Post-print. This is an Author's Original Manuscript of a chapter published in J. Johansen, S. Farooq, & Y. Cheng (Eds.) (2014) *International Operations Networks* (pp. 119-132). Aalborg, Springer. The book can be purchased at http://www.springer.com/us/book/9781447156451.

Citation:
Netland, T. H. 2014. Coordinating Production Improvement in International Production Networks: What's new? In J. Johansen, S. Farooq, & Y. Cheng (Eds.), *International Operations Networks*: pp. 119-132. Aalborg, Denmark: Springer.

Coordinating Production Improvement in International Production Networks: What's new?

Torbjørn H Netland (torbjorn.netland@iot.ntnu.no)
Norwegian University of Science and Technology (NTNU)
Industrial Economics and Technology Management
Trondheim, Norway

Abstract

How can a multinational firm simultaneously improve the productivity of all its factories? A popular answer is to develop and deploy multi-plant production improvement programmes. Inspired by the sustained success of the Toyota Production System, many companies develop their own company-specific production systems (XPS) and implement them in their dispersed networks of plants. This paper explores what is new in how multinational companies coordinate the improvement of operations on a corporate level. A multiple-case method is used to investigate the production improvement programmes of four Scandinavian multinationals: Elkem, Hydro, Jotun and Volvo. It is suggested that an XPS differs from how companies traditionally have organised improvements in production in three ways: First, it is a lasting strategic programme and not a project. Second, it is tailored to the specific characteristics of the company. Third, it creates a common corporate language for production improvement in all parts of an organisation and in all corners of the world, enabling an easier transfer of practices and learning among plants in the network. These characteristics offer several implications for practice, especially for multinational firms that have yet to start coordinating production improvement in their networks of plants.

Keywords: Production improvement, International production networks, Multinational companies, Lean production

Introduction

The rapid economic and political changes of the past few decades have fundamentally changed the rules of the game for global manufacturing firms. In order to remain competitive today, all plants in a production network must be integrated into a global strategy (Ferdows, 1989, 1997; Bartlett and Ghoshal, 1998). Research on international manufacturing strategy separates between *configuration* and *coordination* issues (Porter, 1986). After a rapid global growth in the past decades, many multinationals now face the task of effectively configuring and coordinating an integrated factory network (Ferdows, 1997; Colotla et al., 2003). Related to coordination, a timely question to ask is: how can firms effectively increase the productivity of all their plants?

A popular answer has been to develop and deploy company-specific production systems (Netland, 2013). A collective term for these systems is 'XPS'. An XPS is a production improvement programme tailored to a specific company. The 'X' stands for the company's name, and 'PS' is an abbreviation for Production System, or similar. Inspired by the sustained success of the Toyota Production System (TPS), companies as different as Alfa Laval, Boeing, Carlsberg, Caterpillar, Ecco, Electrolux, Grundfos, Harley Davidson, Heinz, Honeywell, REC, Scania and Siemens—to mention a very few—have recently introduced their own XPSs. Embarking on such a network approach to production improvement is a serious and costly decision. Failure, even in single plants, is an expensive experience.

Considering the popularity of XPSs in industry, the corresponding academic literature is scarce and underdeveloped. The *multi-plant* aspect of production improvement is an area that is not well understood (Netland and Aspelund, 2014), whereas the literature is correspondingly richer on single-plant improvement. This paper explores what XPSs are, and how they differ from traditional improvement projects in plants. It seeks to answer questions such as: what is *new* with XPS? And, importantly, what does it mean for managers who operate global production networks? The literature is reviewed in order to understand the motivation behind the recent trend, and is used to develop propositions for discussion. The propositions are then compared with an investigation of the XPSs of four Scandinavian multinational companies: Elkem, Hydro, Jotun and Volvo.

Literature review

How to strategically improve production is one of the most fundamental questions of operations management. This question is now gaining importance for companies that operate international production networks. Since the days of Taylor and Ford in the early 20th century, research and practice has suggested several templates for production improvement. Schonberger (2007) offers a useful account of the recent development of such templates. The most popular ones include just-in-time production (Ohno, 1988), total quality management (Juran, 1988), lean production (Womack et al., 1990), six sigma (Henderson and Evans, 2000), world class manufacturing (Schonberger, 1986) and business process reengineering (Hammer and Champy, 1995). Since the 1990s, following the growth of multinational companies, it has , been an on-going trend to develop XPSs based on these templates (Feggeler and Neuhaus, 2002; Netland, 2013).

One company that has been remarkably successful in continuously improving over time is the Toyota Motor Corporation. Toyota's sustained improvement is a quality that few other firms have been able to copy (Bateman, 2005; Schonberger, 2007). The lasting success, which is persistent across Toyota's global production network, is largely attributed to its famous TPS. TPS is a holistic management philosophy developed by Toyota after World War II (Ohno, 1988; Shingo and Dillon, 1989; Womack et al., 1990; Liker, 2004). Since the 1980s, many companies have tried to copy bits and pieces from Toyota without paying sufficient attention to the totality of the TPS (Feggeler and Neuhaus, 2002). More and more companies have realised that a systematic approach to production improvement is needed—and develop their own XPSs for that purpose. Therefore, it can be suggested that a novel characteristic is that *XPSs are systemic strategies for lasting production improvement* (Proposition 1).

Contingency theory (Sousa and Voss, 2008) suggests that the suitability of practices is dependent on contingencies to the firm. Experience has taught companies that a certain amount of adaptation of the recommended practices and templates is needed for implementation to be successful. Adaptation means that practices are adjusted to fit the specific company. At the same time, Jensen and Szulanski (2004), who study how practices are transferred in intra-firm networks, warn that too much adaptation increases 'stickiness' and hinders effective sharing of the practice. In a literature review on multi-plant improvement programmes, Netland and Aspelund (2014) found that the majority of empirical studies argue in favour of strong adaptation of proven practices. Companies seek to collect and adjust practices so that they fit their characteristics and business better, without allowing full heterogeneity at the subsidiary level—and develop XPSs for that purpose. Thus, it can be

proposed that *XPSs consist of known improvement practices that are tailored to the multinational firm's contingencies* (Proposition 2).

After rapid global growth, many multinationals now face the challenge of effectively structuring, managing and operating a globally dispersed production network (Colotla et al., 2003). Global companies see potential synergies for improvement, just as they have done in purchasing, marketing, production, logistics and product development earlier. Seminal research in the field of international business (e.g. Ghoshal and Bartlett, 1988; Kogut and Zander, 1993; Jensen and Szulanski, 2004) claims that the ability to efficiently share knowledge in the intra-firm network is the prime reason for the existence of multinational companies in the first place. A global approach to improvement can ease benchmarking and the transfer of successful practices among sister plants (Szulanski, 1996; Jensen and Szulanski, 2004). Thus, global companies seek efficient platforms to share production improvement knowledge in the network of plants—and develop XPSs for that purpose. It can hence be proposed that *XPSs are platforms for sharing production improvement know-how in the global production network* (Proposition 3).

Research method

In order to test whether the propositions make sense, a multiple-case research methodology has been deployed. Case studies are well suited to investigate new practices in contingency-rich environments (Voss et al., 2002; Yin, 2009; Barratt et al., 2011). This paper builds on available case studies, which Lewis (1998) suggests is a sound methodology for this type of research. Using convenience sampling (Stake, 1994), four renowned Scandinavian multinational companies with their own XPSs are included: Jotun AS, Elkem AS, Volvo AB and Hydro ASA.

All four companies met at a workshop on XPSs in Trondheim, Norway, in May 2011. Subsequent to the workshop, the companies have been visited by researchers for the purpose of gaining a detailed understanding of their respective XPSs. Three master theses, written at the Norwegian University of Science and Technology, have made in-depth investigations of the two case companies Jotun and Elkem. Aa and Anthonsen (2011) and Eide (2012) have studied the implementation of Jotun's XPS in factories in Norway, Indonesia, Saudi Arabia and the United Kingdom. Alvær and Westgaard (2012) studied the implementation of Elkem's XPS in factories in Iceland and Norway. The author supervised these theses and has personally performed research on Volvo (c.f. Netland and Sanchez, 2012; Netland and Aspelund, 2013), visiting more than 40 Volvo factories worldwide. For the fourth company,

Hydro, the author has participated in several workshops and discussions with the corporate XPS office. For all companies, detailed internal documentation of the respective XPSs and their implementation in the companies' networks has been provided.

The presentation of the empirical data follow the typical procedure for multiple-case studies (Eisenhardt, 1989; Choi and Hong, 2002): each case is first presented separately, then discussed together.

Case descriptions

In this section, the four cases are described individually in succession.

The Elkem Business System

Elkem is a Chinese-owned manufacturer of the earth minerals silicon and carbon. Elkem is headquartered in Oslo, Norway. Its core competence is high temperature furnace technology and high-temperature process operations. Elkem's global operations network consists of 2.500 employees spread across 12 production plants in Norway, Iceland, the US, Brazil, South Africa and China.

Elkem is a pioneer in Norway when it comes to XPS. Through a joint venture with Alcoa at the end of the 1990s, Elkem got to know Alcoa's XPS (the Alcoa Business System) and decided to develop a similar production improvement system. Key reasons to develop its own XPS was to ensure a long-term improvement strategy in Elkem, and thereby reduce several corporate cost cutting initiatives driven by external consulting groups. The Elkem Business System (EBS) was heavily influenced by the principles, methodology and tools that Alcoa used. Alcoa's system—and hence the EBS—is founded on the philosophy of the TPS. The EBS 'house' is shown in Figure 1.

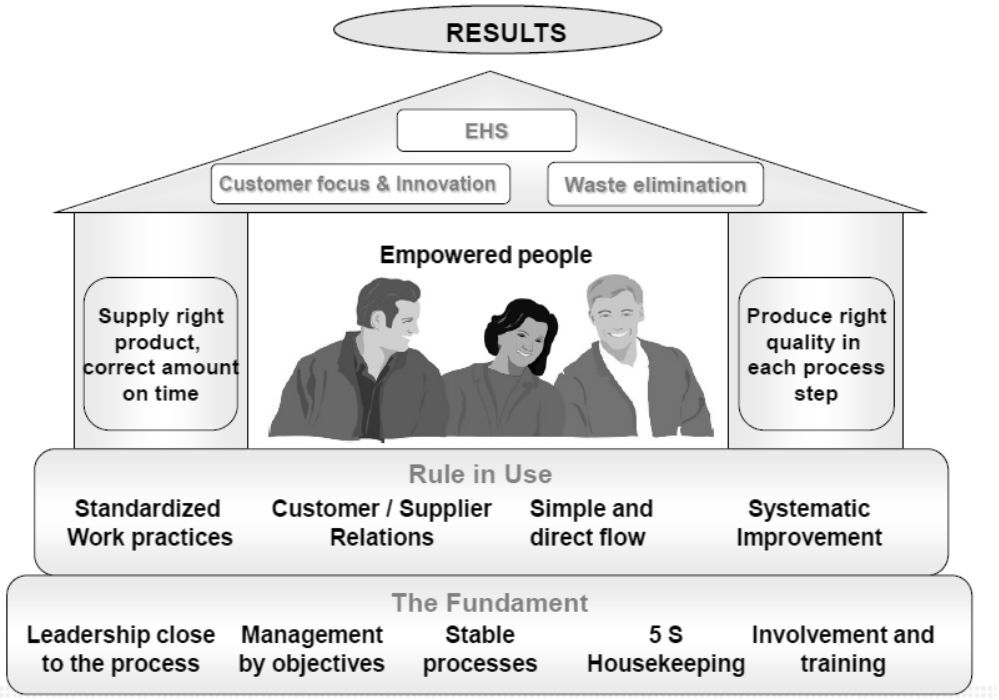

Figure 1 – The Elkem Business System house (Source: Elkem AS)

The EBS house consists of a foundation with five main principles ('leadership close to the process', 'management by objectives', 'stable processes', 5S housekeeping' and 'involvement and training'). Above the fundament, there are four 'rules in use' ('standardised work practices', customer/supplier relations', 'simple and direct flow', 'systematic improvement'). Two pillars and 'empowered people' support the 'roof of targets and results'.

To assist in the implementation of EBS in all the plants in the production network, an EBS Center with lean experts was established in 2000 in Norway. The five EBS coaches travel to the plants and offer onsite training in EBS. Elkem emphasises empowerment of employees and the EBS Center aims to accelerate the implementation process by developing the employees' motivation and ability to solve problems. The EBS Center also performs annual EBS audits in the production network and is responsible for regular updates of the EBS per se.

The Jotun Operations System

Jotun is a multinational manufacturer of paints and protective coatings. Jotun's global operations network consists of about 9000 people in 43 countries. It is a family-owned company headquartered in Sandefjord, Norway. The company has delivered strong results over several years and is still expanding through organic growth. Jotun is a market-driven firm that offers the highest quality of paint solutions.

Nevertheless, sharpened competition and a need to share good practices between plants, made Jotun embark on an XPS strategy in 2007. Since then, Jotun has worked with lean production, developing the Jotun Operations System (JOS) over several years. By including the main manufacturing processes for paint, JOS is tailored to the needs of the industry. The JOS 'house' is shown in Figure 2.

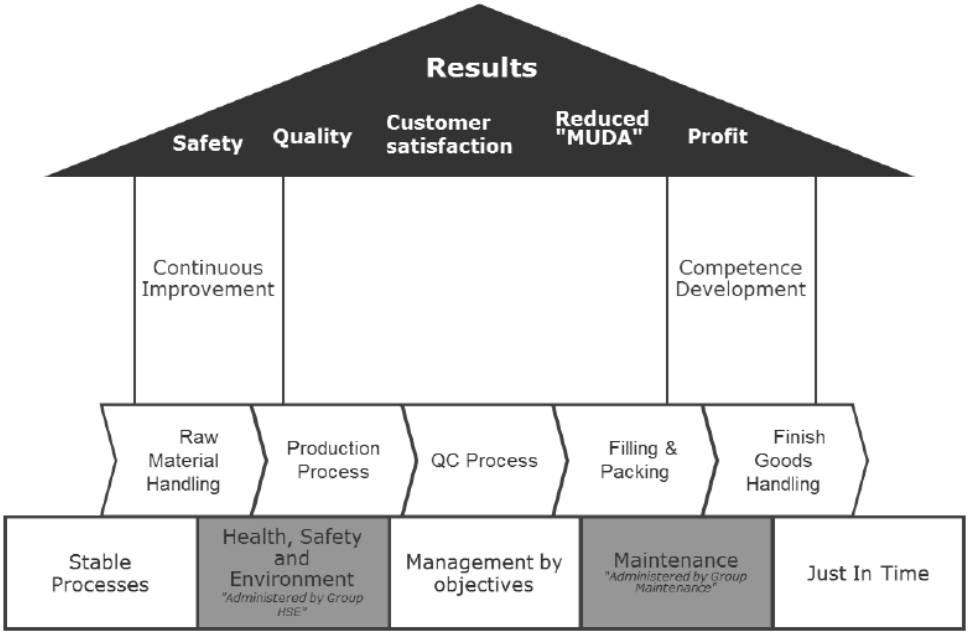

Figure 2 – The Jotun Operations System house (Source: Jotun AS)

The JOS house consists of four key components: fundamental operations principles, best practice process management, two pillars of development and, at the top, the expected results. The purpose of JOS is to improve the productivity of all Jotun plants worldwide. Two of the fundamental principles—'Health, Safety and Environment' and 'Maintenance' (grey in Figure 2)—are of particular importance for Jotun as a chemical processing company.

To assist and govern the implementation of JOS in the global production network, Jotun has established the Group Operations Improvement (GOI). GOI carries out audits of JOS implementation in all plants, facilitates sharing of best practices and coaches the implementation. All plants have appointed a lean coordinator. A special focus in Jotun has been to increase the general knowledge level in both technical operations and lean thinking. Therefore, since 2007, GOI arranges the Jotun Operations Academy with courses and qualifications for all employees worldwide.

The Volvo Production System

Volvo is a leading manufacturer of heavy vehicles. Volvo's main products include trucks, buses and construction equipment for the world market. Volvo employs about 100.000 employees globally. It is listed on the Stockholm Stock Exchange and is headquartered in Gothenburg, Sweden. After selling off the cars division in 1999, Volvo has grown considerably through mergers and acquisitions. Today, Volvo's global production network comprises around 60 plants in more than 20 countries.

Increasing competition on price and a need to increase the competitiveness of its plants resulted in the launch of the Volvo Production System (VPS) in 2007. The VPS pyramid is shown in Figure 3.

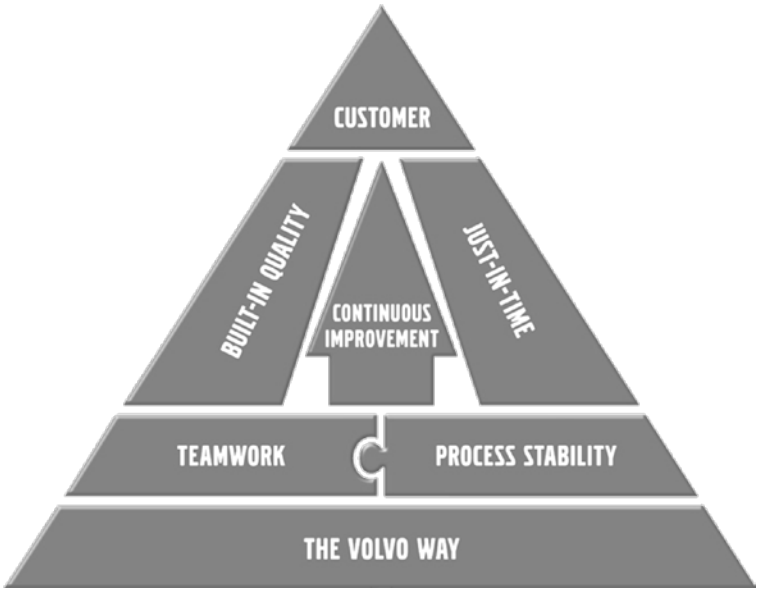

Figure 3 – The Volvo Production System pyramid (Source: Volvo AB)

The VPS starts with a fundamental focus on Volvo's corporate values ('the Volvo Way') and ends with an inherent focus on creating value for the customer. In-between are five key operational principles: 'teamwork', 'process stability', 'built-in quality', 'continuous improvement' and 'just-in-time'. The VPS is Volvo's strategic production improvement programme and is strongly influenced by Toyota's original system and lean production.

In Gothenburg, a VPS department is responsible for governing the VPS and supporting its implementation of the global production network. Every plant is assigned a VPS Coordinator, and each regional division is assigned a VPS Global Coordinator. Most plants have their own VPS team. The corporate VPS office also carries out VPS assessments of all plants; finding strengths and weaknesses and suggesting a roadmap for the next steps.

Hydro's Aluminium Metal Production System

Norsk Hydro is one of the largest industrial companies in Norway. One of its main business divisions, Hydro Primary Metal (HPM) supplies aluminium metal to internal customers in Hydro's extrusion and rolling divisions and to other customers all over the world. HPM's production network consists of aluminium smelting plants in Norway, Germany, Brazil, Canada, Qatar and Slovakia. At these plants, bauxite is transformed into alumina and aluminium through an energy-intensive process of electrolysis. Approximately 5000 people work for HPM worldwide.

Since the mid-1990s—and up to 2006—HPM had focused on the implementation of total productive maintenance in their plants. However, with foresight of rising energy costs and lower aluminium prices in the global market, HPM believed that a broader approach based on lean production was needed and could deliver a cost advantage to HPM in the market. To develop the new approach, HPM worked closely with Hydro's upstream automotive parts division that had many years of experience with lean and already had its own XPS (the Hydro Automotive Production System).

In 2006, HPM launched the Aluminium Metal Production System (AMPS). Today, Hydro's divisions for aluminium extrusions and rolling have similar systems in place—adapted to their specific needs and requirements. Thus, Hydro does not have *one* global system, but rather it has adapted versions for each corporate division (metal, extrusion and rolling). The first live pilot of the AMPS in Hydro was at the Årdal plant in Norway in 2007. Since then, the system has been implemented in all of the smelters worldwide. The standard presentation of the AMPS is shown in Figure 4.

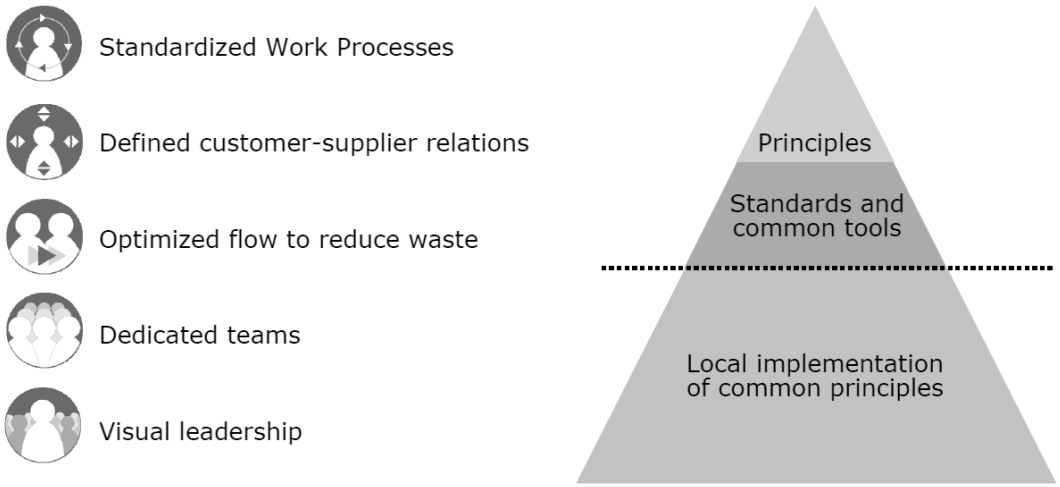

Figure 4 –Hydro's Aluminium Metal Production System (AMPS) (Source: Hydro ASA)

The AMPS is built around five main principles: ‘Standardised work processes’, ‘defined customer and supplier relationships’, ‘optimised flow’, ‘dedicated teams’ and ‘visible leadership’. Each of these principles has a defined set of standards and tools for each plant to use. Hydro also pays explicit attention to the importance of local adaptation and implementation of the principles (see pyramid in Figure 4).

Even if AMPS, according to Hydro, is ‘a global and mandatory platform for improvement’, the plants in the network are given a large degree of freedom to implement it according to their local needs and situations. An example of the effect of AMPS is that one of its plants in Karmøy, Norway, was awarded ‘the lean company of the year award’ in 2012. An important AMPS slogan reads: ‘AMPS is not a project – it’s a way of operating’.

Hydro has a small global AMPS team located in Oslo, Norway. The team owns the AMPS documentation and supports implementation in the network. It also arranges a training programme, where more than 2000 employees have participated; including 750 managers and supervisors. All smelters have local AMPS teams. Hydro does not have a global audit programme, but instead uses self-assessments at the plant level for gauging implementation.

Cross-case analysis and discussion

The three propositions derived from the review of the literature are now discussed in light of the four cases.

Proposition 1: Strategic improvement programme

For all cases, the XPSs are strategic improvement programmes. This differs from many other stand-alone and isolated improvement initiatives the case companies have undertaken prior to launching their XPSs. Instead of letting subsidiaries figure out their improvements individually, the headquarters offer a shared system for the global production network. All four cases have developed their XPSs with the intention of establishing a lasting strategy and roadmap for improvement.

With the XPS comes top-management attention—a required, but rare, ingredient in continuous improvement (Liker, 2004). All cases have explicitly recognised their XPS as a top-priority for their long-term strategies. The XPS is corporate business, and is not left to the plants alone. Because the XPS becomes part of the bigger organisation, the chance for survival of the system is much better, while attention to improvement can easily drop in single plants in difficult periods (Bateman, 2005), the XPS will continue in other parts of the organisation, and hence will still be available when the plant is ready to pursue it again.

Proposition 2: Tailoring of known principles to fit the firm

The four companies have all developed their XPSs by choosing available principles that best fit them, from a broad pallet of proven lean production principles. Considering the principles of EBS, JOS, VPS and AMPS, it is apparent that the four XPSs have strong resemblance, which is expected due to their common roots. However, even if the principles stem from the same templates, a tailoring to the unique needs of the firm takes place in the development process of the XPS. The argument is that not all principles suit all companies—as suggested by the contingency perspective (Sousa and Voss, 2008). The XPS allows for necessary adaptation. Instead of marrying one template (i.e. lean, total quality management, six sigma, etc.) the company can *strategically* choose from all proven production improvement philosophies. An example is that Hydro—a batch producer of aluminium—focuses on 'optimised flow' instead of 'just-in-time'. 'Optimised flow' is a more suitable concept for batch production.

The tailoring is not limited to the content of the systems. Importantly, the companies often lend their own names and designs to the XPSs, similar to all cases in this study. This serious choice symbolises sincerity and durability. It presumably reduces the 'not-invented-here syndrome' and increases employees' ownership of the programme. Off-the-shelf improvement philosophies do not have these advantages.

Proposition 3: A common platform for improvement in the global production network

The XPSs of Elkem, Jotun and Volvo are shared platforms for *all* plants and employees in the firms' global operations networks. Hydro has separate systems for different divisions, but these systems are common for all plants in the respective divisions. One obvious advantage for all four firms is that not all plants need to develop and maintain their own improvement programmes. This has been a key reason for the development of the four XPSs in the first place. The drawback is that the firms must use global resources to manage and maintain the XPSs, as all four companies do to various degrees. Elkem, Jotun, Volvo and Hydro believe that their global efforts outweigh the sum of the individual efforts if no XPS was used.

An XPS also creates a *common improvement language*, which leads to easier transfer of experiences and good practices between units in the production network. Thus, the firms make use of one of the strongholds of multinational companies by leveraging the global know-how (Kogut and Zander, 1993). This advantage of an XPS is presumably more important for multinational companies with sprawling networks of plants, than it is for small and medium sized enterprises.

Implications for managing improvement in global operations networks

Establishing that an XPS is a strategic and tailored multi-plant production improvement programme being implemented in all plants of an international production network simultaneously, a discussion on the implications for corporate managers remains.

After multinational companies have configured their global production networks, a natural step is to start exploiting manufacturing capabilities around the world. The four cases in this research have suggested that developing and deploying an XPS can be an effective way to coordinate production improvement across subsidiary plants. In cases where the same best practices are valid for several plants in a production network, a shared corporate system has clear benefits. A first recommendation for multinational companies, which do not have an XPS, will then be for them to consider developing one. Elkem, Hydro, Jotun and Volvo provide examples of how the implementation of XPSs can be developed, launched and managed in the networks: they have all set up corporate XPS offices, appointed XPS coordinators and teams in all plants, developed audit schemes and shared practices between plants by means of both codified standards and by rotating people among plants. Of course, the resources spent on measures like these must be weighted against the expected benefits.

It must also be emphasised that the four cases investigated in this paper are all established companies operating in relatively mature industries. It is unlikely that an XPS is a panacea for all companies in all industries. There are several pitfalls that warrant discussion. First, in cases where the international production network, or its environment, is quickly evolving, an XPS is likely to have a more limited effect. For example, if the production network of a firm is constantly changing, as in IKEA's 'footloose strategy' (Ferdows, 2008), the XPS would naturally have a more time-limited effect. Likewise, in industries characterised by rapid and disruptive innovations in technology, the relative effects of implementing an XPS can be marginal. Hence, in such environments, other improvement strategies might be more appropriate (e.g. Intel's successful 'copy exactly strategy' (McDonald, 1998). Second, XPSs presumably have limited effects in cases of highly diversified firms, where best practices in one division are not 'best' in others.

Conclusions

Over the last ten years, production improvement has gone from plant-specific initiatives to corporate systems, common for all plants in the company's global production network. Development of such *XPSs* appears to be an on-going trend among manufacturing multinationals. However, despite the popularity in practice, the literature has not yet

established an own stream for XPSs. This paper analysed the novelty of coordinating production improvement in global production networks.

The four cases of Elkem's EBS, Jotun's JOS, Volvo's VPS and Hydro's AMPS were investigated. The main differences between XPSs and how firms have traditionally organised production improvement are summarised as follows:

- An XPS is a strategic programme; not a project.
- An XPS is specific to the company; not general.
- An XPS is common for the global production network; not local solutions.

First, an XPS is a lasting strategic programme, not a project. Many firms carry out countless temporary production improvement projects. In contrast, the XPS is infinite—meant to sustain the emphasis and focus across the global operations networks over a long time. It comes with implicit managerial support and attention from the corporate level. As part of a bigger whole, the chance for survival of the system in difficult periods is better. The XPS therefore brings consistency and durability to improvements in all plants within the network. However, this comes at the expense of the need for new strategic directions in times of rapid change.

Second, an XPS combines the strength of proven production improvement principles and the unique composition and adaptation of them to the firm's characteristics and needs. It is clear that Toyota's success with the TPS—popularised as lean production—has heavily inspired other XPSs. However, different systems are not identical; each firm tailors the composition of production improvement principles to fit its needs. An alternative would be to make use of readily available improvement solutions in the market place, which do not necessarily require costly development and maintenance of an own XPS.

Third, an XPS creates a common strategy, and language for production improvement in all parts of a global operations network, enabling an easier transfer of 'best practices' amongst units. This way, each plant does not have to 'reinvent the wheel' when it comes to production improvement. This comes at the expense of local autonomy and solutions tailored specifically to the subsidiary itself, which would make sense if subsidiaries are very dissimilar.

The three characteristics of an XPS offer interesting implications for practitioners and research. It has been established that companies struggle to sustain improvements over a longer period (Bateman, 2005; Schonberger, 2007). Can an XPS help sustain the improvement work across many plants in a global production network? Based on the investigation of four XPSs, I suggest it can—particularly for multinational companies with similar operations in mature and stable markets. Having an XPS, however, is only a

prerequisite. Achieving the potential results—and doing so over time—is a challenging task that warrants further research.

Acknowledgements

This paper has benefited from the diploma work of M.Sc. Ole André Aa, M.Sc. Henning Anthonsen, M.Sc. Ingrid Alvær, M.Sc. Silje Westgaard and M.Sc. Thomas L. H. Eide at NTNU. Further, I want to thank our contact persons in Elkem, Jotun, Volvo and Hydro for their exceptional hospitality and support.

References

Aa, O. A. & Anthonsen, H. (2011) Management of best practices in multinational companies: A comparative case study concerning implementation of operations best practices in two subsidiaries of the Jotun Group. *Industrial Economics and Technology Management.* Trondheim, NTNU.

Alvær, I. & Westgaard, S. H. (2012) Implementation of Company-Specific Production Systems (XPS) in Multinational Companies: A comparative case study concerning implementation of XPS in two subisidaries of Elkem. *Industrial Economics and Technology Management.* Trondheim, NTNU.

Barratt, M., Choi, T. Y. & Li, M. (2011) Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management,* Vol. 29, Iss. 4, pp. 329-342.

Bartlett, C. A. & Ghoshal, S. (1998) *Managing across borders: the transnational solution,* Boston, Mass., Harvard Business School Press.

Bateman, N. (2005) Sustainability: the elusive element of process improvement. *International Journal of Operations & Production Management,* Vol. 25, Iss. 3/4, pp. 261-276.

Choi, T. Y. & Hong, Y. (2002) Unveiling the structure of supply networks: case studies in Honda, Acura, and DaimlerChrysler. *Journal of Operations Management,* Vol. 20, Iss. 5, pp. 469-493.

Colotla, I., Shi, Y. & Gregory, M. J. (2003) Operation and performance of international manufacturing networks. *International Journal of Operations & Production Management,* Vol. 23, Iss. 10, pp. 1184-1206.

Eide, T. L. H. (2012) Critical success factors for managing company-specific production systems. *Industrial Economics and Technology Management.* Trondheim, NTNU.

Eisenhardt, K. M. (1989) Building Theories from Case Study Research. *Academy of Management Review,* Vol. 14, Iss. 4, pp. 532-550.

Feggeler, A. & Neuhaus, R. (Eds.) (2002) *Ganzheitliche Produktionssysteme - Gestaltungsprinzipien und deren Verknüpfung,* Köln, Wirtschaftsverlag Bachem.

Ferdows, K. (Ed.) (1989) *Managing International Manufacturing* New York, North-holland

Ferdows, K. (1997) Made in the world: The global spread of production. *Production and Operations Management,* Vol. 6, Iss. 2, pp. 102-109.

Ferdows, K. (2008) Managing the Evolving Production Network. In Galavan, R., Murray, J. & Markides, C. (Eds.) *Strategy, Innovation, and Change: Challenges for Management* Oxford, Oxford University Press.

Ghoshal, S. & Bartlett, C. A. (1988) Creation, adoption, and diffusion of innovations by subsidiaries of multinational corporations. *Journal of International Business Studies,* Vol. 19, Iss. 3, pp. 365-388.

Hammer, M. & Champy, J. (1995) *Reengineering the corporation: a manifesto for business revolution,* London, Nicholas Brealey.

Henderson, K. M. & Evans, J. R. (2000) Successful implementation of Six Sigma: benchmarking General Electric Company. *Benchmarking: An International Journal,* Vol. 7, Iss. 4, pp. 260-282.

Jensen, R. & Szulanski, G. (2004) Stickiness and the adaptation of organizational practices in cross-border knowledge transfers. *Journal of International Business Studies,* Vol. 35, Iss. 6, pp. 508-523.

Juran, J. M. (1988) *Juran on planning for quality,* New York, Free Press.

Kogut, B. & Zander, U. (1993) Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies,* Vol. 24, Iss. 4, pp. 625-645.

Lewis, M. W. (1998) Iterative triangulation: a theory development process using existing case studies. *Journal of Operations Management,* Vol. 16, Iss. 4, pp. 455-469.

Liker, J. K. (2004) *The Toyota way: 14 management principles from the world's greatest manufacturer,* New York, McGraw-Hill.

Mcdonald, C. J. (1998) The evolution of Intel's Copy EXACTLY! Technology Transfer Method. *Intel Technology Journal,* Vol. Q4, Iss. 98, pp. 1-6.

Netland, T. & Sanchez, E. (2012) People at the wheel - Volvo's lean journey. *Lean Management Journal,* Vol., Iss. March, pp. 35-36.

Netland, T. H. (2013) Exploring the phenomenon of company-specific production systems: One-best-way or own-best-way? *International Journal of Production Research,* Vol. 51, Iss. 4, pp. 1084-1097.

Netland, T. H. & Aspelund, A. (2013) Company-specific production systems and competitive advantage: A resource-based view on the Volvo Production System. *International Journal of Operations & Production Management,* Vol. 33, Iss. 12, pp. Forthcoming.

Netland, T. H. & Aspelund, A. (2014) Multi-plant improvement programmes: A literature review and research agenda. *International Journal of Operations & Production Management,* Vol. 34, Iss. 1, pp. Forthcoming.

Ohno, T. (1988) *Toyota production system: beyond large-scale production,* New York, Productivity Press.

Porter, M. E. (1986) Changing patterns of international competition. *California Management Review,* Vol. 28, Iss. 2, pp. 9-40.

Schonberger, R. J. (1986) *World class manufacturing: the lessons of simplicity applied,* ASQC Quality Press.

Schonberger, R. J. (2007) Japanese production management: An evolution - With mixed success. *Journal of Operations Management,* Vol. 25, Iss. 2, pp. 403-419.

Shingo, S. & Dillon, A. P. (1989) *A study of the Toyota production system from an industrial engineering viewpoint,* New York, Productivity Press.

Sousa, R. & Voss, C. A. (2008) Contingency Research in Operations Management Practices. *Journal of Operations Management,* Vol. 26, Iss. 6, pp. 697-713.

Stake, R. E. (1994) Case Studies. In Denzin & Lincold (Eds.) *Handbook of qualitative research.* Thousand Oaks, Sage Publications.

Szulanski, G. (1996) Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm. *Strategic Management Journal,* Vol. 17, Iss. Winter, pp. 27-43.

Voss, C., Tsikriktsis, N. & Frohlich, M. (2002) Case research in operations management. *International Journal of Operations & Production Management,* Vol. 22, Iss. 2, pp. 195-219.

Womack, J. P., Jones, D. T. & Roos, D. (1990) *The machine that changed the world,* New York, Rawson Associates.

Yin, R. K. (2009) *Case study research: design and methods,* Thousand Oaks, CA, Sage.