IMD: International Case Study- Nodia(A)

Lausanne-Switzerland **POM 197**

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NOKIA MOBILE PHONES (A): SUPPLY LINE MANAGEMENT

This case was prepared by Research Associate Jussi HeikAi&~ under the supervision of Professors Thomas E Vollmann and Carlos Cordon as a basis for class discussion rather than to illustrate either effective or ineffective handling of a business situation.

The phenomenal growth of the cellular phones market continued through the first half of the 1990s. In Western Europe, the number of subscribers grew from 5 million in 1991 to 23 million in 1995. The three globally leading mobile phones manufacturers, Motorola of the US, Nokia Mobile Phones of Finland and Ericsson of Sweden had strengthened their positions *(refer to Exhibit 1).*

Up to the end of 1995, the industry had been in an allocation state: all the phones that manufacturers could produce were sold. Until 1995, global demand had exceeded all expectations. At the end of 1995, however, sales growth slowed down, coinciding with a global lack of semiconductors. Surfing on a tsunami of a growing market suddenly did not seem so lucrative anymore.

Nokia's Response

Of the leading companies in the industry, Nokia Mobile Phones was the least vertically integrated. They were facing, an opportunity of gaining market share or getting seriously wounded in the competition. Pertti Korhonen, Vice President for Logistics, was thinking about their supply chain management challenges:

> What is the importance of supply chain partnerships for Nokia Mobile Phones? With our growth rates, we have to be sure that our suppliers are able to provide us good quality components, just-in-time, with minimum total cost of ownership.
>
> However, we *cannot* tie up capital or management resources in running our suppliers' businesses. Furthermore, we *cannot* afford to tie ourselves to a technology partner whose technology might become obsolete for the future generations of mobile phones.

Bad News Coming

In November 1995, after four years of superheated growth, sales and profits at the world's number two cellular-phone manufacturer were in a slowdown. Delayed semiconductor deliveries had halted some assembly lines. Inventories were building, and costs were climbing. In North America, Nokia had been overly optimistic about how quickly carriers would convert from analogue to digital mobile communications networks, leaving the company with lots of unwanted digital handsets. On December 14, Nokia warned investors that profits might suffer. Within five days, their stock price had dropped 28%. In February 1996, another profit warning was sounded, and share prices fell below 50 percent of what they had been in September of the previous year.

Competition

Effective innovation of new products had enabled Motorola, Nokia and Ericsson to solidify their positions in the lead--their total global market share was over 70% in 1995. The large global consumer electronics companies, such as SONY, NEC, Philips, Alcatel and Siemens, had stakes in the business but had not shown clear interest in entering the game on a large scale. Two questions were being widely debated in the industry: What would trigger them to jump in? And what would the strength of their globally established brands and management practices be? SONY had already shown some signs of their capacity: in the UK market, their market share had gone from practically nil to 16% in 15 months. Could they do the same elsewhere in the world?

Logistics

Nokia's stumble at the end of 1995 was caused not so much by extemal conditions as by shortcomings in the critical discipline of logistics--feeding all the right items to factories, warehouses and distributors in hundreds of locations around the globe.

Until 1995, logistics for Nokia Mobile Phones had been straightforward: With unit sales surging to 100% a year, managers focused solely on buying enough parts to feed five plants in Europe, Asia, and the *US.* The chip debacle in 1995, however, signaled new problems. Without the necessary chips, phone production backed up, causing inventory build-up in other components. Parts prices were eroding by 20 to 25% a year, but NUT couldn't take advantage of this trend. So it got saddled with high costs.

Supply Line Management

Following the share price collapse in the end of 1995, Nokia Mobile Phones took quick action to change course. The response was a corporate-wide initiative called.. Supply Line Management (SLM). The focus was shifted onto finding potential

improvements in the *supply lines,* the communications and logistics lines between Nokia and their immediate suppliers or customers.

Old strateoies and structures simply did not match with the new challenges, so NMP started to search actively for a new sourcing strategy. Sourcing was divided in cylobal versus regional responsibilities. Furthermore, NMP categorized their suppliers as global, regional (same continent) or local (same country, city, site and/or same cultural and language background). There could be multiple, single or sole source suppliers for a certain type of component. Single source supplier meant that NMP purchased everything from one supplier, but there was another supplier available if needed. Sole source supplier meant that there was only one supplier available.

Inside Nokia, there seemed to be contradictions, "Chinese truths," in what people believed to be the best alternative in a particular sourcing situation. However, there was a natural tendency to move towards single sources when volumes were growing.

SLM Teams

Nokia Mobile Phones formed teams to slash inventories and speed up turnover of raw materials and finished goods. They were set up to figure out the best possible sourcing strategies for component groups to support both global and regional sourcing, purchasing, incoming logistics, material quality and product development activities. Five SLM teams started working to provide NMP with quality components, just-in-time with minimum total cost of ownership. Each team was responsible for one of the following component groups:

- Electronics components.
- Electromechanical components.
- Mechanical components.
- Accessories and batteries.
- Investments (machinery and equipment for factories and R&D).

Globally, team members came from sourcing, R&D, factories and distribution centers, production engineering centers, finance, and legal affairs. SLM Steering Group set the targets.

Relationships with Selected Suppliers in 1995

According to Pertti Korhonen, the user interface module of Nokia's 2110 phone, introduced in late 1994, was a good example of possible supply base development over a product life cycle.

NMP started the production of the Nokia 2110 phone with a global sole supplier of the user interface module, coming from Japan. When demand picked up, we followed our decision to insource the component in order to learn the new technology involved. a flexible circuit board assembly. NMP Components in Finland were given the task of learning the technology, and they ended up being the global alternative SUDDlier.

During the high-demand period NMP Components and the Japanese supplier were not able to provide all needed modules. We needed another regional European supplier, and subcontracted some of the production to a Finnish contract manufacturer, Elcoteq Network. When the demand saturated in Europe, we did not need two sources anymore and decided to manufacture the module internally. The whole development in less than two years had been from a global sole supplier, through global and then regional multiple suppliers, to single suppliers in two regions

Elcoteq Netwo

Elcoteq was a Finnish company that sold contract manufacturing services. Elcoteq's sales had grown from Fmk76 million in 1991 to Fmk9OO million in 1995. Typical customers for Elcoteq were ABB Industry, SONY and major telecommunications and mobile phones manufacturers. By building its own factories and acquiring major customers' factories, Elcoteq had quickly developed a network of five factories in Finland and one in Estonia. Elcoteq's factories were either back-factories (large-series cost-efficiency), front-factories (small production runs with an extensive product range) or in-factories (in the customer's own factorv or as an extension of it).

Antti Piippo, Elcoteq's Chairman of the Board and CEO, defined their strategy as 14 global with Northern European orientation," i.e. working with major Northern EurODean customers world- ide:

> This orientation enables good understanding of management culture, management systems and quality systems between companies. Material sourcing and the factory network can be flexibly adjusted to the needs of customer-supplier alliances For us globalization is not an end for its own sake, but in this business, we operate in a completely global environment with our customers
>
> Elcoteq is willing to form partnerships with a selected number of customers to enable low total cost of manufacturing and short time-to-market. For us, this would mean participation in concurrent engineering of new p ducts, co-ordination of supplies r subassemblies and taking ramp -up responsibilities.

For Elcoteq, Nokia Mobile Phones was seen as a potential major partner. However, what exactly Nokia wanted to do together with them was unclear. In the case of the user interface of Nokia 2110, the production of the module was at one point given partly to Elcoteq and then taken completely back to Nokia. Kari Hdyrinen, Elcotea's Business Development Director, described the situation:

> In the long run, a partnership could make the supply chain considerably more efficient. We would be able to take a wider scope of responsibilities and a more coordinating role.
>
> Overlapping competence areas, however, make a true outsourcing partnership challenging.
> We have full capabilities to manufacture mobile phones. For Nokia, it is primarily a question of where they want to allocate their resources.

GWS Perlos

GWS Perlos, a manufacturer of precision plastic parts from Finland, aimed at a position of growing importance in the production infrastructure of their major customers. Nokia Mobile Phones was one of their two biggest customers, and the business volume was growing fast. Matti Vartia, Managing Director of Perlos, defined the relationship between Perlos and NMP:

> We can, indeed, talk about partnership, even if there is no formal agreement of close cooperation. Perlos has supplied plastic parts for mobile phones and accessories since the time when NNT started mobile phone production, close to 20 years ago. Because of the long collaboration, the two companies understand each other well. Communications between Nokia and Perlos take place on multiple levels, and we have good trust between us.

Perlos played a crucial role in designing and planning the production of plastic parts for NND's phones. The company's special expertise was materials, mould design, production automation, and rapid product development in co-operation with customers.

NMP gave their sales forecast to Perlos every two months. Perlos planned their operations accordingly. Orders came directly from NIMP's five factories all over the world, even if the Asian factories also used regional suppliers. In case of a bottleneck, NMP's Sourcing decided where Perlos delivered. In principle, Perlos had a mould for a product in only one factory, supplying the product to all NMP's factories. There were hundreds of active product names for the parts and close to a thousand names in total, including the passive ones.

Vartia was thinking of ways to increase efficiency in their supply chain:

> We have had discussions of implementing EDI. It would be a natural step to improve knowledge in our joint planning. However, neither of us has been ready for this. Furthermore, open information sharing raises the confidentiality issue. Do we need to have a sole supplier partnership in order to really perform in the best possible way?

Perlos was willing to follow its customer-partners overseas, assuming that it was free to build an independent factory and do business as it wanted. In 1995, a factory was built in Fort Worth, Texas, five miles from NMP's phone assembly site. The initiative came from NMP, which was disappointed with the local suppliers and wanted a partner who understood their needs. The factory turned out to be a real win-win for both parties. NMP got a reliable partner, and Perlos, with pressure from NMP, got the factory operational quickly. In the summer of 1996, Perlos was widening their customer base primarily by supplying the US subsidiaries of their major European customers.

Exhibit I
The Top Three Cellular Phone Manufacturers

COMPANY	TELECOM EQUIPMENT REVENUE 1995				GROUP PROFIT 1995	
	US$M	% Change	% of Total Sales	Foreign Sales %	US$M	% Change
Motorola (USA)	16'660	15.80%	61.60%	63.00%	1'781	14.20%
Ericsson [redacted] (Sweden)	13'423	19.90%	96.90%	90.80%	762	37.70%
Nokia (Finland)	8'525	27.80%	100-00%	91.20%	511	-43.30%

Note: *Thesefigures refer to the whole group, notjust the cellularphone business.*
Source: *Forthcoming ITU World Telecommunication Development Report 199611997.*

http://www. itu. intAtili .. verviewltopl Omanuf.html

Exhibit 2
Technologies for Mobile Communication

The first analogue cellular mobile communications network was launched in Europe in 1981. The first digital cellular network, based on the pan-European Global Standard for Mobile telephony (GSM) with Time Division Multiple Access (TDMA) technology, was launched 11 years later in 1992. By 1995, there were as many GSM as analogue networks in Western Europe. GSM subscribers accounted for 35 percent of the over 22 million users.

In addition to growth, a number of other changes were taking place in the global mobile communications market in 1995. New cellular technologies were at the heart of these changes. Furthermore, new mobile customers were a breed apart from traditional users, and mobile phones had become fashion apparel. Plain voice telephony was now just one of a range of services offered by mobile operators, who were starting to expand beyond national borders.

With its digital capacity, GSM could carry more value-added services than analogue networks and at faster speeds. Users could receive news to their handsets according to their own specified criteria, and sports fans were delighted to read half and full-time results in real time from the screens of their mobile phones. Another important European digital cellular technology was the DCS 1800, which had been designed primarily for high user-density networks, but also supported small mobile phones that were unusable in vehicles.

GSM was rapidly gaining ground in Eastern Europe and the former Soviet Union. GSM networks were also installed in Australia, Hong Kong and India, and were being evaluated or adopted in most countries in the Asia Pacific region. In China, it was emerging as the preferred digital cellular technology.

Technology choices in the two other developed markets, Japan and the US, complicated the global situation. Japan was developing its own digital system, Personal Digital Cellular (PDC). In the US, the penetration of analogue technologies was very high, and the dominant digital cellular standard was the native Digital Advanced Mobile Phone Service (D-Amps). D-Amps had been developed from the analogue Amps cellular technology, and allowed a clear migration path from analogue to digital.

Following GSM's rapid penetration in Europe, there had been forecasts of a quick transfer from analogue to GSM technology in the US. However, US operators instead started investing in a competing technology, Code Division Multiple Access (CDMA), that promised higher performance than GSMfMMA.

Despite the prevailing differences in 1995, the mobile communications industry had a vision of a world where terrestrial and satellite-based communication systems would allow people to make and receive calls from any point on earth using the same multipurpose handset whether at home, in the office or outside. The number of cellular phone subscribers had risen by more than a factor of 10 in the previous five years to more than 80 million world-wide. The industry experts were expecting this to soar to 350 million by the end of 2000