

CONTEMPORARY APPROACHES ON THE LEAN MANAGEMENT IMPLEMENTATION IN THE SLOVAK INDUSTRIAL ORGANIZATIONS

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Abstract

Lean management practices became from the last decade the phenomenon that is implemented in the normal company live even in the Slovak companies. The aim of this paper is to present some current directions on the lean management implementation in several Slovak industrial companies. Most of the companies are from machine and automotive industry. Presented ideas can be used in other companies as an incentive and example. However, the actual usage will depend on the management determination and conditions in individual companies.

Introduction

Also for the industrial companies in Slovakia, the implementation of the current approaches of contemporary concepts like lean management and lean logistics are not new. On the contrary, these concepts are well known and have been successfully implemented since the 90-ties. This is also the reason that Slovak industrial companies are able to successfully compete against other similar companies globally. The aim of this paper is to present some ideas on the current trends and examples about the lean management implementation in some Slovak industrial companies. The readers can see not only the successful examples, but also the challenges the Slovak industrial companies nowadays face in order to stay competitive in the future.

The presented ideas in this paper are based on the authors' attendance on the National Productivity Forum in Zilina, held in October 3, 2012, where the authors have the chance to meet with several managers from Slovak institutions and industrial companies and where the authors also made the notes from the speeches of the speakers.

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The challenges the Slovak industrial companies face

Several participants of the National Productivity Forum have agreed that while in the recent past the main theme was the productivity growth, it is now becoming innovation, research and development. This is not the question of the future, this need is already present. Slovak industrial companies are doing well in production, but not so well in research and development. The funds for research go mostly to schools and science institutions, where mostly the basic research is done, or research for research, as it was said by one conference participant, but into the practice no research funds come. However, the emphasis should be placed on applied research. Businesses in particular need this type of research, not the basic research. The benefits and results for companies come, in particular, from the applied research. It is not possible to make scientific organizations, such as Slovak Academy of Sciences, and universities set research priorities themselves. This must be what the economy and industry need. Applied research is essential to advance the competitiveness of Slovak industrial companies.

The issues and challenges the Slovak industrial companies face are then these:

1. Research must match the actual practice.
2. Even when the thoughts and ideas are created, there are not enough resources for their implementation.
3. The current need in Slovakia is to establish a competitive manufacturing research company, because where production exists, after some time also research comes after production. And companies must be prepared for this.

Today it is necessary to increase productivity in its entirety, not partially, which requires increasing productivity as a whole and through new technologies. In the future, we need to make cooperation with the best, we need greater cooperation and integration in order to enforce our products in the market. We must above all work inward to ourselves and be aware of this, and not to wait for a helping hand from the outside.

Increasing productivity requires not only technology, but also the workers who would be willing to invent and improve the existing technology to better utilize it. After installing the technology, it increases the output to the nominal, but then we need to further improve the technology to better use it. Workers must be ready and willing to act and think like, doing more efficiently, because only this will further increase productivity and added value. The understanding of the added-value in the enterprise is: share of the work volume that contributes to the formation of the product.

The problem is that the education in professional apprenticeships, high schools and universities does not catch up with the latest development in praxis of the Slovak industrial

companies, their graduates are not well prepared. Many graduates even do eventually something else in their carrier as they studied in the school. Companies themselves are not enough strong to support funding the youth education in the fields, they need. Cooperation among only businesses and educational institutions is limited. Therefore, it is also important to engage in this challenge the state and the relevant ministries. The problem is to get young people into technical professions and technical education, because the young people have a bad idea of a career in the technical field. The career advice is therefore important.

In this context interesting ideas presented Ben-Zvi, Israeli ambassador to the Slovak republic. The main reasons for Israel's success are:

1. Technology-driven products
2. People

Israel is very successful in attracting high-tech companies from worldwide. Two main factors for this are:

1. Existing technology infrastructure
2. Existence of highly-educated people and management expertise

Israel puts a lot of money into research and development (R&D); actually this is the second highest item in the state budget after defence. Putting money into R&D is a matter of priority for the government and companies. Israel believes that putting money into R&D creates revenue, it is not money spending, but rather money creating. *"Industrial R&D is the one that creates tangible products that you can sell."* said Ben-Zvi. R&D projects in Israel concentrate on designing new product, improving existing ones, or improving technology processes.

How the Israeli government handles the support of R&D projects of start-up companies? When R&D project fails, loan becomes a grant. When R&D project succeeds commercially, the costs are repaid through royalties (or profit).

Interesting thoughts had Holeček, the director of the Automotive Industry Union in Slovakia (AIU). AIU vision is the creation of optimal conditions for long-term sustainability of the Slovak automotive industry competitiveness. The objectives of AIU are:

1. Enhancement of the cooperation between the final manufacturers (OEM) and subcontractors. This is because the key costs are also high logistics costs.
2. Initialization and participation in setting up the direction of vocational secondary and higher education.
3. Initiate and encourage the creation of R&D base in Slovakia. This particularly pertains to the applied research. Subcontractors themselves must initiate the applied R&D, because the final manufacturers require that.

According to Holeček, the elements of a successful automotive organization are:

1. Personnel – education, training, coaching
2. Processes – standardization, implementation, optimization
3. Technology – manufacturing, logistics, inspection, materials
4. Organization – such as lean management, kanban, JIT

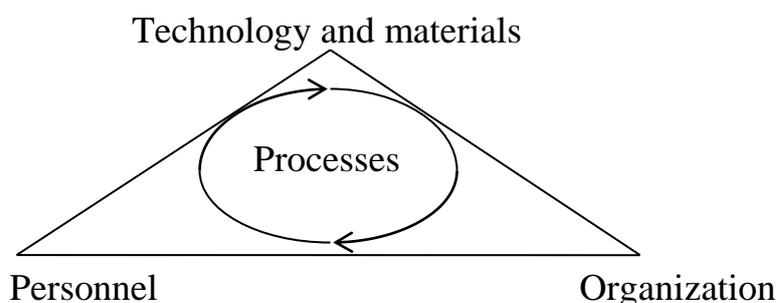


Figure 1: The elements of a successful organization in the automotive industry

Process analysis, process improvement, innovation and research, these are the areas the Slovak industrial companies must concentrate the most. With process analysis and process improvement, the quality issues come together. For example, Peugeot-Citroen has established for that the Quality Reactivity program.

The standard of quality reactivity is that each defect means investigation. The principles of quality reactivity are:

1. Defect investigation = root cause analysis plus responsibility
2. Countermeasures to protect customers against defects including internal customers
3. Post-it or Crisis cell for common statement of how to solve the defect
4. Responsible person for solving the quality issue lead 5Whys tool and develops an Action Plan:
Why and how an operator detected the defect?
Why did an operator produce defect?
Action Plan must be then developed
5. Quality control checks. Daily meetings allow checking the efficiency of quality reactivity standards

There are different quality thresholds (or awareness of acceptable and unacceptable quality parameter) from a team member to general manager. Also the visual management is applied within the quality reactivity initiative: every hour the reports are generated about the quality checks.

Different opinions can be put forward as far as the critical factors of the successful implementation of lean management concept. For example, Frank Werz, head of the production system in Volkswagen Slovakia, considers these four success factors:

- CIP (Continuous Improvement Program) team
- KPI (Key Performance Indicators) – Audit
- Best-practice database
- Benchmarking tips: - Target matrix of managers and employees
- Percentage of CIP implementation

Milan Šesták, plant manager of Emerson Network Power, considers these six items as the basic principles of lean management:

- Standardized work for not only workers, but also team leaders and managers
- Gemba and coaching
- Everyday responsibility
- Visual management
- Routine of continuous improvement
- Focus on problem solving

According to Milan Šesták, these steps are important in implementing lean management philosophy:

1. Connectivity to business strategy
2. Connectivity to KPI common for the whole organization
3. Appointment of team leaders and specialists – important is workers' flexibility, not narrow specialization
4. Acquiring support from engaged persons, it is the role of every member of the implementation team
5. Having skillful suppliers – partnerships, for example with the customer support
6. Processes: process change must be quick
 - Creating the Road Map
 - Customer orientation of process changes
7. Results: it cannot be visualization for visualization
 - Introducing parameters for measuring and monitoring
 - Introducing benchmarking
 - Introducing rolling trend parameters

In summary, the implementation of lean management philosophy, four processes can be recognized: strategy – plan – control – reporting.

Three main factors must be interconnected when implementing lean management philosophy:

1. Processes – technology
2. People – their skills and responsibility
3. System – measurement and analysis

These three factors lead to the certain behavior of employees and this leads to the achieved results. For Emerson, the most important parameter is lead time and for its determination and achievement the value-stream maps are used.

In Emerson, in the framework of lean management, standard well-known tools are applied like kaizen blitz, Lean Review meetings, lean training matrix.

The philosophy of KIA Slovakia is shown in the Picture below.



Figure 2: The Pyramid of the Philosophy of KIA Slovakia

KIA Slovakia has introduced the term *Qualitivity* = quality and productivity balance. Productivity is understood as the number of hours needed for producing a car. Within the lean management, KIA Slovakia has introduced IPAS system (Idea Proposal Activity System) of continuous improvement or kaizen activities.

Innovator submits the proposal form, which is a more detailed description of the problem and proposal. Keyman then considers the proposal and if he or she accepts the proposal, registers

the proposal. Keyman is a person whom the KIA has in each workshop, who knows the workplace very well. Keyman then passes the proposal on to the team leader who will make the final approval. After approving, the team leader is responsible to register the proposal into the computer.

Direct example of kaizen initiative in KIA Slovakia: Optimizing robot's starting position – saving 6 seconds.

Indirect examples of kaizen initiative in KIA Slovakia: Installing anti-skid pads that reduces workload and fatigue of workers.

Automatic Call Maintenance – call maintenance initial reaction time of maintenance workers was 5-15 minutes; after the implementation it has reduced to 2-5 minutes.

Indirect options are particular improvements in quality and productivity through improving working conditions.

Generally, Kaizen is applied in KIA Slovakia in these areas:

- Teamwork
- Improving quality and productivity
- Elimination of waste and increasing efficiency
- Having pleasant working environment

Lean initiatives are usually applied in organizations through lean projects. Iveta Verešová, sales director of Siemens Industry Software, has shown the requirements on a project management:

1. End each phase of the project on time
2. Maintain the highest quality with zero tolerance for errors
3. Not to exceed budget for a project
4. Maintain documentation of the project in the required quality and structure
5. Allow authorized access and decision-making and always have the latest version of the project

The complexity of the project and the environment puts greater demand on the decision-making process, to make decisions informed to appropriate people throughout the project life cycle management: Plan – Develop – Manufacture – Support.

Generally the following tools are in the lean organizations implemented:

- In the material flow: Cell Production – Milkrun – Shipment FIFO-Station
- In the process at the customer: Ship-to-Line Supermarket – Milkrun – Assembly

The advantages of these tools can be:

1. Improved internal work flow – implemented rolling logistics and fork-lift-free logistics
2. System advantages: reduced lot sizes

3. Reduced manual handling
4. Ergonomic system improved – no lifting
5. Improved external workflow – integration of supply chain in a lean way

Usual benefits are:

- Reduction of manufacturing lead time
- Quality ppm or FPY (First Pass Yield)
- Available to promise more than 95%
- Reduction of floor space
- Increase of productivity
- Reduction of inventory level

Michal Major: WPS manager has said that the Whirlpool Production System introduced within this WPS system the Logistics Excellence program that has been implemented from 2005 until now.

WPS system is based on the four basic values: innovation, team work, respect for people, and effectiveness (or speed).

One of the ways of how to obtain an excellence is Lean Logistics Excellence in the framework of Lean Manufacturing. In implementing Lean Logistics Excellence, they introduced the following methods to reduce inventory:

- Kanban call off
- E-kanban
- Process standardization
- Consignment warehouse supply strategy
- Containerization
- Intensive work with people

Reduction of transportation costs was accomplished through:

- Transport Leveling
- Optimization of transport planning
- Optimization of material receipt
- Process standardization
- Intensive work with people

Material efficiency (scrap, non-accordance with standards, discrepancies in inventarization) was accomplished through:

- Optimization of new models rollout process
- Optimization of defects
- Process standardization
- Cooperation with suppliers
- Introduction of permanent inventarizations
- Intensive work with people

Improvements in material handling were organized in three major areas:

1. Pull approach (kanban, supermarket, milkrun, PFEP)
2. Standardization (containerization, milkrun)
3. Production flexibility (cells, flow)

The benefits of introducing all that are: truckload leveling to 80%, average time of offloading was reduced from 45 to 21 minutes (every truck has a 30-minute window), production downtime was reduced to 0 in 2012, and workers' efficiency has increased.

Conclusion

Based on the ideas of the managers and professionals, presented in the 15. National Productivity Forum 2012, it can be concluded that the success of the Slovak industrial companies will depend on the excellent operations and production management, as well as on the project realization in applied research, on the proliferation of the cooperation between producers of final products and their suppliers as partners, and, lastly, on the cooperation between industrial companies and research and educational institutions.

The presented ideas in this paper are by no means conclusive, further information gathering is necessary when someone wants to learn much about the people development practices. The aim was just to bring additional knowledge into this field, to provide contribution to the lean management discipline from the perspectives of praxis in several Slovak industrial companies. Based on the examples, it is clear that designing an effective lean system in the company is not an easy task, because it requires taking into considerations many facets.

When thinking about the lean management implementation, consider also this interesting thought: When you have two alternatives, the first thing you have to do is to look for the third one, that you did not think before, that it can exist.

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