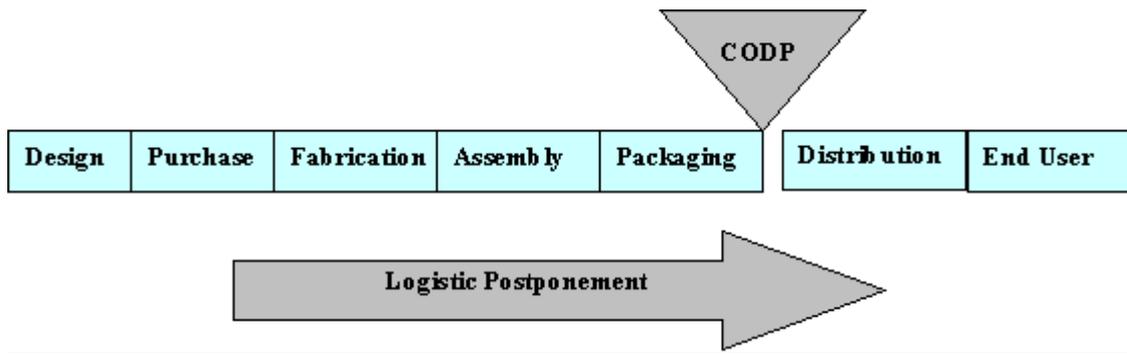
Logistic and segmented Postponement for Elgiganten holds benefits for its whole supply chain in the forms of cost reduction and shorter lead times. Plus this has the potential to make Elgiganten supply chain flexible. Previous literature from Bucklin (1965), Pagh and Cooper(1998) and Zinn and Bowersox (1988) also support this kind of inventory postponement strategies for retailers.

Keeping in view the profiles of five categories of the goods defined above we decide one by one for the P/S decision for these products depending upon their problems and profiles.

4.4.2 P/S Strategy for white goods, small white goods and the brown goods

We have placed these three categories under the head of logistic postponement. The reason for this is that these are the goods that have highly uncertain demand and these goods are at their growth or maturation stages. Customers require customization and value addition. The order winning criteria for these products is service not costs. Delivery frequency and sales for these products are higher than telecom and computers i.e. three times a week. Delivery lead times are short for all the three and products are standardized. So for this reason we have placed this category under the head of logistic postponement. The logistic postponement will help in setting the CODP of white, small white and brown goods upstream after the products are packaged. This means that products can be stored under make-to-stock system with centralized inventories. Figure 4-2 explains the above strategy.

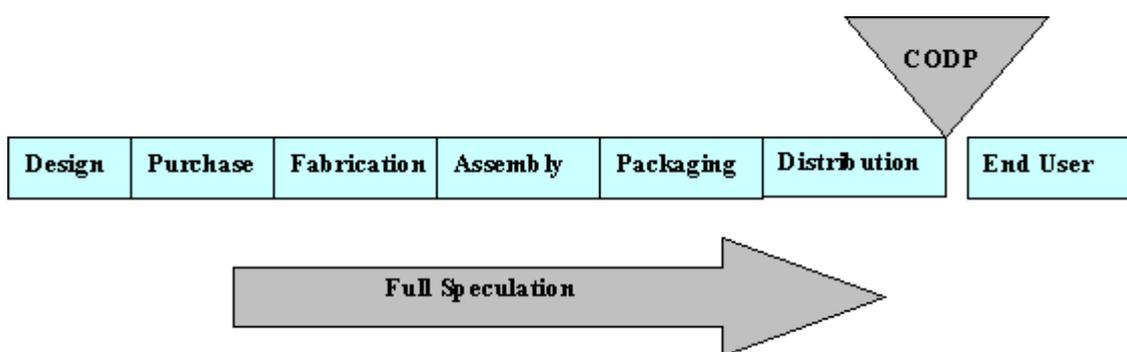
Figure 4-2: P/S Strategy and CODP of White, Small white and Brown Goods of Elgiganten(modified from Can, 2008, pg. 40)



4.4.3 P/S Strategy and CODP of Telecom

For telecom the products are standardized, with high sales and with cost as an order winning criteria. The product range is wide and delivery frequency is high but demand uncertainty is very low. The lead time for the product is longer than in all the five categories. Large economies of scale are achieved and no special capabilities are requested from manufacturers by Elgiganten for this specific category. The life cycle is at growth and serves for high scope for this product. So depending upon these characteristics we think that they should remain at speculation for this particular category as lead time is longer and demand uncertainty is lower with high sales volume. So the CODP for this particular product should remain where it is now i.e. at downstream. Figure 4-3 depicts the above suggestions.

Figure 4-3: P/S Strategy and CODP of Telecom of Elgiganten (modified from Can, 2008, pg. 40)

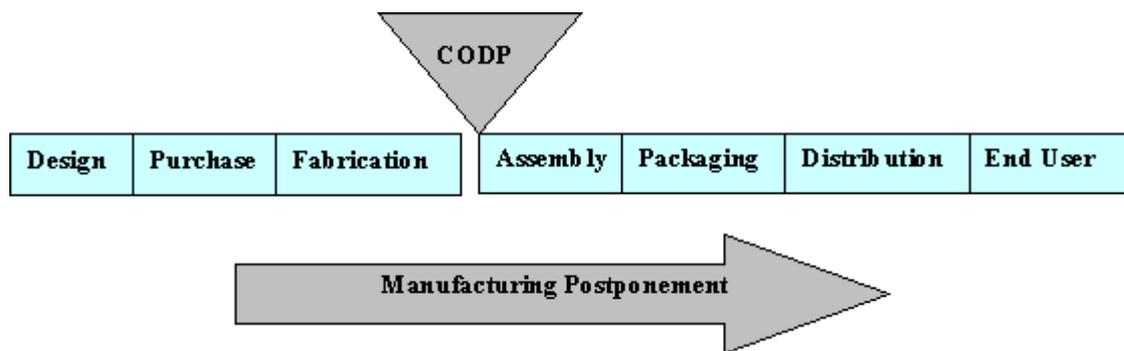


4.4.4 P/S Strategy and CODP of Computers

This is the only category in which Elgiganten is offering customization. This product category is at growth stage and the sales are high but cost is the main deciding point for the purchasing by customers. Value addition is high as compared to other categories. Delivery

lead time is short and demands are very uncertain. Monetary density is high. So depending upon these findings we suggest that Elgiganten can have manufacturing postponement for this product safely. The reason for this is that they own PC city and can assemble the products easily upon receipt of customer order. So for this specific product their delivery time will lie after assembly line to have assembled to order system.

Figure 4-4: P/S Strategy and CODP of Computer of Elgiganten (modified from Can, 2008, pg. 40)



4.5 Postponement and Supply Chain Flexibility for Elgiganten

The current speculation strategy of Elgiganten includes different problems that are already mentioned above. These problems are related to cost, demand uncertainty, inventory loss, loss of sales and low profit margins. As Elgiganten is forecasting and anticipating the demands of customers, huge amount of uncertainty is affecting the whole supply chain. The difference between the Elgiganten forecast and market demand is leading to over or under stocks and ultimately the costs are higher i.e. 5%. This problem is amplified when customers reject the available product and need some customized solutions, so this is also affecting the loss of customers from 10-15 %. The problem persists when there are changing trends and customers want to have variations with respect to the changing trends. Elgiganten supply chain is heavily relying on safety stocks through their centralized warehouse. This arrangement is to reduce costs and get economies of scale. But this also results in inventory holding costs and it is in queue so adding no value to the supply chain but just in a waiting position for customer orders.

To overcome these problems we have suggested postponement for four categories of products out of total five. As mentioned above the relation of postponement and supply

chain flexibility can be explored through the concept of legality. This will allow Elgiganten to separate the standard components from the differentiated ones. This would ultimately help Elgiganten to head forward towards responsiveness and agility i.e. flexible supply chain, but to attain this flexibility Elgiganten has to promote mass customization. Moreover postponement effects the positioning of CODP and moves the CODP from the standardization to the customization. For flexibility in supply chains it is important to pay attention to the positioning of CODP i.e. it will be downstream if Elgiganten has lean principles but upstream if the products require customization. With postponement strategies greater flexibility can be developed in Elgiganten supply chain. In general postponement strategies are used in Elgiganten in a way that they have centralized inventory warehousing distribution system. But still they are facing the demand uncertainties because of their speculative techniques and this is resulting in the loss of sales and loss of customers. Customization is only focused for PCs but greater level of customization is required to make the lead time shorter and to lower the inventory holding costs. Recent trends in consumers' demand are towards more customized products and this issue can be addressed with the postponement strategy in Elgiganten as suggested by Boone (2007) who states that postponement not only attempts to reduce costs but also satisfies customers. The postponement in Elgiganten can be incorporated in the overall strategy by being more responsive to customers' demands, by penetrating the CODP at initial levels and by shortening the forecasting time.

5 Conclusions

This chapter represents the final conclusions by answering the research questions and the discussion for future research.

Theoretical Implications

For consumer electronic industry standardized products do not work now, as the customers now require products according to their individual needs. This trend has shortened product life cycles and facilitated mass customization. This consumer behavior is increasing day by day. To adapt to the rapid changing market needs mass customization is the solution as mass production no longer works. Cost, service, quality and in time services are the essentials of retailing business. When assessing the need for postponement strategy, retailers need to assess the lead times, demand uncertainty, consumers demand for customized products, delivery frequency, customer's willingness to wait, etcetera. Basically customer requirement is the main factor for the retailers to consider. As in the present study we found that for different product categories customers have different needs and demands. So it is important to have the decision of postponement and structure of supply chains based upon the customers' demands and needs.

Managerial Implications

Technological developments in Consumer electronics are rapid and customer expectations are rising for quality, cost and speed. They need right things in right place and at right time. This situation has challenged electronic retailers as their sophisticated and traditional strategies of speculation and forecasting are no longer providing them huge benefits because of unpredictable demands and frequent changing needs. They cannot afford to stock in bulk inventories that cannot meet the unexpected change in patterns of consumer demands. So, to have more satisfied customers and more sales volume, the need is of value added and customized operations and to introduce the CODP at some initial stages of the supply chain. This will ultimately lead towards the flexible supply chain through the strategic direction towards postponement. As in this case the inventories will be reduced, transport costs will be minimized and value added services can contribute as a major factor to have a competitive position in market. Our findings showed that customers have different attitudes and demands within electronics industry as a whole, for example in telecom they need no customization, in white, brown goods they want it at medium level and for computer they need it at high level. So such trends are good determinants in

setting P/S strategy for retail chains and also to position CODP. This means that to decide about these strategies, customer expectations are the core problems to be considered to design and decide any P/S strategy. Companies have started realizing the benefits of postponement application. This means that increased use of postponement will increase the product variety and mass customization. There are more chances of meeting customers' expectations and for earning higher profit margins because of satisfied customers. As cited in Can (2008), Mike Kilgore (2008) estimates that 80% of organizations are benefiting from postponement strategies. So now the question is not that postponement is right or wrong but it is about the quality, meeting customer's demands, cost effectiveness and satisfaction of consumers.

5.2 Discussions for Future Research

In this thesis we have attempted to have a profile analysis of Swedish Electronic Retailer's goods by modifying the original profile analysis of Pagh and Cooper (1998). This profile framework provides opportunity for further research in different directions. This research was conducted on one Electronic retailer of Sweden, so there will be a lot of aspects that we could not grasp in this thesis. So, this also opens door for contributing in this literature further. For future research, it would be useful if our model is used to exploit the relation of postponement and supply chain flexibility for other retailers. Moreover the comments of managers to design such research would be an important feedback to detect any missing link. It is also suggested that for future research the survey based research on retailers will give more generalized and valid results.

References list :

- Afuah, A. (2003). *Innovation Management*. New York: Oxford University Press.
- Appelquist, P., & Gubi, E.(2004). Postponed variety creation: case study in consumer

- electronics retail. *International Journal of Retail & Distribution Management*, Vol. 33(10), pp. 734-748.
- Aviv, Y., & Federgruen, A. (2001a). Capacitated multi-item inventory systems with random seasonally fluctuating demands: implications for postponement strategies. *Management Science*, Vol. 47 No. 4, pp. 512-31.
- Aviv, Y., & Federgruen, A. (2001b). Design for postponement: a comprehensive characterization of its benefits under unknown demand distributions. *Operations Research*, Vol. 49 No. 4, pp. 578-98.
- Ballou, R. D. (2004). *Business Logistics / Supply Chain Management*. 5th edition. Upper Saddle River, New Jersey, Pearson, Prentice-Hall.
- Benedict, C., & Margeridis, H. (1999). Chain Reaction. *Charter*, Vol. 03, pp. 46-49.
- Boone, A. C., Craighead, W. C. & Joe B. H. (2007). Postponement: an evolving supply chain concept. *International Journal of Physical Distribution & Logistics Management*, Vol. 37 No. 8, pp. 594-611
- Borrus, M. (2000). The Resurgence of US Electronics: Asian Production Network and the Rise of Wintelism, in Borrus, Ernst and Haggard, eds. *International Production Networks in Asia: Rivalry or Riches?* London and New York: Routledge, p. 57-79.
- Bowersox, D.J., & Closs, D.J. (1996). *Logistical Management - The Integrated Supply Chain Process*. McGraw-Hill, Singapore.
- Bowersox, D.J., Closs, D.J., & Cooper, M.B. (2007). *Supply Chain Logistics Management*. (2nd ed.). New Delhi: Tata Mcgraw-Hill.
- Bowersox, D., Stank, T.P., & Daugherty, P.J. (1999). Lean launch: managing product introduction risk through response-based logistics. *Journal of Production Innovative Management*, Vol. 16 No. 6, pp. 557-68.
- Brown, A., Lee, H.L., & Petrakian, R. (2000). Xilinx improves its semiconductor supply chain using product and process postponement. *Interfaces*, Vol. 30 No. 4, pp. 65-80.
- Bucklin, L.P. (1965). Postponement, speculation and structure of distribution channels. *Journal of Marketing Research*, Vol. 2, pp. 26-31
- Can, C. K. (2008). *Postponement, Mass Customization, Modularization and Customer Order Decoupling Point: Building the Model of Relationships*. Masters Thesis. Department of Management and Engineering. Linköping University.
- Chiou, J-S., Wu, L-Y., & Hsu, J. (2002). The adoption of form postponement strategy in a global logistics system: the case of Taiwanese information technology industry. *Journal of Business Logistics*, Vol. 23 No. 1, pp. 107-24
- Chopra, S., Meindl, P., & Kalra, D.V. (2006). *Supply Chain Management: Strategy, Planning and Operation*. (3rd ed.). New Delhi: Dorling Kindersley.

- Christensen, C. M., & Overdorf, M. (2000). Meeting the Challenge of Disruptive Change. *Harvard Business Review*, Vol. 78, No. 2: 67-75, 2000.
- Christopher, M. (1998). *Logistics and Supply Chain Management*. 2nd ed., Prentice-Hall, Hemel Hempstead.
- Christopher, M., & Towill, D.R. (2000). Marrying the Lean and Agile Paradigms. *Proc. EUROMA Conference*, Ghent, pp. 114-121.
- Cooper, C. J. (1993). Logistics Strategies for Global Business. *International Journal of Physical Distribution and Logistics Management*, Vol. 23:4, pp. 12-23.
- Dapiran, P. (1992). Benetton – global logistics in action. *International Journal of Physical Distribution & Logistics Management*, Vol. 22 No. 6, pp. 1-5.
- David H., & Maister. (1976). Centralization of inventories and the –Square root law. *International Journal of Physical Distribution*, Vol. 6 (1976), pp. 124-134.
- Dubelaar, C., Chow, G., & Larsen, P.D. (2001). Relationships between inventory, sales and service in a retail chain store operation. *International Journal of Physical Distribution & Logistics Management*, Vol. 31 No. 2, pp. 96-108.
- Duclos, L.K., Vokurka, R.J., & Lummus, R.R. (2003). A conceptual model of supply chain flexibility. *Industrial Management & Data Systems*. Vol 103(6), 446-456
- Ernst, R., & Kamrad, B. (2000). Evaluation of supply chain structures through modularization and postponement. *European Journal of Operational Research*, Vol. 124 No. 3, pp. 495-510
- Feitzinger, E., & Lee, H.L. (1997). Mass customization at Hewlett Packard: the power of postponement. *Harvard Business Review*, Vol. 75 No. 1, pp. 116-21
- Fisher, M., (1997). What is the right supply chain for your product? *Harvard Business Review*, Vol. 75 No. 2, pp. 105-16.
- Fernie, J., Fernie, S., & Moore, C. (2002). *Principles of Retailing*. Oxford: Butterworth. Heinemann.
- Ghuri, P., & Gronhaug, K. (2005). *Research methods in business studies: A practical guide*. 3rd Edition, Pearson Education.
- Goldman S. L., & Nagel R. N. (1993). Management, technology and agility: the emergence of a new era in manufacturing. *International Journal of Technology and Management*, Vol. 8, pp. 18–38
- Haberman, H., & Danes, S. M. (2007). Father-daughter and father-son family business management transfer comparison: Family model application. *Family Business Review*, Vol. 20, pp. 163-184
- Hart, C. (1995). Mass customization: Conceptual underpinnings, opportunities and limits. *International Journal of Service Industry Management*, Vol 6, pp. 36 – 45.

- Hoekstra, S. and Romme, J. (1992). *Integrated Logistics Structures: Developing Customer Oriented Goods Flow*, McGraw-Hill: London.
- Kong & Allan (2007). More on Postponement Adapting Postponement to Supply Chains. retrieved from www.kondandallan.com
- Kotler, P. & Keller, L. K. (2006). *Marketing Management* 12e. Upper Saddle River, New Jersey, Prentice Hall.
- Kotzab, H. (2005). *Retailing in the context of IT and distribution*. Retailing in a SCM-Perspective. H. Kotzab and M. Bjerre. Copenhagen, Copenhagen Business School Press.
- Lee, H. L. (2002). Aligning supply chain strategies with product uncertainties. *California Management Review*, Vol. 44 No. 3, pp. 105-19.
- Lee, H.L., Padmanabhan, V., & Whang, S. (1997). Information distortion in a supply chain: the bullwhip effect. *Management Science*, Vol. 43 (4), pp. 546–558.
- Nagel, R., & Dove, R. (1991). *21st Century Manufacturing Enterprise Strategy*, Lehigh University, Incooca Institute.
- Olhager, J., Selldin, E., & Wikner, J., (2006). Decoupling the value chain. *International Journal of Value Chain Management* 1 (1), 19–32.
- Pagh, J.D. & Cooper, M.C. (1998). Supply chain postponement and speculation strategies: how to choose the right strategy. *Journal of Business Logistics*, Vol. 19 No. 2, pp. 13-33.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks: Sage Publications.
- Perreault, Jr. W.D., & McCarthy, E.J. (1999). *Basic Marketing: A Global-Managerial Approach* (13th ed.). Homewood, IL: Irwin.
- Porter, K., Little, D., Matthew, P., & Rollins, R. (1999). Manufacturing classifications: relationships with production control systems. *Integration Manufacturing System.*, Vol. 10, pp. 189–198
- Sackett, P.J., Maxwell, D.J., & Lowenthal, P.A. (1997). Customizing manufacturing strategy. *Integratio Manufacturing System*, Vol. 8, pp. 359–364.
- Schary, B. P., & Skjott-Larsen, T. (1996). *Managing the global supply chain*. Handelshojkskolens, Forlag.
- Shewchuck P. (1998). Agile Manufacturing : One Size Does Not Fit All. *Proceedings of the International Conference on Manufacturing Value Chains*, Troon, pp. 143-150.
- Shingo, S. (1989). *A Study of the Toyota Production System from an Industrial Engineering Viewpoint*. Productivity Press, New York.

- Silverman, D. (1997). *Qualitative Research: Theory, method and practices*, London: Sage
- Silverman, D. (2001). *Interpreting qualitative data: Methods for analysing talk, text and interaction: (2nd ed.)*, London: Sage.
- Simchi-Levi, D., & P. Kaminsky (2008). *Designing and Managing the Supply Chain: Concept, Strategies and Case Studies*. 3rd edition. New York, McGraw-Hill International.
- Su, J., Chang, Y., & Ferguson, M. (2005). Evaluation of postponement structures to accommodate mass customization. *Journal of Operations Management*, Vol. 23, pp. 305-18
- Suna, X.Y., Suna, P. J., & Wanga Y.L. (2008). Positioning multiple decoupling points in a supply network. *International Journal of Production Economics*, Vol. 113, pp. 943–956
- Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students (4th ed.)*. London, FT Prentice Hall.
- Towill, R. D. (2005). Supply Chain Competitiveness: Supply Chain Management. *IEE Manufacturing Engineer*. Vol. 02/03. pp. 36-39
- Treville, D., Shapiro, S., & Hameri, A. P. (2004). From supply chain to demand chain: the role of lead time reduction in improving demand chain performance. *Journal of Operations Mgmt*, Vol. 21, pp.613–627.
- van Hoek, R.I. (2000). The role of third-party logistics providers in mass customization. *International Journal of Logistics Management*, Vol. 11, pp. 37-46.
- van Hoek, R.I. (2001). The rediscovery of postponement a literature review and directions for research. *Journal of Operations Management*, Vol. 19, pp. 161-84
- Vickery, S., Calantone, R., & Dröge, C. (1999). Supply Chain Flexibility: An Empirical Study. *Journal of Supply Chain Management*. Vol. 35, 16–24.
- Walker, R., Cooke, M., & McAllister, M. (2008). A Neophytes journey through qualitative analysis using morse cognitive processes of analysis. *International Journal of Qualitative Methods*, Vol. 7, pp. 81-93.
- Wadhwa, S., & Chopra, A. (2000). A genetic algorithm application: dynamic reconfiguration of agile manufacturing systems. *J Stud Inform Control*, Vol.9, pp. 1–9
- Winkler, H. (2008). How to improve supply chain flexibility using strategic supply chain networks. *Logistics Research*. Vol 1, pp. 15-25
- Waller, M.A., Dabholkar, P.A. & Gentry, J.J. (2000). Postponement, product customization, and market-oriented supply chain management. *Journal of Business Logistics*, Vol. 21, pp. 133-59.
- Wanke, P.F., & Zinn, W. (2004). Strategic logistics decision making. *International Journal of Physical Distribution & Logistics Management*, Vol. 34, pp. 466-78.

- Wikner, J. and Rudberg, M. (2005). Introducing a customer order decoupling zone in logistics decision-making. *International Journal of Logistics: Research and Applications*, Vol. 8, pp. 211–224
- Wortmann, J.C., Munstlag, D.R.& Timmermans, P.J.M. (1997). *Customer-driven Manufacturing*, Chapman & Hall: London.
- Yang, B. & Burns, N. D. (2003). Implications of postponement for the supply chain”” *International Journal of Production Research*, Vol. 41, pp.2075-90.
- Yang, B., Burns, N. and Backhouse, C. (2004a). Management of uncertainty through Postponement. *International Journal of Production Research*, Vol. 42, pp. 1049-64.
- Yang, B., Burns, N. & Backhouse, C. (2004b). Postponement: a review and an integrated framework. *International Journal of Operations & Production Management*, Vol. 24, pp. 468-87.
- Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks, IL, Sage Publications.
- Yin, R. K. (2003a). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Yin, R. K. (2003b). *Applications of case study research* (2nd ed.). Thousand Oaks, CA: Sage.
- Yusuf Y.Y., Sarhadi M. & Gunasakeran, A. (1999). Agile manufacturing: the drivers, concepts and attributes. *International Journal of Production Economics*, Vol. 62, pp.33–43
- Zinn, W. and Bowersox, D. (1988). Planning physical distribution with the principle of postponement. *Journal of Business Logistics*, Vol. 9, pp. 117.

Appendix

Questionnaire

- Briefly describe your current business processes?
- What is the current strategy of inventory management?
- Is your supply chain efficient or responsive?
- What is the current level of efficiency & customer satisfaction?
- Which areas of your supply chain is the weakest link?
- How do you forecast demand?
- Comment on the level of uncertainty that your organization has to cope with.
- What is your stockout rate?
- What is the average life cycle of your product?
- **Lead Time:**
- How long is your CLT?
- **Reliability of supply Chain:**
- How reliable is your supply chain?
- How you predict supplier performance (Delivery time or delivery quantity)?
- Which area of your supply chain needs improvements, why and how?

- **Bargaining Power:**

- How many suppliers do you have?
- How unique are the purchased items?
- What kind of third party providers and how much?
- Do you outsource some functions/processes?
- What is the level of customization provided to your customers?
- What is the current service level in your organization? Can you quantify your service level?
- Is your product variety broad or narrow? Is your product line wide/narrow?
- Please comment briefly on the following product characteristics
 - life cycle
 - Monetary density
 - Value profile
 - Product design characteristics

What's your pricing strategy?

Comment on your sales volume fluctuations

Comment on your customer segmentation strategy/customers that you target

Comment on your inbound Logistics Operations.

Issues explored through Interviews

Important Determinants for P/S Strategies			Effect of determinants on P/S Decisions	Effect of determinants on CODP
Product	Market and Demand	Capabilities	P/S Strategies	Position of CODP
Life Cycle Stage Volume Cost/Service Strategy	Lead Time Delivery Frequency Uncertainty of demand	Economies of Scale Special Capabilities	Full Speculation Manufac. postponement Logistics. postponement Full Postponement	Upstream Down stream

Working of Profile Analysis (for different categories of goods that the case company deals in)

Computers
 - Copiers
 - Printers
 - Scanners
 - Desktops
 Cameras
 Accessory

Some important P/S-decision determinants			Generic P/S-strategies			
			The full speculation strategy	The manufacturing postponement strategy	The logistics postponement strategy	The full postponement strategy
P r o d u c t c h a r a c t e r i s t i c s	Life cycle	Stage	Introduction	Growth	Maturation	Mat./Decline
		Volume	Low/Med.	Med./High	Med./High	Low/Med.
		Cost/service strategy	Service	←→	←→	Cost
	Product characteristics	Product type	Standard	←→	←→	Customized
		Product range	Narrow	←→	←→	Wide
	Value	Value profile	Initial stages	←→	←→	Final stages
		Monetary density	Low	Low	High	High
	Market and demand	Relative delivery time	Short	←→	←→	Long
		Delivery frequency	High	←→	←→	Med./Low
		Uncertainty of demand	Low	←→	←→	High
Manufacturing & logistics	Economies of scale	Large	Small	Large	Small	
	Special capabilities	Yes	No	Yes	No	

COMPUTERS

M. P
 Logistic Postponement

Telecom mobile
BPS
Fixed plus
Assurance

Some important P/S-decision determinants			Generic P/S-strategies			
			The full speculation strategy	The manufacturing postponement strategy	The logistics postponement strategy	The full postponement strategy
Product characteristics	Life cycle	Stage	Introduction	Growth	Maturation	Mat./Decline
		Volume	Low/Med.	Med./High	Med./High	Low/Med.
		Cost/service strategy	Service	↔		Cost
	Product characteristics	Product type	Standard	↔		Customized
		Product range	Narrow	↔		Wide
	Value	Value profile	Initial stages	↔		Final stages
		Monetary density	Low	Low	High	High
	Market and demand	Relative delivery time	Short	↔		Long
		Delivery frequency	High	↔		Med./Low
		Uncertainty of demand	Low	↔		High
Manufacturing & logistics	Economies of scale	Large	Small	Large	Small	
	Special capabilities	Yes	No	Yes	No	

Mr. Peter Karlsson
 Manager
 Elgiganten.

special

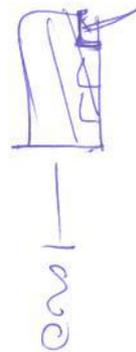
sol. of sales

TELECOM
 GOODS

speculation

White Goods
 ✓ Dish washers
 ✓ Washing machine
 ✓ Microwave
 ✓ Freezers
 ✓ Air conditioners
 ✓ Oven

Some important P/S-decision determinants			Generic P/S-strategies			
			The full speculation strategy	The manufacturing postponement strategy	The logistics postponement strategy	The full postponement strategy
Product characteristics	Life cycle	Stage	Introduction	Growth	Maturation	Mat./Decline
		Volume	Low/Med.	Med./High	Med./High	Low/Med.
		Cost/service strategy	Service	↔	↔	Cost
	Product type	Product type	Standard	↔	↔	Customized
		Product range	Narrow	↔	↔	Wide
	Value	Value profile	Initial stages	↔	↔	Final stages
		Monetary density	Low	Low	High	High
		Relative delivery time	Short	↔	↔	Long
	Market and demand	Delivery frequency	High	↔	↔	Med./Low
		Uncertainty of demand	Low	↔	↔	High
Economies of scale		Large	Small	Large	Small	
Manufacturing & logistics	Special capabilities	Yes	No	Yes	No	



3 times a week

WHITE GOODS

LP

→ 100
 → 1000

Mr. Peter Karlsson
 Manager Elgiganten AB

- ✓ TV
- ✓ Hi Fi
- ✓ CD plays
- ✓ DVD plays
- ✓ Entertainment

Bran Goods
Brown Goods.

cheap as possible

Some important P/S-decision determinants			Generic P/S-strategies			
			The full speculation strategy	The manufacturing postponement strategy	The logistics postponement strategy	The full postponement strategy
Product characteristics	Life cycle	Stage	Introduction	Growth	Maturation	Mat./Decline
		Volume	Low/Med.	Med./High	Med./High	Low/Med.
		Cost/service strategy	Service	↔	↔	Cost
	Product characteristics	Product type	Standard	↔	↔	Customized
		Product range	Narrow	↔	↔	Wide
	Value	Value profile	Initial stages	↔	↔	Final stages
		Monetary density	Low	Low	High	High
	Market and demand	Relative delivery time	Short	↔	↔	Long
		Delivery frequency	High	↔	↔	Med./Low
		Uncertainty of demand	Low	↔	↔	High
Manufacturing & logistics	Economies of scale	Large	Small	Large	Small	
	Special capabilities	Yes	No	Yes	No	

3 times a week

L.P BROWN GOODS

Mr. Peter Karlsson
Manager,
Elgiganten.

Small white goods

Date and Time: -

22 May 2009

1 pm - 2.45 pm

Some important P/S-decision determinants			Generic P/S-strategies			
			The full speculation strategy	The manufacturing postponement strategy	The logistics postponement strategy	The full postponement strategy
Product characteristics	Life cycle	Stage	Introduction	Growth	Maturation	Mat./Decline
		Volume	Low/Med.	Med./High	Med./High	Low/Med.
		Cost/service strategy	Service			Cost
	Product characteristics	Product type	Standard			Customized
		Product range	Narrow			Wide
	Value	Value profile	Initial stages			Final stages
		Monetary density	Low	Low	High	High
		Market and demand	Relative delivery time	Short		
	Market and demand	Delivery frequency	High			Med./Low
		Uncertainty of demand	Low			High
Manufacturing & logistics	Economies of scale	Large	Small	Large	Small	
	Special capabilities	Yes	No	Yes		

SMALL WHITE GOODS

L.P

Mr. Peter Karlsson
Manager
Eleganten. Jewellery

