

23/3/2018

Mid Semester Examination, IV Semester, 2018
Academic Year 2017-18 (Even Semester)
School of Management
Programme Name MBA
Course Code with Title : MMS-551
Global Supply Chain Management

Time Allowed 2.00 Hours

Maximum Marks: 30

SECTION : A

(2X6= 6 Marks)

1. What are the driving factors of Global Supply Chain. List them
2. List Professional Service portfolio of 'Global Logistics Operators' or 'Logistics Service Provider'
3. Explain the concept of Triple Bottom Line

SECTION : B

(4X3 Marks=12 Marks)


4. Explain Value Chain Analysis in terms of Global Supply Chain firm.
5. Explain the evolution and Revolution of Logistics and Supply Chain Management, Globally.
6. List recent trends and Strategies in Global Operations (Logistics, Manufacturing etc.)
7. Express the potential of 4 Indian Firms which you consider as global Supply Chain Giants by 2050.

SECTION : C

(12 Marks)

Based on Nokia's Supply Chain Management Case, Attempt Questions (11 to 14) **[4X3 Marks=12 Marks]**

8. How Global Firms are more vulnerable to Supply Chain Risk.
9. How Global Supply Chain Risk Management Held by Nokia and Ericson. In your opinion, which one of them has more responsive Supply Chain and Why ?
10. 'Supply Chain Disruption at any point can affect the whole Supply Chain and Sustainability of the business', how and why? (in context to case study)
11. 'Any Mismatch between Input and Output can cause Global Disaster'. Explain the statement in context to the case and in view of 'System Approach' of Management.

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Nokia's Supply Chain Management

Case

Author: Russell Walker & Joanna Wilson

Online Pub Date: March 15, 2016 | **Original Pub. Date:** 2012

Subject: Global Operations Management, Logistics, Supply Chain Management

Level: Basic | **Type:** Indirect case | **Length:** 3502 words

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Organization: Nokia Corporation | Ericsson LM | **Organization size:** Large

Region: United States of America, Finland, Sweden | **State:** New Mexico

Industry: Telecommunications

Originally Published in:

Walker, R., & Wilson, J. (2012). *Nokia's Supply Chain Management*. 5-111-007. Evanston, IL: Kellogg School of Management, Northwestern University.

Publisher: Kellogg School of Management

DOI: <http://dx.doi.org/10.4135/9781473970984> | **Online ISBN:** 9781473970984

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<http://dx.doi.org/10.4135/9781473970984>

Abstract

In March 2000 a fire broke out at the Royal Philips Electronics plant, damaging its supply of semiconductor chips. Nokia Corporation and Ericsson LM relied on these chips to produce their cell phones; together they received 40 percent of the plant's chip production. Both companies were about to release new cell phone designs that required the chips. At Nokia, word of the setback spread quickly up the chain of command. Nokia's team, which had a crisis plan in place, sprang into action. With an aggressive, multipronged strategy, Nokia avoided any cell phone production loss. In contrast, the low-level technician who received the information at Ericsson did not notify his supervisors about the fire until early April and had to scramble to locate new sources for the chips. This search delayed production and proved a fatal blow to Ericsson's independent production of mobile phones. Nokia's handling of its supply chain disruption provides a dramatic example of how a company's strategic risk management can alleviate financial disaster and lay the groundwork for success in the future. Perturbations in supply chain management are inevitable, and grow harder and harder to assess as the marketplace becomes more globalized.

Case

On March 17, 2000, a power surge caused a fire at the Royal Philips Electronics (Philips) plant in Albuquerque, New Mexico. The plant was a key supplier of semiconductor chips used in cell phones for both Ericsson and Nokia Corporation; together they received 40 percent of the plant's chip production. At the time, both companies were about to release new cell phone designs that required these chips.¹ Although "smaller than the nail on a baby's pinkie," the chips were of utmost importance to the phones' functionality.²

The fire at the Philips plant lasted less than ten minutes before workers and sprinklers put out the flames. It was clear the fire had destroyed a certain stock of chips, but the extent of the damage to Philips's "clean rooms"—where the entire inventory of chips was stored, due to their fragile composition—was unknown. In its initial reports of the fire to Ericsson and Nokia, Philips relayed it would take around a week before production would return. News traveled quickly at Nokia, where managers actively dealt with the supply disruption, setting up a series of daily alerts and discussions. At Ericsson, the technician who received the initial report of the fire from Philips failed to pass along the information to his superiors. Philips soon realized it had underestimated how much damage the clean rooms had sustained and reported to Ericsson and Nokia that the process to resume normal operations would take six weeks. Nokia's resources were waiting and ready to spring into action to locate alternative supply sources, whereas Ericsson was unprepared for the news and had been depending on a quick Philips recovery. As a result, while Nokia's new phone launch continued, Ericsson had to delay the launch of its new phone and its market share suffered.

Philips and the Cell Phone Market

In 2000 Philips's semiconductor division was manufacturing about 80 million chips every day. Eighty percent of the mobile phones sold worldwide used Philips chips.³ Apart from mobile phones, consumer markets were demanding many other electronic devices that required the

chips, such as new cars, digital cameras, and mobile memory devices. Owing to this burgeoning demand, surplus capacity was scarce.

A steady supply of chips was critical to cell phone manufacturers, as their customer base often replaced phones for the latest or most fashionable model. Suppliers increasingly relied on the replacement market, which meant speed to market became a critical sales factor.⁴ This was especially true in an industry with short product cycles of just eighteen months, where each shelf week helped the company recoup research and development costs.⁵

During this time, cell phone companies believed the newest craze would be converged devices with 3G networks that promised wireless mobile access in combination with basic phone functions. Companies invested billions in this prospect, creating the supportive infrastructure, buying 3G licenses, and investing in new product design. These heavy investments seemed certain to return big profits, as Internet traffic was reportedly doubling every one hundred days and there was strong growth in worldwide mobile cell phone penetration.⁶

The Nokia Corporation

In 2000 Nokia was the world's leader in cell phone sales and the largest corporation in Europe by market capitalization. The 130-year-old company had started in wood pulp production but by 1999 was a leading electronics firm, with \$19.9 billion in net sales and 60,000 employees. It had developed a strong brand synonymous with price accessibility and mass appeal for its cell phones, which accounted for 70 percent of its revenue.⁷ It also had a small network sales division that accounted for another 25 percent of revenue.

The transformation from a "stodgy Finnish conglomerate, making everything from rubber boots and cables to lavatory paper and televisions,"⁸ to the Nokia of today began in the 1970s, when leadership invested profits into new technology and electronics such as radiotelephones. When Ericsson's Nordic Mobile Telephone network (the first international network) went up in the early 1980s, Nokia already had some start in basic hardware manufacture; it launched one of the first consumer mobile phones in 1984, the Talkman.

When the Soviet Union collapsed in the early 1990s, so too did trade channels for Nokia's traditional product line. This was just as demand for mobile handsets was increasing. However, Nokia did not have the capacity to expand production until the head of the handset division, Jorma Ollila, channeled new resources into the division and one year later as chief executive, "bet the company on becoming a mobile phone pure-play."⁹ In 1999 Nokia sold 128 million phones.

The Ericsson Corporation

Ericsson was another large, old Scandinavian firm, based in Sweden and founded in 1876 as a telephone manufacturer. In 2000 it had 100,000 employees and net income from operations of \$734 million, with net sales of \$25 billion. While Nokia dominated the handset business, Ericsson excelled in network sales.

Ericsson had perpetually struggled to keep pace with its telephone manufacturing competitors, going head-to-head early in the twentieth century with AT&T. However, by

midcentury it had expanded its role in telecom technology and revolutionized landline networks in the 1950s and again in the 1970s, before pioneering early cellular networks in the 1980s. At the start of the twenty-first century, the company was by "far the world's dominant supplier of mobile networks," with 70 percent of sales coming from the network division.¹⁰

Nevertheless, Ericsson continued to persevere in telephone production, now mobile, despite constant criticism that the firm misread consumer markets by focusing on uncompetitive upscale models. Although the company did experience sales growth in 1999, its handset sales, at \$43.3 million, were still well below those of Nokia. Margins were also slim at 1 to 2 percent for handsets, while its network business continued to experience "rapid sales growth and strong margins."¹¹ The opposite was true for Nokia, whose margins were 24 percent for hardware while its networks were "weak by comparison, with lower growth and falling margins."¹² Between the criticism and the margins, Ericsson had little breathing room in the fast-moving handset market. New products were needed to quell the critics, and Ericsson hoped the first foray into Bluetooth technology would do just that.

Post Fire: The Nokia Response

A few days after the fire, a supply manager noticed a flag in the system about chip inflow from Philips. Following a pre-established process, word eventually reached component purchasing manager Tapio Markki.¹³ The anomaly was unresolved until a call from Philips on March 20 detailed the news about the fire and the estimated week hiatus. Markki sent word of the fire up the chain to Pertti Korhonen, senior vice president of operations, logistics, and sourcing in Nokia's mobile handset division. Korhonen then implemented a series of tracking applications in the system for the five components Philips made at the plant and began placing daily, instead of weekly, calls to Philips about inventory.¹⁴

On March 31, Philips phoned Nokia to explain that the damage to the clean rooms was worse than anticipated, and it would be weeks before it could restart production. Some quick calculations at Nokia determined the shortage could halt production on about four million handsets and affect 5 percent of its annual production.¹⁵ The prospect was unacceptable, and a team of thirty, including Korhonen and CEO Jorma Ollila, sprang into action from several angles. First, engineers considered whether a chip redesign would allow Nokia to access alternative suppliers. The team then looked into new suppliers for three of the five components available independently of Philips—two suppliers in the United States and Japan responded with the requested inventory within five days. Finally, under pressure, Philips secured more inventories from the Netherlands and Shanghai plants after expanding production. By the end of the global effort, Nokia had its chips and as a bonus, the engineers had devised a way to boost production so that an additional two million chips could be made when the plant came back online.¹⁶

This effort successfully resulted in Nokia avoiding any production loss because of supply chain disruption, an event which years earlier had cost the firm millions.¹⁷ Owing to the previous setback, Ollila had "instituted the practice of aiming executive hit squads at bottlenecks and giving them authority to make on-the-ground decisions."¹⁸ After the fire, this practice worked in tandem with other company institutions, such as a well-functioning input monitoring system and a clear channel of communication between all personnel levels. As a result, the fire was a minor hiccup in 2000.

Post Fire: The Ericsson Response

Ericsson did not know about the fire until a low-level technician received Philips's initial message. One-week delays were common, and "the fire was not perceived as a major catastrophe," according to an Ericsson spokeswoman.¹⁹ When Philips phoned technicians again on March 31 to acknowledge the previous timeline was too idealistic and that the short-term supply of chips was uncertain, the top brass continued to remain in the dark.

It was early April before anyone on the executive team knew about the fire. By then, the outlook was bleak because Ericsson had previously moved to streamline its supply chain by making Philips its sole provider.²⁰ Moreover, Nokia had already commandeered any extra supply of chips that existed. When Ericsson finally announced the loss to the market, shares fell more than 11 percent.²¹

Repercussions

The component shortage at Ericsson helped delay the launch of the first mobile phone to feature Bluetooth technology, the T36. Company officials estimated \$400 million in direct revenue losses, which insurance would somewhat cover.²² However, the continued muddle in the mobile phone division was obvious, and the new phone had lost critical shelf time. Although Ericsson adjusted its shipping configuration to mitigate future shortages, analysts agreed the continued endeavor in mobile handsets was floundering.

By the end of October, Ericsson had already lost 3 percentage points in global market share to Nokia. By the end of the year, Ericsson had to scrap the T36 for the mass market, citing too short of a market life. The company reworked it into another model that came out in 2001, the T39— more than half a year after it had initially announced the T36.²³ The losses were astounding in the annual report, with nearly \$1.68 billion lost in the company's mobile phone division, which the company attributed to component shortages.²⁴

Like Ericsson, Nokia also subsequently found secondary suppliers for many of its components. Unlike Ericsson, there was no mention of component shortages or the fire in Nokia's annual report. Despite the preparedness with which it handled the fire, Nokia continued enhancing its supply chain operation by installing dynamic systems to track major shipments of its suppliers, establishing a thorough risk management assessment for each of its major suppliers, and creating contingency plans for a variety of crises.²⁵

The Bubble Bursts

The telecom bubble more or less coincided with and was largely a consequence of the larger dot-com bubble, bursting in mid- to late 2000. The telecom industry experienced bankruptcies, fraud, and destruction of shareholder value on a massive scale, in part because investments were based on incorrect predictions about the growth of the Internet and accompanying goods and services.²⁶ As mentioned above, some sources believed Internet traffic was doubling about every hundred days—but in reality its growth was far less striking, doubling every year between 1997 and 2003. Growth in worldwide mobile phone penetration also peaked in 1999 at 52 percent, falling abruptly in 2001 to 29 percent. Companies had

invested billions in fiber-optic networks, 3G spectrum, and highly sophisticated converged devices, forecasting quick returns from consumers demanding the newest replacement phones. In fact, many cell phone manufacturers thought that 3G would be a quick fix to the slowing market, which would necessitate that consumers update their handhelds for the fastest access to a mobile Internet.

However, cell phones at the time were clunky, had small screens, and failed to utilize the Internet in an appealing way. As one analyst at Dow Jones said, "Are there really that many people who want to surf the web on a cell phone's two-inch screen?"²⁷ Moreover, the telecom bubble and 9/11 had stalled consumer markets, and in some parts of the world companies still needed to invest in more 3G licenses and networks to offer quality coverage. It would be some time before companies would see a return on these heady investments, with 3G networks and useful cell phone designs finally mainstream by 2007.

Post Bubble: Ericsson and Nokia

The bubble showed up at Ericsson in early 2001, when the company laid off around 20 percent of its workforce and outsourced its cell phone production. By April 2001, Ericsson was done with independent manufacture of mobile phones and had created a 50/50 venture with Sony that became Ericsson's new production shop. By 2009, the Sony-Ericsson brand was the fifth largest producer of mobile phones by sales, with 4.5 percent of market share—down from 7.6 percent in 2008.²⁸

Telecom eventually recovered from the bubble, before again facing slower demand brought on by the global recession in the late 2000s. In 2010 Ericsson was a much smaller company, at 82,500 employees with plans for further reductions. Net sales were stagnant in 2009 at \$29 billion, and operating income dropped 65 percent year-on-year to \$834 million.

Nokia weathered the telecom bubble better than its competitors by anticipating the downturn; it slowed hiring, shelved new product development, and cheapened expenses by outsourcing production.²⁹ Although there were layoffs, they were not as significant. As of 2010, the company had more than 123,000 employees with net sales of \$58.7 billion (down 19 percent from 2008) and an operating profit down 76 percent year-on-year to \$1.6 billion. Despite these less-than-ideal figures, the company had grown considerably since 1999 and had continued to maintain its position as a sales leader, with a 2012 market share of 22.5 percent. It had lost much of its market share to Samsung in recent years (the maker of the Android phone), which led with 25.4 percent.³⁰

Supply Chain Risk

Nokia's ability to manage a supply chain disruption with alacrity and flexibility demonstrated to its shareholders and the public its competency in not only supply chain management but also operational risk management. As was obvious with Ericsson, however, an insufficient response to a disruption is costly, and hazard insurance may only cover the immediate loss of inventory and physical assets and not total revenue loss or brand damage. As globalization allowed for truly worldwide supply chains, disruptions were more likely for myriad reasons: border issues, terrorists, natural disasters, and labor disputes. In fact, natural disasters had grown increasingly more expensive since the 1960s, with their cost having risen tenfold.³¹ In effect, it is important for companies to consider the threats posed to supply chain disruption

and their associated costs in an operational risk frame.

A typical drop in the share price after negative supply news is about 8 percent in the first two days, which is a greater drop than that caused by either a delay in a new-product launch (an average of 5 percent), negative financial news (3 to 5 percent), or IT problems (2 percent).³² Moreover, as Ericsson experienced, the delay of a new product may accompany supply chain disruption when global capacity for an input is scarce. The impact is not limited to the short term, however, as operating income, return on sales, and return on assets are negatively affected for months—even years—afterwards.³³

To avoid these costs, companies must implement an operational risk design with standards for strategy, processes, and values supported by technology, which gives the company enough forewarning to adapt and respond to supply chain problems.³⁴ Part of this flexibility may be addressing the issue of a lean supply chain. Although less costly, it creates risk because of the complete reliance on a sole provider. Thus, companies need to consider the tradeoffs in their risk management strategy between holding inventories or using multiple supply sources and avoiding disruption. However, a completely risk-averse strategy in a supply chain may result in carrying too much inventory or spreading suppliers over such a large geographic range that the strategy is prohibitively costly—which smaller firms could ill afford. Companies must balance costs with risk-management practices to produce a tailor-made strategy for their firms to avoid the large direct and indirect costs of a disruption.

Recovery Efforts

The fire in New Mexico was a costly setback for Ericsson that contributed to the end of its independent mobile phone production. Additionally, it revealed that the company's mismanagement of its cell phone brand extended to its operational risk practices, as it failed to recognize how costly disruptions were to the bottom line. On the other hand, Nokia's keen insight into its manufacturing operations and its cognizance of the importance of getting products to shelves, including its acute monitoring of input supply, helped the company handle the fallout from the fire.

Nokia was not immune from falling sales, and its share price in November 2002 was less than a third of its peak in June 2000.³⁵ It performed better than its competitors, however, due to the prescience of management, weathering the overall market changes with the same logistical and risk management acumen that managed the fire. As the bubble's repercussions subsided, Nokia still had a healthy lead in market share over its nearest competitor. It also continued receiving numerous accolades, including a signal distinction as "Europe's biggest corporate success story of the last decade," according to the *Financial Times* in 2004.³⁶ Nokia's next big challenge in the second decade of the twenty-first century would be facing new competition from Apple and potentially, Google—a new test for the old pros in Finland.

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