

Lean Thinking and Transferring Lean Management - The Best Defence against an Economic Recession?

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Abstract

Productivity growth is a fundamental means for society to improve its living standards. Productivity growth comes from technological change (new ways of producing goods and services) and better organisation of production (better ways of using available resources given available technology). Both processes operate simultaneously and, in practice, it is difficult to distinguish between the effects of each process. The processes are dynamic and affect individual activities differently over time. These years, manufacturing functions have been transferred rapidly and globally from mature countries to emerging countries. This paper is about the lean philosophy and the critical elements for successful transfer of lean management among sites and countries.

Keywords: Lean Enterprise, Lean Management, TPM, KAIZEN

JEL Classification: L150, L230, L690, M110

1. Introduction

The lean philosophy is all about eliminating waste and synchronizing necessities in order to, on the short and long term, meet the requirements of the market. The lean philosophy is expressed in several different statements: achieving more with less people, reducing non-value-adding activities, slimming etc. Lean is often associated with efficiency, reducing surplus. This however, is only one side of the lean philosophy. An essential aspect of the lean philosophy is a continuous striving for flawless products, that can be delivered on demand, customer specific, without wasting material, labour hours, and other resources (energy) in a safe (both physical, emotional as well as professional) working environment. The lean philosophy is a continuous improvement philosophy. There are several methods and techniques that can be used to become *leaner*.

Lean enterprise is a business system for organizing and managing product development, operations, suppliers, and customer relations. Businesses and other organizations use lean principles, practices, and tools to create precise customer value — goods and services with higher quality and fewer defects — with less human effort, less space, less capital, and less time than the traditional system of mass production. Using *Lean principles*, manufacturers have made significant improvements to their operations, from improved productivity, increased resource utilization, to a more accurate understanding of product costs. One area where manufacturers may not have thought to apply Lean management is the workforce. But as labour pressures increase and margins tighten, savvy manufacturers are turning their attention to the workforce, and discovering that Lean can help them increase workforce flexibility and agility, and improve their bottom line. A flexible, motivated workforce is the central component of a successful Lean program. Applying Lean principles to the workforce can play a critical role in ensuring that labour is aligned to demand, which in turn can result in lower costs and shorter lead times. There are three

primary areas of improvement that manufacturers should focus on to achieve Lean improvement in the workforce:

- Identifying non value-added labour.
- Measuring and managing variability.
- Motivating the workforce.

In Lean manufacturing waste is anything that adds to the time and cost of making a product, but does not add value from the customer's point of view. *Value-added* activities transform products into something the customer wants. *Non value-added* activities are meaningless to customers, and as a result, customers are not willing to pay for them. Examples of non value-added activities include moving WIP between departments that are organized functionally, or building a defective product. The labour wasted in non value-added activities can be significant, and unless manufacturers are able to accurately measure this waste, it can be difficult to identify and eradicate. There are two areas where manufacturers can look for this waste: documented and undocumented non value-added steps and events.

These years, manufacturing functions have been transferred rapidly and globally from mature countries to emerging countries. Even global industries, which have a multi-national basis, are trying to make aggressive direct investment to new operation sites where low procurement cost of manufacturing resources and rapid economic growth are expected. However, in such situations, there are usually serious shortages of labour resources with necessary skills, facility resources with necessary functions as well as proper maintenance functions, suppliers with required performance, etc. Then, companies have another burden of these new management problems. To overcome these tough problems, management technology such as improvement methods carries out significant role for many years in Japan. This technology is supposed to perform its relevant role to cope with new dimensional management problem solving in current ongoing rapid globalization. On the other hand, serious shortage of management engineers in younger generation is pointed out. This phenomenon is not only the case in Japan, but also in most of mature countries depending on its seriousness. In industrialising countries, on the contrary, structure of population maintains almost Pyramid shape and it is recognised to be a serious problem how to transmit the know-how of management technology to the mass of young generation. The shortage of skilled management engineers, who are the drivers of manufacturing function performance, is now world common biggest problem.

In this paper, based on this understanding, requisites for transfer of lean management are discussed through investigating the global activity of Lean Management, and the specification of infrastructure enabling its smooth transfer is examined.

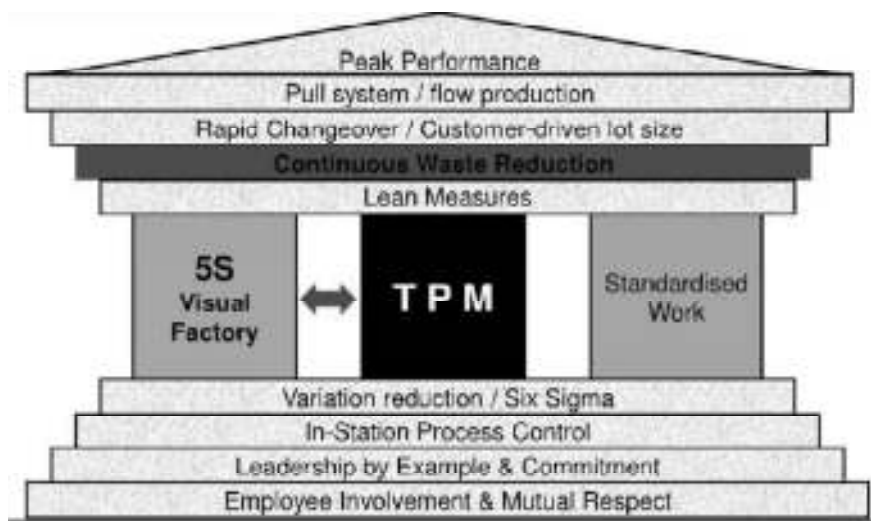
2. Literature Review

The face of manufacturing has changed in the space of a decade. Local has become global. Push has become pull. Time has become real time. Monolithic enterprises have given way to extended supply chains, and the considered focus of manufacturing executives now has to expand beyond their own companies per se to include suppliers, partners and, above all, customers. Today, the real cost reduction opportunities for many companies are in the linkages to suppliers and customers. In order to respond to such change—and keep the costs of responding at minimum levels—companies must have the

capabilities to meet demand as it occurs. Conventional mass production manufacturing models lack the flexibility to respond as rapidly as necessary in today’s marketplace. Push-based mass production models that evolved from a bygone era result in extended lead times, excess inventory, poor quality and a vicious cycle where high inventory translates to longer lead times and a value stream that is no longer responsive to the customer and the changing needs of the customer. An accounting mentality of *low per piece cost* led to pursuit of volume – at the piece part level – with questionable decisions about manufacturing equipment, flows, organization, etc. taking place. Volume covered all ills – whether it be high setups, quality issues or any of a number of other problems.

Before the emergence of Toyota Production System in 1940, mass production which came from Henry Ford in the early 20th century, famously for the Ford Model-T was popularized around the world for many years, a large number of companies adopted this revolutionized production system, even now, many industries are still only appropriate for mass production rather than lean production. Because of the weak economic environment after World War II, companies in Japan could not afford too much cost in manufacturing products as western companies, they had to explore some other production patterns with less cost and high efficiency. The automotive manufacturer Toyota was the one that succeeded in contriving a novel production system that had the contribution to reduce costs, increase efficiency and produce better quality compared to mass production. Consequently, this remarkable production pattern, as one of the key factors of the success of Toyota makes Toyota prosper and become one of the most important automotive manufacturers in the world.

Figure 1. Lean production system



In 1990, Americans James P. Womack and Daniel T. Jones extracted the most important and essential principles of Toyota Production System and created a new production philosophy named “Lean production” in the book *The Machine That Changed the World* (Womack and Jones, 1990). Lean production is a combination of mass production and craft production. Mass production which was from USA and famous for Ford Model can produce a large amount of standardized products once on the production lines, however, a lack of variety and flexibility could result due to standardized production, which means it is not flexible to change or redesign those products that are already on the production lines. Craft production is a traditional production technique that was used in the earlier time of manufacturing. During that period, there were very few orders, sometimes only

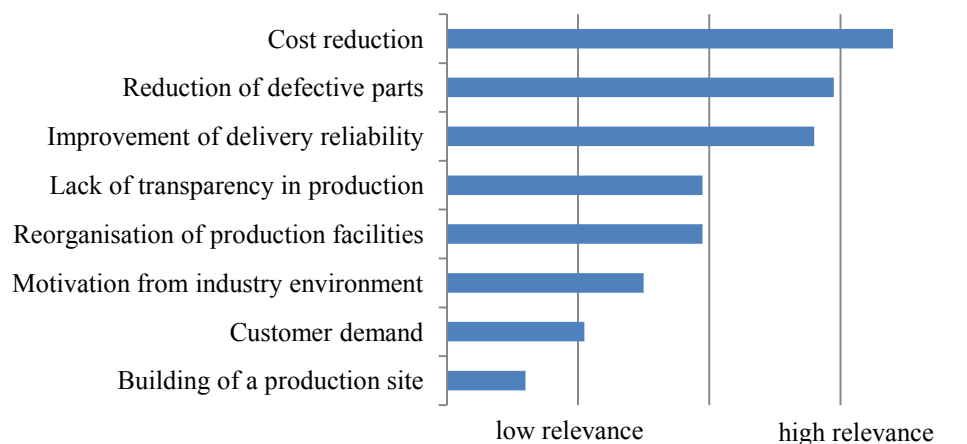
one or two, and every product was produced manually. As a consequence, high variety and good quality could be achieved but with less output. Therefore manufacturers can produce products that completely satisfy the customers' need. The reason why lean production is designed is that the manufacturers want to have more competitiveness in the market, meet varieties of customers' needs, acquire higher quality of products, and obtain more profit. Lean production aims to surpass the quality of craft production and reduce the waste of mass production. The products which are manufactured using lean production strategy will have both the craft production' good quality and mass production' large amount, as well as the lowest waste and cost.

Table 1. The seven deadly wastes

| Waste Category | Description |
|-----------------------|---|
| Overproduction | Making something before it is truly needed. This is considered a particularly serious form of waste because it leads to excess inventory (e.g. safety stock) that typically masks many other underlying problems and inefficiencies. |
| Waiting | Time when work-in-process is waiting for the next step in production. It can be truly illuminating to look at the time interval from order to delivery and ask – how much of that time is actually spent on true value-added manufacturing. |
| Transport | Unnecessary movement of materials, work-in-process or finished goods. |
| Motion | Unnecessary movement of people. |
| Overprocessing | More processing than is needed to produce what the customer requires. This is often one of the more difficult wastes to detect and eliminate. |
| Inventory | Production (raw materials, work-in process, or finished goods) that goes beyond supporting the immediate need. |
| Defects | Production that is scrap or requires rework. |

Source: compiled by the author

In fact, the aim of lean methods is to eliminate any waste in processes and thus to improve production objectives such as lead time, cost, quality, flexibility and delivery performance. This is achieved by the positive effect on relevant production figures like inventory, process time, set-up time, machine availability, reject rate, etc. Experience shows that lean methods affect the production processes in different ways depending on the specific conditions and requirements (e.g. customer demand, production program); therefore they have to be adapted to individual company characteristics. The interdependencies between company characteristics, lean methods and production figures can usually only qualitatively be stated if they are known at all. But for lean methods to be successfully applied these interdependencies have to be transparent in a quantitative manner. In the current economic situation, the trend towards more individual, customer-tailored manufacturing can be noticed. Consequently, lean methods have to be adapted for the application in small series productions. These are characterised by a high product variance with complex product structures and small volumes. Further typical attributes of a small series production are little process repetition, volatile customer demand with frequent late order modifications, large differences of work content and long replacement times. This requires a trade-off for the production organization between lean but still flexible, buffering processes.

Figure 2. Reasons for the implementation of lean methods

Five fundamental and essential principles of lean production are briefly explained follows and also some examples of the principles that can be found in the literature: Value; Value stream; Flow; Pull; Perfection.

Moreover, some *tools and techniques of lean production* based on those five principles above are presented: Eliminating non-value adding activities, Continuous improvement, Flexible information system, Takt-time, Standardized work, Visual control, Just-In-Time (JIT) production and delivery, Multi-team-based working, Integration of suppliers.

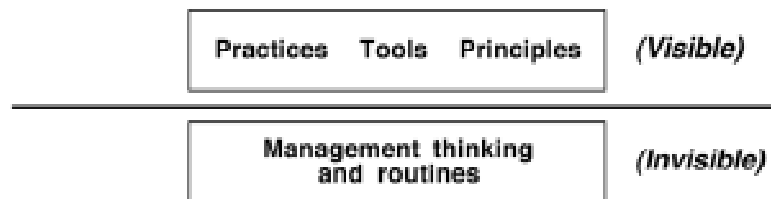
3. Culture Differences and Organizational Changes

We have known for a long while that Toyota does something that makes it more capable of continuously improving than other companies, and by now we have recognized that it lies in its management approach. But how Toyota manages from day to day and thereby embeds continuous improvement and adaptation into and across the organization has not yet been explained. That is about to change.

The relationship between lean production and culture is just the same as the relationship between the footstone and the building. The same footstone can be built into different buildings which are varied and decided by architects, cost and functionality. Lean production concept is the footstone and the basic principles are the same; culture, policy and people like the architects, cost and functionality, they will decide which principles of lean production concept should be used, where they should be applied, how many of the principles should be adopted and to what extent they should be utilized in terms of different conditions. In fact, a different culture is not the essential problem for implementing lean production, but is something within it. It is unavoidable that different countries have different local customs and different industrial environments: labour density, degrees of development, industrialization, education, traffic situation, price of land and so on. Companies have to take into account all these factors when putting lean production into practice because their variations could lead to different results when applying lean production, and sometimes, lean production is not suitable at all in some extreme situations. Therefore, finding the appropriate principles of lean production is the crucial step for companies executing lean production successfully.

Many companies have been observing Toyota's current visible practices, classifying them into lists of elements and principles and then trying to adopt them. This is *reverse engineering* - taking an object apart to see how it works in order to replicate it—and it is not working so well. Toyota's tools and techniques, the things you see, are built upon invisible routines of thinking and acting (Figure 3), particularly in management, that differ significantly from those found in most companies. We have been trying to add Toyota Production System practices and principles on top of our existing management thinking and practice without adjusting that approach. Toyota's techniques will not work properly, will not generate continuous improvement and adaptation, without Toyota's underlying logic, which lies beyond our view.

Figure 3. Toyota's techniques are built upon invisible management thinking



In short, culture differences indeed exist in different geographical regions. Nevertheless, the essential factors affecting the implementation of lean production, just as mentioned above, is not the culture itself but something within it and *companies' policies* are another fundamental aspect for carrying out different lean production.

The implementation of lean production changes the structures of organization and administration of companies dramatically, but it indeed makes a positive impact on administration performances and the overall competitiveness. There are also some changes caused by implementation of lean production, including reducing workforce and identifying duties of the rest, training employees to be multi-skilled, building cross-functional teams or departments, blurring boundaries among departments, building convenient and fast information systems and so on.

Actually, the failure of lean production in some traditional companies is caused by the failure of organizational changes. Thus, administration and organization management are crucial for implementing lean production. Communication and education are two keys to apply lean production successfully:

- ***Lean production emphasizes cooperation and teamwork, thus communication*** is an absolutely indispensable part to achieve lean production successfully. Some evidence shows that most of poor communication happens among departments or external companies, such as the supply chain. Therefore, communication needs to be carried out not only within workers and teams, but also among departments, it should penetrate the whole company from management level to shop floor operators, from internal to external and from suppliers to customers. Managers should work and communicate with shop floor workers closely and frequently in order to get information about manufacturing accurately and in time, and then plan economic scale schedules, which leads to improve efficiency, reduce cost and time.
- ***Education*** is another important factor to organizational changes caused by lean production especially for traditional companies. Employees are accustomed to traditional manufacturing style, and might reject these new concepts at the

beginning; moreover, employees may feel difficult to learn these new concepts without managers' help. Consequently, in order to help workers to adapt to lean production as soon as possible, managers need to: first, explain clearly what lean production is and why they need to implement it; second, provide some materials or training lessons to help workers to join in lean production process; last, show a implementation plans and point out the goal they will achieve. In addition, some encouragement policies such as remuneration system are good and easy for workers to understand the complex goal of lean production.

Culture change takes time; it cannot be accomplished overnight or in a few weeks. With hard work and determination combined with a little luck, significant culture change might be accomplished in a few years. A common complaint heard from companies that have attempted to implement lean practices is that they slip back into the old ways or regress. In observing human change, regression is an ever present foe of change. That people naturally resist change is no revelation to most of us, but we may overlook the fact that managers also resist change. Their resistance often includes failure to step up to the challenge of managing change including the learning of new skills or more importantly the "unlearning" of some old ways of dealing with people. They may also be happy to give up on change efforts by declaring failure rather than acknowledging the successful baby-steps that are present at the leading edge of the organizational learning curve. High on most lists of lean management skills would be these which all support the critical organizational culture change:

- Trusting / Respecting.
- Sharing information.
- Empowering / Shared decision making.
- Team building / Motivation.
- Coaching / Mentoring.
- Training / Developing.
- Collaborative relationships / win-win attitudes / partnering.
- Managing organizational culture.
- Full commitment to change and management in a new way.

Trust and Respect. The two ideas go together. It is nearly impossible to trust someone you have no respect for and it is equally hard to respect someone and not be able to ascribe a certain level of trust in your dealings with them. This concept is addressed in American social psychologist Douglas McGregor's famous 1960 book "The Human Side Of Enterprise" where he outlines his ideas of two types of managers.

Theory X managers refers to those exhibiting authoritarian management styles and who believe that: the average person dislikes work and will avoid it if he/she can; therefore most people must be forced with the threat of punishment to work towards organizational objectives; the average person prefers to be directed; to avoid responsibility; is relatively non-ambitious, and wants security above all else.

Theory Y managers refer to those exhibiting participative management styles and who believe that: effort in work is as natural as work and play; people will apply self-control and self-direction in the pursuit of organizational objectives, without external control or the threat of punishment; commitment to objectives is a function of rewards Associated with their achievement; people usually accept and often seek responsibility; the capacity to use a high degree of imagination, ingenuity and creativity in solving organizational problems is widely, not narrowly, distributed in the population; in industry the intellectual potential of the average person is only partly utilized.

It should be clear by now that the managers who embrace a theory –Y behaviour approach are better equipped to lead the lean transformation. Companies that embrace this mindset (attitude comes before action) will generally have a much easier job making the lean transformation.

As stated earlier, using the term “Associate,” or some other similar term, is an important first step in the transition from being more of a Theory X manager to being more of a Theory Y manager. Language does affect our perceptions and perceptions modify our behaviour. A Theory Y manager will easily be able to trust and show respect. Some techniques to show trust and respect include: asking Associates for their opinions or solutions; making “small talk” with Associates and inquiring about those things important to them such as family and hobbies; including associates in meetings or customer site visit; sharing as much process and business information as possible; empowering Associates to implement improvements; encouraging Associates to take training and learn new skills; inquiring about Associates’ desire to advance in the company.

Share information. Control of information has always been a way to amass power in an organization and the majority of traditional managers share only what they think an employee needs to know. But a successful lean manager recognizes that the only way that Associates can contribute to the success of the company through improvements is to provide them with full access to available information be that about a specific process and product or about the general state of the business as a whole. One of the best ways to show trust and respect is to make information readily accessible. This can easily be done by postings on bulletin boards, through company newsletters, or listing on the company intranet. However, training may be required to help the Associates to understand how to read and understand the data made available to them. Information to share might include: basic sales, profit and loss information; performance against customer requirements such as quality, delivery and cost targets; absenteeism; safety; inventory turns; sales per employee; cost to supply benefits; typical lean metrics (performance measurements); value added ratios (processing time divided by production lead time); performance against Takt Time; OEE (Overall Equipment Efficiency); inventory turns.

Empower / Share decision making. Once the relationship between Associates and management becomes open and honest through the practice of trust and respect as well as through the open sharing of information, along with Associate training, a next logical step is to empower Associates to make decisions and implement changes. Just like senior executives place parameters on what managers can and cannot do, it will be important to place some boundaries around an Associates’ sphere of empowerment. In general, an Associate should be fully empowered within the scope of their position, and should look forward to expanding their scope through cross-training and job enhancement. They now have information they need to make improvement and solve problems and they should also have the ability to come up with solutions and implement them. Since this may be a new concept for many employees turned Associates, they might need some help and encouragement as they transition to this new mode of doing work. Plus, like anyone making decisions, they also have to begin to accept accountability for their actions. Some will be able to make this transition faster than others. Go with those who are ready, willing, and able and focus on ensuring their success. This will help others to move in the same direction. Keep in mind that not everyone will be able or willing to make this transition. For those few individuals, often called “late adopters,” and it will be only a few, try to find more traditional management directed work for them. As lean gains traction, as they see the positive effect of empowering employees (associates), and as they

begin to feel marginalized because of their earlier position, many will look for ways to become part of the lean transformation team. They should be welcomed and embraced.

Team building / Motivation. One of the key enablers for lean implementation is the building of true teams. The term “true” teams is used to differentiate the common practice of taking existing work groups and renaming them a team without making any of the developmental or structural changes required of true teams. True teams will be developed to accept and embrace decision making, problem solving, and contributing to the overall success of the company. True teams will have complementary skills and interdependent tasks and will have a clear focus on satisfying the customer. They will be committed to a common purpose, set of performance goals, and approach, for which they hold themselves mutually accountable and they will work within a framework of collaboration, sharing, and trust.

Managers working to make the transition from work groups to true teams should also focus on learning and practicing ways to motivate their fellow Associates. While external motivators, such as money, time-off, awards, and public recognition, are valuable tools to use, the real challenge is to build internal motivation within Associates so that they do the right things because THEY want to do those things right. Helping Associates to feel that their contributions are valued and welcomed will go a long way towards harnessing internal motivation. Everyone has it; the challenge for managers is to develop an environment in which it can thrive.

Coach / Mentor. As managers begin to share more information and decision making with Associates, as they view former employees as true Associates and as respect and trust is mutually shown and practiced, they begin to see their role more as coach and mentor rather than traditional manager. These words are similar in that they focus on the development of Associates, they are not synonymous. But an expert lean manager needs to be highly skilled in both. A Coach serves more as an external consultant that allows the Associate to more realistically observe their own behaviour and helps them focus on improving performance. Coaches tend to ask key questions to help the Associate’ come to conclusions about their behaviour and attitudes rather than giving advice or training. A Mentor fosters self responsibility but is not responsible for performance. Mentors often provide insight and perspectives that expand the Associates understanding and often give pointed feedback. They also help the Associate to take responsibility for their own growth and development. Coaches tend to focus more on generic issues while Mentors look at more targeted and job specific issues. Both are important skills for managers to learn and practice. Many organizations set up formal mentoring programs whereby each Associate has a mentor. In these formal programs, the mentor is usually not the Associates’ manager.

Critical Coaching skills include: being a good listener and knowing how to rephrase questions; able to phrase and articulate key questions; clarify and reframe issues; placing yourself in the Associates “shoes”; be non-judgmental.

Critical Mentoring skills include: being a good listener and knowing how to give effective feedback; knowing how to help with goal setting and planning; knowing when to give and when not to give advice; having the ability to instil confidence and motivate people.

Training / Developing. The more skills Associates gain through a variety of training and development activities, the more they will be able to become full partners in quality initiatives, improved value streams, cost reductions, and overall business success. A key function, therefore, of a lean manager is to embrace and endorse training. Short-term

costs will yield long term benefits. Training might include a simple four minute session of showing an Associate how to do something or to explain how to read and interpret various business forms. To reap benefits, all training and development activities must focus on performance improvement. Performance problems will fall in one of four categories but training can only fix the first one. It is important for the manager to fully comprehend these four categories and to make sure they understand which solution to apply to each: knowledge / skills; process; resources; motivation or culture.

Once it is determined that the performance gap is solvable by training, managers should conduct a needs analysis to determine the extent of the training required. In the early stages of a manager's transition to becoming a dedicated lean manager, they would be wise to seek assistance from outside consultants in order to build their own skill sets around this important function.

Collaborative Relationships / Win-Win Attitudes / Partnering. By this stage of a lean manager's growth and development, they are beginning to move into a truly collaborative relationship with Associates. This new relationship should be providing rewards to the manager, the Associate, and the business. The term win-win takes on an understandable meaning and becomes the standard focus for all transactions between managers and Associates. A partnering mentality that is predicated on the belief that the success of the organization depends on everyone and that everyone plays a key role in that success becomes the norm.

Managing organizational culture. Once the manager has been successful in honing their own skills on the above items and placing them into practice in their organizations, the culture should begin to show some changes. Old habits die hard, however, and true culture change, one that reacts instinctively in any given situation, takes time. Culture change takes time. When transitioning to lean manufacturing, it is easier to move forward as long as things are going reasonably well and product continues to be shipped. The challenge comes when the business runs into a crisis, such as a major quality spill, and management wants to revert back to the methodologies that they are comfortable with. It is imperative that lean manager stay the course even during these difficult times. By fully engaging the Associates and using the tools, the crisis can be averted. This "staying the course" focus will help convince all stakeholders they are truly in a long term transition rather than another "flavour of the month" program as so many change initiatives are disparagingly called. This successful testing can be a catalyst for renewed resolve among associates enabling them to achieve new levels of success.

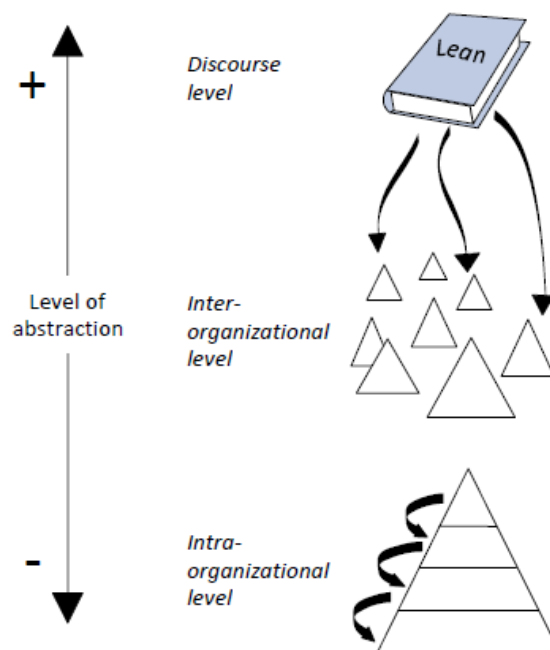
Management's full commitment. The last item is nonetheless critical to the success of lean transition implementation. Management, particularly at the executive level, **MUST** be fully engaged and committed. While it is advisable to engage lower level managers in the implementation of lean tools and processes, senior management cannot delegate lean implementation commitment. The organization needs to see that the senior leaders are not only behind the process but engaged in its implementation by following the guidelines explained in this document. Everyone will be watching to see if senior managers "walk-the-talk" by learning and practicing the same skills they propose for others. The lean journey is not easy. The lean journey is not without significant challenges. The lean journey requires self changes before you will be ready to lead your team forward. But the lean journey is not optional, not if you desire your organization to be competitive and successful in the new global economy. The good news is, others have travelled the road before you and have left some good markers by which you can improve your chances of a

successful trip. Just keep in mind that unlike a traditional journey, this one does not have an end. It only has a beginning. That journey must begin with the manufacturing leader.

4. Transferring Lean Production / Management Infrastructure

The translation of management concepts, according to the proposed model is to be interpreted as a circular process, feeding on and feeding back to the discourse. Given a certain point in time, we can identify a set of institutionalized practices and ideas in the management discourse. Coming from a period where organizational culture, participative strategies and customer focus have been predominating factors in the management discourse, we are perhaps starting to see a move *transferring Lean production* from a normative to a rational management discourse. Management concepts are decontextualized, reconstructed and commoditized and then disseminated to organizations through the process of *interorganizational transferring*. Once inside the organizational framework, the concept will be met by networks of actors. Based on the *transferring competence* within the organization, different modes of interpretation of the encountered idea will be applied and the idea will be transferred by individuals and networks of actors within and outside the organization (e.g. consultants, business partners etc.) – *intraorganizational transferring*.

Figure 4. Lean production from the academic discourse to practice within organizations



The transferring competence within these networks will determine the basis for application of the concept. Since the concepts themselves are always more or less ambiguous in nature they need to be transferring to fit the context, thus creating a need for transferring competence within the transferring network in the organization. In order to provide a concept with strong inscriptions, it would need to be adapted to a specific branch of industry, a certain category of organizations, or limit its applicability in some other way. A management concept with the universal range of applicability as argued by

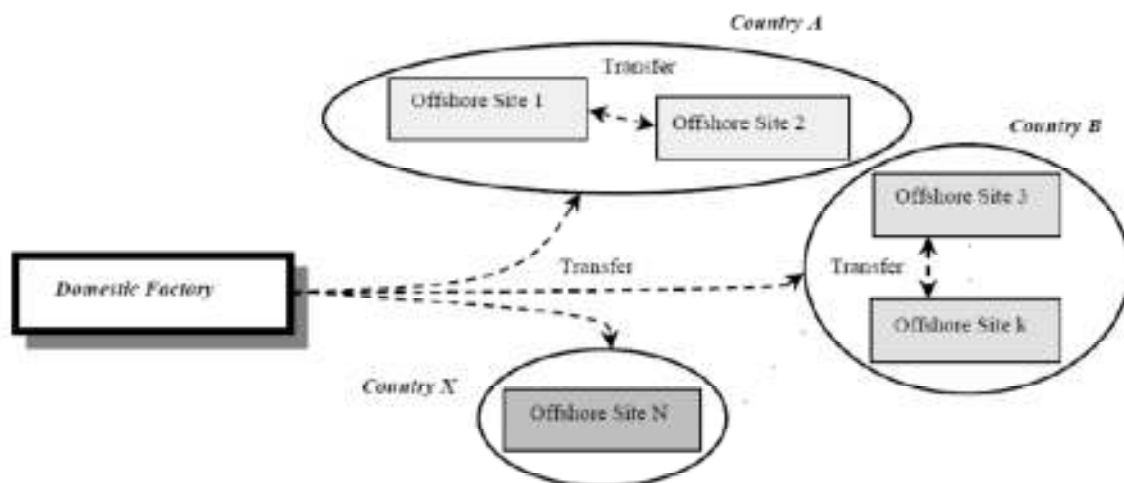
Womack et al (1990) requires weak inscriptions, so that the concept can be interpreted to fit the organization that chooses to take it in.

During the intraorganizational transferring process, the concept will be subject to many possible modes of transferring. When considering several networks and/or actors within an organization, the framework can be expanded to include combinations of the two modes of translation, i.e. translations that are both *intentional and unintentional* at the same time. When the opinion of one translating actor or network differs from that of another, this combination may come into play. The management concept is interpreted in different ways and conflicting action programs are produced. The strongest action program will be the one that has supporting devices with the strongest inscriptions. If a concept related action program has sufficiently strong inscriptions, it could be seen as a prescription and the possibility/risk of further transferring of the concept is minimized. This allows us to speak of *a direct application* of the idea, provided that the practice undergoes actual change and the application is successful. If the idea does not deliver the promised results, the effort will most likely be characterized as a failure. The application may then be seen as a potential success story that may be decontextualized and fed back to the discourse by similar means as discussed above, strengthening the discourse surrounding the idea. If, however, the transferring networks within the organization have insufficient transferring competence, the inscriptions in the idea and the devices mobilized in its support may be too weak to ensure an effective application. The idea may be further transferred to suit the needs of other networks, leading to *decoupling* between the transferring and the effectuating networks.

Nowadays, Lean is one of the well known management scheme all over the world because of its rapid globalization. Therefore, in this chapter, the feature of this scheme together with improvement tools is investigated to extract the essential elements for successful global transmission. Due to recent rapid globalization, Lean scheme has to reinforce various aspects of its feature and there are 3 major directions. These are now progressing in terms of simultaneous improvement.

- 1) Geographically horizontal expansion (See Figure 5).

Figure 5. Geographic Transfer of Lean Management Infrastructure

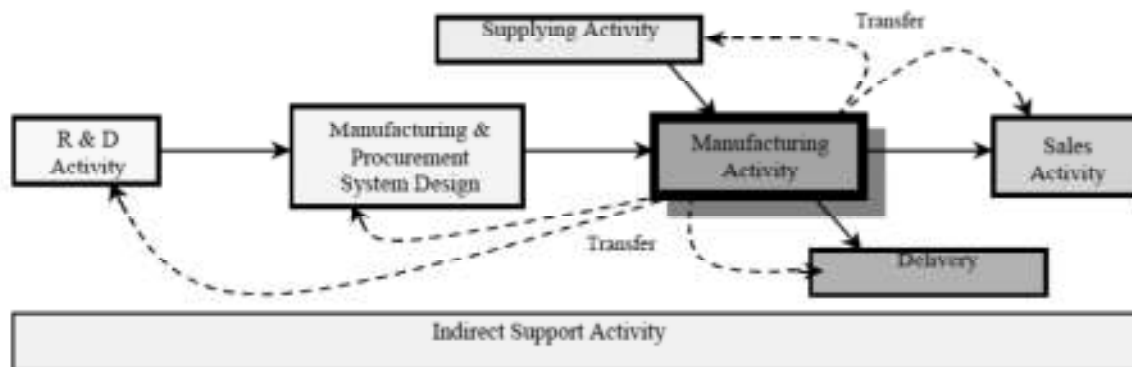


This extension is improvement technology transfer to offshore sites operating under various business environments. This activity is classified into 3 categories, i.e. transfer

from mother factory to offshore factory in the same country, transfer among offshore factories originated in the same country and transfer among offshore factories originated in the different countries.

2) Functionally horizontal expansion (See Figure. 6).

Figure 6. Functionally horizontal expansion



This extension is to transfer improvement technology from manufacturing to other business functions, which has been developed and accumulated in manufacturing industries, especially in its major function, i.e. factories. This includes transfer to R&D, sales, production engineering such as process design, purchasing, delivery divisions. Further, transfer to other industries such as service sector is also in this scope.

3) Vertical transfer.

This extension is to reinforce the linkage between corporate strategy and improvement activities, which is a different perspective from the above pattern of transfer. This indicates not only physical transfer of technology to horizontal sites/functions but also qualitative enhancement based on the rational linkage with these sites, and it is extremely important for improvement of company performance.

The reasons and incentives to promote lean management transfer can be summarized into 2 major issues:

- 1) Reinforcement of manufacturing function. The necessity to respond to the world trend of qualitative and quantitative requirements for manufacturing industries and the necessity to respond to maintenance requirement of world resources through ultimate elimination of loss.
- 2) Establishment of transfer business of lean management and its refinement. Promotion of lean recognition as an advanced country in this area and establishment of its exporter's stand point and establishment of world-class training/education function as a leading country in this area.

5. Transferring Methodology for a Manufacturing Organization

Lean Manufacturing is currently the most effective management system for the activities of an organization. Doing Business in Romania, located in a permanent change, requires rapid adaptation to market requirements. Globalization of markets means increasing competition in domestic markets. Since there is a divine right to stay in business, every company in Romania must realize that sooner or later, the solution for market survival is an ongoing effort to increase *competitiveness*. Lack of productivity is evidenced by the average weekly working time, 45.9 hours in Romania, compared to 38.2 hours in the EU. Regarding the distribution of working hours in Romania only 13% of employees work less than 30 hours a week and more than a fifth of the population say they work over 60 hours per week, meaning an average of 16.6 hours per day in Romania - well above the average of other European countries. From the analysis of the indicators mentioned above, the general perception is that the working pace is very intense, but in fact recorded low productivity, limited competitiveness, a gross national product well below the European average suggest a different picture. The need for improving skills with direct consequences on labour productivity and competitive performance is indeed clear.

Before applying Lean Manufacturing principles and tools, one needs knowledge of the situation, on which you can choose the strategy of improvement and determine priorities for action. Lean Thinking uses a proven methodology with clients in its approach. The approach is as follows:

1. **Deep analysis and understanding** of the current situation.
2. **Initial Pilot Activity**. Creation of a value stream based on lean principles.
3. **Integration**. Replicate to other areas while taking the pilot to the next level of improvement.

This may seem simplistic; however the need to deeply understand the actual situation (versus what should be happening) is exactly what leads us to create a base line understanding of the “real current state”. The path forward is based upon the company’s understanding of their reality against the principles of lean. The path forward is a step by step approach. Lean Thinking consultants have the experience to be the sensei (teacher) on this journey. The activity is structured to ensure a “*learning by doing*” approach. Process improvement without acquisition of knowledge and lean skills is a superficial outcome and has been proven to be not sustainable. As a guideline, the following would be the typical of the methodology used:

1. **Preparation** (1 – 2 days); (2 – 4 weeks in advance of start date)
 - a) View operations with key leadership stakeholders.
 - b) Identify suitable pilot value stream for activity.
 - c) Clarify expectations and the role of leadership.
 - d) Confirm participants for initial activity.
 - e) Develop Communication Plan for all employees.
2. **Initial Analysis** (1 – 2 weeks)

Cross functional team including a representative from top management. Team size depends on size of organization. Around 5 – 8 members - ideally from within the value stream.

- a) Create the Material and Information Flow Diagram (Value Stream Map) of the selected pilot: Initial draft – clarifying customers’ perception of “value”; Validate information by actual checking of the processes; Clear identification of the points of *mura* and *muri*; Communicate with pilot line key members for confirmation.
- b) Develop a Future State Map and Action Plan for the pilot: Provide training in appropriate lean thinking and methodology to enable the team to create the future state model line; validate with leadership and process owners the proposed future state and plan.

The needs of each organization are different. In order to successfully develop a road map towards a Lean culture it is essential to begin by gaining a balanced understanding of the organization's needs in customer, people, process and financial terms. The difference between the current condition and the target condition is known as “the gap” and the aim of assessment and diagnostic activity is to find the root causes for the gap so that countermeasures can be taken. While the assessment studies a broader range of factors and influences, what we call a diagnostic focuses on a narrower band of information to find specific short-term solutions.

The factory-level QCDSM metrics are:

Q = Quality = Defects per million, cost of poor quality, warranty cost.

C = Cost = Sales per employee, output per man-hour, material cost.

D = Delivery = On-time to promise, on-time to request, lead-time.

S = Safety = Recordable incidents per year, L&I premiums, loss hours.

M = Morale = Turnover percentage, 5S level, ideas per person per year.

Assessment and diagnostics activities develop a vision of world class manufacturing based on eliminating waste and managing Value Streams, and identify the few vital objectives that will align the organization on effective daily management and breakthrough improvements.

3. Pilot Line Implementation Activity (6 – 12 months typically)

- a) Introduction of visualization of abnormalities and real time practical problem solving activity (RTPS) at the process.
- b) Application of lean methodology and team member training to achieve the following: Stability; Flow; Pull / Level; Kaizen.
- c) Daily follow up by Process Leaders to practice the Lean Leadership roles and behaviours.
- d) “Learn by doing” together and reflecting on progress and issues.
- e) Continuous communication of activity and results to all employees.

4. Integration (2 – 5 years typically)

Scope of expansion depends on the following:

- a) Will of Senior Leadership.
- b) Robustness of the pilot line for sustainability.
- c) Capacity of the organization to expand.
- d) Ability of the model line members to support and guide the expansion to other areas as the “internal sensei”.

Many companies have implemented lean. Not all are truly successful in their efforts. To ensure your success with the implementation of Lean it is important to understand some

of the key factors. Companies that have realized a sustainable transformation have some common key success factors:

- Senior Leadership actively engaged in the activity at the process:
 - Top managers who practice Lean management must make greater efforts to ensure they understand the true meaning of kaizen – “change for the better” – and the “continuous improvement” and “respect for people” principles, in order to achieve favourable financial and non-financial outcomes that benefit all key stakeholders.
 - The only way managers can learn and understand Lean management is through direct participation in kaizen and other process improvement activities. This will also lead to a better balance between thinking and doing.
- Company functions are aligned and share a common philosophy, principles and concepts of the company direction (*Hoshin Kanri*).
- Change is managed through the core business process owners:
 - Internal “lean experts” play a coaching role to support the core.
 - Accountability is clearly defined and rests with Management.
- Lean is not perceived as “a program”:
 - Toyota has been on this journey for 60 years and they admit there is still so much waste.
 - Some companies use the term “company lifestyle change”.
- Strong supporting department engagement for kaizen:
 - Maintenance / Engineering have strong kaizen capabilities and responsiveness.
 - Supporting Business Departments are pulled in to breakthrough problems and process / system improvement opportunities.
- Emphasis is on creating a heightened understanding of flow:
 - Issues that stop the flow of value are taken very seriously.
 - *Muri* and *Mura* are considered Management responsibility.
 - Not a “tools based approach”.
 - Selection of “Lean team members” are the future company leaders.

Founder of the Toyota Production System – Taiichi Ohno was once quoted as saying “*No company will be able to successfully apply TPS unless they are facing a crisis*”. He believed it was this crisis which forced Toyota to explore and breakthrough with their Toyota Production System.

6. Conclusion

The purpose of this paper has been to contribute to the knowledge base concerning the transferring of management concepts with a specific focus on Lean Production. The underlying ambition has been to take a holistic perspective on the matter and demonstrate how different theoretical perspectives can be combined to form a model for analyzing these processes of transferring. This leads to potential communication difficulties when discussing the matter, which could be reduced through an increased awareness of the different perspectives that are associated with the concept as well as the processes that produce them.

Within industry, the concept cannot be said to be associated with a certain set of practices, but rather seems to be a label that is used to describe a variety of applications.

Taking these results together indicates that it is unreasonable to expect the concept to provide certain results, but rather that these are determined by the way the concept is interpreted and translated within the organization that seeks to implement it.

Although weak inscriptions of management concepts are required at the discourse level, these can cause problems when a management concept is brought inside an organization. It is indicated that insufficient transferring competence will lead to weak inscriptions, which in turn may lead to an uncontrolled and potentially ineffective translation process, increasing the risk of undesired decoupling. Transferring should not be approached normatively. Just as with Lean Production, one cannot say that translation is good or bad, but is dependent upon the situation.

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