

The Role of Consumer Insight in New Product Development and Its Impact on Supply Chain Management: A Swedish Case Study

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Abstract

This paper seeks to explore how a profound consumer understanding may influence the early stages of a new product development (NPD) process. The issue is examined through a qualitative single case study combined with a literature review. The case study shows how the NPD process is structured and executed in a Swedish furniture company as well as the role consumer insight plays in that process. Empirical data have been collected mainly from in-depth interviews with persons representing senior and middle management in the case company. The research reveals that consumer oriented, cross-functional NPD in the case company has a strong impact on internal collaboration, and aligns the goals between different departments and functions within the company. Despite inefficiencies on departmental level, effectiveness on company level is achieved. Early indications show an expected growth in contribution margins by 8 percentage.

Keywords: Supply chain management, new product development, consumer insight, demand flow, concurrent design

Introduction

One of the main objectives with early stages of New Product Development (NPD) is to search for new areas of consumer opportunities. In order to have a successful output of the NPD process, it is important to acquire a profound understanding of the voice of the consumer (van Kleef et al., 2005; Kärkkäinen et al., 2001; Simonson, 1994). Consumer opportunities are amongst the first stages of NPD, and the importance of the quality of the opportunity identification stage is gaining recognition (Cooper, 1988, 1998). Comprehensive knowledge about the consumers is needed to understand their true demand (Lee and Whang, 2001). Moreover, it is useless without physical distribution. The linkage between consumer insight and distribution activities, Supply Chain Management (SCM) is referred to as Value Chain Management (VCM) (Rainbird, 2004).

SCM may be described as a set of approaches dedicated to the integration and coordination of materials, information and financial flows across a Supply Chain (SC), satisfying customer requirements with cost-efficient supply, production and distribution of the right goods in the correct quantity to the right location on the correct time (Gibson et al., 2005; Hilletofth, 2009). Without new products, market acceptance and value adding packages, an efficient SC is useless. Hence, the NPD process is closely intertwined with SCM (Hilletofth and Ericsson, 2007). Since the value offering is not only restricted to the product characteristics, but also customer service (Christopher, 1972), SCM affects NPD. Therefore NPD and SCM must be treated simultaneously (Hilletofth, 2008; Hilletofth et al., 2009, 2010; Charlebois, 2008; Canever et al., 2008; Vollmann and Cordon, 1998; Vollmann et al., 1995; Heikkilä, 2002; De Treville et al., 2004).

In recent years a new business environment, characterized by rapid and volatile demand changes, short product life cycles, and a high degree of customized products, has evolved to co-exist side by side with the conventional low cost business environment (Christopher et al., 2004). Companies may chose to compete in this new marketplace. To be competitive in this environment a profound understanding of customer needs, rather than the technology of the product, must be considered during NPD. This challenge calls for innovative and rapid NPD. Customer pain as the driver of all activities is sometimes referred to as Demand Chain Management (DCM) (Bingham, 2004; Hilletofth, 2009). Further, there is a competitive advantage to gain when customers are included in several stages of the NPD process (Pralalad and Ramaswamy, 2000, 2004).

The basis for differentiating the SC has been the product characteristics (Fisher, 1997). Since not only the product is in focus, the whole value offering must be considered. This calls for innovation and differentiation in several stages during which the consumer comes in contact with the offered product/service (MacMillan and McGrath, 1997). The strategy must be reinforced with the activities, e.g. accepting trade-offs and giving the strategy precedence over operational efficiency, all in an effort to escape competition based upon lowest price, with low contribution margins (Porter, 1996).

The research purpose is to investigate how consumer insight affects early stages of NPD, and how that relates to the configuration, and management of the SC. The research questions are: “What are the consequences of NPD that is driven by consumer insight?” and “What impact has a consumer insight driven NPD on the SC?”. The case company is Hans K, a Swedish furniture company focusing on NPD and distribution. In order to illustrate how consumer insight is collected, and how NPD is structured, a descriptive single case study approach is used. The main research approach is an holistic single case study. This was considered appropriate in order to gather in-depth data.

The remainder of the paper is structured as follows: Section 2 is a literature review, Section 3 presents and discusses the research approach and data collection, Section 4 presents the case study findings, Section 5 discusses and concludes the research and proposes new areas for further research.

Literature Review

Before literature was reviewed a framework was proposed. Many aspects of a SC are affected by NPD, e.g. sourcing, and lead-times. One part of NPD is design. Hence, design not only affects NPD, but also the configuration and management of the SC. There may also be a strategic choice to be demand driven, or supply driven, which in turn affects both NPD and SCM. Therefore, the proposed framework is that design is a vital part of NPD, and that there are important connections between NPD and SCM/DCM.

Supply Chain Management and Demand Chain Management

SCM is sometimes referred to as a set of approaches coordinating materials, information and financial flows across a SC (Gibson et al., 2005), and sometimes a set of processes dedicated to the same task (Cooper et al., 1997; Lambert et al., 1998) with bi-directionality in the materials flow (Hjort, 2008). Regardless of definition, there are two ways defined in literature to do this: the lean or efficient approach suitable for functional products, and the agile or responsive approach suitable for innovative products (Fisher, 1997; Walters, 2006). In order to be both efficient and responsive, a combined approach may be adopted by postponing final configuration (Dapiran, 1992; Feitzinger and Lee, 1997).

DCM has several definitions. According to Walters (2006) it is a matter of emphasis, where SCM emphasizes efficiency in processes and DCM emphasizes effectiveness in the business. Bingham (2004) argues that there are five key stages of DCM, where the fifth stage is full DCM. In this stage customer pain drives all activities, a profound insight to customers' needs provides a competitive advantage and consumer insight is collected in several ways and spread through the organization in order to orchestrate the customer experience. Ericsson (2003) and Jüttner et al. (2007) stresses the collaboration between marketing and SCM as the focal point for DCM.

New Product Development

The NPD process is a key business processes that SCM tries to integrate across the SC (Rogers et al., 2004). Done correctly it allows management to coordinate the flow of new products in an efficient manner across the SC, at the same time fulfilling the demands of the consumers and achieving effectiveness. Moreover, product design may improve the SC capabilities, but the configuration of the SC may also help to improve a NPD process (van Hoek and Chapman, 2006). Kärkkäinen et al. (2001) argue that there are three interconnected phases that defines NPD: strategic planning, customer need assessment, and NPD. The strategic planning attempts to ensure correct identification and prioritization of different product development areas generating specific goals for NPD. The strategic planning is based upon the current business strategies with the purpose of clarifying goals before initiating the customer need assessment and the NPD phases to avoid performing the wrong activities. The objective of customer need assessment it to clarify customers' needs as well as the competitive situation for the company. Through consumer insight, companies may not only increase the chance of developing the right products, but also decrease the risk of de-

veloping the wrong products (Rochford, 1991) Removing the inter-organizational functional focus (silo-mentality) is one way to facilitate creation of customer satisfaction while enabling internal collaboration (Cooper et al., 1997).

Design

Part of NPD is the design phase. Design is defined as “the configuration of elements, material and components that give a product its attributes of function, appearance, durability and safety” (Walsh et al., 1988). Further, the need of fit between activities (Porter, 1996) is stressed as design management is defined as the utilization of design expertise in order to strengthen the strategic objectives of the organization (Blaich, 1998). It is necessary to coordinate the design resources across company functions in order to fulfill the company’s strategic objectives (Vazquez and Bruce, 2002). In order to improve NPD a concurrent approach to design is suggested (Khan and Creazza, 2009). Here, design is part of a cross functional approach, design’s profound impact on SC is acknowledged and design is therefore constricted in order to create fit with the supply chain.

Research Approach and Data Collection

This research aims to explore how a profound consumer insight may influence the early stages of a NPD process and what impact it has on the SC. The issue is examined through a literature review combined with a qualitative single case study. The chosen research approach and strategies corresponds well with the explorative purpose of this research (Yin, 2008). Case study method was considered appropriate since the research analyzes contemporary events, capture wider and in some extent new problem areas, and because the researcher has no control over the events (Yin, 2008). The case company is Hans K a Swedish furniture company focusing on design and distribution of furniture. This company was chosen based on the industry it is operating in as well as its efforts towards developing a consumer oriented NPD process. The case company has actively chosen to compete on a consumer oriented market, with a differentiated and consumer insight driven, product offering as competitive advantage. The choice of market has also included the trade-off of not being able to serve customers (retailers), and consumers that demand low cost, standardized furniture.

One advantage with case studies is the possibility to combine several data collection techniques; in this research empirical data was collected from various sources to enhance understanding by examining the research object from several perspectives. Firstly, this study is based on data gained from three in-depth interviews with persons representing senior and middle management in the case company; former CEO/founder, CEO, and manager of NPD. In addition, brief interviews with the managers of marketing and purchasing/logistics were conducted to finalize the research. The interviews were conducted in 2009, note taking was the main interview method, the length of the in-depth interviews were 60-90 minutes, and the brief interviews were about 30 minutes. In order to find relevant information the interviews were prepared in a structural way. The interviewees were also able to read the findings from

the interview to avoid misunderstandings. Additionally, this study is also based on secondary data retrieved from internal documents produced by the company. Moreover, this study is based on several lectures, meetings, and business trips as parts of an ongoing project between the authors and the case company.

The data collection has been documented, which increases the reliability of the case study. However, it should be noted that all case studies are unique and the companies are continuously changing, meaning that the conditions can never be identical. Two tactics have been applied to increase the validity of this study. Firstly, multiple sources of evidence have been used, and secondly, the draft case study reports have been reviewed by the respondents. As shown above different sources have been used to answer the same questions (interviews, meetings, documents), and therefore triangulation can be said to have been used. The use of triangulation has contributed to improving the rigor, depth, and breadth of the results, which can be compared to validation (Yin, 2008). However, it also enhances the investigator's ability to achieve a more complete understanding of the studied phenomenon (Scandura and Williams, 2000). The overall reliability and validity of the study could have been further improved by increasing the number of informants and extending the period of data gathering to encompass multi-points in time rather than providing a retrospective snapshot.

Case Study Findings

Hans K has two main business areas; NPD of furniture, and distribution of the furniture from Asia to Northern Europe. Hans K stems from Universal Furniture, a furniture distributor founded in 1959. Universal Furniture manufactured in the Far East and had marketing companies in the US, Canada, Europe, the Middle East and Australia. In 2002 the present owners took over the Scandinavian division and became an independent distribution company. In 2004 the company changed its name from Universal Furniture AB, to Hans K.

Hans K does not have any own retailers, their furniture is sold to the final consumer via a variety of stores and retail chains. This leaves a gap in the control of the SC, decreasing the possibility to orchestrate the consumer experience. The company has chosen to disregard the mainstream distributor business model, i.e. where companies compete on price delivering furniture specified by the retailer. Instead, Hans K focuses on products developed from a profound understanding of implicit consumer needs. This includes addressing the issues with consumers not being able to communicate what they actually want, rather what they perceive that they want. Implicit consumer needs are found through a task appropriate NPD process, developed by the case company. Also, due to a postponement strategy consumers are able to do the final specification on many of the furniture sold by the case company, e.g. change the height and fabric on chairs and the height and size of tables. Hence, a consumer insight driven NPD process had to be developed, and has brought along demands on the configuration of the company's SC. These actions are steps from producing functional products competing on lowest price, to produce innovative products competing on other terms such as design and

customization, and are also signs of the case company working in a demand driven manner.

Demand Flow Process

Hans K illustrates their product management process with a model called the Demand Flow Process (DFP) (shown in figure 1). The process incorporates the steps from the strategic market plan and consumer opportunities, which is the first step when developing new products, to the phase out of a product.

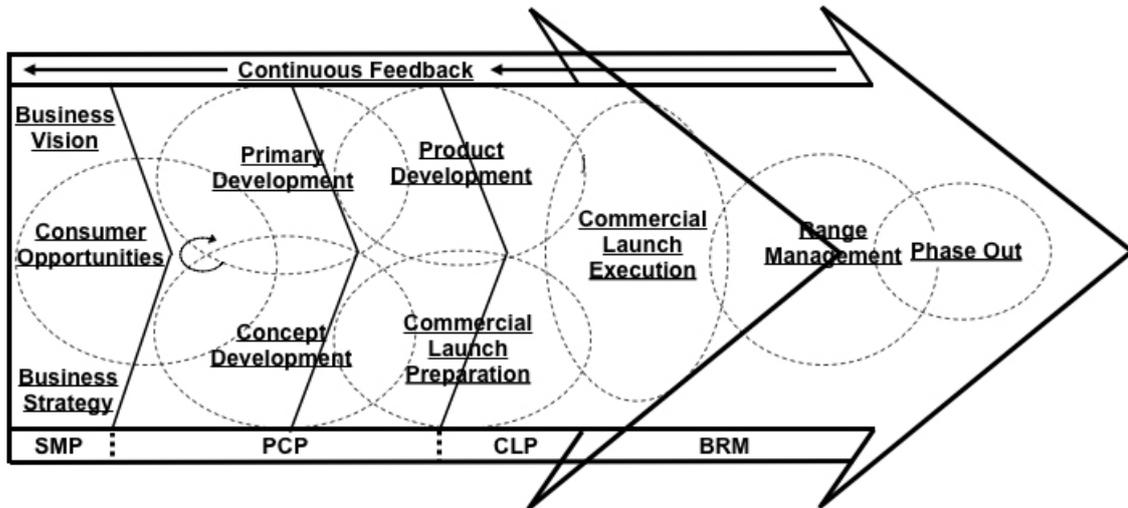


Figure 1: Demand Flow Process

One goal with the DFP is to obtain collective, and objective consumer information, and keep this consumer insight undistorted through the NPD process all the way until the finished product is the hands of the ultimate consumer. However, through the process it is acknowledged by the case company that the information is distorted. The main areas of distortion are perceived to be the interface between Hans K sales department and customers, and the interface between the customers and the consumers. Lack of SC control is a source of demand distortion, and increases difficulty orchestrating the consumer experience.

Roles within the Demand Flow Process

Even though the DFP is clearly defined, the intra-organizational roles are not. The case company is a small company with the founder/former CEO, and father to the current CEO and the marketing manager, still active in the company. With only a few additional people on management level, it has been hard to separate the roles within the company. Due to changes in personnel, intra-organizational roles are currently under revision.

Strategic Market Plan

The SMP is the document guiding the work of Hans K. Within the SMP the consumer segments and the design styles are defined. Consumer groups are defined using psychographic segmentation (Demby, 1974), and design styles are divided into three styles. This makes a 3*3 matrix called the product platform. The psychographic segmentation into three consumer groups enables the case company to focus its efforts collecting consumer insight towards targeted consumer groups. Using this matrix the case company can identify in which of the

nine segments more furniture is needed. The strategy also includes what room to address in a NPD process. The chosen segmentation model is only used to differentiate the design of furniture and treats consumer groups alike in regards of the service offering which may cause the case company to over-serve some groups, and under-serve other groups.

Consumer Opportunities

When it is decided what room to investigate, a small group is assembled to do the initial work. So far the groups have consisted of two to three students, studying NPD and design. The group does activities typical for NPD, e.g. trend analysis, customer surveys and consumer surveys. Further, the group also visits potential consumers in their homes in an everyday setting. During the visit, the home is photo-documented. Two of the main goals are to find implicit consumer needs, and to get a base for developing furniture based upon actual, not intended, use. The case company has the knowledge on what to do, and are not reliant on certain individuals to collect consumer insight.

Studying consumers, the case company has found gaps between the intended and the factual use of many rooms, and the rooms' furniture. Hence, consumer opportunities previously not known have been discovered, e.g. ventilation in media furniture and a multi-purpose bed end casket with place for dirty laundry, a seat and a surface where a laptop can be placed. Implicit needs may be one of the best reasons to pursue consumer insight while producing innovative products, and one of the best justifications for a NPD process driven by consumer insight.

Primary Development

Hans K has no in-house designers. Instead designers are recruited depending on what square in the product platform is targeted. In most cases, three designers have been recruited. As with investigating consumer opportunities, the case company makes efforts to be able to perform core business processes without becoming reliant on certain individuals. The consumer opportunities are presented to personnel within the case company (CEO, marketing, NPD, purchasing/logistics) and designers in a cross-functional meeting. Designers are not only restricted to a certain square in the product platform, they are also restricted to the use of certain materials. The NPD manager keeps the material choices in a material matrix. This may be seen as a postponement of material choice that helps to secure sourcing and makes it easier for the consumer to mix and match furniture produced by the company.

Solutions to consumer issues are addressed in all furniture collections. Even if the design differs, it is assumed that the day-to-day issues are the same for all consumer groups, e.g. how cables are stored in media furniture. Since the designers work with different design styles, it is perceived that there is no competition between the designers, but synergy effects emerge.

Primary development results in furniture sketches, and technical solutions that are handed

over to Hans K in a cross-functional meeting.

Concept Development to Phase Out

The manager of NPD is responsible for concept development. Concept development involves positioning on the market, profitability, forecasting, service and logistics. Concept development is followed by product development. This process is rather generic to the furniture business and addresses areas such as product drawings, and product specifications. However, product specifications are not altered based upon cost saving manufacturing measures suggested by the manufacturer. The manager of marketing is responsible for the commercial launch. These activities are formed by the consumer insight gathering activities, and cross-functional meetings, earlier in the DFP. The manager of marketing remembers, and tries to use the ideas found in the homes of the consumers, not only the looks of the furniture, but also the features, when marketing the finished products. The success of the products are monitored in the product platform. Products that are not profitable, or do not fit the company profile, will be phased out.

Idea Funneling from Consumer Opportunities to Concept Development

All of the steps mentioned above may be depicted in a picture representing time on the y-axis and idea-with on the x-axis. Every step in the process narrows the number of ideas, but at the start of each step there is an increase of ideas due to the cross-functional approach at the case company.

Outcomes of the Demand Flow Process

Negotiating with manufacturers in Asia modifications are often suggested by the manufacturer, e.g. where to put a ventilation hole. The manufacturer might find manufacturing or cost rationalization to justify layout configuration. However, these suggestions are always turned down in favor for the specifications generated through the DFP. For the fiscal year of 2009 an increase in contribution margin of 8 percentages, due to new products developed using the DFP, is expected. This implies that a consumer driven NPD may drive production costs, but also increase contribution margins. Hence, higher cost in manufacturing may be seen as a profitable inefficiency.

Discussion and Conclusions

The research set out to investigate the consequences of a NPD process driven by consumer insight, and what impact that process has on the SC. The findings are that a consumer driven

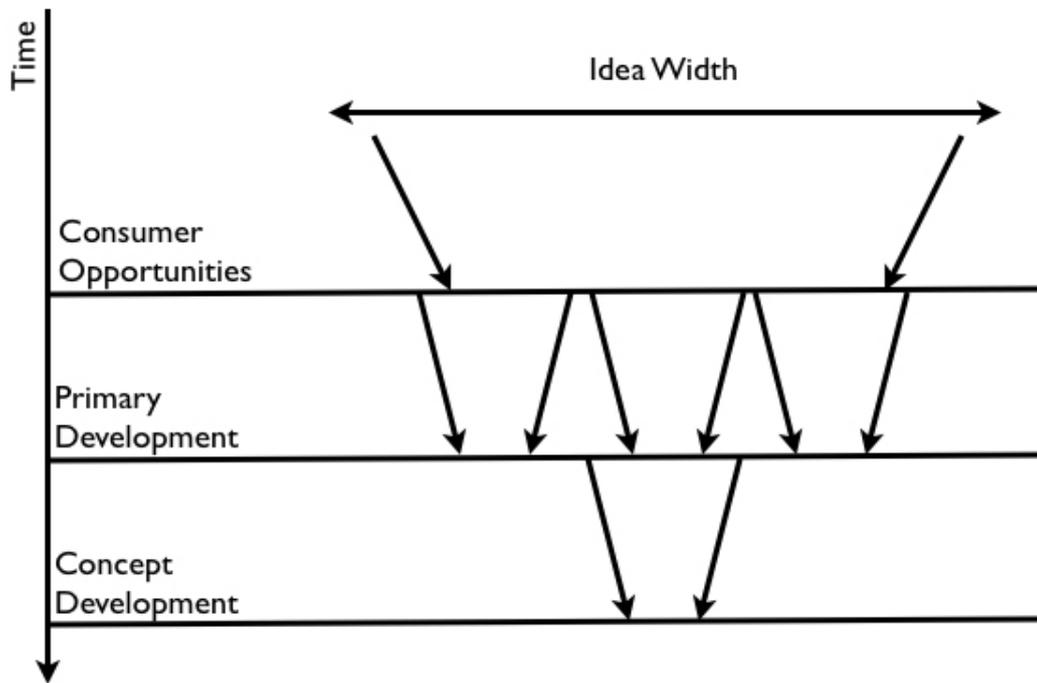


Figure 2: Idea Funneling

NPD process aligns internal efforts, prohibiting the silo-mentality. Departments within the case company are willing to decrease their performance (e.g. purchasing does not accept cost saving modifications to design suggested by suppliers) in order to increase the business output. However, partners in the SC may not realize the possible benefits from the consumer insight driven NPD and lack of collaboration in the SC hinders ultimate performance. Also, by constraining designers to certain design styles and material choices, coherence in the furniture collections is secured, and reliability in sourcing is increased. Moreover, with a consumer oriented business approach and NPD process, furniture are developed to be customized by the final consumer. Hence, a consumer driven NPD process has requirements on several parts of the value offering.

The study reveals that the consumer driven NPD approach and has a lot of resemblance to the ideas of concurrent design (Khan and Creazza, 2009). However, concurrent design focuses on inter- and/or intra-organizational issues, while the approach of the case company focuses on the collaboration between consumers, designers and the case company, neglecting customers (retailers). Assigning designers to specific tasks and specific material choices has an impact on the balance of power between the NPD process and the design phase. Further, this helps to decrease the risk of silo-mentality since everyone taking part in the development of new products have a window into the homes of the consumers. Clearly, this is in line with steps outlined in order to align design with SCM Khan and Creazza (2009). In contrast to Prahalad and Ramaswamy (2000, 2004) the collaboration with consumers is at an arms-

length distance and is restricted to only one part of the NPD.

The main theoretical contribution is the combination of concurrent design and consumer driven NPD. Both fields have been researched previously and been found beneficial, but the combination of the two fields still lacks research. It has also been showed that a joint understanding for consumers acts as a catalyst removing silo-mentality while encouraging management by holistic. Moreover, the need for strategic collaboration in the SC is clearly illustrated with the demand distortion in the interfaces between the focal company and its customers, and the customers and the consumers.

The main practical implication is that companies may benefit from taking a new approach to NPD. This includes the co-development of products with the consumers, a concurrent approach to design, and the integration of customers in order to preserve the information integrity. Further, it is made evident that inefficiencies in parts of a company still may improve the main business objectives.

Further studies into the interface of concurrent design and consumer insight may help to propose new, and better models for NPD. As of today, these topics are treated separately in literature. The results of the case company's efforts is not verified using statistic models. Future research in this area is of interest. However, there are several outside factors that must be regarded and there is a big risk of misinterpretation between significant, and non-significant factors.

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