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This case can be taught together with the HBS case series: Volvo Trucks (A): Penetrating the U.S. Market (HBS Case 9-702-418), Volvo Trucks (B): Acquisition of RVI (HBS Case 9-702-419), and Volvo Trucks (C): Closing Volvo Global Trucks (HBS Case 9-702-444).

Volvo Trucks – Building a Global Strategy

“We have had a very clear strategy guiding what we did, and our basic strategy was correct. That was not self-evident 10 years ago. Strategies must get a chance to develop and be predictive. Companies that change leadership and strategy often tend to get it wrong. But instead, if you have a chance to keep on to your strategy for long it leads to good results”

Leif Johansson, CEO of Volvo AB, interview in GP, 22 March 2007

Volvo AB, a Swedish based manufacturer of trucks, buses, construction equipment and marine engines, had launched a new strategy for the period up to 2015 which aimed at achieving both short term targets and staking out the road to the group’s future position and vision. A new CEO and President had just been hired in 2011 to take over after Leif Johansson who had served for 14 years.

Mr Johansson had taken charge of Volvo AB in 1997 and under his leadership the company had been restructured. The car division was sold to Ford in 1999, and the truck division of Renault (RVI, including Mack in the U.S.) was acquired in 2000, in exchange for 20% of the shares in Volvo AB. A new truck strategy for Asia was also launched, with joint ventures and acquisitions carried out in Japan (Nissan Diesel, later UD Trucks), China (CNHTC and later Dongfeng) and India (Eicher). A global truck company was emerging. After the merger with RVI in 2000, large efforts had been made to integrate Volvo North America and Mack trucks in the U.S., as well as Volvo’s Swedish operations with RVI’s in France. In the construction segment Mr Johansson had acquired Samsung’s heavy construction division in Korea (1998) and later Ingersoll Rand’s heavy construction division in the U.S. in 2007.

However, the CEO had begun his restructuring campaign at home. In 1999 Volvo AB was beginning to buy shares over the stock exchange in Swedish rival Scania, and soon reached around 20% of the votes. In parallel Mr Johansson initiated talks with Investor, a holding company in Sweden, controlled by the Wallenberg family, which had a controlling interest in the company since decades. Scania had roots back to the late 19th century and had become one of the leading brands of heavy trucks in the world. The company had been relisted by Investor on the Stockholm stock exchange as late as in 1996, with Investor as a dominating share holder. After an agreement with Investor in August 1999, then chaired by Mr Percy Barnevik, Volvo reached 43,1% of the shares in Scania. An official bid was now presented to the stock market for the whole of Scania.

It was well known that Volvo and Scania had very different corporate cultures, and had been strong rivals for almost a century. The long-time CEO of Scania, Mr Leif Östling, publicly opposed the deal which turned the proposed merger into a sensible matter. It was also unclear if Dr Peter Wallenberg, head of the Wallenberg family and Honorary Chairman of Investor, was behind the deal. After some time the EU anti-trust authorities made thumbs down, and Investor’s controlling share of Scania was redeemed. Leif Johansson in a later interview in 2007 agreed that he was very dissatisfied with the fact

that the merger had come to nothing: *“We argued to the Commission that trucks was becoming a European and global market, and this is also what happened. The best thing is that we continued to change our position in the market, that we took care of our acquisitions, and that we avoided losses in revenues so that 2 + 2 became 4 or even more than 4”*¹.

Restructuring efforts in the industry did not come to a halt. In 2006 MAN, the German truck rival, entered the scene and made a public bid for Scania. The deal was not favored by Investor nor by VW which had strong links to Porsche and MAN (both involved the struggle for corporate governance), and instead Investor sold all its shares in Scania to VW in 2008. VW then took over MAN in 2011, and in VW 2014 made a bid for the whole of Scania, reaching full control, and Scania was delisted from the stock exchange. VW now composed a new truck team to begin the integration process of the different companies and divisions in Europe around the world. The former CEO of Scania was one of the persons on the truck team. Industry observers commented that it was unclear how the 2015 emissions scandals within VW would impact their truck business.

Olof Persson was appointed new CEO of Volvo AB in 2011. Mr Persson had been working for a few years in Volvo as manager for two different business areas, and now he was now put in charge of integrating the many acquisitions in order to reap promised synergies and economies of scale. To accomplish this he introduced a functional organization. He also led the launch of new product lines of trucks, with Euro 6 (the highest emission standards in the world at the time) offered across the whole range of diesel engines, from 5 liters (for medium trucks) to 13 liters (for heavy trucks).

When taking office Mr Persson announced that EBIT margins would increase from around 9% to 12%. However, margins and profitability of Volvo did not live up to promises, in fact they dropped (Exhibit 1), and in April 2015 it was announced that a new CEO would step in as of October 2015. Martin Lundstedt was now appointed new President and CEO of Volvo. His most recent role had been President and CEO of Scania, part of the VW group. Jan Gurander, group CFO of Volvo, and also formerly with Scania, was placed as acting CEO in the interim. Never before had top management of Volvo had their roots in the main rival.

The Swedish Automotive Home Base of Volvo

There were more than 20 large manufacturers of heavy truck in the world in 2016. Most of these firms had developed over decades in a limited number of countries, or home bases, including the U.S. (Navistar, Paccar, Mack), Germany (MAN, Daimler), Sweden (Volvo, Scania), Finland (Sisu), the Netherlands (DAF), Italy, (Iveco, Astra), Russia (GAZ, Kamaz), China (FAW, Dongfeng, Beiqi Foton, CNHTC Sinotruck), Japan (Hino, Isuzu, UD Trucks,), Korea (Hyundai, Daewoo) and India (Tata, Ashok Leyland, Eicher). The home bases of these manufacturers differed in both macroeconomic and microeconomic conditions, level of economic prosperity as well as in terms of the regulatory environment.

Both Volvo and Scania had emerged in Sweden, a country that was among the more advanced automotive countries in Europe. Swedish automotive firms had a share of R&D only second to German manufacturers in Europe. Overall, the Swedish automotive industry accounted for some 15%

¹ <http://www.gp.se/ekonomi/1.154778-tio-ar-i-topp-pa-volvo?m=print>

of total Swedish exports, and employed over 100,000 people. Volvo AB, Volvo Car (owned by Chinese Geely since 2010), and Scania (owned by German VW since 2014) were the major companies. Saab Automobile had closed its factory in 2011 and had been taken over by a Chinese company, Nevs. Nevs had the intention of turning SAAB into a manufacturer of electric cars, and a first large order from China was announced in 2015. A proposed merger between the car units of Volvo and Saab-Scania in the 1970s had failed due to resistance from leadership and unions of both organizations.

In addition Sweden hosted more than 1,200 companies active as suppliers of components, process equipment and various specialized services. Major suppliers included: Autoliv (airbags), SKF (bearings), Haldex (brake and four wheel drive systems) och SSAB (steel). Global suppliers such as Lear, Delphi, Visteon, Johnson Controls, Tenneco, Valeo, Robert Bosch and Benteler had established themselves in Sweden through acquisitions or green-field plants. Suppliers of technical services and consulting included Semcon, Caran, Sigma, and Teleca. More than 90% of automobile and truck production was exported.

Sweden had a long background in mechanical engineering industries. Several mechanical workshops had entered into automobile production around 1900. Vabis, or Vagnaktiebolaget i Södertälje, presented its first automobile already in 1897. Scania, a manufacturer of bicycles in Malmö in the south of Sweden (Scania is the latin name for the region), presented a truck in 1902. Scania and Vabis merged in 1911 into Scania-Vabis (later renamed Scania). Tidaholms bruk, also in the west of Sweden, entered in 1903 but was liquidated in 1934. Thulinverken in the south of Sweden moved from aircraft engine manufacturing to cars after World War I, but went bankrupt in 1927. Two assembly plants for import cars (so called CKD, completely knocked down, sets) were established in the Stockholm region. GM put up a plant already in 1928 assembling Chevrolet, Pontiac, Oldsmobile, and Opel cars. The plant was closed down in the late 1970s, after five decades of car assembly. Another plant assembled Chrysler, Plymouth, Škoda, Standard, Lagonda, Goliath and Simca cars between the 1930s and the 1970s.

Volvo in Gothenburg presented its first car in 1927. The seed for the new company had been created three years earlier when two friends, Assar Gabrielsson , with a business degree from the Stockholm School of Economics in 1911, and Gustaf Larson, with an engineering degree from the Royal Institute of Technology in 1917, had met at a restaurant in central Stockholm. Both had worked for SKF, a supplier to automotive companies around the world, and now they agreed that they would start manufacturing of cars to supply a rapidly growing market. They turned to their former employer SKF for support. The CEO of SKF, Mr Sven Wingquist (the original inventor behind the SKF spherical bearing) helped the two entrepreneurs with financing, a factory site and a brand. Some years earlier SKF had established a mass-market brand named Volvo (for: I roll) that was not used anymore and Mr Wingquist now offered the brand to the two entrepreneurs.

The first truck was presented already in 1928. In those days trucks were unsophisticated, often fitted with chain-drive systems and solid rubber tyres, and drivers were all exposed to fluctuating weather. The first Volvo truck was more advanced; it was shaft-driven, had pneumatic tyres and the driver operated in a fully enclosed wooden cab (later in steel-reinforced cabs to protect the driver).

After World War II a cluster in the west of Sweden took on a leading role in the automotive sector, with Volvo as the anchor company. The west of Sweden offered suppliers not only of bearings (SKF), but also of axles and engines (e.g. Pentaverken in Skövde, still an engine center for Volvo) and other components. Important suppliers throughout Sweden included Bofors (steel), Svenska Stålpressnings AB (pressed sheet steel), Köpings Mekaniska Verkstad (gearboxes). A workshop in the north of Sweden had developed the first self-supporting steel cab for trucks in the world in 1948. This company was later acquired by Volvo and integrated into their European production system. Scania and Volvo shifted from gasoline engines to diesel engines already during the 1930s and 1940s, and Scania introduced the first turbocharged diesel engine for trucks in the world in 1951.

Saab (in Swedish short for “Swedish Aeroplane AB”) was an aeroplane manufacturer that had been set up north of Gothenburg in 1937, just before the outbreak of the WW II. After the war Saab launched its first passenger car in 1947. The car had a two-stroke engine and was clearly influenced by in-house aircraft design. With increasing prosperity in Swedish society, home demand became more sophisticated, and oriented towards safe, reliable and sturdy cars and trucks.

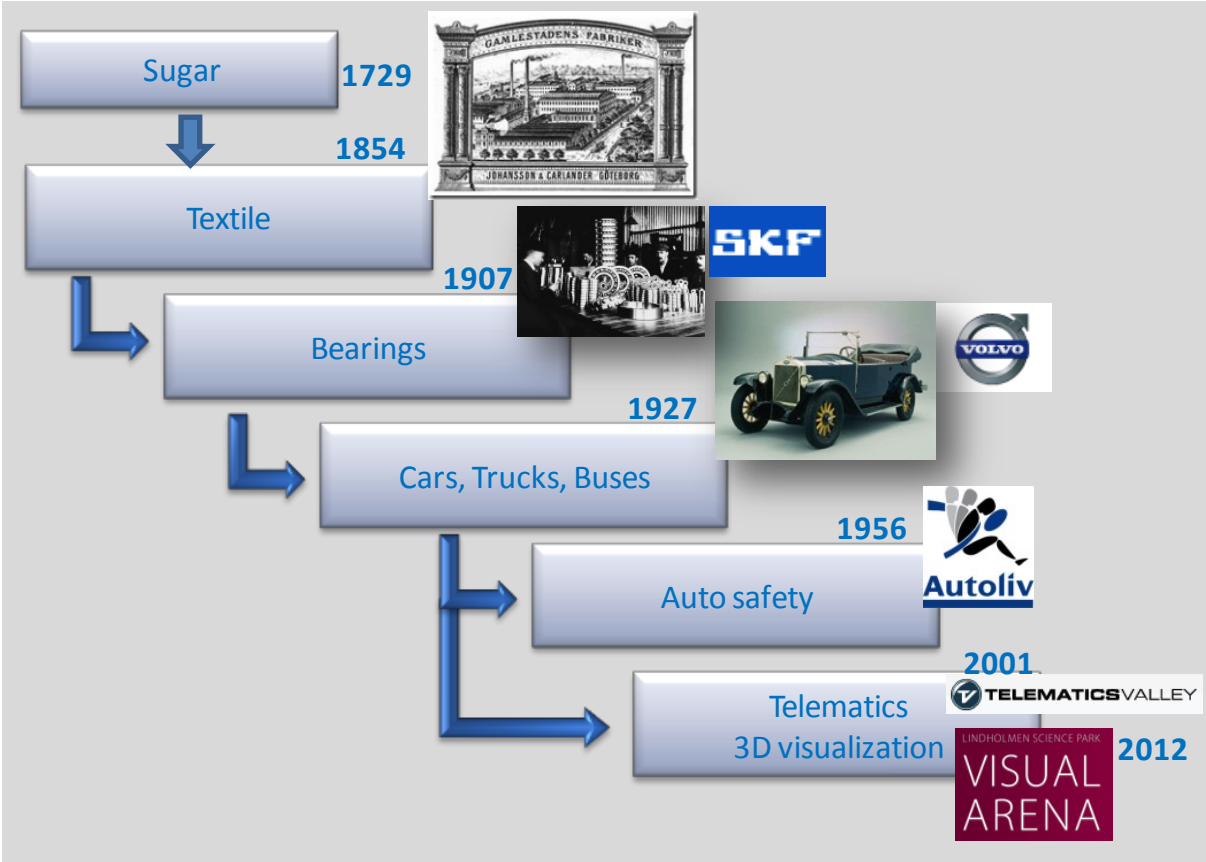
In the early 2000s most of the automotive industry was concentrated in the west of Sweden, which had developed into one of the leading automotive clusters in Europe, employing some 30,000 people (Exhibit 2). The cluster included companies like Volvo (trucks, buses), Volvo Car, Nevs and a large number of suppliers including SKF (bearings), Uddeholm Tooling (steel tools), Autoliv (airbags), Semcon (consulting), Plastal (bumpers), Parker Hannifin (hydraulic systems), Lear (interiors), Elmo Leather (leather interiors), Caran (design) and several others.

Evolution of the Gothenburg Region

Gothenburg had developed from a trading and port hub into early manufacturing in the 18th century (e.g. sugar refining in the district of Gamlestaden), to textiles (e.g. Gamlestadens fabriker and Jonsered in the 19th century), shipbuilding (20th century) to automotive products and other areas of industry. In the Gamlestaden quarters the first textile plant started in a closed sugar refinery, the bearing company SKF in turn was a spin-off from Gamlestaden, and Volvo a spin-off from SKF. In more modern times information technologies, including smart connected cars and trucks, telematics and technologies for 3D visualization had grown out of the automotive cluster.

Several innovations that emerged out of the cluster were linked to safety. For example, Volvo was the first company in the world to offer a car with 3-point seat belts as standard in 1959. Later safety features included children’s safety in cars, better crash resistance of car and truck bodies etc. Innovations also included more ergonomic and environmentally safe products, as well as more fuel efficient trucks, buses and cars. Features such as electronic stability control, lane departure warning systems, automatic emergency braking systems, and seat belt reminders had become standard in trucks by 2015. The leading truck companies also worked with new fuels based on second generation biodiesel and electricity (including hybrids). The project “ElectriCITY” had led to the opening of a new commuter route using electric buses, to connect the two science hubs around Chalmers and Lindholmen Science Park.

Figure 1 Evolution of the Gothenburg Automotive Cluster



A number of organizations for collaboration had developed in region geared towards the automotive cluster. These cluster organizations included: Automotive Sweden, IVSS, Telematics valley, SAFER, Microwave road, Innovatum and Aluminiumriket. Activities of these organizations included technical cooperation, research (e.g. on automotive safety), business networking and training. A number of research centers related to the automotive sector (engine technologies, design, environment, transportation systems, microelectronics etc.) were co-located with the technical university Chalmers. Private research organization partly active within the cluster included Swerea IVF, IFP Simcomp, SP, Imego and IVL.

Volvo’s Global Strategy and Organization

Beginning already in the 1930s, Volvo was actively trying to export both their cars and trucks. Already in 1934 the first Volvo truck was exported to China. After a couple of decades with ad hoc exporting, Volvo began to establish sales subsidiaries in the more important markets during the 1950s. These sales subsidiaries would take care of distribution, spare parts and the buildup of local service networks.

During the 1970s several of the larger multinational firms in Sweden decided to establish manufacturing presence within the EC (today EU), where Sweden was not a member, and it was not

expected that the country would join any time soon (this happened only in 1995). Volvo established a base for truck manufacturing in Belgium and Scania a production base in France. The two rivals also established manufacturing hubs in Brazil.

For long haul purposes, the cab-over design (within Volvo named the F or later FH type) had emerged in Europe during the 1960s. The shift from the conventional design, with a large bonnet, was primarily driven by German legislation, which restricted vehicle length (tractor plus load) and maximum axle load, in order to avoid competition between truck hauling and railways. The conventional design (within Volvo named the N type, or in the U.S. VN type) was the most popular in the U.S., Latin America, Africa and Australia.

After a first entry trial into the U.S. in 1958-1959, with little success, Volvo reentered in 1975. Again, sales of exported trucks from Sweden were slow, and Volvo decided to acquire a local U.S. assembler, White (WMC), in 1981. White had assembly plants in Utah and Virginia, and cab production in Ohio. Seven years later the GMC heavy trucks division was added to the U.S. operations of Volvo. A French base was added with the acquisition of the truck business of Renault (RVI) in 2000. The acquisition also included the U.S. subsidiary of RVI, Mack Trucks. The Mack acquisition added headquarters, R&D and production facilities in the U.S., including a large plant for diesel engines.

Product development was carried out at the main manufacturing sites. In addition, Volvo had a large central R&D center next to headquarters in Gothenburg. A separate organization, 3P, had been inherited from the RVI acquisition and was in charge of coordinating product development of truck platforms. The mandate of 3P did not include the powertrain parts (engine, gearbox, axle) of the truck, which was globally managed by the Business Area Volvo Powertrain in Skövde, just north of Gothenburg. Volvo Powertrain was also responsible for drivetrain systems for Volvo Buses, Volvo Construction Equipment (wheel loaders, excavators etc.), and Volvo marine engines (sold under the Penta brand). Volvo Powertrain was one of the world's largest producers of diesel engines, manufacturing some 200,000 diesel engines and 80,000 gearboxes per year. The Powertrain unit had full responsibility for product development and manufacturing. Volvo was making large investments in new generations of low emission diesel engines to keep up with, or even supersede new environmental regulations, and by 2015 Volvo could fit all its trucks with Euro 6 engines.

Entering the Asian Markets

Volvo had strong positions in Europe, North America and Latin America, but weaker positions in Asia. Under Leif Johansson's leadership an Asian strategy took form. Volvo had decided to enter the Chinese market through exports already in 1991, and had set up a sales and service organization to build market presence. However, sales had been very slow, with yearly sales of a few hundred trucks, and in 2003 a joint venture was formed with CNHTC, named Jinan Hua Wo Truck Co, with a 50/50% ownership between the two parties. The venture would produce and sell trucks under the Volvo brand. Production started by the end of 2004 in CNHTC's premises in Jinan, in the Shandong province.

"China is a key market for the Volvo Group and we have been working systematically to establish all our business areas in China. It is pleasant to certify that this joint venture makes Volvo Trucks the first

western truck manufacturer with an industrial platform for heavy trucks in China”, said Leif Johansson, President and CEO for the Volvo Group².

The initial capacity was 2,000 trucks per year (Volvo FL, Volvo FM9 and Volvo FM12), and the ambition was to increase volumes to 10,000 trucks per year by 2010. However, the venture was closed down only after a couple of years after disappointing sales and fights regarding IPR (with the Chinese partner turning out a similar product under another brand, HoWo) and local sourcing of components. Volvo executives argued that regulatory changes had undercut the strategy of locally produced trucks, and that components sourced from Sweden were too expensive for the Chinese market:

“It is not a secret that the whole foundation of our business in China is to have a lower product cost. If you look on what it costs to produce a truck, the material counts for 80 %. So fiddling around in the factory, of course we should do that too, but in order to succeed we have to have locally produced material to a larger extent; and preferably components like axles and engines as well. And it is only to look in the rear view mirror and say ‘we built the factory and established the JV, perhaps we should have started in the other end in order to have the right product cost when we started to produce’. But we did not do that.”

Quote from interview with a Volvo executive on 20 January 2006³

A goal of 70% local sourcing never materialized; according to a local executive: *If there even was a single screw it would be good. That’s it!*⁴

In 2006/2007 Volvo acquired Nissan Diesel (in 2010 renamed UD Trucks), a Japanese company that was controlled by Renault, and in 2008 a joint venture (VECV) was formed with Eicher, the third largest manufacturer of trucks and buses in India. Initially Volvo had acquired a 8.4% share of Eicher but these shares were sold in 2015.

To coordinate operations in Asia a Business Area Asia had been set up, including the small Asian operations of RVI. The former CEO and longtime veteran in Volvo Trucks, Mr Jorma Halonen, was put in charge of implementing the Asian strategy until his retirement in 2008. Within China, Volvo also established a Volvo Truck Greater China organization based in Beijing.

In January 2013 Volvo stepped up its efforts in China and announced the acquisition of 45% of a new subsidiary (Dongfeng Commercial Vehicles, DFCV) of the leading Chinese manufacturer Dongfeng. The new venture would include the major parts of Dongfeng’s medium- and heavy-duty trucks. Dongfeng had ties with UD Trucks since many years.

Reorganizations

A Volvo Global Trucks umbrella organization had been implemented in 2000, but it was closed down within a year or two. Instead of having one executive in charge of all global truck operations, the organization was split into three parts. According to a press release from January 7, 2002, Volvo Trucks, RVI and Mack Trucks were becoming separate Business Areas, where the former two

²http://www.volvogroup.com/group/global/engb/newsmedia/pressreleases/previous/2003/_layouts/CWP.Internet.VolvoCom/NewsItem.aspx?News.ItemId=24727&News.Language=en-gb

³ Åsa Käfling (2009) The Chinese Volvo – Sino-Foreign Joint Ventures and Perceived Performance. p 260. Published PhD Thesis. Linköping U.

⁴ Ibid.

reported directly to Leif Johansson, the CEO and President of Volvo AB, and Mack reported to Volvo Trucks North America, which in turn reported to the head of Volvo Trucks.

The company was reorganized into a matrix, including nine *Business Areas (BA)*:

- | | |
|--------------------------------|----------------------|
| • Volvo Trucks | Gothenburg, Sweden |
| • Renault Trucks | Lyon, France |
| • Mack Trucks | Greensboro, the U.S. |
| • Volvo Asia | Gothenburg, Sweden |
| • Volvo Buses | Gothenburg, Sweden |
| • Volvo Construction Equipment | Gothenburg, Sweden |
| • Volvo Penta | Skövde, Sweden |

Sold off units:

- Volvo Aero
- Volvo Financial Services

In addition there were five *Business Units* cutting across some or all of the BAs: Volvo 3P (product development of trucks), Volvo Powertrain, Volvo Parts, Volvo Logistics, and Volvo IT. Except for Volvo Powertrain (Skövde) these units were all located at Headquarters in Gothenburg.

As the new CEO took over in 2011 he soon announced a new organization:

“The Volvo Group has seen fantastic development in the past decade and has grown into a truly global and leading player, particularly in the areas of heavy trucks, construction equipment and diesel engines,” says Olof Persson. “But a company’s work is never done and it is now time for the next step, using improved coordination between our truck companies and our development and production units to achieve even more distinct and better focus on our customers and brands.” (Press Release 4 October 2011).

On January 1, 2012, the new organization, referred to as a functional organization along the lines of truck sales, truck production and truck R&D (Exhibit 3), was formally launched. Sales and marketing units of all truck brands (Sales) would be organized in three regional organizational units (Europe, North America, Asia), directly under the CEO. Furthermore, all product development (Technology) and production (Operations) of trucks and engines were placed in two new central organizational units directly under the CEO.

Volvo Trucks, including Renault, Mack, Dongfeng and UD Trucks, were now sold in some 150 countries around the world, through over 1,000 dealers and with over 2,000 service shops. More than 90% of sales were in the heavy truck segment. All dealers and service stations were coordinated with Volvo’s global brand manuals and identification system for parts. Main manufacturing hubs were located in Sweden, France, the U.S., Brazil, China and Japan. In addition Volvo operated a number of smaller assembly units, including: Russia (Moscow), Morocco (Casablanca), Tunisia (Tunis), Iran (Teheran), Saudi Arabia (Jeddah), India (Bangalore), Malaysia (Kuala Lumpur), Thailand (Bangkok), and Australia (Brisbane). An assembly unit in Botswana (Gaborone) had been moved to Durban in South Africa. These assembly units received main components (engine, gearbox, axle and cab) and the main chassis typically from the units in Sweden or Brazil.

Transformation of the Global Truck Industry

Over the years, as the truck industry had become more international, the leading manufacturers had become more and more entangled through mergers, acquisitions, joint ventures and other formal collaborative partnerships. However, there were still many barriers to the introduction of truly global trucks due to differences in technical specifications, quality and other demand differences. The leading firms were selling trucks under different brands (often acquired) depending on the region and different quality features of the trucks (Exhibit 4).

Even if the truck industry had become dominated by a few leading manufacturers from Europe and the U.S., there were still a large number of firms active in the different national and regional markets. In terms of units produced some of the world's larger manufacturers emanated from large markets such as China and India (see Figure 2). Only in China there were more than ten manufacturers of heavy trucks, including companies such as: Dongfeng, FAW, CNHTC (Sinotruck), BAIC (Beiqi/Foton), Shaanxi, Anhui Jianghuai, Lifan Group and Nanjing Automotive. Leading Russian manufacturers included Kamaz, GAZ and MAZ, and leading Indian manufacturers included Tata Motors, Ashok Leyland and Eicher.

Figure 2 Leading Manufacturers of Heavy Trucks (GVW >6tons), 2010

Firm	Units sold	% World market
Dongfeng	300,100	10.3%
Daimler	280,700	9.7%
FAW	274,300	9.5%
CNHTC	199,900	6.9%
Tata Motors	194,900	6.7%
Volvo Global Trucks	125,800	4.3%
Torch	113,200	3.9%
BAIC	109,400	3.8%
MAN	103,800	3.6%
Ashok Leyland	80,000	2.8%
Paccar	79,100	2.7%
Toyota Hino	77,400	2.7%
Navistar	76,600	2.6%
Isuzu	71,500	2.5%
Ford	64,800	2.2%
Anhui Jianghuai	62,800	2.2%
Iveco	51,900	1.8%
Scania	48,600	1.7%

Source: <http://www.kpmg.com/ID/en/IssuesAndInsights/ArticlesPublications/Documents/Competing-in-the-Global-Truck-Industry.pdf>

In total some 300,000 trucks⁵ were sold in Europe, 550,000 in the U.S., and 1,200,000 in China in 2014. The U.S. market was the most consolidated market, Europe somewhat less consolidated and (Figure 3). Volvo and Daimler were among the top-5 companies in all leading regions of the world (Exhibit 5).

Whereas Scania, Paccar and MAN had been leaders in terms of profitability (average EBIT margins of around 10-12% over a business cycle for Scania and 7-8% for MAN and Paccar), Daimler, Volvo and Iveco showed medium profits, and Navistar had been a low performer since decades.

⁵ Including trucks and buses over 4.5 metric tons (10,000 lbs) in 2014.

Figure 3 Heavy Trucks: Market Shares in Europe and the U.S. (2014)

Heavy truck market shares	% of European market
Mercedes (Daimler)	23
Volvo, RVI	23
MAN (VW)	18
DAF (Paccar)	16
Scania (VW)	12
Iveco	6
Other	2

Heavy truck market shares	% of U.S. market
Freightliner (Daimler)	31
Volvo, Mack	19
International (Navistar)	16
Kenworth (Paccar)	14
Peterbilt (Paccar)	14
Other	6

Source: Compiled by the author

Industry observers commented about the future that powertrain innovations would remain a key field of research, but advances in information technology, i.e. smart connected products such as the connected truck, would receive the greatest attention. Real-time fleet management and third-party services were envisioned to help lower a truck’s total operating cost which had become key to an increasing number of operators around the world.

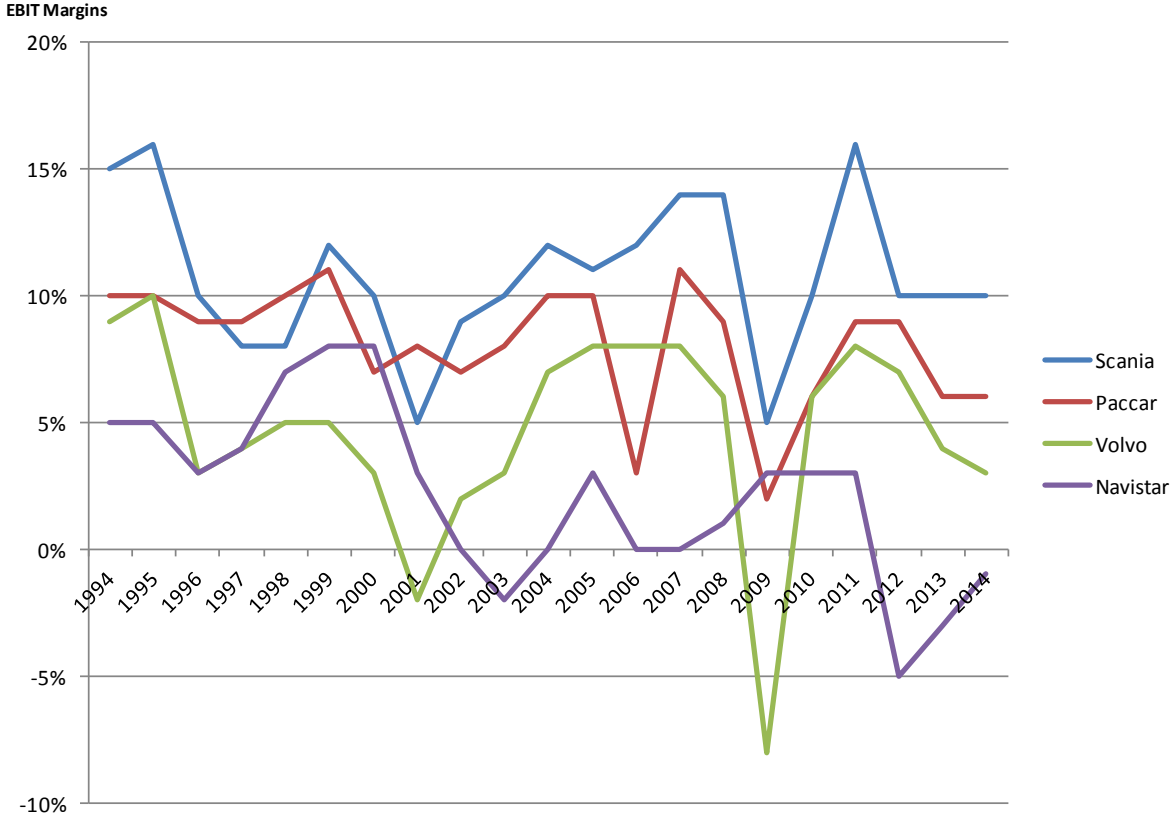
In Europe environmental demands on truck engines had moved from Euro 1 standards (1999) to Euro 6 (2015). On October 15, 2015, Scania, the first manufacturer in the world to offer Euro 6 engines, announced: *Scania has now begun a comprehensive launch of a full range of products with alternative fuels and powertrains for Euro 6. The drive is a decisive step in the company's long-term commitment to offering the widest range of sustainable transport solutions. The highlight of the programme is a Scania-developed hybrid truck for urban distribution combining electric and biodiesel operation; other engines run on gas and biogas, biodiesel, bioethanol and HVO (hydrotreated vegetable oil). This further enhances Scania’s position as the manufacturer with the widest range of alternative fuels*⁶.

⁶ <https://www.scania.com/media/pressreleases/N15029EN.aspx>

Through acquisitions and joint ventures, Volvo and Daimler had established a major presence in all leading markets: North America, Latin America, Europe, China and Japan. Both companies had experienced medium level profits for the last 15 years, always outperformed by Paccar and Scania. Navistar on the other hand had underperformed the other leading brands every year (except for 2009) since 2000. In 2015 Volvo had reached market shares of 19% in North America, 21% in Brazil, 23% in Europe, 18% in China, 19% in Japan and 30% in India.

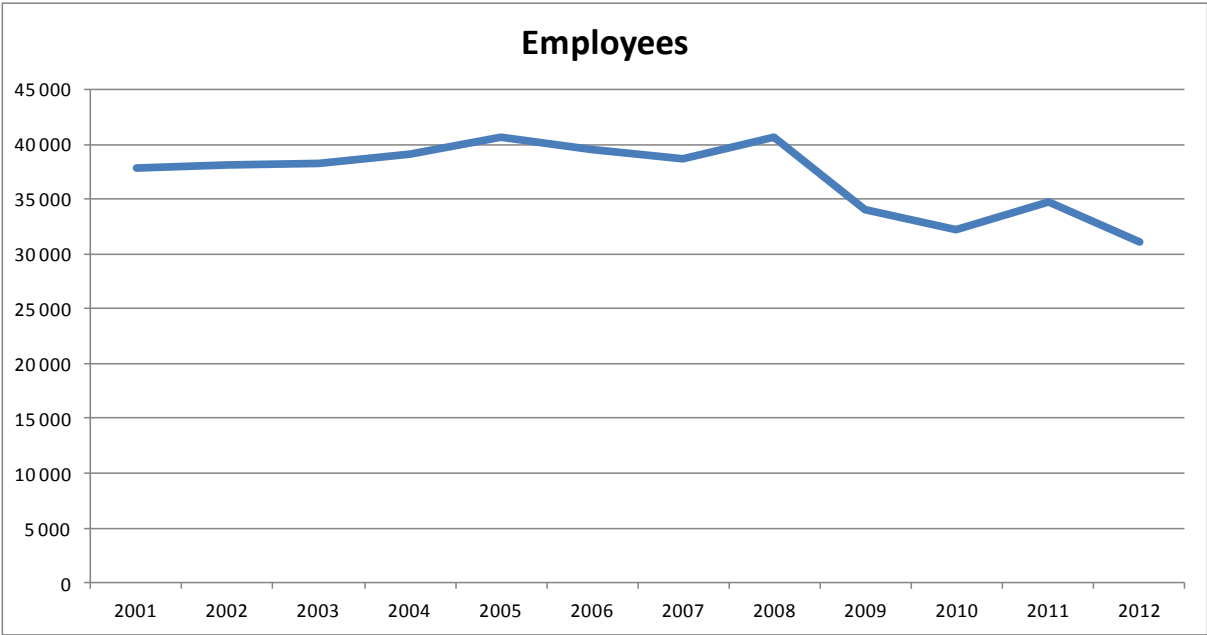
In January 2016 the new CEO of Volvo, Mr Lundstedt, announced yet another organizational change; the four leading truck brands would form their own Business Areas (with their own profit and loss statements): Volvo, Renault, UD and Mack. Mr Lundstedt said that each truck brand must stand on its own feet. He was looking for opportunities for increased profitability – would his experiences from Scania add new leadership qualities and a new strategic focus to Volvo? The other former Scania executive, Mr Gurander (now CFO of Volvo), moved up and became Senior VP and in charge of strategy for the whole group.

Exhibit 1 Operating Margins of Leading Heavy Truck Manufacturers (1994 - 2014)

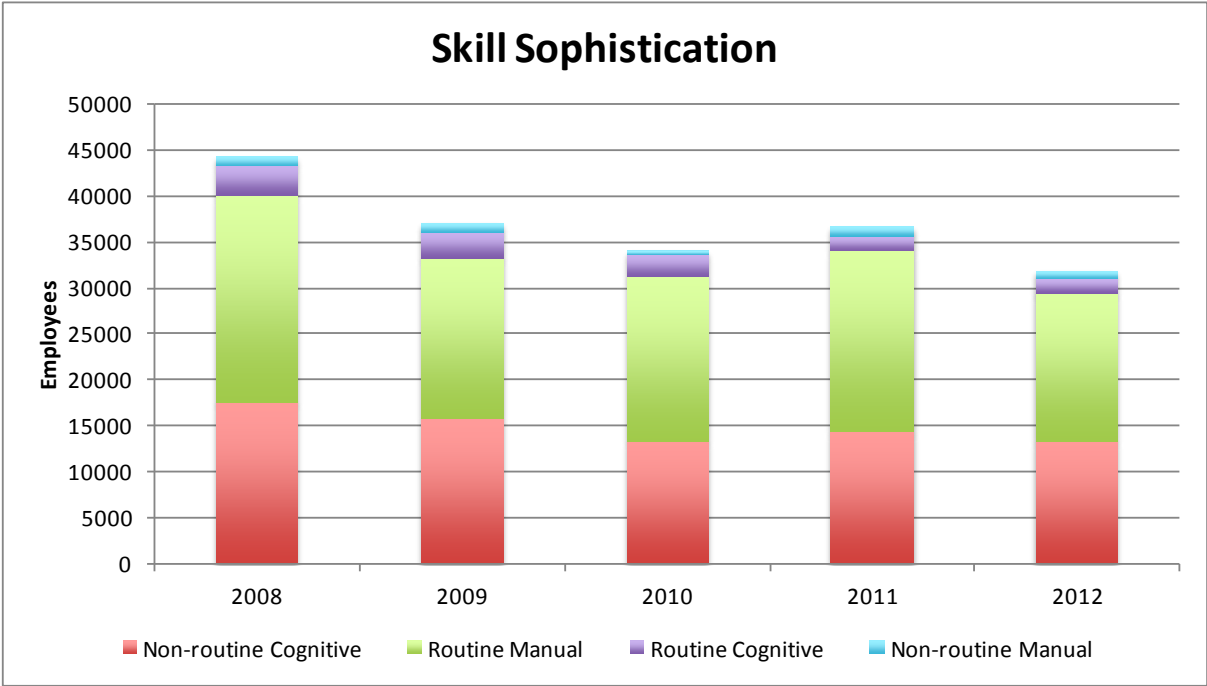


Source: Compiled by the author

Exhibit 2 Development of the West Sweden Automotive Cluster

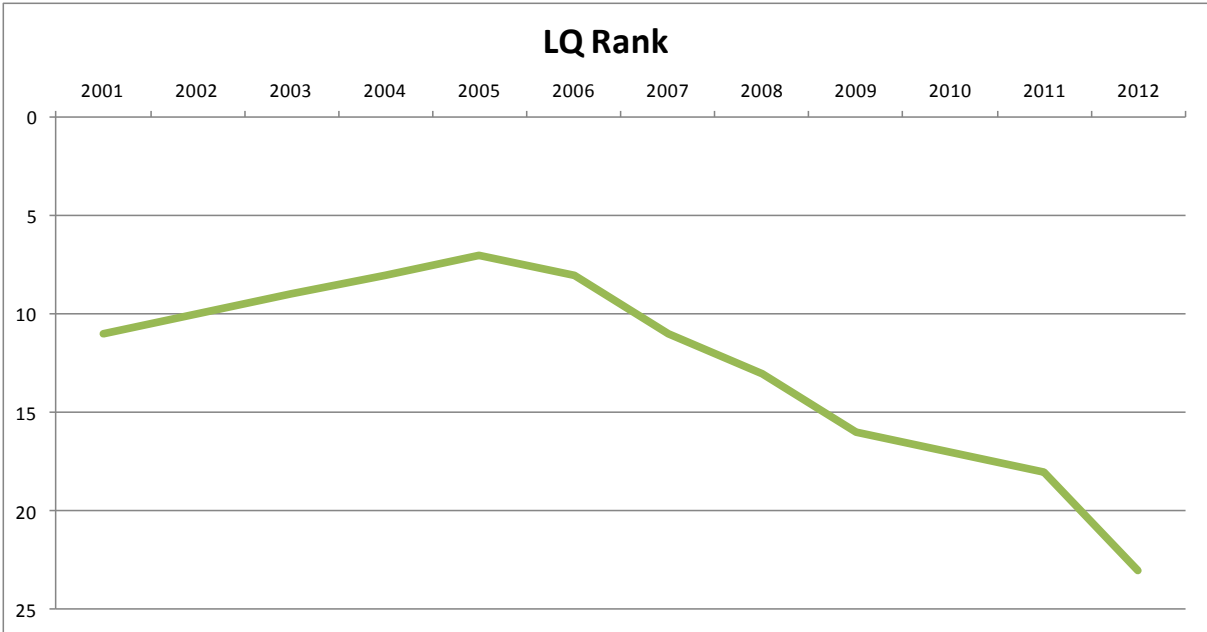


Source: Center for Strategy and Competitiveness (CSC) at the Stockholm School of Economics



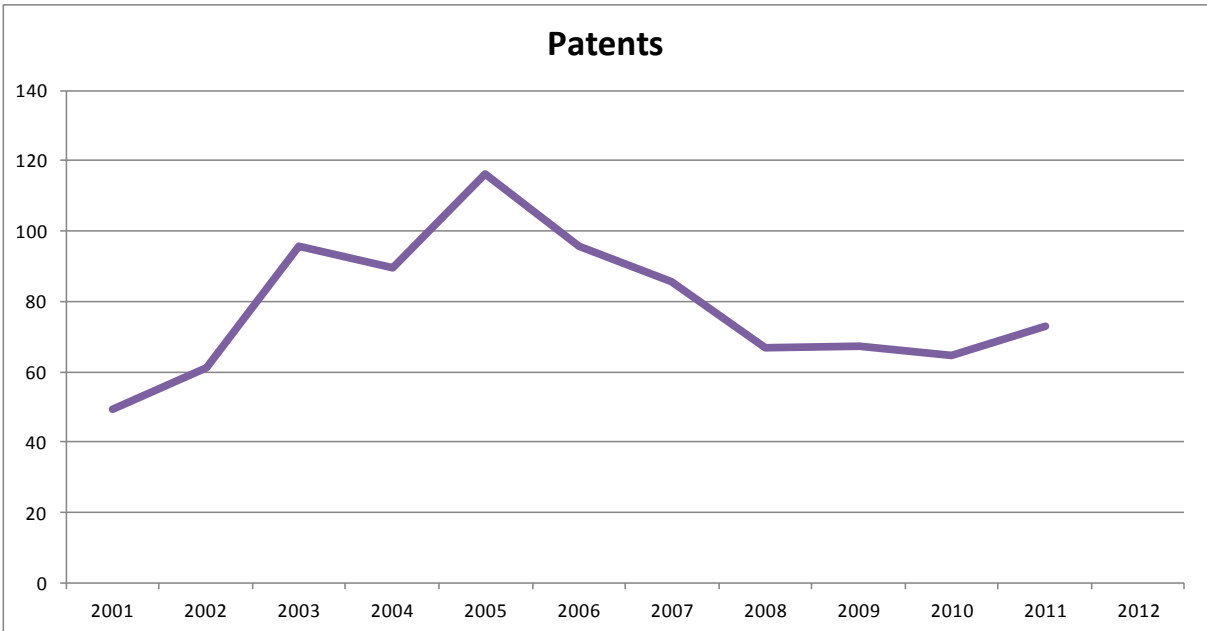
Note: These numbers originate from a different statistical source than the graph above and total employment numbers can deviate some years.

Source: Center for Strategy and Competitiveness (CSC) at the Stockholm School of Economics



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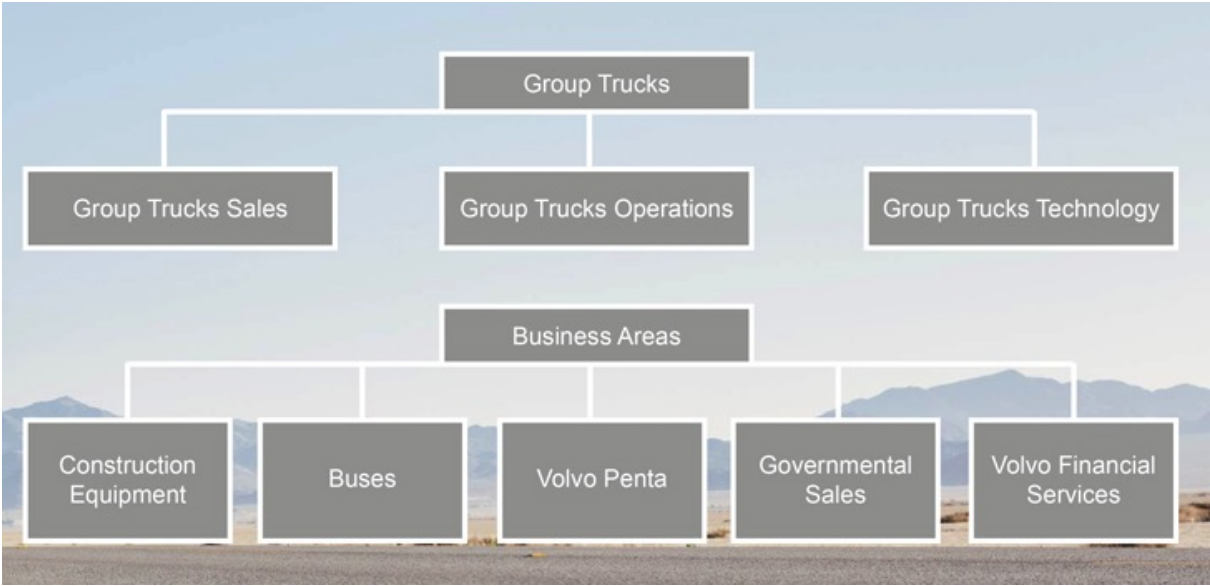
Note: LQ is a measure of cluster specialization in a region. The LQ rank is measured as the value of the Location Quotient (number of automotive employees in the West Sweden region as compared to expected levels as a European region) measured against LQs for all automotive clusters in Europe. Values range from highest (1) to lowest (around 300).



Source: Center for Strategy and Competitiveness (CSC) at the Stockholm School of Economics

Note: Patents are measured as number of patent granted inside cluster by EPO.

Exhibit 3 Volvo AB Organization Chart (2015)



Source: http://www.volvogroup.com/group/sweden/sv-se/Volvo%20Group/our%20companies/Pages/business_structure.aspx

Exhibit 4 Brands of Leading Heavy Truck Manufacturers (2015)

	Paccar	Volvo	VW	Daimler	Iveco	Navistar	Toyota
Brands	Peterbilt Kenworth DAF	Volvo Renault Mack UD Trucks Eicher	MAN Scania VW	Mercedes Benz Freightliner Western Star Mitsubishi Fuso Foton Foton Auman	Iveco Astra Magirus Yuejin Hongyan	International	Hino Isuzu
J/V	Novotrucks (Russia) Leyland Truck (UK)	Dongfeng Commercial Vehicles (China) Dongfeng Nissan Diesel (China)	Cummins- Scania Injection (USA) Steyr (Austria) MAZ-MAN (Belarus) Shaanxi (China) CNHTC Sinotruk(Chi na) Sitruk (China)	Sisu (Finland) Kamaz (Russia) Cummins Kamaz (Russia) Beijing Foton (China) Bharat Benz (India) Kamaz Vectra (India)	GAZ (Russia) Uralaz (Russia)	Global Jianhuai Automobile (China) Mahindra & Mahindra (India)	FAW Automotive (China) Ashok Leyland (India) Avia (Czech Republic)

Exhibit 5 Top-5 Market Shares in Five Leading Regions (2015)

Top 5 Market Share	EU	US	CH	JP	LA
1	Daimler Mercedes	Daimler Freightliner	Dongfeng (DMC) (Volvo)	Toyota Hino	VW VW, Scania
2	VW MAN, Scania	Paccar Kenworth, Peterbilt	FAW	Isuzu	Daimler Mercedes
3	Volvo Renault	Navistar International	CNHTC/Sinotruck (VW)	Mitsubishi (Daimler)	Ford
4	Paccar DAF, Foden	Volvo Mack	BAIC/Beiqi Foton (Daimler)	Volvo UD Trucks	Volvo
5	Iveco	Ford	Shaanxi	Daewoo (Tata)	Iveco