



Master's degree thesis

Log 950 Logistics

Title

A study of development of lean implementation process in customer services at Glamox: how it provides an opportunity for integration in a traditional lean manufacturing company with service-oriented settings and why it might allow value creation initiatives through waste elimination and concurrently filling inter and intra-firm service quality gaps.

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Abstract

Purpose

The purpose of this thesis is to describe issues pertaining to lean development at customer services in a traditional lean manufacturing firm. The major issues discussed are customer value, integration, servitization, service-dominant logic and dependency theory to propose a model on how to address intra-firm service quality gaps among stakeholders by improving interaction related transactions, building value creation initiatives and forming effective governance mechanisms.

Design/Methodology/Approach

A literature search was conducted to explain the terms customer service, servitization, pooled and reciprocal dependencies, supply chain visibility, lean principles, critical success factors and their application in services. Data was also collected to find out more about the interaction related processes and transactions among stakeholders.

Findings:

The study finds that successful lean implementation in customer service necessitates a shift in focus from goods to human interaction to form a value creation construct and apart from waste elimination it also requires, and provides ample opportunity, for the firm to engage in value creation initiatives by forming effective governance mechanisms using inter and intra-firm collaboration.

Research Implications/Limitation

For lack of time and resources, only data relating to few of internal and external customers have been searched. The proposed model is authors' idea, open to debate, discussion and/or criticism and its application in other firms or industries.

Practical Implecations

The proposed model and its characteristics might help to reduce waste at customer services department of the firm especially for processes where it is highly required to do so, fill service quality gaps between partners and making interaction based transactions lead to value creation initiatives among stakeholders.

Keywords

Lean Implementation, Customer Services, Servitization, Integration, Value Creation Initiatives, Dependency Theory, Governance Forms, and Service Quality Gaps

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A Study of Development of Lean Implementation in Customer Services at Glamox ASA

“It is not the strongest of the species that survives, Nor the most intelligent that survives. It is the one that is the most adaptable to change.”

Charles Darwin

1: Introduction and Background of Study

The first chapter offers an introduction of the thesis, topic and the firm. It further illustrates the research question and the objectives of this study. This study would also mention research limitations, literature review and data analysis to address the research question. Starting from the firm, Glamox is a group of companies that develops, manufactures and distributes professional lighting solutions for the global market. The firm is a leading supplier to the world's marine and offshore markets, as well as to land based building markets. Glamox operates in several European countries, as well as in USA, Canada and Asia. The main logistic center is located in Molde and the research has been performed regarding this unit. At Glamox the logistics department is seen as a combination of warehouse, logistics and customer service. In this thesis the main focus will be primarily on customer services department.

Research area related to lean implementation at Glamox ASA and company itself became themes of interest because both researchers currently work at Glamox in Molde and could access data on lean implementation and integration for customer service departments. It became also increasingly interesting to study how a traditional lean manufacturing company can implement lean philosophy in services as it assumes to be a challenging and thought-provoking phenomenon for using lean instruments. Lean is often thought of as just another type of production process, given its roots in manufacturing. However, it is an all-encompassing organizational philosophy founded on six tenets namely elimination of waste, a broad view, simplicity, continuous improvement, visibility and flexibility. (Sanders, 2012.)

First lean program was implemented at Glamox in the production department and a few years later it was introduced to the customer services department. This phenomenon potentially highlights the need to translate the lean applications in manufacturing to the service-oriented environment. It also provides researchers with an opportunity to look at lean implementation

framework in backdrop of core functional areas of organisation including production, sales, warehouse, IT, customer services and logistics all at one place. Lean is often seen as a tool used at the production and manufacturing, however in this research the main focus will be on analyzing lean as an instrument for improving customer value, introducing value creation initiatives and increasing efficiency and effectiveness of the offered service levels at customer services.

It would also be quite pertinent to look at lean in context of strategic objectives of the organization. One of the long-term goals of Glamox is continuous improvement of the company's routines and better understanding of customer needs and expectations. According to management, the goal of Glamox survival and growth through superior and improved customer services could be made possible through lean intervention (Andreassen, 2014). That's why lean philosophy was first introduced to the production department and after it has shown some good results lean was also naturalized to the warehouse and the customer service department in January 2013. Several teams have been formed, in accordance with their functions, for this purpose who conduct daily meetings to discuss important issues related to waste reduction and continuous improvement and seek respective solutions. Lean implementation at customer services department will be discussed and the quite interesting point is how can lean help integration across several departments in a traditional lean manufacturing firm with in-house service oriented settings at place.

Research Question

The research question of particular interest in this regard would be:

A study of development of lean implementation process in customer services at Glamox: how it provides an opportunity for integration in a traditional lean manufacturing company with service-oriented settings and why it might allow value creation initiatives through waste elimination and concurrently filling inter and intra-firm service quality gaps.

Study Objectives and Limitations

The research aims at exploring the development of lean implementation process at customer services of Glamox which is effectively considered a part of logistics department. Since this process is a logical extension of lean implementation from production department to logistics, research would seek what opportunities and challenges this integration might bring considering Glamox is a traditionally manufacturing company with in-house logistics and customer services departments. Since such implementation at customer services department is at initial stages, this research would make an attempt to analyze how lean process is being implemented at customer services and whether it might result in successful waste elimination at services and generate customer value by filling service quality gaps and why so. How lean application at customer services might be ensured as a continuous improvement process? Critical success factors would be identified to address challenges faced by customer services in the face of required level of implementation. Various outcomes related to literature review along with real investigations at customer services department would be presented to help readers identify and appreciate real life challenges and opportunities in wake of lean intervention at the department. A model would be suggested to readers in order to present a graphical picture of these challenges and opportunities in regard to lean intervention at customer services department of the firm.

It is pertinent to mention that study does not explore the role of other departments except customer services in greater detail and makes a mention of other departments only when relevant to customer services in one way or the other. The data analysis is based on semi-structured interviews at customer services, logistics, IT and sales department and also observations. Some theories like interdependency and relationships related content would also be explored to answer the research question.

1.1 Topic Overview

Business started in 1947 in Molde, when Birger Hatlebakk invented the new type of aluminum that was smooth, matt and oxidized. During the following years Glamox has had its rises and falls, but by the end of the year 2008 it achieved the best results through the company's 60-years history. The company's total revenue at present is 1,593 million NOK

and the number of employees is about 1030 worldwide. Glamox business is built around five values namely Customers, Cooperation, Commitment, Quality and Ethics which play an important role in the scope of Lean Philosophy.

Recently, lean has gained a lot of attention at the company being often discussed and focused on. Several times a year an internal information magazine is published where lean and its development are discussed at the company. As Glamox was introduced to the new philosophy, never ending lean-project has started. Big attention is being paid to the internal integration of lean, inspiring for better cooperation between departments, taking more responsibility on one`s work and trying to improve their performance and productivity.

One important function of customer services department is to ensure the interaction between various departments at Glamox though for the purpose of this research the emphasis on these processes would be from logistics and customer services` standpoint. A study of these processes would help us examine the flow of information and flow of people especially within service-oriented environment. There is frequent interaction among stakeholders and meetings are conducted on routine basis between customer service and sales, Customer service and IT department and Customer Service and Accounts and Production. There are sales teams and customer service representatives who exclusively deal with the external clients but it is only customer service department that helps coordinate all activities between departments. Lean implementation in a traditionally manufacturing setting with service providing departments considers networking across all departments.

In light of internal information it can be affirmed that one desired objective of lean`s successful implementation at customer service department is to achieve competitive advantage through waste reduction and streamlining of processes at this vital functional area of organization and thus create value (Carlsen, 2014). Various value creation initiatives, at this department, have been taken in this regard and this research would comment on such steps for an objective analysis. It would be significant to look at the importance of logistics in this context as customer services is considered part and parcel of logistics department at Glamox.

In recent years, attitudes have changed quite dramatically towards providing quality services as an add-on. It has been a deep rooted opinion that the many elements within logistics have caused creating extra cost for firms trying to sell goods in the marketplace. Though cost is obviously linked to the flow of information, it is also well documented that improved and quality customer services do provide a very constructive contribution towards the value of a product. It is so because logistics operations enable processes that help products reach the final customer in a timely manner and in appropriate condition. It is therefore imaginable for firms to contest on the grounds of making products available either at the highest possible value to the customer (for instance if it is exactly where and how the customer wants it) or at the lowest possible cost (so that the customer will buy it because it is the least expensive). Some companies may, indeed, make an endeavor to achieve both of these goals instantaneously. This is chiefly significant because there are many goods that are sold on the grounds of availability or price and not because of their brand name. This relates to quite many technical products as well as food items, such as mobile phones and personal computers. This shows that a company may participate in competition as a cost leader where it tries to use its resources so that it makes products available at the lowest possible prices or as a *service leader*, where it attempts to secure an advantage over its competitors by providing some key service elements to distinguish itself from others, thus achieving a productivity advantage. For a value advantage, this might comprise of, as is the case with Glamox, the provision of an especially custom-made service or the utilization of several diverse channels of distribution so that the product is made available in the marketplace in a lot of different ways (Rushton, et al., 2010). It might contain a regular update on location, status of goods or a guaranteed service level. Authors further maintain that “For a cost/productivity advantage, this may include a number of different means of cost minimization, such as maintaining very low levels of inventory and ensuring that all manufacturing and distribution assets are kept at a high utilization”. Lean implementation at logistics/customer service department at Glamox is an attempt to realize this goal that is to ensure that services are provided sans waste and distributions channels are operated at a high utilization. Customer services department at Glamox is required to serve queries of not only wholesalers but also internal customers such as Sales, Production, and Warehouse. These queries can be related to sales queries, returns, sorting mistakes and/or coordination among different departments. All processes in this regard are meant to add value to the overall offered products and services. Lean

implementation at customer services is an attempt to make these processes effective, efficient and completed with minimum cost without compromise on quality.

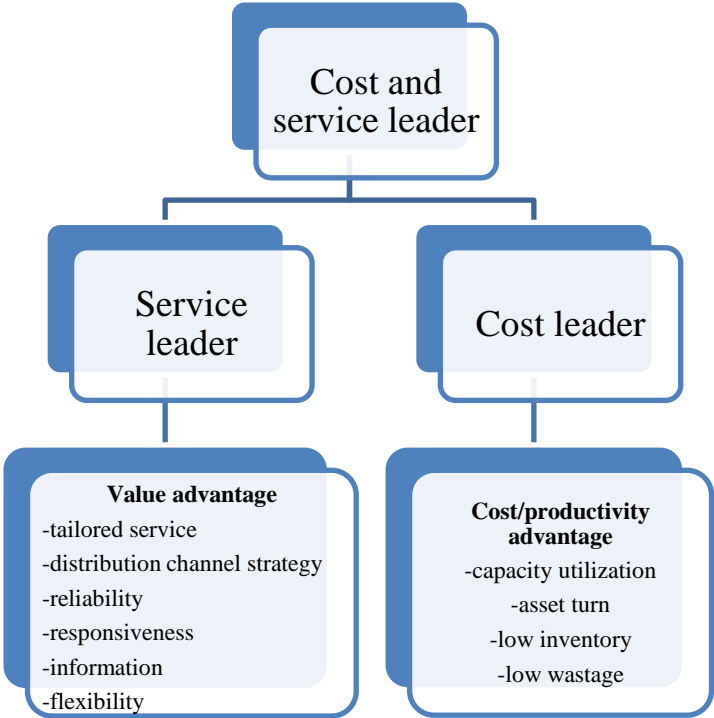


Figure 1.1 The logistics implications of different competitive positions (adopted from Sanders, 2012)

1.2 Customer service and logistics

As it has already been mentioned that logistics departemnet at Glamox is seen as a combination of warehouse, logistics and customer service and one key focus of this research is on customer service related operations.

Customer service is considered as an important aspect of the business by vast majority of organizations. However many companies fail to address what exactly *they mean by customer service* or provide *a precise definition of customer service measures*. Conventionally, service provisions have been founded on many wide-ranging anticipations of what do customers want, rather than considering the real needs or requirements of customers or at least customers’ perceptions of what they require. There are many main points that might be well-thought-out in this regard. One of these is the definition of customer service along with its

measurement. It is also crucial to appreciate that customer services and customer service requirements can and do differ not only between companies and industries but also between the markets segments a firm might serve. Thus the value perceptions might differ across various market segments a firm serves. Another pertinent issue is the acknowledgment of the intricacy of customer service provision. Customer service is inseparably connected to the process of logistics and distribution. There are quite many effects, within this process, that may be pertinent to customer service and these ranges from the ease of ordering to stock availability to delivery reliability (Rushton, et al., 2010). Finally, there is the requirement to strike a balance between the levels of service offered with the cost of that provision. The drawback of many a service offering is often the impractical and unrecognized high cost of making a service available that may, in the event, be greater than is demanded or required by the customer. Following figure explain how a service that might constitute only 20% of total cost can have a far greater impact in terms of customer satisfaction.

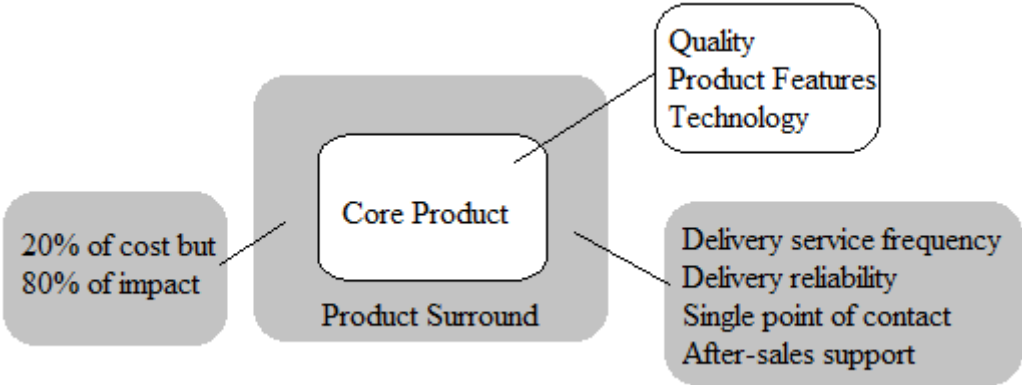


Figure 1.2 Core product versus product surround, showing the significance of the logistics-related elements (adopted from Rushton et. al., 2010)

Logistics/ customer service department has established its teams to help implement lean and identify waste and improvise processes to gain better performance. Following points are worth mentioning in terms of lean implementation at logistics department.

1.3 Major Elements of Lean Implementation at Glamox Logistics Department

- For the successful process of Lean Implementation Program in Logistics, eight teams have been formed in Logistics in accordance with the similarity of the tasks performed

by them. Six of these teams are from warehouse and Logistics department while two are from Customer Service.

- Daily 15 minutes meetings are conducted by each team to critically evaluate the performance of previous day and discuss issues related to wastes and other lean tools. Every second week a half an hour meeting is held by these teams to audit implementation of 5S, 7 Wastes and value added and non-value added activities.
- Factors causing waste and accidents alongwith key indicators are recorded on daily basis and weekly data for each group is transferred to focal person in Logistics department for record.
- Record on rate of sick absence and performance indicators is also being kept for many years before and after LIPL (Lean Implementation in Logistics Department).
- Employees are trained on 5S, 7 Wastes, Value Stream Mapping and are encouraged to not only identify problems as they occur but also be able to contribute in solving them.
- Lean implementation at Glamox includes problem solving, basic root cause analysis, process analysis and data analysis techniques.

1.4 Structure and Method of Literature Review

Different sources have been utilized to be educated with the topic and aslo be familiar with the extent of the research available for lean implementation in services. Various databases have been used such as Science Direct, Emerald, Harvard Business Review that made possible the availability of relevant journals and research papers. Books, alongwith relevant webpages and sites, available on same topic have also been consulted.

Literature avaiable on servitization, value creation initiatives, governance and integration has also been consulted as it forms the basis to understand the nature and importance of lean intervention and its principles in a firm whose core mission is to “be a solution oriented preferred supplier of lighting to defined market segments” (Glamox Website).

Researchers have attempted to identify the key findings derived from the viewpoints presented in various articles. Initially, various papers were found on the explanation of lean and related concepts but focus was given to ones related to lean implementation in seVICES.

2: Literature Review

The literature review has been structured in such a fashion that it mainly deals with specific issues pertaining to lean implementation in service sector or departments. The important concepts related to intrafirm integration, customer value, value and failure demand and servitization would also be taken into consideration. It will elaborate lean in service sector with explanation of seven kind of wastes. Another part of this study would examine those critical success factors and challenges that firms face while having implementation process ongoing. Last but not the least, it would explain few pros and cons firms face towards lean implementation in service sector. A model would be explained later in analysis in light of following discussion as to suggest how the process of lean implementation might be pursued effectively to improve performance in service-oriented departments at firms.

2.1 Background of Lean

2.1.1 A Brief History of Lean

If need for lean intervention at logistics and customer services department at Glamox ASA could be described in one word, it could be “sustainability” for the firm (Sanders, 2012). Organizations have always been seeking to ensure sustainability in the long run to derive maximum profit for its stakeholders. To appreciate relevance of such notions, principles behind lean and validation of its assessment processes, it becomes essential to have a look at the historical development of lean and its principles.

Krajick firstly introduced the concept of Lean in one of his articles called “Triumph of the Lean Production System” where he maintained that a modest use of every resource whether its human, inventory, space, investment in tools or time to develop products might help increase the productivity and efficiency in organizations (Womack et al., 1990, p. 13). Thus, Lean processes are focused to identify and eliminate various kind of wastes and non value added activities to create more value to the organization and also customers. Lean includes use of various techniques for instance having leadership to direct the processes involving multi-skilled employees, managing teamwork and assign it to staff from various functions, enabling communication to get different issues resolved related to trade-offs among departments, allocating and prioritizing of resources and concurrent development that comprises of processes with less inventory, tools and human resources” (Womack et al.,

1990).

It is widely held that “Kiichiro Toyoda” of Toyota Motors was very much influenced by Ford theory of mass production but could not adapt to it for its own reasons related to infrastructure and economic conditions in Japan (Blucher & Alsterman, 2010; Dale & Lwaarden, 2007). These events led Toyota to adapt to its own kind of model where they focused on building several models of cars and trucks in low volumes while minimizing costs through techniques like Just in Time (JIT) and reducing lead times. This model helped Toyota not only to reduce cost and improve quality but also satiate demand for various customer needs while making best use of available resources (Melton, 2005; Dale & Lwaarden, 2007).

The initiatives taken under Toyota Production Systems were those that helped shape some of the most important Lean practices, related to waste identification, reduction and thus elimination, in future organizations (Melton, 2005; Dale & Lwaarden, 2007; Petersson *et al.*, 2010, p. 28). It merits a mention that manufacturing companies, impressed with the outcome, started replicating Lean practices in service departments. Levitt’s study conducted in 1976 points out that firms can truly benefit by adopting these processes into practice and Bowen and Youngdahl (1998) also endorsed the viewpoint mentioning that people really appreciate faster, reliable and quality services and adoption of Lean practices can help firms reach these goals and achieve their vision in result.

2.1.2 Lean Philosophies and Value Creation Logic at Customer Services

An understanding of lean philosophies could help us understand the processes being implemented at Logistics department and customer service department and dissect these processes in orderly fashion to make an objective assessment of their execution and guide the reader if they are being applied in right context at any department based on lean principles. Organizations can focus on the process of continuous improvement by implementing the five Lean philosophies to improve their operations (Loughrin, 2010). These principles-cum-philosophies are pronounced by Womack and Jones (1996) as well cited in Melton (2005) and Bicheno (2004) and is specifying the value from customer viewpoint, the value stream, flow, pull and perfection, which are debated as follows:

1- The first principle can be explained as defining or specifying value from customer viewpoint. Customer value in terms of perceived or available benefits in result of

development of lean service structure should be explored. Womack & Jones (1996) point out that manufacturers and service providers have tendency to offer only those products and services what they feel comfortable with instead of objectively analyzing the customers' preferences and demand. Therefore they are compelled to develop product and services portfolio to meet customers' requirements which in turn requires Lean implementation to specify value in such process.

In the modern trade world where products, business campaigns as well as sales channels become transient, the key to the company's sustainable profit has become enduring customer relationship. As Reichheld & Sasser (1990) stated in their research that if customer retention increases by 5% it leads to an increase of the company's profits by 25-95%. There are various reasons for those striking phenomena. For instance, customers who use to make frequent orders can level out the cost of purchasing goods for the company. Experienced customers are also more cost-effective regarding service, because they become more efficient in dealing with the firm. Loyal customers are at the same time a minor resource and the source of value. To support this vital combination, Glamox should set up customer value as their specific business goal that could be measured.

A number of authors (Shostack, (1984), Smeds, (1994) and Swank (2003)) have noted that irrespective of the sector, businesses can create value through defining the process from a customer's perspective, simplify processes, eliminate waste; improving flow and all of these are underpinned by the mindset of continuously improving.

2- The second principle can be explained as attributing greater significance to value stream meaning thereby organizing processes from the procurement of raw materials to final delivery to end customers from customers' viewpoint rather than focusing on what might be termed as idiosyncratic demands of individual departments (Womack & Jones, 1996).

3- The third principle is also very critical and might be attached much importance with in light of scope of this study. Melton (2005) point out that creating value flow related to not only processes but also people and culture of the organization has a lot to do with Lean implementation. Such value flow can help organization reduce delays in the value added activities and concurrently eliminating non value added activities. Though this principle becomes quite pertinent in the sense that while Lean implementation process is ongoing whether in manufacturing or service departments, the role of people and culture cannot be

emphasized enough yet it has more to do in service related departments as value flow might have an intrinsic appraisal attached to it.

4- The fourth pillar of lean principle can be regarded as leveraging pull demand and thus eliminating the over production and match it with the required demand at all times to help reduce waste in the organization.

5- The last but not the least it is the principle related to seek perfection in the operations conducted within organization. This perfection can be sought through improving overall quality by making services available to customers in the right way and at the right time.

Though initially developed for manufacturing yet these principles are very well applicable to services and the second and third principle that of value stream and value flow are more relevant in context of this study of Lean implementation at services department. Such value stream and value flows might result in value creation for the firms or organizations. The viewpoint presented by Brandenburger and Nalebuff (1997) in Ghosh and John (1999) that value creation is hardly created by companies in isolation especially in developed economies might also be endorsed in this regard. Companies “align themselves with customers, suppliers and many others to develop new markets and expand existing ones” and thus create value. Such alignment might result in shaping, evaluating and redesigning value flows and value streams. Such flows might also be informational as that would help smooth the material flows and fund flows in logistics and supply chain management.

Furthermore, Hammervoll and Toften (2009) believe that value creation initiatives can make firms increase their profitability by not only eliminating extra processes but also by taking joint efforts to increase rent for one of the participating firms or hybrid. Such initiatives can also be explained in terms of “in transactions” and “in interactions”. They point out that “examples of limited cooperation between buyers and sellers in value-creation have focused on transaction-based arrangements; however, in accordance with Borys and Jemison (1989)”, their study “contends that a distinction should be drawn between value-creation in transaction-based arrangements and value-creation in interaction-based relationships”. Technical and administrative coordination is major area of concern in transaction-based arrangements. To ensure such coordination, a good appreciation of partner’s operations is

imperative to attain transparency and boundary permeability. “This entails effective communication, including personal interactions between buying personnel and selling personnel (Chen and Paulraj, 2004 in Hammervoll & Toften,2009). In contrast, continuous mutual adjustments and constant adaptations are required to strengthen interaction-based relationship where both buyers and sellers understand each other circumstances.

Dyer and Singh (1998) also make a mention of value creation initiatives in their article very explicitly under the head of effective governance. They point out how effective governance mechanisms help firms generate rents by either lowering the transactions costs or by providing incentives for partners to engage in value creation initiatives. There are various types of value creation initiatives discussed in the article including relation specific investments, increased volume of exchange, knowledge sharing, complementary resources, safeguard length, sharing tacit knowledge, offering innovations or responsiveness may be mentioned in contract. The role of these initiatives can be further strengthened under lean intervention program at logistics/customer service department at a firm. For instance, relation specific investment has been committed by Nissan seat supplier (Dyer and Singh, 1998) by building its plant in close proximity to Nissan’s assembly plant. This site specific investment came in result of Nissan having minority equity share in the supplier and high level of trust existent between the parties. Such relation specific investment as value creation initiative helped both companies grow and use customized equipment of conveyor belt, economically viable also, to transport the seats instead of using trucks. Following table would help us appreciate value creation initiatives related to transactions or interactions.

<p>Value-creation initiatives in interactions:</p> <p>Relationship specific investments Coaching partner problem solving Knowledge Sharing Willingness to combine complementary strategic resources</p>

Table 2.1 Adopted from Hammervoll and Toften (2009)

Value creation initiative in form of knowledge sharing can also be discussed through the annals of article. For instance Fuji and Xerox have come together to create a “communication matrix” that allow them to know each other better and to multiply inter-firm interactions. Valuable information might be discovered, and where important know-how is located within partnering firms pertaining to solutions for problems on product, technology or market. This matrix assures that both firms become more proficient for “transferring and assimilating knowledge” (Hammervoll, 2009). This kind of communication matrix could go to large extent to ensure quality informational flows among stakeholders and remove waste and unrequired processes.

Value creation initiatives in form of complementary resources can also be pointed out. For instance Visa organization and its alliance partners cooperate to create inseparable assets to generate rents for the alliance partners. Distribution network and strong brand are idiosyncratic to Visa whereas indivisible assets are jointly owned by contributing banks in the large multi-firm alliance. Access to brand name and distribution network offered by Visa can only be possible through participation in alliance and thus value creation initiatives are taken by partners. Such alliances do help create value in the short and long term.

It can be summed up keeping in consideration the above discussion that “various value creation initiatives such as coaching, information supply and sharing strategic knowledge can be tools for promoting collaborative learning in specific types of exchange relations” as also mentioned by Borys and Jemison and Dyer and Singh (Hammervoll, 2012).

It would also be relevant here to consider governance dimensions related to ongoing relationship maintenance with relevant stakeholders, as mentioned by Heide, to understand different issues discussed in this research in better way. Governance can be defined as a “multidimensional phenomenon, encompassing the initiation, termination and ongoing relationship maintenance between a set of parties” (Heide, 1994). Three forms of governance can be referred to namely market governance, hierarchical governance and bilateral or relational governance. These dimensions can be role specification, nature of planning, nature of adjustments, incentive systems, monitoring procedures and means of enforcement.

Borys and Jemison (1989) explain about governance form considering how much each partner has power or authority over the hybrid taking into consideration two situations in supply chain namely sequential and reciprocal interdependence. It might cause not only technical, like lack

of product specification, but also administrative problems like failure to fix alternate delivery schedule. According to them, GM could be a suitable example in this regard. Hybrid with reciprocal interdependence where partners exchange outputs and try hard to learn from each other is also significant. Here reciprocal interdependence requires or demands a greater and faster fit between operational linkages. Chrysler is a good example in this regard of reciprocal interdependence. They make fast moves to create better ties with suppliers in comparison to GM. Logistics department of Glamox could use lean intervention program to help achieve on this front and strengthen ties with the suppliers to maximize gains using lean.

With regard to governance issues, governance value analysis (GVA) seems to distinguish governance as an incentive system whereby a firm acts according to “the expressed wishes of another (hierarchical governance) or a threat of relationship termination (market governance) or desire to perceive the relationship (relational governance)” (Hammervoll, 2009). Incentive is used to trigger desired action from the exchange partners. Ghosh and John (1998) mostly mention highly vertically integrated operations within Toyota and the governance form that can be attributed here is that of hierarchical governance. They also make us appreciate the concept of **unilateral learning** through their article. For instance Toyota in order to focus on reliability needs an assembly line that matches requirements essential for its goal. They supply all the valuable information to its suppliers. Information is processed in this instance and cooperation is not limited to points of contacts. While discussing ongoing relationship maintenance means of enforcement can also be looked at under hierarchical governance. In case problems arise the reliance is on the “voice” or authority to seek solutions.

Bilateral or relational learning is branded by mutual learning through strategic knowledge sharing. Dyer and Singh also talk about sharing of strategic knowledge through various examples like that of Fuji and Xerox by means of development of communication matrix. Dyer and Singh’s article make us understand **unilateral development** through where buyer contributes to supplier problem solving as in the case of Nissan seat supplier example. Being a minority equity holder and high level of trust between exchange partners Nissan collaborates with its seat supplier to develop conveyor belt and jointly invest to increase efficiency and reduce transportation cost spent on trucks. Governance form that can be referred to here is bilateral or relational governance. There are long term commitments and incentive systems are also long lasting. The individual transaction carried out may not be

profitable for instance Nissan seat supplier made all investment when bringing their plant closer to Nissan assembly line but later entered joint investments like those on conveyor belt.

In terms of planning bilateral relation governance form looks at plan as aids and frames of reference rather than strict stipulations on duty. Enforcement mechanism are in form of arrangement that helps exchange partners first detect the significant issues related to product, technology or market and then identify the location of personnel with relevant expertise in the alliance or individual firms to solve those issues.

But another important concept related to value could be considering the difference how value is treated within logistics/customer service function. Value might be thought as:

- More efficient logistics than other dyads/supply chains (lower costs)
- More effective logistics; better delivery service, products or processes –“the innovation supply chain”

The focus at firm could be more on balancing the two essentials and more on effective logistics where emphasis is being laid on lower costs through minimizing or eliminating wastes across various processes within supply chain. Though understandably, boundaries between efficient logistics and effective logistics might be blurred and one cannot be fully separated from the other. Yet a shift in focus on effective logistics would require an emphasis on closer collaboration with suppliers and third party logistics companies and initiating joint efforts with them on lean implementation. In this sense the success of such initiatives rely heavily on the participation of stakeholders; a firm might not have full control on. This point has been further discussed through literature advanced by Neailey discussed in following paragraphs.

2.2 Lean Services and Servitization

As application and assessment of lean principles at logistics/customer service department is prime area to focus in this thesis, having a service oriented setting and being involved in related operations it would be very much pertinent to look at the nature of services, its operations and idiosyncrasies services and servitization might offer.

Service management was initially developed conceptually through the services marketing

literature (e.g., Grönroos, 1990; Normann, 2001). Particularities of service supply include that service are intangible, heterogeneous, perishable, and inseparable regarding supplier-customer interaction (Ellram et al. 2007). Grönroos (1990) highlights particularities of service production including that services at some extent services are impalpable, that they consist of a sequence of activities rather than objects, that services can be generated and consumed contemporaneously and that the customer often takes part in the service production process. Service processes are therefore inherently complex in nature, possibly more complex than manufacturing processes which represent the empirical foundation for the conceptual development of Lean principles.

A simple way to analyze services from a strategic viewpoint is to apply interdependency theory (Thompson 1967). According to Thompson's (1967) framework, all forms of dependencies (sequential, pooled and reciprocal) are accountable in all types of supply; it is their importance that varies. Services are characterized by either predominately pooled or reciprocal dependencies, both involving a greater complexity than sequential dependencies that are linear in nature. In pooled dependencies the number of resource components that are combined increase complexity (Engelseth, et. al., 2014). In reciprocal dependencies, the component characteristics are always in a state of flux implying a supply objective is a moving target subject to inter-actor iteration. Following Thompson (1967), Stabell and Fjeldstad (1998) propose a framework where services may be classified as value shops (reciprocal dependencies dominant) or value networks (pooled dependencies dominant). This entails that when developing service processes muda is not predominately found in how operations are timed sequentially (as in the principle of "takt time") but how resources are pooled and how actors interact. In pooling complexity is a challenge while in reciprocal interdependencies how knowledge interacts is the challenge. Both resource pooling and knowledge interaction (human and machine based) are processes, have supporting sequential interdependencies and accordingly subject to muda (Engelseth, et. al., 2014).

Levitt (1983) has rigorously advocated that business transactions would see a change from "discrete sales of products to relationships based on the provision and support of bundles of products and services". Vandermerwe and Rada (1988) used the term "Servitization" to denote to such bundling of products and services; a business strategy that is attractive and

progressively pertinent for manufacturers to advance on competitive advantage. There are several factors that contribute to the increased competitiveness of a strategy of Servitization:

- services tend to be more difficult to imitate and lock the user into a long-term relationship (Vandermerwe, 2000);
- services improve knowledge through an increased insight into how products are used (Alonso-Rasgado et al., 2004);
- services provide a differentiating factor from traditional manufacturing (Penttinen and Palmer, 2007);
- manufacturers that utilize servitization also increase revenues (Oliva and Kallenberg, 2003) as services tend to have higher margins and can provide a stable revenue stream throughout the life of the product (Cohen et al., 2006).

Literature refers frequently to the fact that servitization has much to do with value creation and enhancing the appeal of overall offered proposition to customers especially for products that are complex and too technical. Johnson and Mena (2008) point out users of servitized products appreciate greater value owing to the all-inclusive nature of the supplied proposition (Vandermerwe, 2000) and enhancement in “through-life support” (Cohen and Whang, 1997). The nature of servitisation dictates that it is mainly used by organizations that supply complex, long-life products that require through-life support such as aero engine manufacturers (Voss, 2005) or highly technical products.

Servitization is a strategic approach to increase customer loyalty based on the knowledge-based features that are difficult for competitors to copy in a competitive marketplace (Schmenner, 2009). Services are in this stream of literature viewed as add-ons. This distinguishes servitization from literature services marketing (e.g., Grönroos, 1990; Normann, 2001), where services are considered the main deliverable and an industry demanding adapted strategic models. Service production, whether it is the main feature of the business, or an “add-on”, involves processes transforming resources distinct from goods transformation. Oliva and Kallenberg (2003) model different types of offerings as a continuum ranging from types of businesses viewing services as add-ons to business where goods are viewed as add-ons. Fundamental to this view is that service production demands a different form of organizing of the resource structure and processes within this structure (Chase & Garvin, 1989; Oliva & Kallenberg, 2003). Human interaction, found in both "value network" and

"value shop" type service (Stabell & Fjeldstad 1998), is fundamental to services (e.g., Grönroos, 1990; Normann, 2001), and has led to the emergent notion of value co-creation through business relationships. In value shops it is human knowledge interaction that is predominant, while in value networks the human labor factor is more predominant.

Service-dominant (S-D) logic, rooted in services marketing literature, moves the essence of the "value creation" construct from goods to human interaction concerning exchange in business relationships pictured metaphorically as a "service". The S-D logic construct (Vargo & Lusch, 2004) increases analytical awareness of human interaction in exchange to support value creation. S-D-logic is differentiated from operations management (OM)-related literature that views "servitization" as service components in a goods-dominant framework rather than a strategic overarching imperative. S-D-logic is, strategically speaking, also a more "top-down" managerial imperative, while servitization is more "bottom-up" empirically founded view (Engelseth, et. al., 2014). In S-D logic all forms of deliverables are in essence "service" whether found in services, manufacturing, construction or other types of industries. Following this view the importance of service in process development is emphasized along with reciprocal dependencies independent of, following Thompson's (1967) classification, industry-specific characteristics. In this study we both consider the servitization as well as the SD perspective; service as strategy for all types of industry, and processes involving an increasing important service deliverable component.

It becomes very significant for a firm, for successful lean implementation, to appreciate the difference how services, as an add-on or main feature of the business, involves processes transforming resources are distinct from goods transformation. Now it has already been mentioned if firm is a traditionally manufacturing with service oriented settings and trying to apply lean principles; in such background it might have many challenges but one of the most significant is the possibility to increase the responsiveness of the firm, reduce the cost and curtail the lead time using opportunities where never recognized before. This challenge becomes even more complex when considering the range of products being offered by the firm. Introducing lean tools and concepts has somewhat allowed the company to eliminate unnecessary processes which seemed to be essential before, cut down the costs and minimize the lead times. It helps to make a difference between value-added practices and standards and non-value added processes. (George 2003.) According to a research conducted by George

(2003) 80% costs in organizations can be attributed to product design that includes services such as logistics, human resources, finance and product development whereas 20% can be ascribed to manufacturing. This situation can lead to increased cost structure in services. Furthermore, more customers can be lost to competitors with increased competition and this situation is more apparent in services than manufacturing. Bowen and Youngdahl (1998) believe that companies are increasingly trying to improve the service quality and they do so to reduce cost and increase profitability by integrating Lean principles.

One of the advances shown by Lean implementation in this context beyond manufacturing was application of lean in logistics and supply chain management. This has helped organizations not only to develop but maintain closer ties with suppliers by increasing innovation sharing fruitful information and lowering costs at various tiers. (Piercy & Rich, 2009). Here is where a firm might take more serious initiatives and strengthen its ties with suppliers offering a larger share of supplies.

The following fundamental research model can be suggested on the basis of preceding literature review. It explains how this case can study may be analyzed in view of servitization, customer value by considering initiatives by firm, integration and lean services.

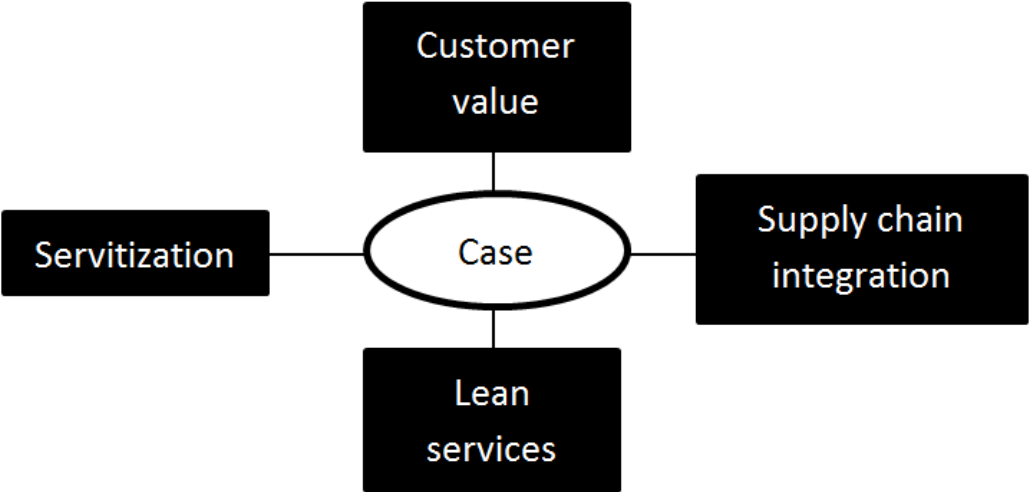


Fig 2.1 Fundamental model explaining case along with key dimensions

Other important factors to be considered under lean services include demand surges, being not uncommon in services, that might cause bullwhip effect as they do in manufacturing. However demand surge might not be the only reason to trigger such effect (Akkermans and Voss, 2013). A different set of managerial policies is needed to address such effect than that

of manufacturing. Escalation of customer complaints and response lead time are major issues in services. Such escalation usually occurs because of lack of understanding of causes and the way to address them on the part of the company. Owing to inadequate information and planning, these problems are faced frequently by the companies and down the line such amplification can result in a tipping point where company is unable to handle such problems and face an ensuing meltdown.

The notion of service supply chain is very much contestable unlike product supply chain which is very well established. There is no physical flow of goods in services and a number of authors have sought to frame the service supply chain by adapting established product supply chain models, such as the The Supply Chain Operations Reference or SCOR model (Baltacioglu et al., 2007). So for example it has been defined as “the management of information, processes, capacity, service performance and funds from the earliest supplier to the ultimate customer” (Ellram et al., 2004) and:

The service supply chain is the network of suppliers, service providers, consumers and other supporting units that performs the functions of transaction of resources required to produce services; transformation of these resources into supporting and core services; and the delivery of these services to customers (Baltacioglu et al., 2007).

However Sampson (2012) has pointed out that models based on product supply chains seem to lack a regard for some of the most significant characteristics of services. These may “include that service supply chains are frequently not linear, as in the traditional product supply chain, but are networks”. Moreover services also have an emphasis on customer contact in its processes (Chase, 1978) and co-creation of value between customer and supplier (Vargo and Lusch, 2010), and this might form two-way flows between customers and suppliers (Sampson, 2000).

According to Akkermans and Voss (2013) a service supply chain can be described “as a network of interdependent service processes” that encompass numerous process entities where a process entity can be explained as “any entity that participates in a process such as a firm, customers, agents of customers and so forth” (Sampson, 2012). A number of important differences can be drawn between services and products which might effect service supply chains. Unlike building inventory to manage variability in demand, other policies are introduced such as queues, building backlogs, and the implementation of reservations systems (Sasser, 1976). In addition, demand management is also taken advantage of frequently in a very sophisticated manner such as yield management in the airline industry (Kimes, 1990).

An important distinguishing factor of services is the direct customer involvement in many service processes. It becomes very important for the firm not being only recognizing customer-induced variability but also dealing with it in the service supply chains.

Implementation of lean principles might equip firm with a strategy to recognize and deal with such customer-induced variability, response lead time and customer complaints owing to such reasons. Lean in services has major role to play as services incur high levels of costs owing to slower processes in place because of non-value added activities leading to quality related issues and poor customer satisfaction. Services are complex and delays in Work in Progress (WIP) can be referred as important reports to be completed, unchecked e-mails, important phone calls to be made and sales orders to be processed. These slow processes comprise of usually 20% activities that cause a delay of 80% (George, 2003).

There are many other aspects that have been proposed by Bowen and Youngdahl (1998) shown in following table. Few of these relate to performance trade-offs having an impact on objectives those of customers and organization, trade-offs related to applying JIT and set up time, maximizing employees involvement and customers' interest, and investing in people to make the real difference for business. Especially in the perspective of Lean in services, organizations give more priority to the investing on people than on equipment (Bowen & Youngdahl, 1998). One core objective in this regard is to provide customers with services that ensure quality and speedy processes using fewer but right tools. There is a need underlying this concept to identify all non-value added activities to eliminate waste, reduce cost and complexity. By identifying wastes at various steps in these processes, employees are enabled to curtail costs and reorganize them by using less capacity, material and workforce to perform the task more resourcefully (George, 2003). Another important notion is that of employees focusing on value-added activities from customers' viewpoint and thus they appreciate clients' needs in a better way and understand how much customers would be willing to pay for increased service levels.

Principal objective of Lean is to improve the speed of the process flow and remove all the slowing down activities. It is possible to calculate the delay caused by the futile processes using the process mapping and collecting data on the variation and complexity of the cycle time. Multiple studies have shown that Pareto rule can be applied to any process with the

cycle efficiency less than 10%, meaning that 80% of the process lead time is commanded by the approximately 20% of activities. Another name for these 20% is Time Traps which can be identified by creating value stream maps. These so called Time Traps occur as the result of delays due to the inefficiency of processes, variation in supply and demand and variation in process capacity. (George, 2003).

According to Grönroos (1990) the main concept of service organization as a system lies within understanding what happens at the transaction point. By implementing Lean, company can learn more about customer needs and demands and concentrate on responding to those demands. In their research Womack and Jones (2003) have pointed out five main principles of Lean, which are:

- **Value:** the principal starting point for lean thinking, which can be determined only by the final customer. Value is created by customer satisfaction providing the right product, for the right price at the right time.
- **Value Stream:** a set of activities needed to design, produce and deliver a specific product, providing an optimal value to the customer through a full value creation process minimizing all possible waste.
- **Flow:** smooth and unobstructed movement through value-creating stages
- **Pull:** actions taken solely to satisfy customer needs, instead of pushing often unwanted products onto the customer.
- **Perfection:** never ending process for improving value, value stream, flow and pull in different operations.

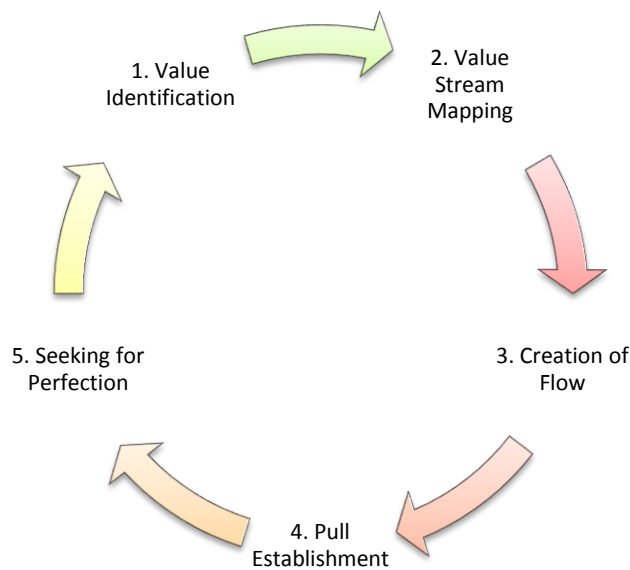


Figure 2.2 Adopted from Womack and Jones, 2003.

When a company has determined value, identified the whole value stream, provided a seamless flow of value-creating steps for specific products and allow customers to pull value, it should start the entire process from the beginning and continue until all waste is eliminated and state of perfection is reached.

Among other authors Ahlstrom (2004) has claimed that five basic tenets of Lean have different characteristics when applied to customer service. Below in the table it is shown what differences there are between lean principles for manufacturing and service sectors.

<u>Lean Principles in Manufacturing</u>	<u>Basic Lean Principles</u>	<u>Lean Principles in Services</u>
<ul style="list-style-type: none"> Identify the customer value 	Value	<ul style="list-style-type: none"> Multiple customers who can also be the supplier
<ul style="list-style-type: none"> Determine the value stream for each product and provide value for the customer minimizing all possible waste 	Value Stream	<ul style="list-style-type: none"> Identify the transaction point and value creating process
<ul style="list-style-type: none"> Work on continuous production flow 	Flow	<ul style="list-style-type: none"> A great variation of demand and multiple handoffs
<ul style="list-style-type: none"> Introduce pull between each step instead of pushing unwanted products 	Pull	<ul style="list-style-type: none"> Build up a responsive service process by providing services only when needed
<ul style="list-style-type: none"> Target towards perfection using minimum amount of time and resources to satisfy customer needs 	Perfection	<ul style="list-style-type: none"> Ongoing waste reduction process by utilizing service personnel

Table 2.2 Main Principles of Lean (adopted from Womack and Jones, 2003)

Through the years it has been frequently discussed whether manufacturing and service processes could be treated similarly. Grönroos (1990) was one of the first to mention differences between manufacturing and services and pointed out four evident features related to service operations:

1. Services are at some extent impalpable.
2. Services consist of a sequence of activities rather than objects.
3. Services can be generated and consumed contemporaneously.
4. Often customer takes part in the service production process.

Using his arguments Grönroos (1990) explained that because of different characteristics of manufacturing and service organizations Lean cannot be implemented for both in the same way. Adapting Lean Philosophy to service sector and implementing it in the right way could gain better efficiency and effectiveness providing visible improvements and eliminating waste (Swank 2003).

2.3 Wastes Identification at Customer Service

Since one important aspect or component of research question has been *logistics' emphasis on waste elimination by concurrently curtailing variability in service levels across several departments*, identification and elimination of such wasteful processes at logistics/customer services department is very important to substantiate the overall discussion and validate the assessment of lean implementation in this department of the firm. Originally Muda(Japanese term) or seven wastes were explained by Taiichi Ohno, who is also known as the father of the Toyota Production System. These wastes have been explained later specific to new organizations, external pressures and industries. One of redefinitions of these wastes for service operations by Bicheno and Holweg (2009) is as follows:

1. Delay when customers are waiting for delivery, for service, for response, in queues, and service is not being rendered as promised. The customer's time might be deemed free to the

service provider, but when he takes his custom elsewhere the trouble begins for the respective firm.

2. Duplication. When things are not done right first time and having to repeat details or re-enter data, copy information across or answer queries from several sources within the same organization, it is considered waste.

3. Unnecessary movement. Lack of one stop, queuing several times, poor ergonomics in the service encounter also cause waste in businesses.

4. Lack of clear communication and the wastes for having confusion or seeking clarifications over product or service use, wasting time on finding a location that might result in misuse or duplication.

5. Incorrect inventory. Being out-of-stock, unable to get exactly what was required, substitute products or services is also considered waste.

6. An opportunity lost to win or retain customers, a failure to establish rapport, ignoring customers, unfriendliness, and rudeness are factors that also constitute waste.

7. Errors in the service transaction lost or damaged goods and product defects in the product-service bundle also are major reasons for waste.

For Lean to be successful, HBS professors Kent Bowen and Steven Spear (HBS DBA '99) have well-defined an outline of 4 principles, based on the Toyota Production System:

Rule 1: All work shall be highly specified as to content, sequence, timing, and outcome.

Rule 2: Every customer-supplier connection must be direct, and there must be an explicit yes or no way to send requests and receive responses.

Rule 3: The pathway for every product and service must be direct and simple.

Rule 4: Any improvement must be made in agreement with the scientific method, under the guidance of a teacher, at the lowest possible level in the organization.

Lean implementation, being an important concept in organization, demands a deep-down analysis of issues at hand, strong commitment and broader understanding. Many organizations pursue lean implementation in wake of realization that it would help them achieve lower costs structure, better quality, faster and reliable delivery and lesser wastes than before. The role of committed management or lean leadership must be emphasized to appreciate the changing aspects it can help bring within organization. In many Lean Production systems, mainly tools and methods are the primary focus of the implementation. But it is claimed by some

researchers that they merely characterize the superficial elements of Lean Production Systems. The actual key success factor is the involvement of employees in daily improvement and according to them this can be achieved through a different way of leadership, the lean leadership (Petersson et al., 2010). Authors further claim that due to these factors it must be understood that Lean can not be implemented overnight. Therefore a detailed analysis should be made to improve the ongoing process of Lean implementation by understanding the opportunities and limitations embedded within the organization. Some of these opportunities and limitations might be unique to organization in context. Toyota can be a very relevant example in this regard that started implementing Lean in 1950's and still continues to do so by reducing waste steadily. This debate on opportunities and limitations brings us to look at some of the critical success factors and challenges Lean implementation can impose on any firm or organization.

Schroeder (2001) mentioned in Palomino, et. al (2013) argues that an organization might change by changing technology, structure or changing people. Structure change comprises of reorganizing internal processes. Changing technology might aim at altering equipment, engineering processes, production methods, or research techniques. In manufacturing companies the processes are interdependent as shown in following figure. They further point out that "The processes interact reciprocally under the influence of joint forces. Therefore, the question arises on how to integrate these processes" Palomino, et. al (2013). Thus integration is also a crucial issue in organizations that should be addressed whereas Lean implementation might aim at changing people, organizational activities rigorously.

2.4.1 Critical Success Factors

An objective analysis of lean assessment would demand a study into critical success factors that might be grounded in corporate strategy of the organization. These success factors might be goalpost for the successful implementation of lean principles across various departments of the organization.

Abdullah, et. al (2008) mention four important factors that are critical to bring about any positive impact in organization on quality improvement which are also endorsed by quality gurus Deming and Juran (1982) in their work. These characteristics are employee involvement, management commitment, reward and recognition and training and education. One factor that might affect the process of Lean implementation at great extent is management

commitment. It helps employees keep motivating and informing them about positive impact of change in organization through Lean implementation (Boyer and Savilla (2003); Atkinson, (2004). Brown and Graves (2003) highlight the role of Lean leadership and top management commitment in order to provide junior staff with accurate and prompt information on Lean consistently.

Another key or critical success factor in this regard is that of increased communication. Powerful communication has meaningful role to play for Lean implementation process across value streams (Worley & Doolen, 2006). Such communication might also be used help leadership share success stories of Lean implementation among employees and receive the consistent feedback from staff to higher management for improvement of processes in place (Merchant, Farber, Paranikas, & Sirkin, 2008). However, Worley and Doolen (2006) stress or highlight the need for management support and better communication for successful implementation of Lean in services. Furthermore, role of effective communication also becomes crucial in the sense that it helps to keep customer-supplier relation intact and remind employees of their responsibilities to provide better products and services and responding to their clients for various issues that arise during the course of such interaction. (Spear & Bowen, 1999). Deloitte MCS limited published a research and made a mention of some critical factors required to necessitate the success of Lean implementation. These factors have been regarded as inspiring confidence or trust among employees in the firm that Lean would be successful; having a vision for the implementation process and linking Lean with strategic goals or objectives of the organization to properly use Lean resources, ensuring its application across all functions in the organization and creating or formation of lean culture within organization. On the whole, focus is given to inspire confidence and build trust among staff to change the culture of the organization. Chakrabarty and Tan (2007) maintain in this regard that implementation or success of Lean might be measured in terms of financial performance of the organization and it would make it easier for management to prove the point of validity to employees and it would be a quality measure to start with. Deloitte MCS make a mention to linking Lean with strategic objectives that are more serious for organization. Appiotti and Bertels (2010) also pointed out that identification of customers' requirements and needs that constitute value to them alongwith focusing on strategic objectives, simplification of processes in place before they are changed; measurement of crucial factors to oversee successful implementation are

important areas to be considered in this regard. However they also come up with idea that Lean should be implemented in those functions or areas of organization that have strategic importance as it would help firms strengthen core competencies and achieve competitive advantage by enhancement of processes and curtail costs, gain more revenue and offer better services. Following Table illustrate key success factors in this context:

Table 3: CSF's of Implementation of Lean

Authors	Journal	Industry	Identified CSF's
Abdullah <i>et al.</i> (2008)	<i>The Total Quality Management</i>	Manufacturing	- Management commitment ; Employee involvement; Training & education; Reward & recognition
Worley and Doolen (2006)	<i>Management Decision</i>	Manufacturing	- Management support ; Communication
Deloitte MCS Limited (2010)	<i>Deloitte LLP</i>	Service	-Link of Lean with the strategic objectives to properly utilize Lean resources; application of Lean in all functions; and creating a Lean culture within organization for improvement
Appiotti and Bertels (2010)	<i>Journal of financial transformation</i>	Service	-Strategic focus is critical; understand the world from the Customer's point of view; Measure what matters; Making it simple prior to automating and master the process before outsourcing
Cotte <i>et al.</i> (2008)	<i>BCG Publication</i>	Service	- Choose strategic customer centric projects; Think big but start small; Involve everyone from top managers to line workers ; Trailer your approach to your culture; Assign dedicate, experienced resources, use metrics to drive performance and communicate communicate communicate
Westwood <i>et al.</i> (2007)	<i>NHS Institute for Innovation and Improvement</i>	Service	-Small changes; Involving all staff; Motivate staff; Executive support and involvement ; Dedicated Lean support; Rapid improvement events

Table 2.3 Adopted from Rushton, et al. (2010)

2.4.2 Lean Implementation and its Challenges

Though Lean implementation has contributed a great success to both manufacturing and services industries yet its implementation observe many challenges during its course. Worley and Doolen (2006) mention the problems or difficulties involved to gear motivation among employees to prioritize focus on customer value and identification of waste at all times. From services viewpoint levels of workload cannot be predicted at all times and flow might vary from time to time (Worley & Doolen 2006).

Lack for standardized processes can also be termed as the major obstacle in services industry. Sarkar (2009) claim that identifying processes in services industry is quite challenging because they are not apparent like manufacturing industries. It's also challenging for the size of organizations to focus on all processes to reduce or eliminate wastes. Documentation and variability of processes involved at Glamox also pose greater challenging as employees might not be able to deal with new situations or find it hard to deal with fixed processes. *Neailey (2010) discuss the problem of having many stakeholders who are not equally participating in Lean implementation and make it difficult for some stakeholders to handle the variability in effect.* Furthermore, areas related to people make it quite difficult and complex to tackle processes in mechanical way. Hierarchical barriers in the organization make it challenging as line management and staff are the ones who work in operations and be onboard at all times to make implementation successful. Aherne (2007) points out how empowerment and relevant training is crucial in health sector to implement Lean practices. George (2003) mentions how uncertainty lent to any process can also mar the quality of a process in place as employees would not feel themselves in control of the process and this situation would introduce unnecessary delays in the process. However, he claims that working for standardized processes make employees more in control and empowers them.

Sarkar (2009) indicates the prime significance of well managing employees' actions and behavior as Lean application depends too much on their day to day work habits and mood also. An ongoing need for constant support of management and effective communication is referred to again and again in literature to ensure successful implementation.

2.5 Lean Services at Logistics

One prime driver of this study is to investigate the application of Lean principles at customer services and explore if solutions enabled by Lean for material management, distribution, transport management systems and supply chain services empower organizations, carriers and other participating members to improve services, reduce costs, smoothen information and material flow and gain complete supply chain visibility. Supply chain optimization through transport management systems is key aspect of logistics department and role played by third party logistics companies cannot be emphasized enough in this regard. Francis (2008) discusses to how supply chain visibility, involving "...the identity, location and status of

entities transiting the supply chain, captured in timely messages about events, along with the planned and actual dates/times for these events”, is dependent on interlinking managerial principles with technical processes. Sherer (2005) points to how development in information technology (IT) is still unmatched with organizational developments within supply chain management (SCM), discussing how IT supports networked and dynamic information flows, while SCM still hold metrics based on a rather static and linear view of product supply processes. Sezen (2008) reveals limitations of information sharing and integration in developing supply chain performance pointing out that more overall supply chain design issues have the strongest impact. In this study focus is directed to features of connectivity within and between firms by predominately considering information flows in the role of supporting logistics flows associated with customer service.

Lean Logistics, in simple terms, can be explained as a way to identify and exclude wasteful processes from the supply chain to escalate product flow and speed. Organizations do implement leaner thinking in order to achieve Leaner Logistics. Organizations that integrate lean thinking into their supply chains might benefit from reduced environmental impact by reducing waste, improved customer service and even overall corporate citizenship. It would be pertinent to define Logistics management here;

Logistics management is ... the planning, implementation and control of the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customer requirements.

(CSCMP, 2006)

Logistics is... the positioning of resource at the right time, in the right place, at the right cost, at the right quality.

(Chartered Institute of Logistics and Transport (UK), 2005)

The following diagram would explain some key components of distribution and logistics, showing key elements in this regard:

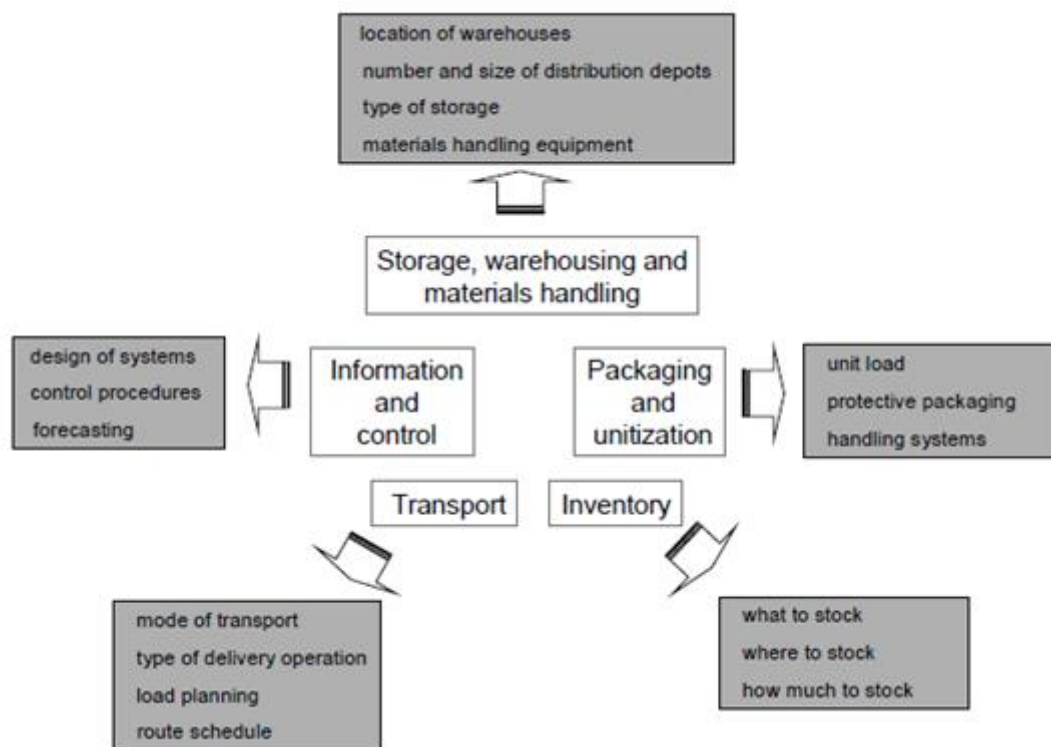


Figure 2.3. Key components of distribution and logistics. Adopted from Rushton, et al. (2010)

Various surveys have made attempts to explain the breakdown the costs of different elements within logistics. Establish and Herbert Davis (2008) showed that transport was indeed the most significant component making up to 50 percent, followed by inventory carrying cost at 20 percent, storage and warehousing also at 20 percent whereas customer service or order entry stood at 7 percent and administration a mere 3 percent. The same survey explained a pan-European cost breakdown. This one indicated transport at nearly 40 percent, warehousing at almost 32 per cent, inventory carrying cost at about 18 per cent, customer service or order entry at almost 5 percent and administration at about 5 percent of overall cost structure. In both surveys the transport cost element of distribution was the main component part, predominantly owing to high fuel costs. US transport costs get a huge impact by this due to extensive distances travelled. It must be noted that the comparative constituents of these costs can differ quite meaningfully between different companies and mostly, between different industries.

In this section the focus is given to integration of the numerous logistics and distribution constituents into a comprehensive working structure that allows the complete system to function at the optimum. The notion of ‘total logistics’ is explained and the significance of distinguishing the opportunities for appropriate trade-offs is discussed. Some crucial features of planning for logistics are studied and the financial impact of logistics in a business is pronounced. The application of Lean principles to help achieve a balance between total logistics cost and offered service levels has been taken into consideration. The trade-off analysis is an imperative part of planning for logistics. Four different levels of trade-off have been recognized at logistics/customer services department of Glamox ASA:

1. *Within distribution components:* those trade-offs that arise within single functions. One illustration might be the decision to use fixed storage locations compared to random storage locations in a depot. The latter provides improved storage utilization but is more difficult for picking; the first is easier for picking but does not deliver such good storage utilization. Glamox at the moment is paying to rental storage location to address capacity related issues of central warehouse. This results in extra costs not only in terms of rent, storage, movement of goods, labor costs but also extra payments to third party logistics companies.

2. *Between distribution components:* those trade-offs between the different elements in distribution. For instance a company might increase the strength and thus the cost of packaging but find greater savings through improvements in the warehousing and storage of the product (that is block stacking rather than a requirement for racking). This element is out of the scope of the current research.

3. *Between company functions:* there are many areas of interface between company departments or functions where trade-offs can occur. This is demonstrated in Figure 2.1 that explains some potential trade-offs and specifies how the various company functions might be affected. For instance the trade-off between the associated warehousing costs of storing the finished product and optimizing production run lengths. Long production runs yield lower unit costs and so more cost-effective production but would be resulting that more product must be stored for a longer period (which is less cost-effective for warehousing). Another important trade off in this regard is between booking orders by customer service and capacity restraints by the warehouse personnel. Only a specific number of lines or items can be picked

a day and warehouse management signals customer services very frequently to halt sending pick lists after a specific number each day.

4. *Between the company and external organizations:* In this instance a trade-off can be fruitful or relevant for two companies that are linked or associated with each other. For instance, a modification from a manufacturer's products being transported direct to a retailer's stores to supply via the retailer's distribution depot network might result in mutual savings for both companies. These types of trade-offs are therefore at the core of the concept of total logistics. For the planning of logistics and distribution, it is vital to take this complete view of a logistics system and its associated costs. On the other hand, of course, the necessity to offer the service level that is required by the customer is of prime significance. The ability of an organization to strike a balance between total logistics cost and customer service level is indispensable to successful logistics. This kind of trade-off is frequently observed at logistics department of Glamox ASA and various arrangements are observed to strike a balance between total logistics and service levels. On one hand many orders are dispatched through distributors but shipments are also made to individual customers whereas payment is charged to dealerships.

Trade-off	Finance	Production	Distribution	Marketing
Longer production runs	Lower production unit costs	Lower production unit costs	More inventory and storage required	Lower prices
Fewer depots	Reduced costs	No impact	Less complicated logistics structure	Service reduction due to increased distance of depots from customers
Lower FG stocks	Reduced costs	Shorter production runs so higher production unit costs	No need to expand storage facilities	Poorer product availability for customers
Lower RM and component stocks	Reduced costs	Less efficient production scheduling due to stock unavailability	Lower stock-holding requirements	No direct impact
Less protective transport packaging	Reduced costs	No impact	Reduced transport modal choice	Increase in damaged deliveries
Reduced warehouse supervision	Cost savings through lower headcount	No impact	Reduced efficiency due to less supervision	Lost sales due to less accurate order picking

Table 2.4 Adopted from Rushton, et al. (2010)

As it has been explained in above discussion that customer services is the department that helps coordinate among various departments and this table very well explains how integration between customer services and other stakeholders become very significant in face of these trade-offs. Fewer depots might sound good from finance and distribution point of view but might create service reduction due to increased distances from customers. Likewise less protective transport packaging might increase damaged deliveries and it can cause more complaints and compromise on service quality. All these issues also would lead to increased work pressure on customer services and chances to waste increment and process variability would augment in this way.

3.0 Research Methodology

This section would illustrate the methodology used to address the research question for this study. Yin (2010) maintains that analysis of the case study evidence is quite difficult and not much developed for doing case studies. He further illustrates four strategies that can help researchers treat the evidence very fairly, produce rigorously analytical conclusions and rule out any nascent alternatives. One of the recommended strategies is case study description and this research would make an attempt to follow the same. Researchers have gone to collect data without having settled on initial set of propositions. The one of the original purpose of research is descriptive and ideas about the research framework have come from researchers' initial review of literature. The technique used to analyze the case study data is by building an explanation about the case. The lean phenomena at customer service department has been analyzed by stipulating causal links about how or why something happened. The links would elaborate insights into informational and people flow at customer service and its related departments.

Furthermore, it is inductive research process that makes use of the empirical data that has led many researchers to the study hypothesis and conclusions (Bryman and Bell, 2007). Researchers would look for some logic in the observations and try to come up with reasonable conclusions based on such explanations. An effort has been made to adopt the same research approach in this study where data has been collected based on observation and semi structured interviews. Researchers also tried to provide the theoretical background to appreciate the right set of qualitative and quantitative strategies thus leading to selected research method. Qualitative methodology has been used frequently where inductive approach is used to generate a theory as well interpretivism. An attempt has been made to finding answers by making sense of human behaviour. Such methodology also seem more apt to adopt as while studying lean implementation in services researchers frequently dealt with human behaviour and interaction. Many processes consist of flow of information and flow of people. Though quantitative method has not been ignored altogether and statistics have been focused where they make a lot of sense to elaborate performance and waste identification. Since this research is a case study so qualitative method seemed appropriate choice and data gathering instrument were observations, investigations and interviews.

It is also pertinent to mention that this research is a single case study deriving specific conclusions. Saunders, et al. (2009) has explained case study in simplest manner that it helps

researchers answer why, what and how research questions.

Five important factors have been considered in this research or single case study namely research question, proposal based on research objectives, case study analysis, establishing link between research objectives and analysis and interpret the findings. It has also been confirmed by Saunders, et al (2009) that well designed case study can not only investigate the application of existant theories but can also lead to challenges and construction of new theory. Therefore an attempt would be made to build on a model based on fundamental model already presented in preceding chapter.

3.1 Practical Methodology

A conceptual framework has been established to approach the analysis in a defined manner. With regards to literature review the first part is based on two sections. First part deals with an effort to appreciate critical success factors and challenges and second to understand lean principles. A comparison of these principles is also drawn with the current practices in the unit of analysis that is firm. Secondly, a review of current practices and processes is considered from existing empirical data. The third step is data analysis that would be discussed in discussions and findings. Propositions would be advanced in light of such discussion as to how and why selected lean principles might be adopted to create and sustain value.

A literature review consisting books, journals, reports and websites has been conducted to understand success factors and challenges in regards to lean implementation in service oriented settings.

To appreciate the implementation process it is essential to study current practices and processes from empirical data. This process would help answer the research question.

3.2 Data Collection

To understand implementation process at the customer services researchers have also used primary data including interviews, observations, documentary evidence and informal investigations. Being employees at Glamox, researchers had acquaintance with key contacts at firm and first approached manager customer service, manager warehouse and senior logistics consultant at Glamox and on having positive responses conducted several semi structured interview with key personnel.

Having attended lean meetings and interaction with key personnel involved in the process also helped to collect data and figure out how processes are being handled at initial stage of lean implementation at these service departments.

4.0 Data Analysis

Customer Service Department at Glamox

To appreciate the role of customer service department at Glamox it is important to look at nature of operations it is involved with. It has been established to engage in a “series of activities designed to enhance the level of customer satisfaction-that is, the feeling that a product or service has met the customer expectation” (Turban 2002).

The customer service department has an important role in the company`s functioning and performance. This department is usually the customer`s main contact point, so service representatives are responsible for the impression clients get of the whole organization. Moreover customer service can provide additional sales for the company and ensure the customers loyalty. Although customer service department includes the variety of different roles, the most important are customer interaction and value adding activities, creation of positive company culture and clerical tasks.

Customer service is often considered as a part of industries such as hotels, hospitals and retails where companies deal with the customers directly. Nevertheless the importance of customer service in the manufacturing companies can be far more significant, because a lost customer can lead to lost sales for millions of NOK. For a manufacturer losing one distributor can result in losing hundreds of customers and huge amount of income. In addition to that there are contacts of those decision making representatives that can determine what products end up in the stores or retailers. All above mentioned makes it vital for the company to address these highly valuable relationships with a special attention.

4.1 Department and its Development

Customer service department has always been a part of Glamox Company, though its functions have changed through the years. In the beginning there has been several customer service departments located in different regions in Norway. Points were established in three biggest cities Oslo, Bergen and Trondheim and customers contacted the closest located office.

As there hadn't been any single contact point for the customers, the coordination was difficult and each customer service department was responsible for all customer support including reclamations, returns and technical support. In 1999 a big change was introduced by the company when a new ERP system called BAAN was presented to the company. With the help of this system a single point of contact SPOC became possible and a new common database was established. It means that all technical issues, service and product requests, problems and incidents were first directed to the service desk and either resolved there or forwarded to the other source of support where the problem could be solved. A SPOC service desk is not expected to resolve all the issues, but rather facilitate and coordinate all customer interaction processes, which is relevant both for internal and external customers.

After an integration of a new computer system function of customer service department became more efficient and interaction and coordination between internal departments and external customers moved to the higher service level. Customer service was organized as one team working under the same principles where information flow became more fluent and sharing of knowledge more effortless.

Managers have always paying attention to continuous improvement and many different improvement projects have been implemented, such as for example Total Quality Process TQP. But all these projects didn't have common structure, before Lean came into picture. Lean covers all working areas and is more structured. It gives better understanding of the department's and whole company's goal and plays and important role in the development of interaction between departments.

4.2 Core Objectives

The main goal of supply chain management and logistics is to provide their clients with required level and quality of service at the less possible cost of the whole supply chain. According to logistics strategy the aim is to reach excellent service in a coherent and cost-effective manner. (Christopher, 2005.) To achieve these goals customer service department has to function in a corresponding way and its core objectives and daily routines should serve customers at a high quality level. Clear identification of the tasks provides better cooperation and customer interaction.

The core objective of Glamox customer service department is to serve both internal and external customers. Among internal customers are sales teams, warehouse, IT department, engineers, purchasers, accounting and other internal departments. External customers are mainly wholesalers, retailers, project clients and third party logistic companies such as Bring, Schenker and Erik Øye Transport. Customer service is the only department that coordinates all above mentioned sections between each other. It is only customer service that acts as a link between external customers and sales teams as well as warehouse and third party logistics companies.

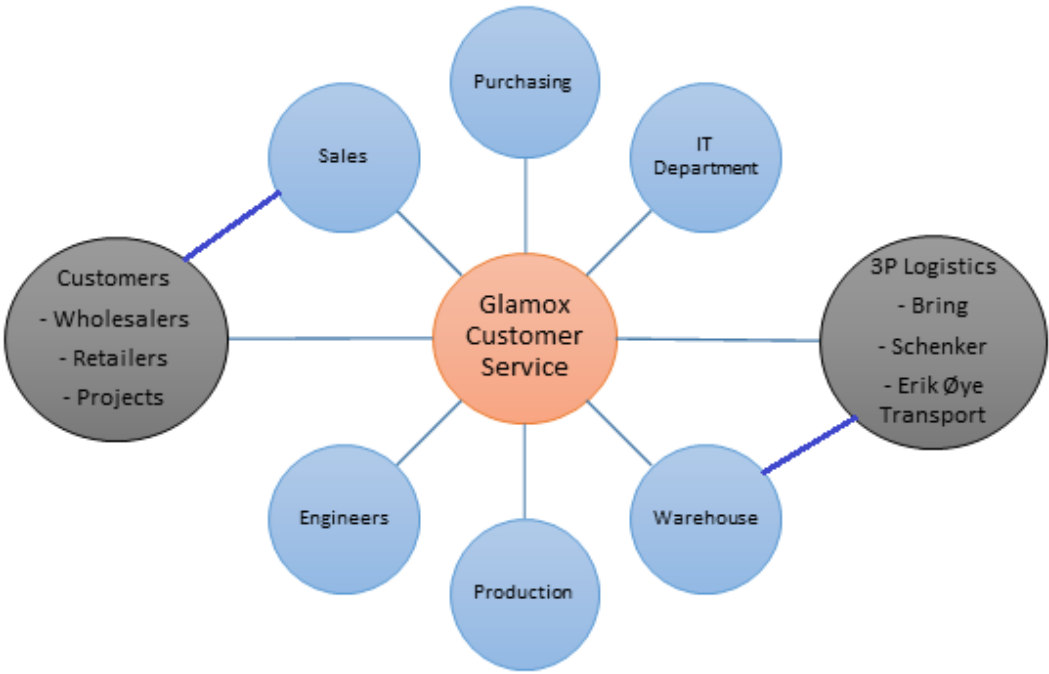


Figure 4.1 Interaction of Customer Service with Internal Departments and External Customers (authors, 2014)

The main goal of customer service department is to perform as a single point of contact and provide coordination between different departments customers. All contacts are made via phone or e-mail, in some rare occasions; fax is also used, for example receiving orders. Telephone contacts are prioritized as first and service level performances are measured daily. In the table below it is shown monthly average telephone service level for 2013. Average service level for that year was 94%, which is a relatively good result. The target of customer service department is to achieve a telephone service level of 95%. As we can see from the

table below, monthly service level is high, only in June it fell down to 91% what gave the average level lower value.

Month	Average Service Level of Telephone
January	93%
February	95%
March	94%
April	96%
May	94%
June	91%
July	95%
August	94%
September	93%
October	96%
November	97%
December	94%

Table 4.1 Monthly Telephone Statistics of Customer Service Department for 2013.

In addition to personal e-mails of each clerk, customer service has a common e-mail address where all customers can send their orders, requests and queries. It is called common mail and one clerk is responsible for answering all incoming e-mails during the day. This e-mail works as an ordering channel for the wholesalers and all orders are first printed out and then put in the system manually. Number of e-mails coming to common mail can vary from 92 to 1000 e-mails per week, depending on the season. The lowest amount of e-mails come during summer holidays, and the busiest seasons are autumn and winter. Though the low number of e-mails are more exception than a rule and on average customer service processes 765 e-mails per week or 153 e-mails per day.

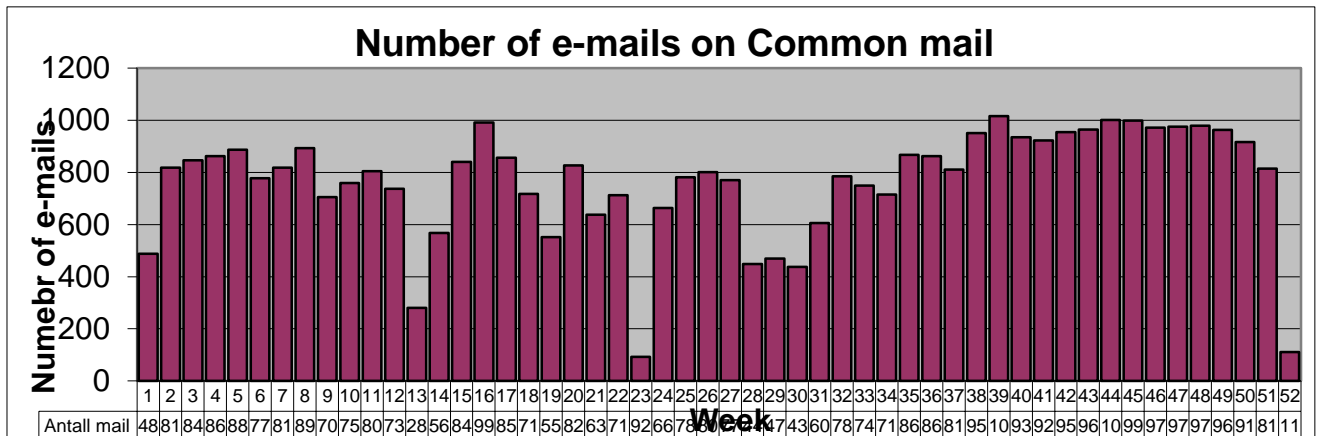


Table 4.2 Statistics on E-mails Received on Common Mail at Customer Service Department

Another main task of customer service department is to take care of all back office work, such as manual placing and confirmation of orders, putting backorders, writing return and reclamation forms, crediting and correcting failures, etc. If we divide all tasks performed during the day by customer service clerks, 40% of work goes to answering the phone, 30% to answering e-mails and 30% to the back office work.

4.3 Internal Customers

There are several internal customers of Glamox customer service department, but in this paper the main focus will be on sales representatives and the warehouse. These sectors produce most of the work for customer service and thus can be seen as the most important internal customer group.

Sales agents are divided into four teams according to the region of location, which is North, South, West and East. Each sales team has its own responsible clerk at the customer service department. The task of sales is to find project customers, make offers, conduct contracts and put in orders. When an order is placed it needs to be confirmed manually and that is a task of customer service. As a daily routine customer service officers print out order lists placed by sales people and confirm them. Each officer takes care of his/her region. Customer service department engages eight officers where two of them are students who work part time.

Two data programs are used in the company, GSS sales system and ERP system BAAN. GSS is mostly used by sales people where they can place offers and orders. Once an order is placed and saved in the system it cannot be changed by sales representatives anymore. After order is generated it is automatically transferred to the main logistical system BAAN. If an order needs to be changed, for example change delivery time, address, quantity and types of products, seller should contact customer service and request them to do so. Because of that there is frequent interaction between sales teams and customer service. Sales people seek to deal with their representative officer, but they often work with all clerks at the department.

4.4 External Customers

External customers are the wholesalers, distributors, project customers, smaller clients such as electrical contractors and third party logistic companies, though it is mostly wholesalers that contact customer service directly. There are several big wholesalers such as Ahlsell, Onninen, Berggård Amundsen, Otra, Solar, and Elektroskandia that distribute Glamox products around Norway. According to company's policy most of the products should be distributed through the wholesalers. In case of project sales when the contract is made directly with the customer, the payment still goes via wholesaler who takes responsibility to guarantee that the invoice will be paid.

Orders are received through several different channels: common mail, fax, Electronic Data Interchange (EDI) system and GSS system. Most of the wholesalers' orders come to the common mail box of customer service and need to be entered manually. Elektroskandia is a rare wholesaler that uses EDI online system and can place their orders directly to the Glamox order database. This procedure is applicable to A-items which wholesaler orders to its stock.

Wholesalers have their own product database with the overview of product types, prices and discounts. This database excludes special and modified products. To know the delivery time and price of these types of products they need to request customer service. Main wholesalers have their fixed discounts, which is more or less same to all. These discounts come automatically when a wholesaler's customer number and product item number is entered in the order system. Glamox lean implementation program seems more focused on alignment with internal customers or departments whereas alignment with external customers is also

being considered in some instances. For instance, new arrangements are discussed and negotiated with third party logistics companies in light of feedback by customers. Attempts have been made to address the issues related to damage to goods because of G-force while they are being transported on lorries. Another example is that of redesigning of product where logistics team negotiated product design with engineers so that it becomes safer to transport that particular item.

4.5 Product Strategy

Capability of delivery is one of the most important decision making criteria for clients. That's why it is vital to build the supply chain in the way that enables to deliver the right quantity at the right time, right pace and at the right price. Glamox customers are able to obtain information on current lead times for most of the products through the price list, web pages and product catalogue.

There are several categories of products:

A-item is a **standard** stock product

B-item is a **standard** product delivered within 2 weeks (10 working days)

C-item is a **standard** product delivered within 5 weeks (25 working days)

M-item is a **modified** product which delivery time depends on the order request, but usually not sooner than in 5 weeks

E-item is a **special** product which delivery time depends on the order request, but usually not sooner than in 5 weeks

Transportation time is added to the delivery times of all products which varies according to destination.

4.6 Order Process within the Company

Deliveries from the warehouse

Goal: Provide lighting solutions at the agreed price, in the right place at the right time and the right quality. Delivery precision of the complete orders shall be at least 99%.

The main coordinator of this process is the head of Logistics.

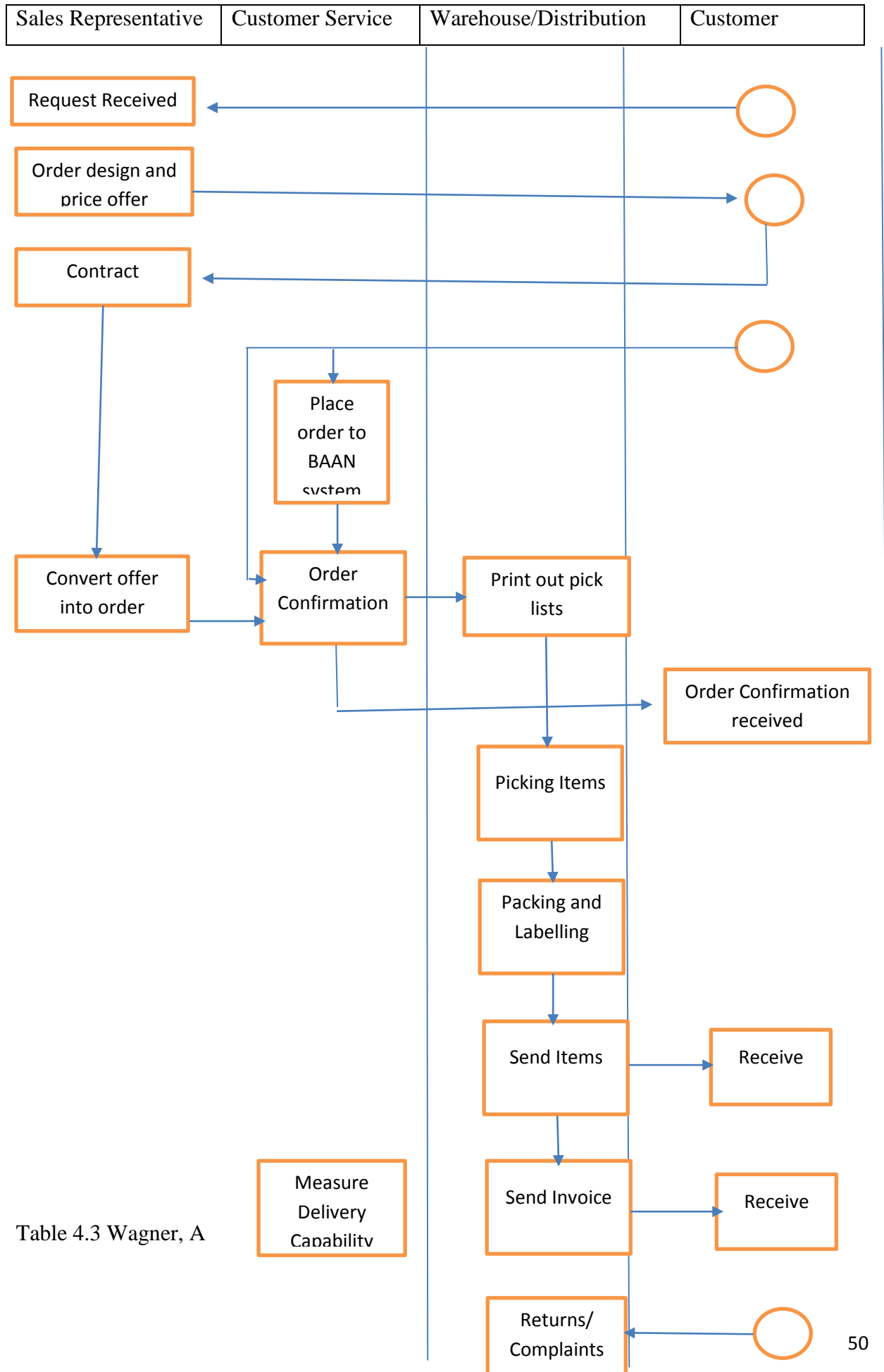


Table 4.3 Wagner, A

In the beginning of the order process for the stock items sales representative receives a request from the customer. It can be either wholesaler or the end customer. Afterwards sales person starts making preparations with estimates of needed amount of lighting solutions and their design. When a contact with the customer is made; relevant standards must be followed. Most of the orders are generated by the sales people, though it may also come directly to the customer service department by phone, e-mail or fax. In that case customer service clerk is placing manually an order into BAAN system for delivery to the agreed place at the agreed time. Some customers can make orders straight through EDI system without using sales people and customer service. That makes order process much easier as it goes directly to the company`s database.

When an order request was made via sales representative, the offer is registered in the GSS database and then converted into order. If the product is on stock the delivery date is confirmed immediately and order confirmation with expected delivery time is sent to the customers e-mail. If product is not available, delivery date should be confirmed with 24 hours from the time an order is placed. In most of the cases date is confirmed, but sometimes it takes longer to get the delivery date. When the delivery date is confirmed distribution clerk prints out the pick lists and takes them to the warehouse. Warehouse personnel pick items according to the order. Goods be packaged in accordance with packing instruction and labelled with the recipient and delivery address. After products are sent, the invoice is also sent to the customer.

4.7 Aftersales Services

Sometimes products can be returned and there several reasons for that:

- customer wish, when a customer ordered too many products and doesn`t need the rest
- seller fault, when the estimation of which type of product to send was done in the wrong way
- customer service fault, when the wrong product was placed to the order
- warehouse fault, when the wrong product was sent to the customer

If the reason for the return is something else than customer`s wish, all money are refunded. In case it is a customer wish, different types of products are credited in different ways. It is only

A-items (stock items) that are always credited 80% to cover at least the shipment cost. For crediting other items customer service should send request to the returns department where the credit amount is estimated. Usually it is 60% or 50% for B and C-items and 0% for M and E-items. Though if there is an active order for M or E-item they can be credited as well.

Another aftersales service is reclamation on the defect products. On Glamox website there is a reclamation form which customer fills in and sends to the reclamation department. Bigger complaints are processed by the reclamation department, but most of them are forwarded to the customer service to be processed manually there. Warranty of the products is 5 years, so all products or parts of it, purchased within 5 years should be replaced. To avoid the invoice customer should return defect product within 30 days.

4.8 Types of Orders

There are 4 types of orders depending on the invoice and delivery terms: S23, S24, S25 and S26.

S23 is an order with delivery and invoice to the wholesaler, when the wholesaler gets a fixed discount on the products.

S25 order is almost the same as S23, the only difference is that products are delivered directly to the customer. Customer gets then a price from the wholesaler.

S24 is an order which can be done in 2 different ways:

- salesman gives a special price to the wholesaler, usually for the big projects. Products are delivered to the wholesaler.
- salesman or customer service clerk gives special price to the customer, but the invoice goes via wholesaler. In that case wholesaler gets a profit for invoicing which is certain percent of the whole order sum. This is also the way Glamox secures itself if for example a customer will get bankrupted and won't be able to pay the bill. Then it is wholesaler who is responsible for the payment. Products are delivered to the customer.

S26 is a type of order for office dealers that order mainly lighting for desks and interior (Luxo products).

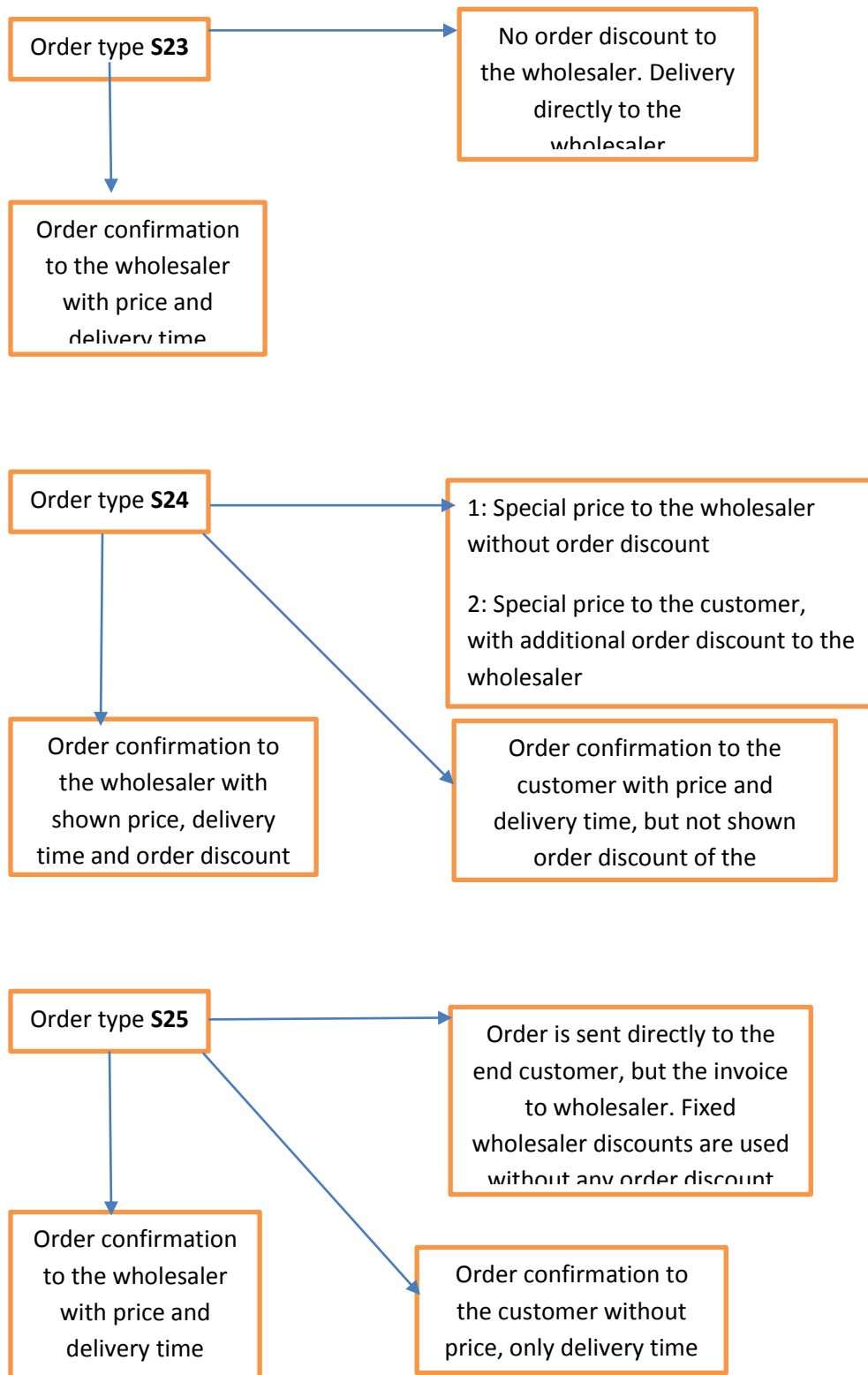


Table 4.4 Wagner, A

Sales person	Total budget	Project sales 2013	Preliminary code 9	Sale in % from budget	Phone cost	Total Sales per region
TB	15,265,641	16,278,617	28,668	125%		
BM	15,275,352	16,087,362	1,024,469	131%	934	
TJ	15,338,475	12,888,204	0	103%	206.7	
KT	15,338,475	17,295,541	0	131%	432	
HL	15,338,475	21,280,169	83,521	158%	825	
SS	14,789,787	13,159,356	22,529	108%	284.73	
JF	7,700,548	9,175,795	0	156%	483	
ØE	11,487,950	6,841,050	0	84%		
TS	15,469,578	14,865,819	15,913	115%	2,298	
JK	14,789,787	11,406,658	1,007,069	103%	1,583	
EO	14,692,675	14,788,212	0	120%	2,350	
FAL	15,338,475	19,286,369	330,649	146%	323	
TA	13,333,094	10,041,693	51,072	97%	2393.17	
Sykehuset Østf.	4,127,297	1,307,060	0	32%		
Div. Øst	0	-1,743,555	0			
Sum East	188,285,610	182,958,350	2,563,890	118%	12,111	185,522,240
RL	15,460,654	12,695,965	103,536	104%	144.53	
GS	18,731,568	20,672,060	273,778	129%	121	
GV	14,955,648	5,203,649	76,682	57%		
RA	17,121,462	10,597,512	12,956	81%	456	
PI	17,121,462	10,763,447	107,056	83%	1,062	
PS	0	-342,005	0	0%		
PM	17,121,462	20,661,082	359,181	142%	1,179	
BMK	15,496,763	12,030,201	378,587	101%	392	
MN	15,496,763	11,268,462	593,357	98%	678.31	
Høgskolen i Bergen	0	-4,008	0			
Div. Vest	0	2,762	0			
Sum West	131,505,782	103,549,127	1,905,133	100%	4033.41	105,454,260
JH	16,369,735	14,522,796	69,184	106%	86.16	
RL	16,980,346	15,451,704	13,400	108%	160.14	
BS	16,369,735	11,053,985	214,499	86%		
ØE	1,453,835	1,507,892	187,677	117%		
JH	17,041,942	13,701,679	89,916	101%	115.86	
EV	10,680,967	6,117,809	526,015	90%		
KL	13,594,949	10,072,397	328,396	105%		
EY	15,722,077	10,345,456	50,523	86%	778	
Sum North	108,213,587	82,773,717	1,479,610	98%	1139.95	84,253,327

Causes of Waste and Role of Integration

The company`s revenue is generated though three main channels:

- Project sales
- Sales to the wholesalers
- Sales to retailers

Project sales generate the most revenue from all sales in Norway, which is approximately 66% of total sales. In this type of order products are ordered and supplied for the particular project i.e. building. For most of the projects demand comes from Electrical contractors addressed to Glamox salesmen, who send the request to the project team. When project team has created an internal project, it is sent back to the sales responsible for pricing and control. After the project and price offer is made, Electrical contractor confirms the schedule and sends his pricing forward to the architect or building owner.



Figure 5. Flow of project sales.

Customer service is involved in that order process mainly by making manual confirmation of these orders, which is a part of a daily routine. However, sales people often need support for making changes in placed orders and requesting delivery time where cooperation with customer service becomes vital here. The reason for changing orders may be mistakes made by sale people (given wrong price or wrong delivery date) as well as changes in customers demand. After an order is placed it is only customer service that can make changes manually.

As the significant part of the company`s income is driven by the sales teams also called as GSN (Glamox Salg Norge) and workflow of these teams are to some extend dependent on the cooperation with Customer Service department, it is important to study the level of waste produced during this collaboration. There are two types of mistakes made by GSN: the one

that require crediting and the one that doesn't, but which produce extra work for different departments.

Reasons for crediting are as following:

- Wrong price is charged
- Wrong wholesaler is pointed out
- Wrong discount is allotted
- Wrong quantity is mentioned

These are typical mistakes that require crediting. As seen in the appendix, sales teams make 40% of all crediting cases, 45% are caused by Customer Service and 15% by other departments.

4.9 Wastes at Customer Service

Customer service department deals with numerous internal departments as well external customers. Nature of waste at services differs from what it is for typical manufacturing as several processes can occur simultaneously and do not necessarily depend on each other. It has already been mentioned in above discussion that services are characterized by either pooled or reciprocal dependencies and in such conditions it is not easy to figure out waste identification and Customer Service is still working on waste recognizing processes. Work culture has also much to do with these issues but that is out of scope of this study.

Above mentioned table explain how sales teams make an effort to maximize their sales and meet targets set by the management. These sales representatives do have frequent interaction with customer services and such interaction has been measured in terms of cost, as explained by the phone cost column in the table, and service evaluation might be carried out by customer service provided to answer various queries forwarded by them or solve the different issues arisen. More often than not, calls or emails received in this regard are to sort any mistakes made by these representatives. Researchers have looked to gauge how firm is trying to implement lean in a way that it helps to ensure that such interaction is fully optimal, without waste, and focused on providing best quality services to the end customers. Few processes are being discussed here in detail to explain how they can cause waste, process variability and extra cost for the firm in this regard. It is also worth mentioning that lean implementation process has enabled these issues come on surface.

First one can be that of related to transactions made by sales department especially those meant to be for big projects. Orders are placed well in advance, sometimes as early as 18 to 24 months, to make sure that lead times might be followed usually for products or items that are not kept in inventory or classified as A items. Once customer services department passes the order to production, process initiates and sales representatives also receive bonuses on passing such orders.

At the later stage of the project, end customer or builders might decide to go for alternative solutions and place a request either to cancel or replace order with substitute items. Such cancellation might constitute a substantial cost to the firm (Ekroll, 2014). Customer services department on receiving this information delete the order from the system yet might fail to inform production and other relevant departments such as warehouse who go to produce and then store such order without any intimation. Once products are manufactured and stored in the warehouse, they have already cost the firm a significant amount of money in terms of production, storage, handling, salaries, information flows and processing. These items are later shown as a loss to one of the subsidiaries considered responsible in this regard. There is intense wrangling among internal companies to decide as to whom to bear the penalty for such sales loss. Though contracts might be stipulated in the start between relevant stakeholders to affix penalties in such cases yet customer services role becomes crucial to inform the relevant departments once information is received in such cases.

It is very significant to note here that administrative problems like failure to fix alternate delivery schedule might be caused because of lack of understanding of governance forms. It was mentioned in above discussion that reciprocal dependencies requires a faster and greater fit between operational linkages to address these kinds of issues. It is this fit or synchronization between operational links that could improvise integration and process streamlining. Another kind of waste that can be caused in this regard is that of related to change in transport mode for B items which are manufactured on demand and have lead times of two to three weeks. In case an order is placed with customer service department consists of A, inventory held for such items, and B items, A items might be transported to customer through air freight on his requirement yet B items are produced in next two to three weeks. Once those items are manufactured they might be shipped using road transport and in some cases customer service department copies the same old transport mode and forgets to pass the information to warehouse. In such cases extra cost might be borne by the firm.

Another somewhat similar waste might be identified if customer service representative forgets to delete the unrequired information while copying the old orders. They do so if partial order has been met and remaining is on hold till the items become available. These issues bring to surface the above mentioned viewpoint in literature review that interaction based transactions in services are highly characterized by either require pooled or reciprocal dependencies. Inter-actor iteration becomes very significant in this way and quality interaction and on-time informational flows might be emphasized to ensure significant integration among departments and inter and intra-firm collaborations.

Debate related to governance mechanisms can bring value to the firm in this context by either lowering the transactions costs or by providing incentives for partners to engage in value creation initiatives. These partners might include end customers or builders where it is ensured that last stage alternations are avoided once production is started or complete. Customer service department's role cannot be ignored here to help lower the transaction cost and pass any relevant information on time and taking all pertinent stakeholders on board once such information is available. These steps might help avoid the process variability and lend credence to the whole operations to make them quality based. Governance dimensions such as role specification, nature of planning, nature of adjustments, incentive systems, monitoring procedures and means of enforcement become vital here considering the relationship length and nature with the stakeholders involved. It would be worth mentioning that situation becomes complex when it is realized that nature of such relationships vary from client to client and different procedures might be required to address various situations.

Mistakes that do not require crediting are for example wrong ZIP code and wrong delivery date on the order. These mistakes though can involve several departments and cause a lot of extra work through the supply chain. For example a sales person places an order in GSS system and forgets to write in ZIP code. This order is confirmed and a person at the warehouse prints out the pick list and scans it to get the destination for delivery. When ZIP code doesn't appear warehouse has to contact Customer Service to check and change ZIP code. After it is done they need to print out new pick list and scan it once again. All these actions could be avoided if a sales person simply remembers to type in wright code in the beginning.

Such mistakes cause much of waste and process variation whereas they might also be hindrance in terms of effective integration among various stakeholders inter-firm and intra-firm.

4.10 Other Types of Waste

With introduction of Lean at the department Customer Service started taking notes on each process that interrupts normal work flow. Minutes wasted are noted in a special form and at the end of the week all notes are summarized and put in a table. Types of waste are divided into eight different sections, shown in the table below.

	Type of waste	Minutes per 5 weeks
1	Transport	190
2	Rework	1840
3	Warehouse	80
4	Overproduction	95
5	Waiting/searching	160
6	Movements	0
7	Overwork	70
8	Production based	60
		2500

Table 4.4 Types of waste

Rework is a section with the highest rate meaning that it produces most waste for the department. In the following table we can see that the main section producing waste is reclamations. Next come returns, missing order number and crediting corrections.

Waste of rework	Minutes
Reclamation	335
Return	250
Order no	210
Crediting	160
SUM	955

Table 4.5 Types of Rework

When waste is identified then it is easier to take actions to eliminate it. As a result of Lean intervention Glamox started up with waste elimination processes focusing on monthly meetings and training of sales representatives and taking new perspective on reduction of reclamations. Procedure of reclamation should be simplified and responsibility should be divided between Glamox and suppliers. Reclamations used to come by e-mail and each e-mail is registered as a waste. In those cases when one reclamation requires several e-mails back and forth it was decided to use telephone to clarify the case at once.

Successful Lean Implementation at Customer Service Department

Since Lean has been introduced to Customer Service Department many visible improvements have been achieved. Before successful implementation of Lean a significant part of all customers crediting were on behalf of wrong shipment charge. In addition to customer complaints it also caused additional charge to the company. This is typically S25 order where the invoice is sent to the wholesaler and product directly to the customer. A customer address needs to be changed manually and sometimes the shipment fee should also be changed.

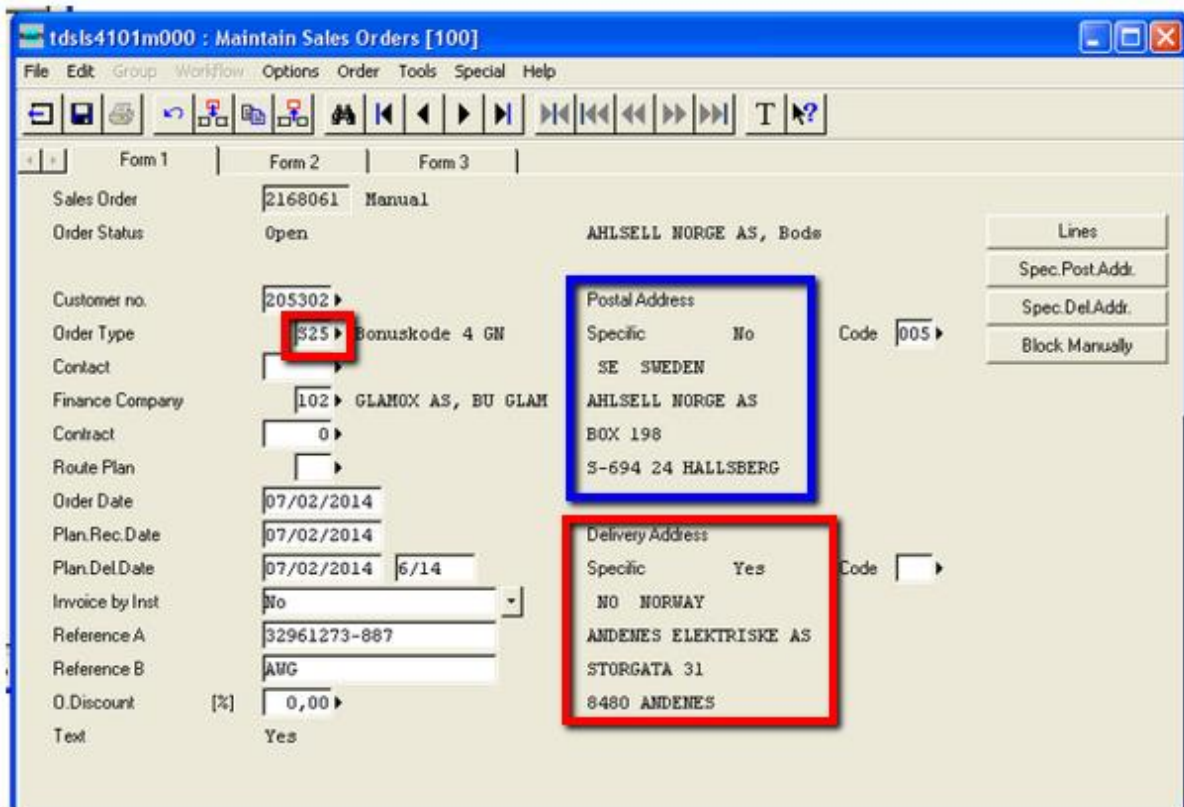


Figure 6. Saler Order in BAAN system at Glamox.

As shown in Figure 7 there are four main zones which require different shipment fees varying from 3,5% to 6,5% of the total amount.

Code	Description	Number of Days	Percentage
1	Fraktsone 1 - Østlandet	3,5%	1 3,50
2	Fraktsone 2 - Sørlandet	4%	1 4,00
3	Fraktsone 3 - Vestlandet	4,5%	1 4,50
4	Fraktsone 4 - Nord-Norge	6,5%	1 6,50

Figure 7. Four main shipping zones.

These zones should be changed in case the customer is located in another zone than the wholesaler. If this procedure is not accomplished it will cause additional expenses for the customer or the company. If customer is located in lower zone than the wholesaler then customer pays higher cost than he actually should. This is followed by the complaints and extra work for customer service and accounting department when crediting the shipping fee.

If customer is located in the upper zone than the wholesaler, Glamox has to pay the difference to the shipping company.

With the integration of Lean thinking a solution to that problem became better cooperation with the IT-department. The system was changed in the way that when a wholesaler and a customer located in different zones the failure message appears saying that the shipping zone is wrong, Figure 8.

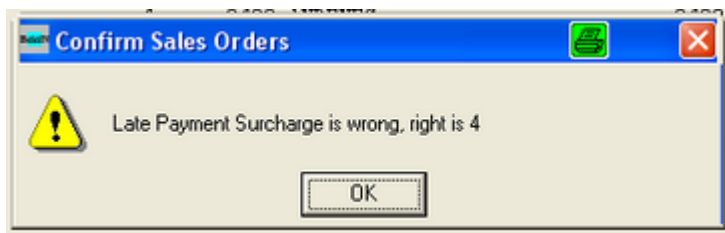


Figure 8. System Message on Wrong Shipping Zone.

The same procedure was adopted when dealing with customer discounts. One fourth of all crediting matters were caused by the wrong/forgotten discounts and along with cooperation with IT-department the failure message began to appear to check the discount.

This shows positive effects of Lean Integration that helped to save cost, reduce waste and improve service quality and customer satisfaction. These innovations has been made recently so there still doesn't exist any statistics showing improvements in numbers, but according to Customer Service clerks these simple actions have reduced extra work caused by these mistakes.

4.11 Process Mapping

1. Order Cancellation

Order Cancellation is one of the procedures maintained by customer service. The complexity of this process can significantly vary depending on several factors such as the status of order and the type of products. In Figure 2 it is shown the simplest scenario for order cancellation when the order is made for a standard stock item (A-item) and the order has been confirmed,

but no further actions have been taken. Cancellation request can be generated directly by the customer or by the sales person via e-mail or telephone. In that situation order can be easily cancelled in BAAN system without any further actions required.

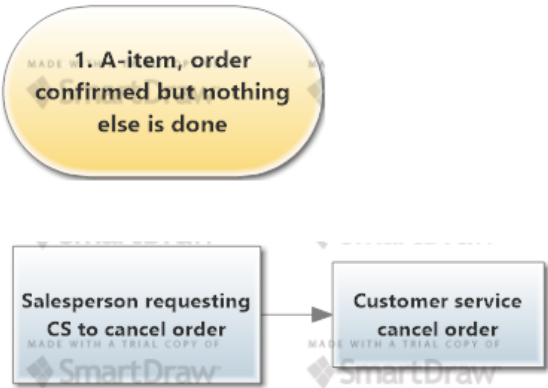


Figure 9. Order Cancellation Scenario 1.

Next step after order is confirmed is printing of the pick lists. After the pick list are printed out they are taken to the warehouse and the order is transferred to the next status. Further on the pick lists are distributed to the warehouse employees who are responsible for picking up and packaging products. It means that if an order cancellation request comes in after the lists are printed out, customer service officer should first contact the warehouse asking to find and dispose of the pick list before the order can be cancelled. When the warehouse has confirmed the order can be cancelled, customer service officer should first manually delete the Outbound Data and after that the order can be cancelled in BAAN system.

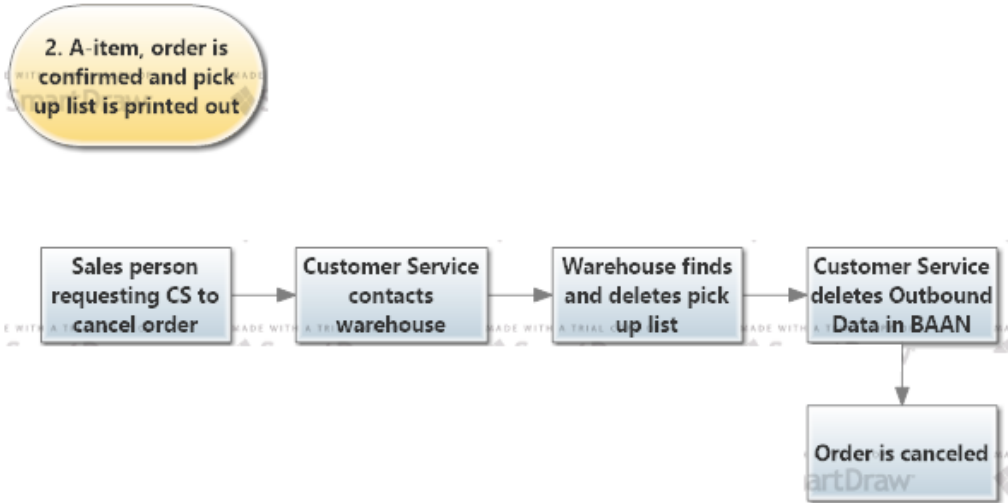


Figure 10. Order Cancellation Scenario 2.

When the order is conformed and the pick lists printed out the products are picked, packaged and withdrawn from the warehouse waiting to be shipped. If the order cancellation request arrives just before the products has been shipped, the procedure of cancellation becomes more complicated involving several departments and producing non-value added work. Ready order should be first found and the return department gets a request to generate an internal return so that the products could be placed back to stock. After the order is cancelled at customer service department, the warehouse should unload and put products back on their place. This scenario is valued only for the stock (A) items. In that case no penalty is charged from the customer or sales team only causing waste.

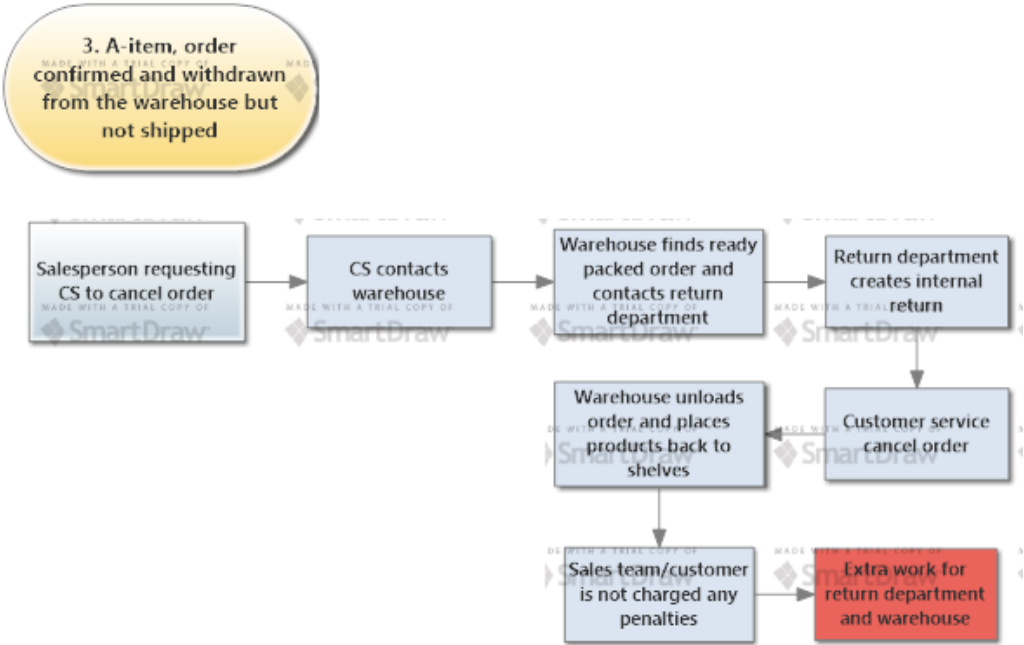


Figure 11. Order Cancellation Scenario 3.

Some items, such as architectural and design luminaires, are produced at Glamox factory in Sweden (former Luxo). In that case, when the order is placed for those products, the Purchase Order is created along with the order and sent to the factory. This happens automatically during the order generation at customer service. Most of the products produced in Sweden are not stock items and the spare parts need to be purchased. If the order cancellation request for this type of order comes before the spare parts have been purchased, it is possible to cancel order without any penalties but it still produces additional waste. In that case customer service

should contact Swedish factory by e-mail, asking them to delete a Purchase Order. The main waste in this scenario is waiting time to get confirmation from the factory that the order can be cancelled. When factory has cancelled Purchase Order and informed customer service about that, the order can be cancelled in a normal way in BAAN system.

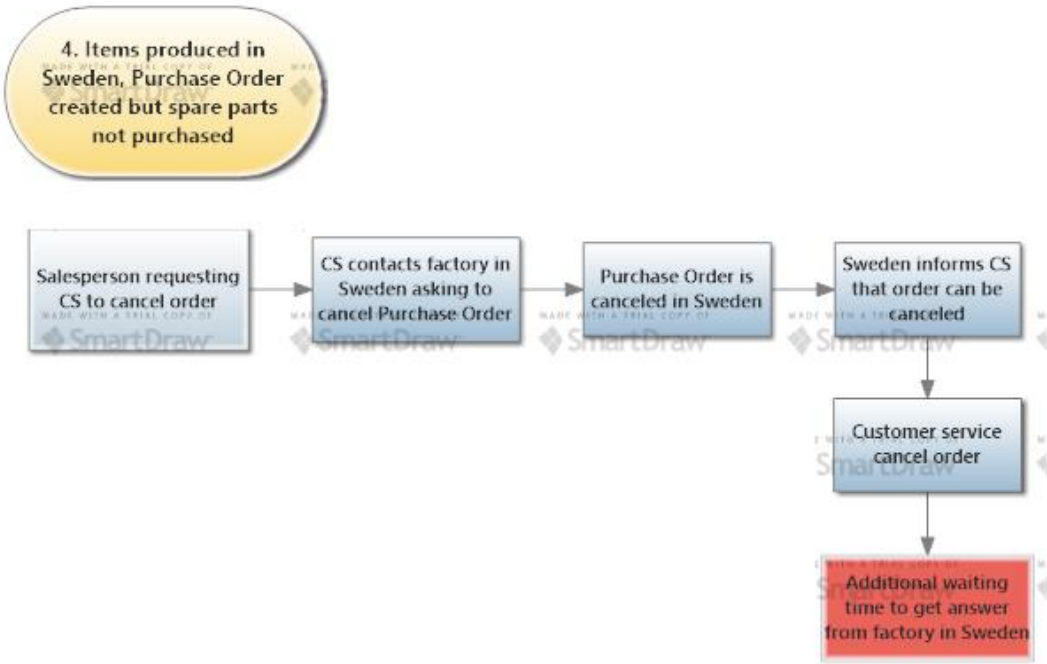


Figure 12. Order Cancellation Scenario 4.

If the cancellation request regards order for special items that are not on stock and the spare parts has already been purchased or the item has already been produced, the cancellation demands additional penalties for the customer or sales team as well as extra work from return department. When order cancellation request for such order occurs, customer service must contact an engineer or product planner and find out if the spare parts have been purchased. If it has been done, the order cannot be cancelled anymore with any penalties. Customer service requests return department to generate an internal return and customer or sales team has to carry return sanction which is normally 40% to 50% of the product cost.

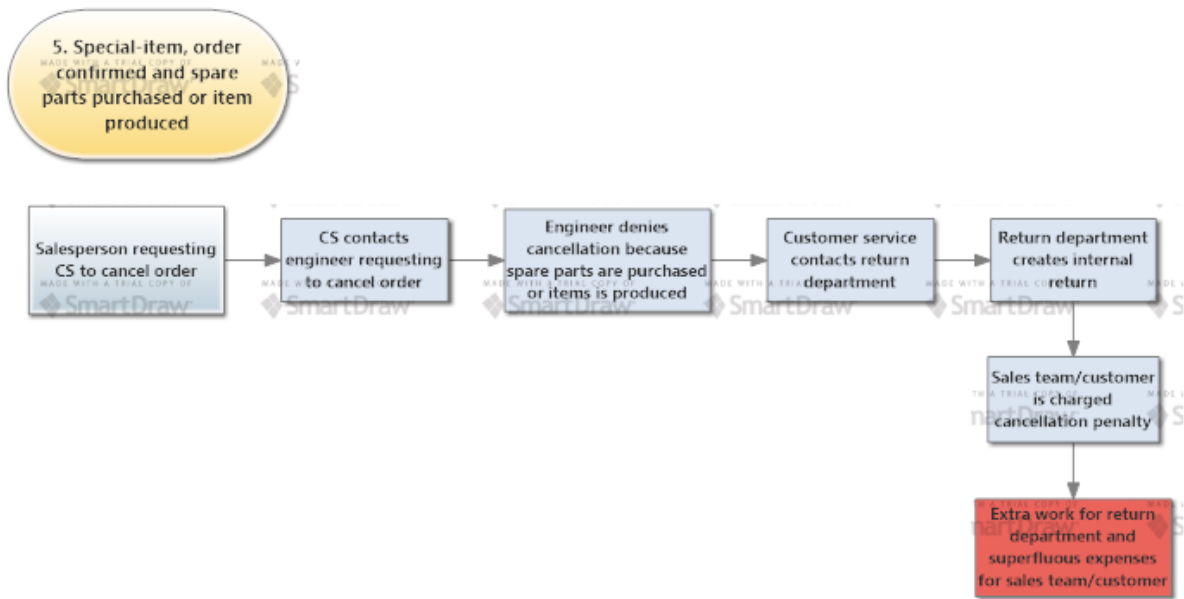


Figure 13. Order Cancellation Scenario 5.

2. Shipment Tracking

Shipment tracking is of the most common procedures requested from customer service on daily basis. There are two scenarios how this can be done depending on data accuracy regarding the delivery status. The customer is calling/sending e-mail asking to check the location and status of the shipment with the order confirmation number. The easiest way to do so is to enter the order number on the shipping company`s web page for tracking order and get the status displayed. This customer contact could be avoided as customer could do the same procedure himself without contacting customer service. This action requires time and unnecessary movement both from the customer and customer service department generating waste.

Another scenario for shipment tracking is when customer needs to know exact location or delivery time of the order or if something is wrong with the shipment status. In that case information displayed at the web page doesn`t provide all information and customer service should contact shipping company directly. When shipping company has received a tracking request from Glamox it is internally forwarded to the department responsible for shipment.

As soon as the case is solved shipping company contacts Glamox customer service providing all needed information after what customer service contacts customer.

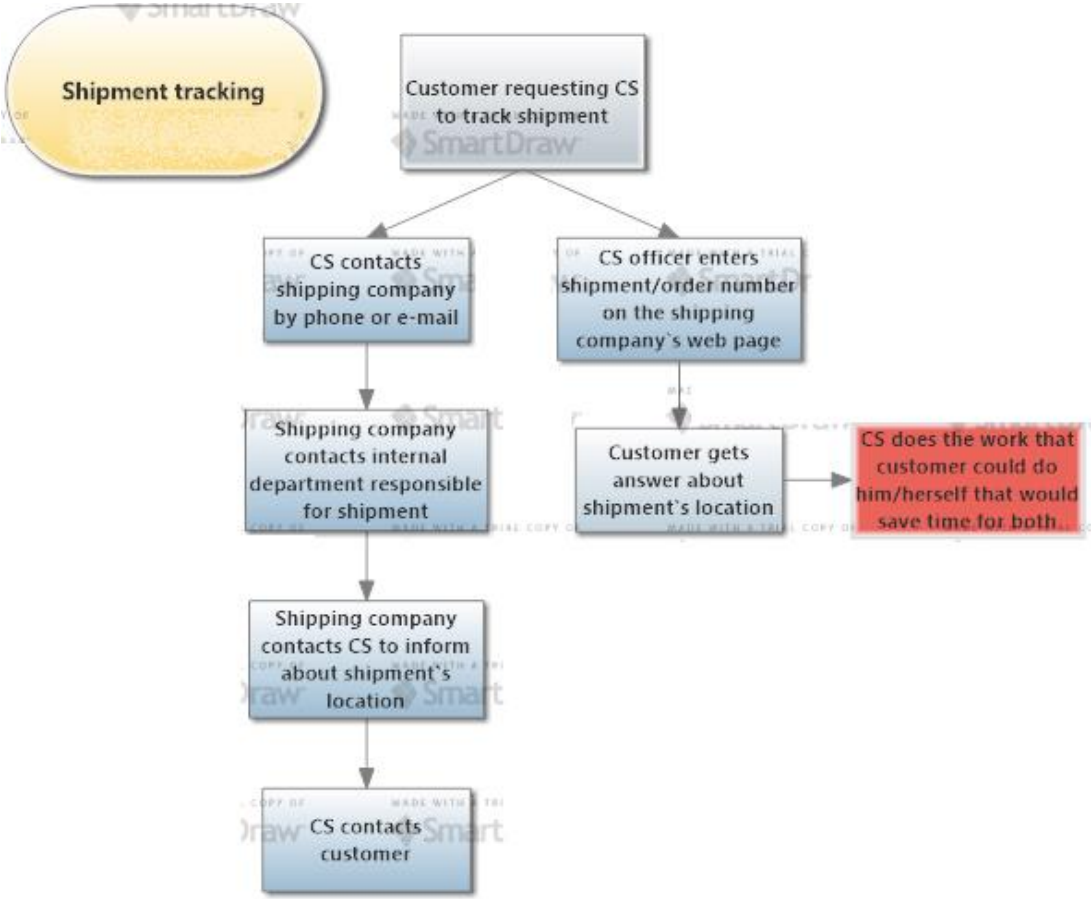


Figure 14. Different Scenarios for Shipment Tracking

Another example of value creation in this context could be illustrated as when Glamox might initiate or enter joint efforts on lean with suppliers or third party carriers to enhance the appeal of its end products for the customers in result of combined capabilities. For instance customers can be informed how third part carriers can be accessed for shipment tracking and this way there would be less pressure on customer services department in terms of phones or emails handling. Awareness among clients related to use of online portals for such services might also be encouraged. Such efforts are not being highly considered right now. The increment in profit resultantly can be increased from π_0 to π_1 . Such initiatives could help organization not only increase profitability but achieve sustainability and minimize on wasted arisen through lack of cooperation with suppliers. Lean could be viewed as a major effort in this regard that firms could initiate or enter jointly.

5.0 Data Synthesis

5.1 Lean Control System for Service-Oriented Environments with Variability in Service Levels

Since lean implementation program has major cost implications for Glamox and this intervention does cost not only in terms of direct expenses but also in terms of time allocated on daily meetings, trainings and learning. Evidence suggests that employees' ability to respond to these change initiatives and perception on autonomy might affect performance. All these factors would have an impact on overall performance of the firm and it might be safely assumed that such an intervention affects the employees' autonomy and satisfaction levels. Furthermore such an intervention is also perceived to be beneficial in terms of cost effectiveness and helps improve the processes at logistics but all the benefits and applications are not fully dawned upon employees.

Such a situation also might cause variability in service levels and this variability in service sector stems from many causes. These causes might be different from industry to industry. Causes most pertinent to Customer services at Glamox have been perceived such as:

Continuous mutual adjustments and constant adaptations are required to strengthen interaction-based relationship where both buyers and sellers understand each other circumstances. Lean implementation might help employees appreciate and understand such adjustments and adaptations. Data suggest that at some occasions employees have failed to respond to customer queries in a satisfactory manner especially where adaptations or adjustments are required. Such adaptations also require cooperation from other departments. For instance if client makes a query to a particular customer service representative about reduced lead times a significant time might be lapsed because of absence or sick leave and this kind of delaying response to that query might cause losing business. So variability in process might be avoided by taking measures in this regard.

Furthermore, in the above discussion researchers have brought forward examples of various kind of trade- off involved at customer service and logistics department. In order to ensure that the concept of total logistics is put into practice and that suitable tradeoffs are achieved, it is essential that a positive planning approach is adopted at these departments especially

related to improvement measures initiated or discussed in daily lean meetings. With planning comes responsibility and roles might be assigned specifically with follow up. Planning should be undertaken according to a certain hierarchy that reflects different planning time horizons. These are generally classified as strategic, tactical and operational. There is an overlap between the main planning stages, which emphasizes that there are many planning factors that can be covered by different stages in this planning hierarchy. The relative importance of these various aspects of logistics may differ between one company and another or even among departments at the firm. The choice of transport mode could, for example, be an initial strategic decision and also a subsequent tactical decision for the same company. It might be a strategic decision for a company that is setting up a new global logistics operation, but might be a tactical decision for another company that is principally a supplier to a locally based market and only occasionally exports over long distances. It might be indicated that the interrelationship of planning and control within this hierarchy is important. Both of these different elements are essential to the running of an effective and efficient service oriented operation. Customer service department might take steps where they plan to ensure that the operation is set up to run properly – it is ‘doing the right thing’ or preparing for and planning the operation ‘effectively’; *control* is about managing the operation in the right way – it is ‘doing the thing right’ or making sure that the operation is being run ‘efficiently’.

Customer service department might take steps related to issues like waste elimination, order cancellation and shipment tracking to plan and operate efficiently and deriving the optimal value out of these operations first time they are processed.

5.2 The logistics components of customer service

The logistics components, in light of above discussion, of customer service can be categorized in various ways. They might be seen as transaction-related elements, where the stress is on the specific service provided, for instance on-time delivery, or they might be viewed as functional attributes or interaction related elements that are linked to overall aspects of order fulfilment, such as the ease of order taking. Seven rights of customer service, showing the main service classifications: Quantity, Cost, Product, Customer, Time, Place and Condition. (Rushton, et al., 2010). Transaction elements at customer services of Glamox ASA can further be separated into further three categories. These reveal the timing and nature of the particular service requirements before, during and after delivery of the product:

1. *Pre-transaction elements*: these are customer service factors that are considered prior to the real transaction taking place. These include:

- written customer service policy;
- accessibility of order personnel;
- single order contact point;
- organizational structure;
- method of ordering;
- order size constraints;
- system flexibility;
- transaction elements.

2. *Transaction elements*: These are the elements straight connected to the physical transaction and are most frequently concerned with distribution and logistics and here theme of integration becomes utmost important considering need for informational flows between departments.

- order cycle time;
- order preparation;
- inventory availability;
- delivery alternatives;
- delivery time;
- delivery reliability;
- delivery of complete order;
- condition of goods;
- order status information.

3. *Post-transaction elements*: these comprise of those elements that arise after the delivery has taken place, such as:

- availability of spares;
- call-out time;
- invoicing procedures;
- invoicing accuracy;
- product tracing/warranty;
- returns policy;
- customer complaints and procedures;
- claims procedures.

Customer service elements can also be categorized by *multifunctional dimensions*. The intent is to evaluate the diverse constituents of customer service across the entire range of Glamox requirement that includes the entire span from order placement to the actual delivery of the order – the order cycle time. One of the foremost consequences is that this method permits some very pertinent overall logistics measures to be derived. The four main multifunctional dimensions according to Rushton, et. al., (2010) are:

1. *time* – usually order fulfilment cycle time;
2. *dependability* – guaranteed fixed delivery times of accurate, undamaged orders;
3. *communications* – ease of order taking, and queries response;
4. *flexibility* – the ability to recognize and respond to a customer’s changing needs.

Each of these can be broken down into further detailed elements. The total order fulfilment cycle time might be divided into the five core time-related components from order receipt to final delivery, plus an initial step from order placement to order receipt, which is not measured by some companies because it is deemed to be part of the customer’s ordering process. When identifying and measuring order fulfilment cycle time it is important to be able to break it down to all of the key components. Thus, if there is a customer service problem it can be measured and traced quickly and easily and the definite detailed problem can be recognized and solved. As mentioned here, there are many different elements of customer service, and their relevance and relative standing will differ according to the product and market concerned or market segment.

5.3 Conceptual model of service quality

Service quality can be measured according to the extent to which the customer experiences the level of service that he or she expects from the organization. Therefore, it might seem a very simple view of service quality at first sight yet is quite effective as it is the match between what the customer experiences and what the customer expects. Any mismatch arisen from this situation can be termed as the ‘service quality gap’. It must be noted that the customer viewpoint is what the customer believes or perceives to be happening, not essentially what is *actually* happening in regard of what the supplier is providing to clients (or

thinks he or she is providing). “Perceived quality is always a judgment that the customer makes – whatever the customer thinks is reality is reality, no matter what the supplier may believe to the contrary”. This is another cause why cautious measurement of customer service is important to be able to validate that few specific and agreed standards are being realized.

Thus, service quality is what the customer thinks that it is:

Service quality = perceived performance \times 100 desired expectations

A rather more complex approach can also be utilized as a conceptual model of service quality. The goal of this approach is to recognize the numerous different service gaps that can or might appear throughout the customer service process. Measures are then taken to assess the relative importance of each of these gaps and to screen them on a regular basis as also explained by Rushton, et. al., (2010).

This process might signify the important phases in the process of providing a service to customers. The initial point is the supplier’s discernment of what he or she thinks is the customer’s service expectation. From this, the supplier should develop suitable service quality specifications and standards. These should then be conveyed to and agreed with the customer. Then, the service is provided by the supplier through the logistics operation. The customer will then have a certain expectancy of the service level to be provided and can associate this to the service that he or she perceives is being received.

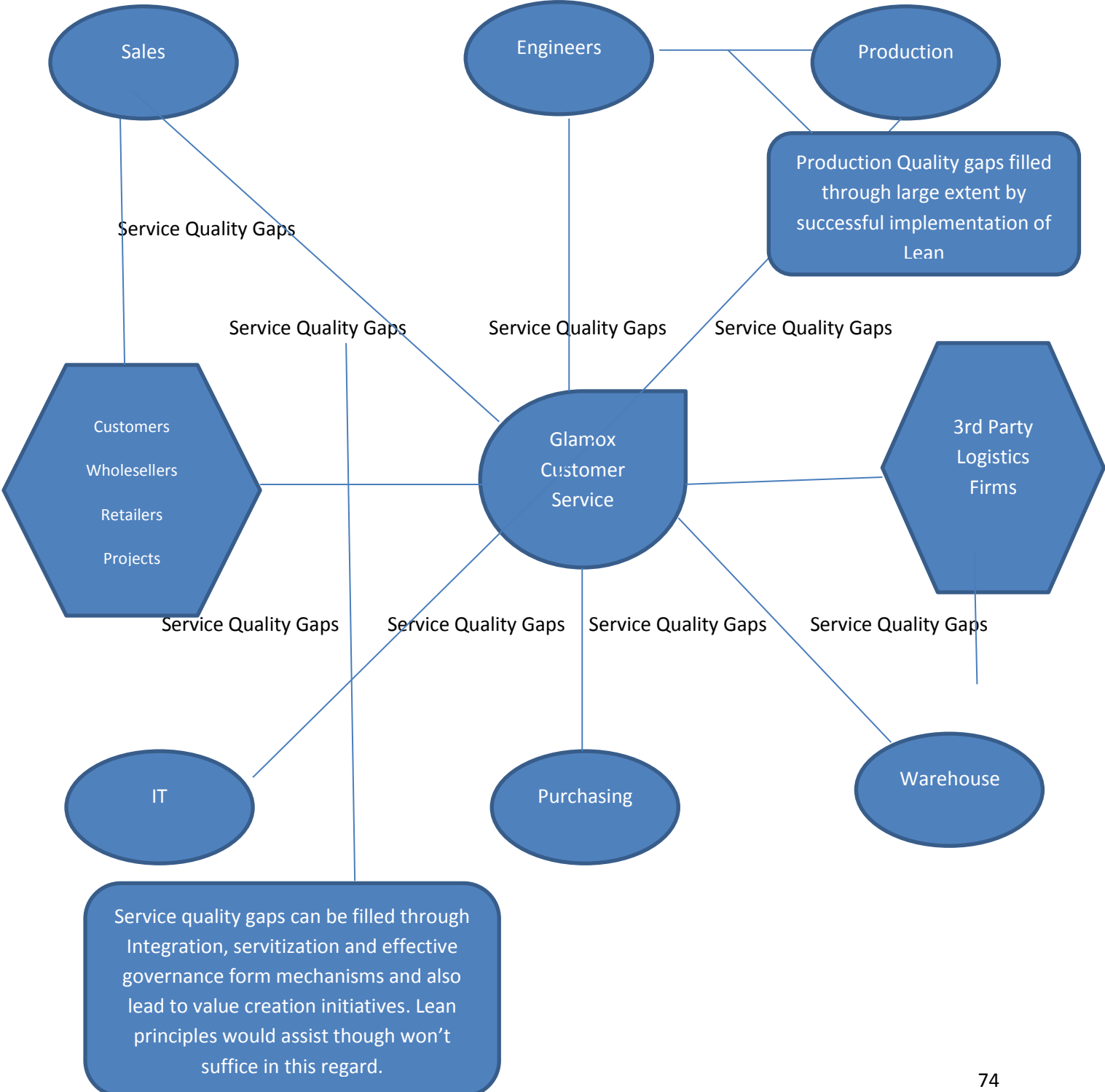
Furthermore, this concept is developed to illustrate the potential areas for service failure. Working backwards, the key issue is likely to be the one between the service that the customer expects and the service that the customer perceives to be provided (Gap 6). This is the perceived service–expected service gap, and for both the customer and the supplier it is the major aspect of service quality that needs to be measured. The question arises how is this undertaken? There are a number of different types of customer service studies that can be carried out to achieve this. However, it is also important to be able to identify *why* any such service failure has occurred, and the different reasons can be recognized by measuring the other service gaps.

- *Gap 5: actual service–perceived service gap*: this is the difference between the service that the supplier is providing and the service that the customer thinks is being received. This gap may, typically, be caused because the supplier and the customer are measuring service in a different way.

- *Gap 4: service delivery–external communication gap:* this is the difference between the actual service that is provided and the promised level of service that was communicated to the customer. This gap may be caused by a misunderstanding in communication.
- *Gap 3: service standard–service delivery gap:* this is the difference between the actual service that is provided and the planned level of service based on the service specification that has been set. The cause for this gap may be inefficiency within the delivery service.
- *Gap 2: management perception–service standard gap:* this is the difference between the service specification that is set and the supplier management assessment of customer service requirements. This gap is likely to be caused by an inadequate initial operational set-up.
- *Gap 1: customer expectation–management perception gap:* this is the difference between the service that the customer expects and the service level that the supplier thinks that the company wants. This gap is usually caused because the supplier does not understand the real customer requirements. Conceptual models of this nature are valuable to help the understanding of the underlying issues that are involved. They need to be interpreted into a practical format to enable actual service policies to be derived. Above mentioned wastes in processes can be categorized under these service quality gaps and relevant stakeholders could be involved to address such quality gaps by taking steps that lead to not only elimination of waste but also value creation initiatives. Such steps can be related to interaction led transactions among partners and defining roles considering governance form mechanisms.

On the basis of above mentioned data analysis and discussion it might be safely claimed that “service quality” gaps are existent not only between buyer and supplier but also intra-firm departments as explained in case of relationships with sales team on project sales. These intra-firm “service quality” gaps can be those of present between customer services and sales, customer services and warehouse, customer services and operations and/or customer services and IT departments. Such gaps could not only generate tons of waste, extra cost to the firm, process variability but also create hindrance to efforts required to pursue value creation initiatives among various stakeholders. In light of this discussion another model might be suggested considering the fundamental model presented in following figure. .

A more visible supply chain can be one that enables interaction led processes address service quality gaps generated during operations within intra-firm operational linkages.



This model explains how gaps should be filled or addressed by considering the guidelines available in literature and analysis pertinent to servitization, integration and value creation. Simultaneously lean principles can help firm not only operate in such broad context but also make processes adapted and aligned to firm's unique requirements and challenges. These requirements and challenges could be different for different product class and market segments. It shows that required level of responsiveness and reliability could be varying depending on service levels requirements. All this debate brings us to the conclusion that though all kind of wastes is damaging for the firm yet waste generated for processes where higher level of responsiveness and reliability is required for service levels could be lot more detrimental for Glamox. Thus lean principles along with doctrines addressing servitization, integration and value creation might help address such intra-firm "service quality" gaps and also ones existing inter-firm and could bring connectivity that contributes accordingly to supply chain network transparency or visibility. These principles would assist in streamlining processes, eliminating waste but could not seem to suffice on their own. As it has been mentioned, equal or extra efforts might be concentrated where they are not needed in required volume. At the same time they might be exercised less than required where they are needed most. Thus servitization and governance form mechanisms according to product class, customer and market segments is what is required to be given attention to. This view might also be endorsed considering scarcity of resources and very expensive labor market in Norway but Resource based view theory, cultural, unions and labor related issues are out of scope of this study. It also merits mentioning that various forms of governance mechanisms might be required to deal with different stakeholders for the same firm. Though this discussion is also out of scope of current study for lack of time and resources yet it can be explored in future research how various market segments within single firm might require different governance mechanisms and this way firm can build various value creation initiatives with relevant stakeholders.

Conclusion: Lean Implementation, Integration and Big Picture

Glamox ASA being an international organization should not ignore challenges and opportunities globalization has posed in recent decades. In wake of globalization in recent years the increase in number of companies functioning in global marketplace has been

witnessed to great extent. This phenomenon requires companies assume a broader perspective when operating as an international company. In this case the company is truly global, with a structure and policy that represent a global business. This may include, amongst others, attributes such as global sourcing, global branding, centralization of inventories, global production and the control of information, but with the capability to deliver for local requirements, be these electronic standards for electrical goods, language on packaging or right/left hand-drive alternatives in the automotive industry. All of these features serve to accentuate the additional difficulty of operating successfully and efficiently in a worldwide environment. Logistics and supply chain networks have developed into far more complexity and the requirement to manage and plan logistics as an integrated system has become far more difficult. To service international markets, logistics networks have developed into, unavoidably, far more complex and far more expansive linkages. And it comes to customer services department at Glamox in many cases not only to recognize but also use these linkages to firm's profit while keeping the wastes and process variation to minimum. Once again, the prerequisite is to logistics as a broad and integrated system. Organizations operating in a worldwide market are often "involved with the outsourcing of some manufacturing and the use of 'focused' factories that specialize in a limited number of products". Globalization almost surely point to greater complexity and such intricacy provides some substantial implications to handle logistics operations. These comprise of:

- extended supply lead times;
- production postponement with local added value;
- complicated node management;
- multiple freight transport options;
- extended and unreliable transit times; and
- the need for greater visibility in the supply chain.

It becomes evident from this discussion that there is a direct clash or conflict "between globalization and the move to the quick response, just-in-time operations that are being sought by many companies". Lean implementation program at customer services department also seeks to achieve quick response, better service, and waste elimination and lead time reduction. In global companies there is a propensity to observe inventory levels and order lead times increase on rise because of the distances involved and the intricacy of logistics operations. In

companies moving to the just-in-time philosophy there is an aspiration to eliminate redundant processes and waste within their operations and reduce lead times. For these companies trying to attain such goals is challenging and application of five Lean principles and its tools and techniques is not as simple as it might seem in the first place.

So being a multinational firm and to enable itself for managing the requirements, challenges and opportunities posed by globalization Glamox should have integrated systems in place.

There has been much progress to develop more integrated operations in logistics and distribution systems having the notion of total logistics at its basis. Accordingly, quite ground-breaking ‘trade-off s’ are now being practiced by many organizations in various industries. The major motive for this change is twofold. One is the understanding of the importance, cost and complexity of logistics systems and the second is the growth made in the field of information technology, which has allowed the development of refined information systems to support and enhance the management and planning of logistics operations, whereby very thorough data collection and thereafter analysis can be started which was previously unmanageable. Much of the roots of integrated systems do have a background in manufacturing. One of systems that is quite relevant to this study has been discussed above which is JIT and it has been successfully applied in manufacturing industries mostly such as automotive yet it has major application in services. The main idea of JIT is to deliver a production system that eradicates all activities that neither add value to the final product nor permit for the unceasing flow of material – in simple terms, that eliminates the wasteful and costly components within a process. The objectives of JIT are enormously related to distribution and logistics, including:

- the production of services the customer wants;
- the production of service when the customer wants them and to the required extent;
- the production of perfect-quality service;
- the elimination of waste (labor, inventory, movement, space, etc.).

Thus a discern use of lean principles along with already mentioned essentials, such as servitization, lean services and integration, would guarantee not only waste elimination but also value creation across supply chain and better informational flows would increase supply chain’s visibility.

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Appendices

Order 2158624 205150 ELEKTROSKANDIA AS Skien

Delivery Address INST. PER ØVERLAND AS

wishdate 15/11/2013 Text Yes X ENGERBAKKEN 14

Reference 5397230 Blck No EIDANGER ZIP Code OK

Forw.Agent 200 Bring Stykkgoods 1 3946 PORSGRUNN 3946 Yes

Pos.	Item No.	Description	Ordered	Un.	PLD.Dt.	ABC	Wth	Cont.	Calc.date	L Whole sale
10	A20624220	A20-P166 124HF TC-L	5	pcs	15/11/2013	A	100	No		
20	77000121	LAMP TC-L 24/830 2G11	5	pcs	15/11/2013	A	110	No	15/11/2013	
30	C20039309	C20P22CUMLA328HGW99GJ100000	5	pcs	15/11/2013	A	100	No	15/11/2013	
40	C20039274	C20P22CUSUA228HGW99AJ100000	2	pcs	15/11/2013	B	100	No		

Buttons: Cancel, Fix Zipcode, Confirm Line, Pl.Inv.Trans, Confirm Order, Chnge Forwarder, Conf.Sel.Lines, O.Acknowledgem.

1. Sjekk SPOC note om noen spesielle beskjer
2. Sjekk postnr. opp mot forwarding agent.
 - a. 200 Stykkgoods
 - b. 220 Stykkgoods Bergen (se oversikt)
 - c. 014 Erik Øye (Oslo) (se oversikt)
3. Sjekk om varelinjen har fått dato
 - a. #10 Ikke dato, sjekk "Pl.Inv. Trans" (om vi kan sende)
 - b. #20 Vi kan sende 15/11, men dette er lyskilde til #10
 - c. #30 Vi kan bekrefte (om dellevering) "Conf.Sel.Lines".
 - d. #40 Ikke dato, må produseres (B-vare)
4. Sjekk Reference (REF A):
 - a. Om dette er en direktekunde skal det være merking (ordrenr/bestillingsnr.) i Reference (REF A).
 - b. Om vi sender varer uten pris/faktura, skal vi merke ordren med "Uten anførsel".
5. Bekreftelse:
 - a. Hele ordre samme dato: Confirm Order
 - b. Enkeltlinjer (ikke hele ordre). Conf. Sel. Lines + O. Acknowledgem.

Confirm order eller O. acknowledgem:

Del.Dt.: Dato fra lager

Pl. R. Date: Dato forventet fremme iht. Bring sine tabeller. Må I enkelte tilfeller beregnes manuelt

Order 2158623

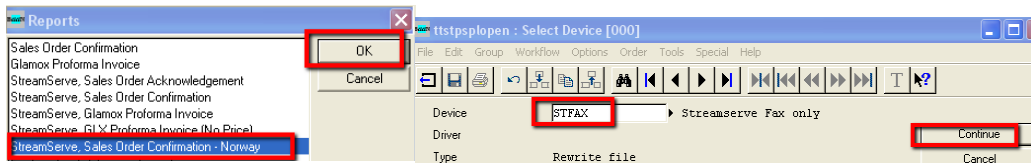
Cust. 205131 ELEKTROSKANDIA AS Ar

wishdate 12/11/2013

Del.Dt. 13/11/2013

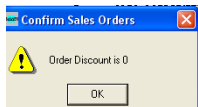
PIR.Date 15/11/2013

Buttons: Continue, Cancel, Help



Advarsler

Sjekk om ordren skal ha avanse. Fix Zip Code. Endre fraktsone [bilder]



No 2

Kunden ønsker varene “garantert fremme” dagen etter. Den leveres på døren innen kl 9 dagen etter i større byer og tettsteder, mindre steder innen kl 16.

Bekreftingsfrist kl 12. Posten hentes her kl 15.30.

Vi legger inn ordren som vanlig (se tidligere instruksjer).

I form 2 legger vi på transportør: 018 Bring bedr.pakke o/natt.

Vi tar på samme tid bort vanlig frakttillegg her.

Sales Order	2176800
Customer no.	205109 ONNINEN AS Åsane
Currency	NOK Norwegian Krone 1,000000 per 1
Fixed Rate	Fixed
Term of Delivery	DDP DDP Incoterms 2010
Place	
Terms of Payment	15 45 days from invoice date
Freight Costs	8 Fraktsone 0 - Fraktfritt
Sales Price List	002 Listepriiser Glamox Norge
Price List f.Dir.DI	
Cust. Prices/Disc.	201127 ONNINEN Oslo
Customer Texts	
Forwarding Agent	018 Bring bedr.pakke o/natt
Route	018 Bring bedriftspakke o/natt
Tax	Yes
Ship Complete	No

I form 1 på linjenivå legger vi inn en varelinje med fraktkostnader; artno: C002 – freight cost.

Vi regner ut hva frakten blir til oppgitt postnummer, se skjema i FI43-11a (utdrag under):

1. Vekt på varen finner vi i item data.
2. Vi ganger med antallet varer, og finner ut hvor mange kg som skal belastes for.
3. Vi finner ut hvilket postnummer varene skal til, og finner fraktkostnaden GSN betaler for varene.
4. Denne prisen må ganges med 1,2 for å finne ut hva kunden skal betale. Dette beløpet runder vi av, og legger inn i pris-feltet på linjen.

Item		335240365		C45 236L CB 830 0P	
General Data					
Material		Process Item		No	
Size	18,4	RPT Item		No	
Standard		Revision-Controlled		No	
Weight	[kg] 3,600	Update E-Item Rel.		Not A	
Search Key I	C45 236L CB 830	Current Revision			
Search Key II	335240365				
Item Type	Purchased	Cost Price Data			
Item Group	TOP006 C45	Cost Price Comp.		001	

BEDRIFTSPAKKE EKSPRESS OVER NATT

NETTOPRISER

GLAMOX ASA

JAUNUAR 2013

kg	sone 1	sone 2	sone 3	sone 4	sone 5
	6300-6499	6001-6099	6100-6199	0001 - 5999	8000 - 9999
		6200-6299	6700-6999	7000 - 7999	
		6500-6699			
1	197	210	231	344	456
2	204	216	241	361	507
3	211	222	252	377	552
4	222	236	270	402	609
5	231	244	282	418	653
6	243	259	299	440	709
7	250	266	311	457	761

Figur: Utdrag av tabell over priser for ekspress over natt, tall for 2013, se FI43-11a.

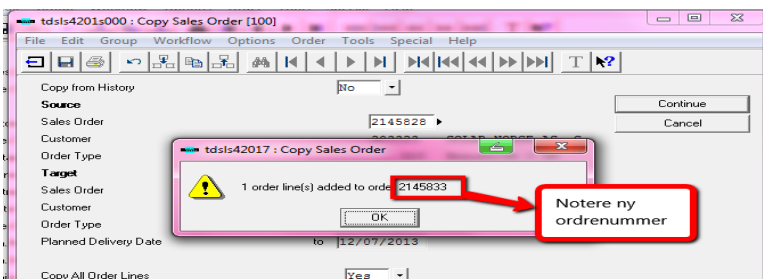
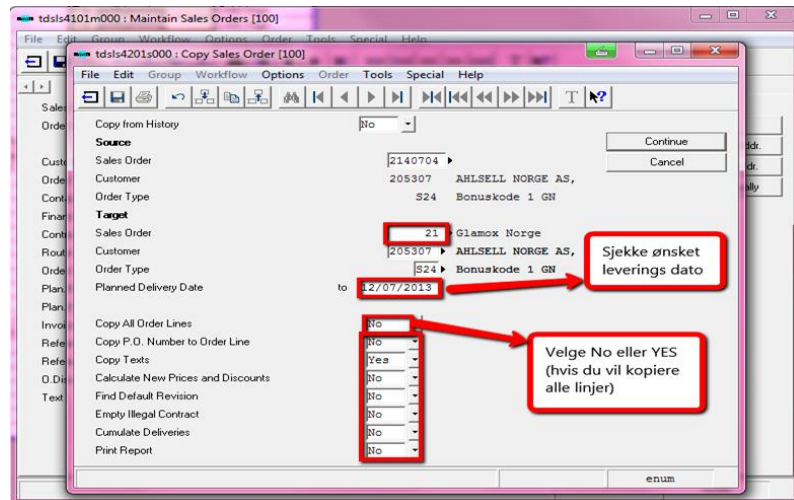
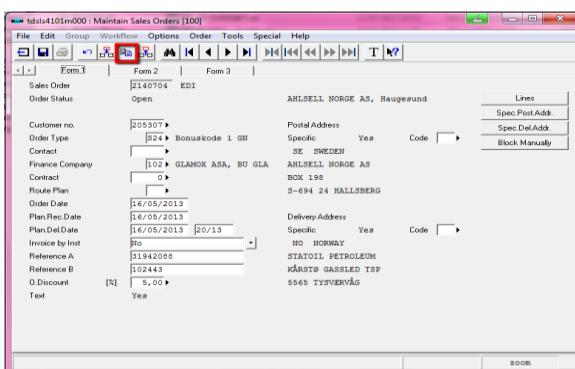
Vi bekrefter så linjen i Confirm Sales orders, sammen med det som skal sendes post over natt.

Dette er den vanlige prosedyren da kunden ønsker dette sendt fortest mulig. (f.eks. batterier)

Det kan også forekomme at selger ønsker at vi skal sende noe post over natt uten at kunden skal belastes for frakten. Da legger vi ikke inn denne linjen med fraktkostnader, vi endrer bare ”forwarding agent” til 018.

Hvis vi ønsker å spore post over natt sendinger, må vi kontakte distribusjonen for sendingsnummer. Til info kan det være lurt med en beskrivelse av varen utenpå hvis det f.eks. er batterier, da dette lett blir stoppet på flyplassen og da kan bli forsinket.

No 3



tds4101m000 : Maintain Sales Orders [100]

File Edit Group Workflow Options Order Tools Special Help

Sales Order: 2145831 Manual
 Order Status: Open

Customer no.: 205327
 Order Type: S23 Bonuskode 0 GN
 Contact: 102 GLAMOX ASA, BU GLA
 Finance Company: 0
 Route Plan: 12/07/2013
 Order Date: 12/07/2013
 Plan.Rec.Date: 15/07/2013
 Plan.Del.Date: 12/07/2013 28/13
 Invoice by Inst: No
 Reference A: [Redacted]
 Reference B: AR
 O.Discout [%]: 0,00
 Text: No

AHLSE
 Postal: SE SWEDEN
 Specific: AHLSELL NORGE AS
 BOX 198
 S-694 24 HALLSBERG

Delivery Address: NO NORWAY
 AHLSELL AS, Fredrikstad
 BONNTJENNISVEGEN 14
 2055 NORDKISA

Husk å slette alt ikke relevant info skriv inn: <kopi av SO21... (opprinnelig ordre nummer)>

Husk å slette Ref A

modify multibyte

tds4102s000 : Maintain Sales Order Lines [100]

File Edit Group Workflow Options Order Tools Special Help

Pos	Proj	Item No.	Ordered	Price	1.Dis%
10		988812310 GEF 108-E3/ST W/	10	2187,00	65,00

Form 1 Form 2 Form 3 Form 4 Form 5

Credit Limit: [Redacted] Open Balance: 178308 Order Balance: 7655

Order /Customer: 2145828 203323 SOLAR NOR Ordered [pcs] 10
 Position Number: 10 Back Order: 0
 Project: [Redacted] Dir. Delivery: No
 Item Code System: ELN 6621211 GEF 108-E3/ST W/3 S SINGLE M/N
 Item No.: 988812310 Price [pcs] 2187,00
 Item Category: Standard IT Rev. Price Level: Price List / Ite
 Warehouse: 100 Glamox ASA Disc. Perc.: 65,00
 Plan.Del.Date: 15/07/2013 2913 Disc.Amount: 0,00
 Text: No Disc. Level: Customer / Price
 Selection Cd: A Amount [NDK] 7654,50
 Confirmed: No

Andre Yes til No (linje ikke bekreftet)

modify

No. 4

Tillegg på en ordre

Om en ordre har fått et bestillingsnummer fra grossist kan vi **ikke** legge på flere antall eller flere varelinjer på ordren. Det samme gjelder om vi har bekreftet en ordre (forespørsel på bestillingsnr er sendt til grossist). Alt av tillegg bør legges på en ny ordre.

Reduksjon og sletting

Det første vi må sjekke er hvilken status ordren står i, om ordren står i **status 1 og 2** kan vi slette/reducere. Om ordren står i **status 3** (outbound og plukkliste er på lager), må vi kontakte lager og spørre om lageret kan kaste plukklisten.

Alt av a-varer kan slettes umiddelbart. B, C, E og M-varer må vi få godkjenning fra produksjonsplanlegger eller innkjøper.

Kontaktpersoner:

GPM: Holten eller Aldal. **GPK:** Kirkenær, Ordre. **GPE:** Smørdal.

GPS: Målilla, Order. Vi må sende PONr fra felt 4. Ved ok slett linjen på PO, deretter på SO.

Tradingprodukt: Smørdal eller Birkeland

Handling i Baan

1. Slett posisjoner om ok fra innkjøper/planlegger/fabrikk
2. Skriv hva du har gjort i header tekst. Husk hva som skal internt og hva eksternt
3. Send en rebekreftelse i Baan.

