THE GLOBAL CRISIS: CHALLENGES BUT AS WELL OPPORTUNITIES FOR DEVELOPMENT AND INNOVATIONS WITH THE DEMAND & SUPPLY CHAIN FOR MOBILE TELECOMMUNICATIONS SUPPLIER

Dr. Marcus Stoerkel*, Dr. Alfonz Antoni**
****Sales Director Vodafone Global Microsoft Mobile Device Sales, Germany***
*****Associate Professor at University of Applied Sciences, Budapest, Hungary***

The global crisis had a severe impact on the way of working between companies and the relationships of people. The OECD roundtable was publishing a conference paper on impacts of the economic crisis on globalization and global value chains "Reference [1]". Besides macro economical results of the 2008 global crisis the microeconomics of supply chains and trade in tasks were in focus. In order to increase the efficiency of the supply chain operations in a particular supply chain in spite of the current difficulties, a good structured collaboration should be established between the parties. This will bring closer the participating companies to each other in the different levels of the supply chain, and foster a co-operation of an effective material and information flow between the parties. New business model innovations are needed to overcome the growth challenges and add value for future business. Processes together with people and relationships can be seen as dominating issues of supply chain challenges. Our paper is looking into theoretical basics and definitions of logistics and supply chain management. Based on these fundamentals the telecommunications industry will be highlighted and strategic long term as well as tactical short term co-operations, which foster the openness and trust, will be worked out.

1. INTRODUCTION, THEORETICAL EXPLANATIONS AND IDEA OF THE PAPER

The telecommunications industry has a growth challenge created by the market saturation with high penetration of mobile subscriptions and high cost burden from the times when new business came in easy.

To master these challenges business model innovation is required for a transformation of an organization through the use of strategic partnerships and the realignment of an existing business model to reposition the business or extend its reached into new markets. The word „innovation" got " into fashion during the last years. In public discussions of society, politics but especially within the business economic the word innovation is used a lot "Reference [2]". Unfortunately the understanding and definition of the word is very different and not really precise. One of the common interpretations is that it has to do with something "new". In the economic environment you can see that through the dynamic impulse of technology, changing markets, structural changes, new competitors as well as new market conditions the need to innovate is getting massive "Reference [3]". In addition to the

missing growth the demand volatility is creating planning issues and creating lack of predictability. Demand volatility is a reality in many industries, from discrete manufacturing to process and telecommunications industries. Not only are retailers serving end consumers facing volatile demand, but this volatility is being passed on to manufacturers and distributors at different stages of the value chains. As the supply chain flexibility decreased in the recent years, the accurate and reliable forecasting methods will have a more crucial role in the upcoming time for the manufacturing companies, otherwise they will not be able to serve their customers in case of sudden demand changes. The transition to becoming pull-driven or demand-driven is slowly occurring in many industries.

Under these unfavorable circumstances, companies were forced to reduce cost in every possible way, including the reduction of the inventory levels, labor force, production capacity, and the supplier base too, which steps resulted in decreased flexibility throughout the whole supply chain and create innovative cooperation models.

In order to increase the efficiency of the supply chain operations in a particular supply chain in spite of the current difficulties, a well-structured collaboration should be established between the parties. This will bring closer the participating companies to each other in the different levels of the supply chain, and foster a co-operation of an effective material and information flow between the parties. Planning and forecasting is an essential part of business throughout all industries. Especially within the telecommunications industry the demand creation is made by one partner only but it is a joint work between handset manufacturers, mobile operators and other market partners like content provider and application developers. Between manufacturers and mobile operators you need to have an intensive dialogue with open books and high degree of trust. People and relationships can be seen as dominating issues of supply chain challenges.[1]

The telecommunications industry was facing such issues already some while ago and is trying to develop processes to deal with it but just with the global crisis these issues got much more visible. In the year 1995 Nokia got into a situation which changed the entire company and its logistics processes: “Despite strong sales growth, Nokia Mobile Phones profitability was adversely affected by a number of factors during the year. The principal factor affecting profitability was the difficulty of meeting the challenges created by the business group's rapid growth. Profitability was also affected by interruptions in the supply of certain components, as well as logistical “Reference [4]”. Nokia learned and changed the logistics concept with a new business model approach towards the customers. The proper logistics- and supply chain model can be seen as one of the success factors which made Nokia an important player in mobile telecommunications. The created business model

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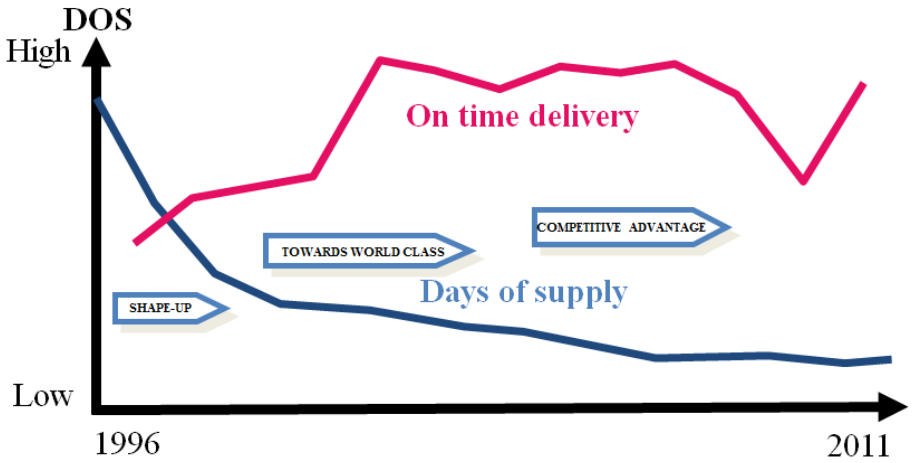
Similar thoughts can found in: Stoerkel, M. (2012): “Supply chain management and logistics within the mobile telecommunications industry”, in: Hungarian logistics yearbook 2012. Besides general re-work additional aspects of innovation and innovations management completed this paper.

innovation is not that new but the global crisis made the need for it more transparent and urgent to use it on broader scale.

Figure 1 shows the improvements achieved in Nokia over the last 16 years and illustrates the potential which comes from a proper supply chain co-operation.

Figure 1: Nokia customer service and inventories development on global level



Source: Stoerkel, 2010 “Reference [5]”.

The Days of Supply (DOS) level for the customers, which is a major cost factor, could get reduced from over 100 days to 20-30 days on global level. At the same time the service level improved significant and today a customer can expect the goods he orders today to be delivered within the next 10 working days. Nokia managed to shape up the supply chain and make it a world class and today it is even a benchmark for other industries. The reason why the DOS level should not be reduced under a certain level is on the one hand for planning security reasons and on the other hand it has as well significant cost impacts. Understanding a certain industry's cost structure one can elaborate a powerful competitive advantage. And if one happens to be in a manufacturing business, it can dramatically improve one’s capacity and production decisions. With these changes in the industry changes came along. Logistics departments in companies got more attention as ever before. In order to deal with the new circumstances like growth with decreased profits there was a need to change and increase the role of the logistics departments. That was the moment when supply chain management was emerged. Later on supply chain and supply chain management will be defined and differences between logistics and supply chain will be worked-out. With that foundation given we will examine the supply chain processes and look into the example of mobile telecommunications industry and Nokia in particular. The summary and the conclusions will highlight the key points and importance for companies like Nokia.

2. TRENDS AND MODIFICATIONS - SUPPLY CHAIN INNOVATIONS AND SUPPLY CHAIN MANAGEMENT AFTER THE CRISIS

Often the terms logistics and supply chain management are used as synonyms, but in fact they are not the same, so we should not mix them. The difference rooted in the approach itself, we distinguish them based on the below: Logistics management mainly focuses on a certain individual company, and through planning, execution and

control of the processes it is intends to reach the best possible efficiency. However, the SCM concept has a broader view, and focuses on the relationship management of the parties in the network, and tries to harmonize the processes in order to foster the integration. A comprehensive definition of supply chain was given by the Council of Supply Chain Management: „The material and informational interchanges in the logistical process stretching from acquisition of raw materials to delivery of finished products to the end user. All vendors, service providers and customers are links in the supply chain "Reference [6]".

It can also be seen as a collaborative-based strategy to link business operations within the organization to achieve a shared market opportunity "Reference [7]". Besides the physical flow of materials there is another crucial factor: The flow of the information between the participants of the supply chain, because without this, a supply chain cannot be effective and efficient. The material and the information flow upstream and downstream through the supply chain is important, so it is a kind of „two-way street". If there is no honest and open sharing of data between the parties like the handset manufacturer and the telecommunications operator there will be no chance to deliver the right products in the needed volume in time. Another definition can be found from Martin Christopher: „Network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer" "Reference [8]".

A similar concept can be recognized in the thinking of. Lambert: „Supply chain management is the integration of key business processes from end-user through original suppliers that provides products, services and information that add value for customers and other stakeholders." "Reference [9]".One of the key issues is the proper integration. How to bring the participants of the supply chain closer to each other, how to align the business processes of the involved companies to match the data and how to enable an effective way of working to maximize the service level? Actually you have to innovate some of your business models and change the way-of-working to reach your goals. An experiment for the answer will be explained in Chapter 3.

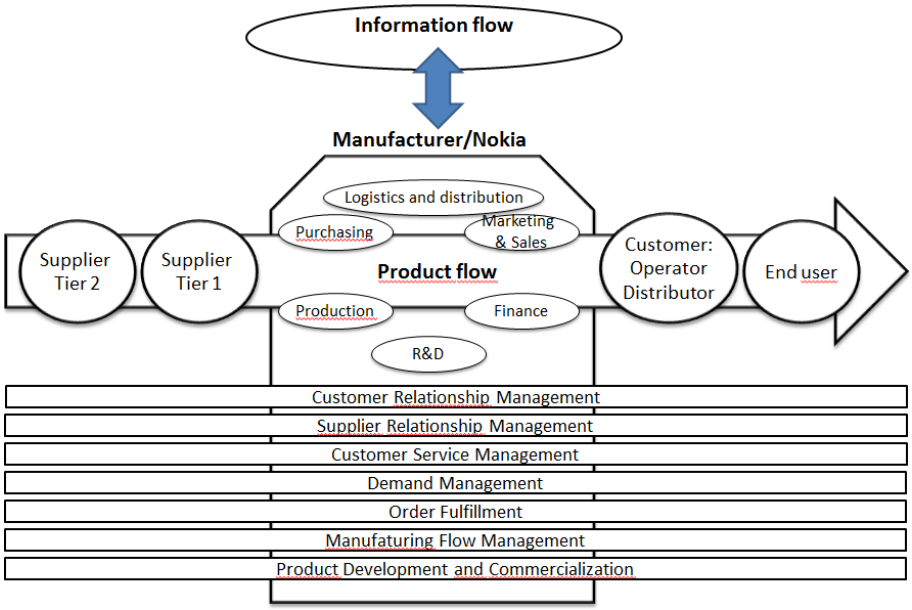
3. THE TWO TIER NETWORK IN THE MOBILE INDUSTRY: THE EXAMPLE OF NOKIA

In order to describe the interconnections between the different parties it would be useful to speak about networks rather than about chain. The network design problem is one of the most comprehensive strategic decision problems that need to be optimized for the long-term efficient operation of whole supply chain "Reference [10]".

In the telecommunications industry the different partners within the supply chain have to adapt their behavior and exchange of information to the new needs based on the economic crisis in terms of speed and openness. Figure 2 illustrates a simplified supply chain structure with a two-tiered supply side, and a two-tiered demand side. What we have to recognize is that the supply chain management

processes link all the relevant functions within the particular company, and also integrate the mentioned company with the other firms in the supply chain in focus, so it can be described as a cross-functional and a cross-firm involvement at the same time. Therefore it is important that the participating companies have standardized processes in order to cooperate efficiently, and it will end up with favorable results for all the involved parties.

Figure 2: Supply chain structure with Telecommunications Industry



Source: Own figure based on Lambert/Cooper/Pagh (1998) p.2 "Reference [11]".

The major advantage of an open communication is the better reliability of the data. All the partners in the value chain can optimize their planning and the individual companies will definitely gain tremendously but the benefits will move beyond the own company and everybody will gain. This will obviously have direct influence on the organization and thus add to their locked-in working capital. Supply chain management principles primarily focus on three elements. The company can compress the lead times and raise quality and accuracy at every stage, service will improve thus getting rid of costs out of business. Secondly organizations should take a process view rather than a functional view of the operation. In addition to that working across functional boundaries to integrate business processes in the future is getting more important.

As above we had the chance the observe the structure of a general supply chain model, let us project this model to the mobile industry, and see how does it looks like in the case of the operations of Nokia.

Nokia as a manufacturer can be placed in the center of the chain, as the company produces the mobile devices in their own factories across the world.

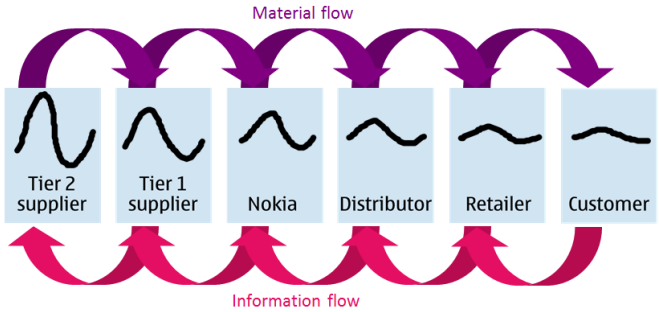
The Supplier 1 level represents the direct suppliers of Nokia, from which the company purchases all the needed materials, components and spare parts for their

factories, which are necessary for the manufacturing activities, in order to produce the final products for the end consumers. Naturally these suppliers also have their own suppliers, from which they procure the related raw materials, which are the basics for the production of mobile phone engines, batteries, covers, displays, and other essential components. They are representing the second tier, the Supplier 2 level.

On the demand side of the graph the next level in the network is the level of Customers, which are representing the direct distributor partners of Nokia, and its mobile operator partners (such as Vodafone, Telenor, T-Mobile, etc.). In fact, in both of the cases there is an additional level on the demand side of the supply chain, between the Customer and the End User. In case of the channel of the wholesale distributor partners, the goods will flow through the certain retailers to the final end consumers. In case of the mobile phone operators' channel, the end consumers purchase the mobiles from the particular operator, but not directly from its central warehouse. The mobile operators have their own retail channel too, through which the mobile phones are distributed, and sometimes these retail shops are operated by a third party contractor. Information flow is driving the demand chain which has a direct influence on the supply and the complete value chain.

Figure 3 illustrates the supply chain network with the material and information flow limitations.

Figure 3: Volatility amplification – Bullwhip effect



Source: Stoerkel, 2010 "Reference [5]".

With increased clock speed of information and complete openess from all partners, within the network we would be able to overcome the bullwhip effect "Reference [12]".This could lead to significant savings and an improved service and availability level.

In ideal case the manufacturer would get, daily the information about all relevant purchase on the level of point of sales (POS). With more transparence in the cooperation the results will improve and a win-win situation can be established.

4. Opportunities and challenges of CPFR (Collaborative Planning, Forecasting and Replenishment)

At its essence, CPFR is a set of business processes that help eliminate demand and supply uncertainty through improved communications between supply chain trading partners.

The basic concept of the collaborative business practice has been that the business partners along the supply chain will be able to jointly predict and satisfy the future demand of the end consumers more efficiently, if they will have the visibility to each other's demand forecasts, order forecasts, promotional and marketing plans. The CPFR technique has its roots in the so called Efficient Consumer Response (ECR) methodology. The ECR technique had its focus on the effective coordination of the marketing, production and replenishment processes in order to improve the performance of the supply chain operations. CPFR developed as a pioneer initiation in order to integrate information and intelligence of the different trading partners in the supply chain, and this way improve the overall inventory management, reduce the occurrence of stock-out situations, optimize the stock levels in the warehouses across the channel, and reduce the cycle times. CPFR's primary aim was to link the best practices of sales and marketing (like category management) with the demand planning and supply chain processes, with the following excepted results: increased product availability parallel with a reduced average inventory level, which will end up in boosted sales revenues and cost cut.

The actual business innovation was created through the CPFR approach originated in 1995, it was a pilot project of the famous retailer Walmart. At that time, this initiative was called CFAR (Collaborative Forecasting and Replenishment). The anticipated outcome was to reduce inventory levels, but improve product availability at the same, resulting in sales and profit increase. The pilot program was a real success, the in stock average increased from 87% to 98%, lead times dropped from 21 to 11 days, and sales increased by 8.5 million dollar during the test period.

The results of the above mentioned pilot were presented to the VICS (Voluntary Interindustry Commerce Standards) committee in 1996, which started to define an international standard on CFAR. Later on the standard was renamed to CPFR, because the committee wanted to emphasize the importance of the collaborative planning in the process. Afterwards the VICS committee published its original guidelines in 1998, which is usually referred as the „Nine-Step" model.[2]

Despite of the several success stories, CPFR did not have a widespread adoption at that time. Especially the lack of trust between the trading partners, which resulted in a limited willingness of data and information sharing is a problem. We often face a poor level of data quality, which could result in deceptive information. The low level of integration between the B2B partners made the information and data exchange more difficult for the participants. As a response for the numerous negative feedbacks on CPFR, the VICS committee published a new model in 2004.

This new CPFR reference model gives us a kind of general framework for the processes applied in the different steps. The participants in the collaboration are the

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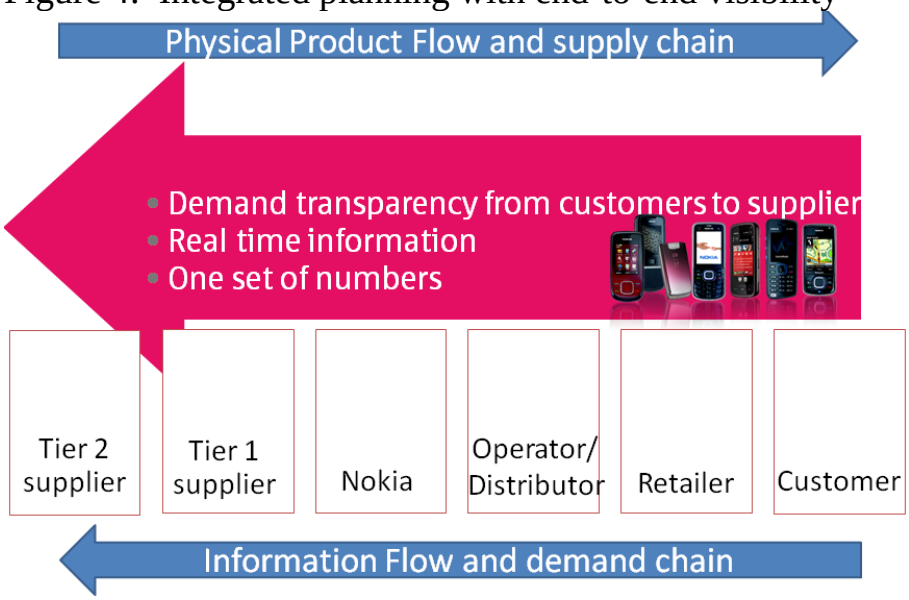
[2] The concept of this Nine-Step model can be summarized:

1. First the trading partners agree to jointly develop a market-specific plan, using the approach of the category management.
2. Mutually the trading partners develop a shared demand forecast plan, and besides that an order forecast plan as well.
3. At the last stage, the initial order forecast plans then converted into actual orders.

seller and the buyer, and their mutual aim is to satisfy the demand of the end customer by closely working together. The model can be used in the telecommunications industry as well and as it is a generic tool which focuses on strategy & planning, demand and supply management, execution and analysis of the current situation.

Figure 4 illustrates the different members of the supply chain and their need for integrated planning and visibility.

Figure 4: Integrated planning with end-to-end visibility



Source: Stoerkel, 2010 “Reference [5]”.

If we project this framework to the mobile industry and Nokia, then Nokia, as a manufacturer fills in the role of the seller, and the mobile operator partners (such as Vodafone, T-Mobile, Telenor etc.) fill in the role of the buyer (distributor/retailer).

The demand chain is essentially the mirror image of the supply chain. As we have seen, the supply chain is a string of economic players attempting to create value through an efficient, sequenced process. The demand chain offers companies a way to cope with fluctuations in demand, enabling companies to plan more efficiently and effectively for changes in demand. The culmination of both of these concepts has been the customer-centric value chain “Reference [13]”.

The common goal is to satisfy with a high service level the needs of the final end consumer, who walks into a retails shop of one of the mobile operators with the intention of purchase a new cell phone. In order to make such a good co-operation possible there a many elements which should to be in place. Companies should focus on customer relationships and strengthen the collaboration with the most important business partners. With a well-established collaboration, uncertainty in demand can be minimized, but in order to succeed in this, the proper tools should be on hand too. Looking at the findings we see a one-to-one match to the supply chain development we faced at Nokia. Strong partnerships combined with exchange of all relevant data in real time is key of success and the basis for cost reductions as well for service level improvements. It took between three and six month within the CPFR collaboration

that the operator customers saw the benefits of sharing sensitive data. Many people are involved and a lot of hurdles within huge organizations have to be overcome to get each and every member of the teams behind the project and to see the benefits for both companies. Is that point reached the openness and trust from both sides is not a problem anymore. It depends on the willingness of the partners to integrate the information systems and exchange data in ideal case on daily level to see trends coming and avoid any kind of the bullwhip effect before it hits you.

5. SUMMARY AND CONCLUSION

There is no guarantee that innovations in business co-operations will be successful and well accepted within a market and between the market partners. Many different factors can make it impossible to reach the given targets when it comes to new introductions of the described services and changes in the way of working. Especially when there is heavy competition and difficult overall market conditions the investment of time and energy is necessary and very important. We have to select the right time, the right tools and good commitment on both sides to have best chances to achieve positive results. If you look into latest examples of the mobile telecommunications market then you see Nokia losing market share in significant numbers despite advanced supply chain tools and strong customer relationships. Basics of the product portfolio and needed product innovations were not examined in this paper but would be helpful to understand the strategic challenges within the telecommunications industry. If companies want to be successful with their supply chain in the coming years they must give special attention to joint planning efforts with their suppliers and partners. Further business model innovations in the supply chain are needed to adjust to the market needs in best possible manner. To manage all the complex processes within the company is difficult, very costly and assumptions can be very wrong. The first, theoretical part of our paper depicts the direction of the development regarding the supply chain management practices. From this, we can clearly see that the trend in the last decades was to facilitate the integration. Companies have started to integrate the certain functions into the organizations internally and they proceeded to integrate the different levels of the particular supply chain. The main goal is to increase the visibility throughout the supply chain, and this way to eliminate totally the so called “silo-effect”. In the case of Nokia the change from logistics to supply chain was very beneficial and represents one of the key success factors in the battlefield of telecommunications.

The lack of communication and common goals between the business partners in a particular supply chain is one of the biggest barriers against the efficient operational performance. Supply chain management is here to stay and we are at the beginning of the spectrum. We still have a long way to go and miles to conquer before the entire industry, all players and all participants become supply chain enabled and get necessary tools to make informed decisions. Companies have a lot to gain from supply chain and demand chain management Implementations – you just need to trust your partners.

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AUTHORS

Antoni, Alfonz is European Logistics Vice President and Associate Professor at University of Applied Sciences, Budapest (Bp. 1148, Nagy Lajos kir. 1-9.) (email: aantoni@t-online.hu)
Stoerkel, Marcus, is Sales Director Vodafone Global Microsoft Mobile Device Sales