LEAN MANAGEMENT FOR SUSTAINABLE BUSINESS DEVELOPMENT

Alexandru-Ilie BUZATU
Ph.D. student, The Bucharest University of Economic Studies, Romania, alexilie.buzatu@gmail.com
Cristian COSTACHE
Ph.D. student, The Bucharest University of Economic Studies, Romania, costache.cristi22@gmail.com
Adrian IORDACHE
Ph.D. student, The Bucharest University of Economic Studies, Romania, adi.iordache@gmail.com

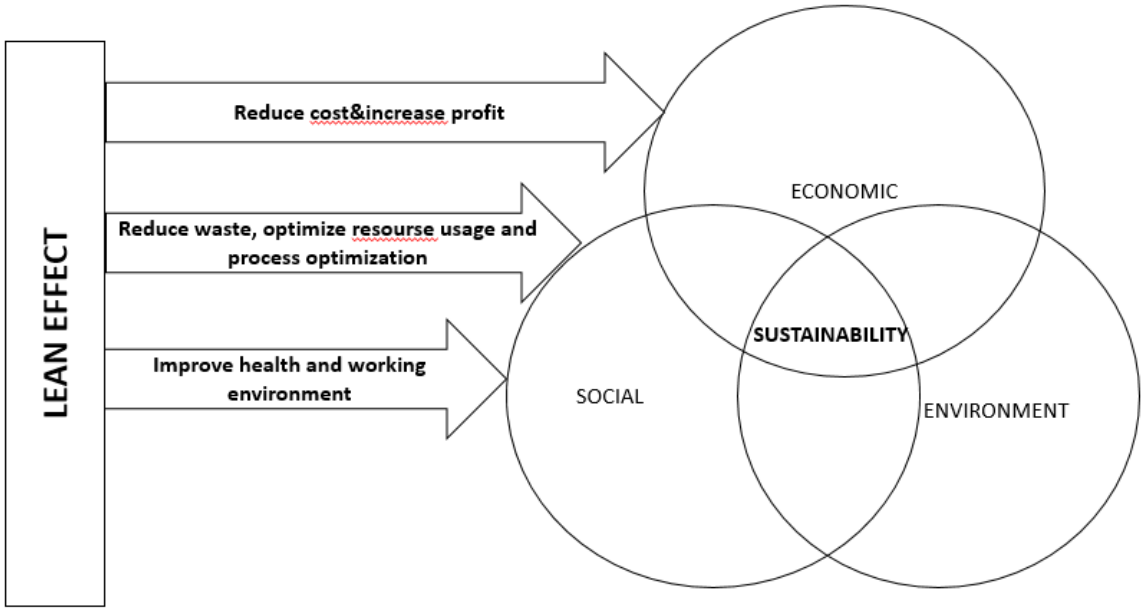
ABSTRACT
This paper highlights an analysis of business development management for companies from emerging countries and the interactions between Sustainable Development and Lean processes.
The main objective of this paper was to see the differences between the general business development plan and the business development plan with the implication of Lean Management values, the implications of Lean processes in a company from emerging markets and how it can be transformed in a competitive advantage.
Using the Lean Management values for business development management it was possible to view the evolution of the companies and the optimization for the operational costs involved for its development path. To see the structure of the companies that invested in the Lean Management values and processes, the results and the impact in their sustainable development and waste reduction in their activity.
KEYWORDS
Lean management, business sustainable development, values, waste management, emerging markets.

INTRODUCTION

The need for continuous improvement and gaining a competitive advantage, especially for companies in emerging countries, leads to the search for and implementation of common principles for sustainable development, the implementation of sustainable principles will help society to develop. Three sustainable principles are identified that can summarize and form a framework: improving quality, reducing waste, improving quality, and implementing better systems. "Waste" can influence any product or service, from design to recycling, through its entire life-cycle and it can be identified in products, processes and systems. Waste is associated within "natural resources" (all ecosystem that land offers to people), which are lost through degradation of products and consumption. Links between the social system and the sustainability of the ecological system are inter-connected and influence one on another. A strategy implemented from design for sustainable development should be the reduction of waste at source. For improved sustainability every company needs to Improve quality and reducing waste in products or services, systems or processes it can be found in almost all quality management design plans.
If productivity and quality can be together improved by prevention and reducing waste, quality of life and sustainability can be improved. Sustainability is best accomplished by implementing ecosystems that function perfectly in terms of sustainability, all distributors, manufacturers, consumers and decomposing organisms have a clear function and each side has a purpose.
Organizations tend to focus on their own activity and do not pay attention to suppliers and customers. Unlike economic issues, organizations tend not to focus on environmental and social aspects from the perspective of the system. Designing and implementing more sustainable systems should focus on internal and external suppliers and customers as well as the opportunities they present. Lean - based on value was first developed in the Japanese manufacturing industry and is influenced by a significant impact on quality management. Lean is based on a set of values: concentration of clients and values, concentration on people; continuous improvement; system visualization; long-term thinking and waste disposal. The reason for applying Lean should be to the benefit of the customer, only the final customer can define the value and value is a main area in Lean.

1. APPROACHES AND LITERATURE TO QUALITY MANAGEMENT AND LEAN MANAGEMENT SECTOR FOR SUSTAINABLE BUSINESS DEVELOPMENT

Existing scientific research offers a broad range of definitions for sustainable development:
''Developments that are responsive to current needs without compromising the ability of future generations to meet their own needs'' and ''have developed considerably and are developing further''. These definitions have as a common point the whole ecosystem, namely the interdependence between the economic, environmental factors, the society and all the external influences.
In this paper, the term of sustainable development will be linked to the dependence / need to implement optimization measures, increase quality and reduce costs by optimizing resource consumption.
Sustainable development is shared by engaging in the three dimensions: economic, environmental and social. The three dimensions have as a common basis, for sustainable development, concepts of Quality Management and Lean Management, concepts used and as a basis for improving competitiveness. Deming supports the importance of the ecosystem because it has the greatest influence on the result, therefore it is necessary to visualize the ecosystem based on sustainability, see Figure 1.



(Source: made by the author, 2019)

Figure 1. Lean effect on economic, environmental and social dimensions

Sapru & Schuchard (2016) argue that the lack of Lean Management and Quality Management concepts in organizations has proven to be harmful to economic and social performance.

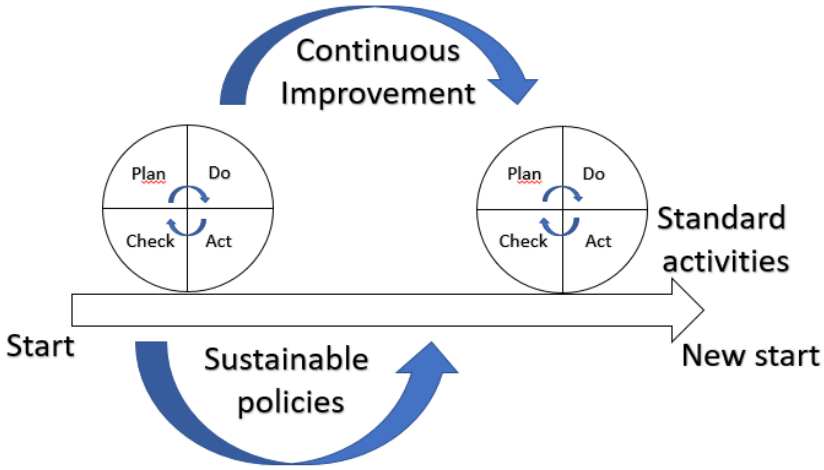
More recent studies have shown the effect on a company's results in applying Lean Management and Quality Management concepts and how, when combined with environmental initiatives, Wiengarten et al. (2013), there are higher performance, flexibility and operational performance benefits, also reducing waste and hence reducing costs, resulting in sustainable development and continuous improvement of competitiveness.

Recent studies have shown a way in which Lean Management can be an "imaginary bridge" by using Lean management and Deming (PDCA) concepts for managing any organization when it comes to addressing sustainable development issues as a strategy. Lean and Quality Management concepts have an important role as a way to develop an organization and improve its performance, see Figure 2.

Every company needs to implement processes and to develop a system for creating innovative products or services, after standardization of every process, the stakeholders involved in the system need to be engaged for searching new, improved ways to make things faster, cheaper and use of little resources.

The competitive advantage is gained through the continuous improvement of all the procedures and processes within an organization, especially if it is in the stage of development new markets. Lean is more than just solving the problems; is fundamental to how organizations think and learn, looking to develop innovative solutions for high flexibility and performance. Product and service requirements are changing constantly, the production and service system should be constantly and forever improved, and each organization should support the use of the improvement cycle (PDCA).

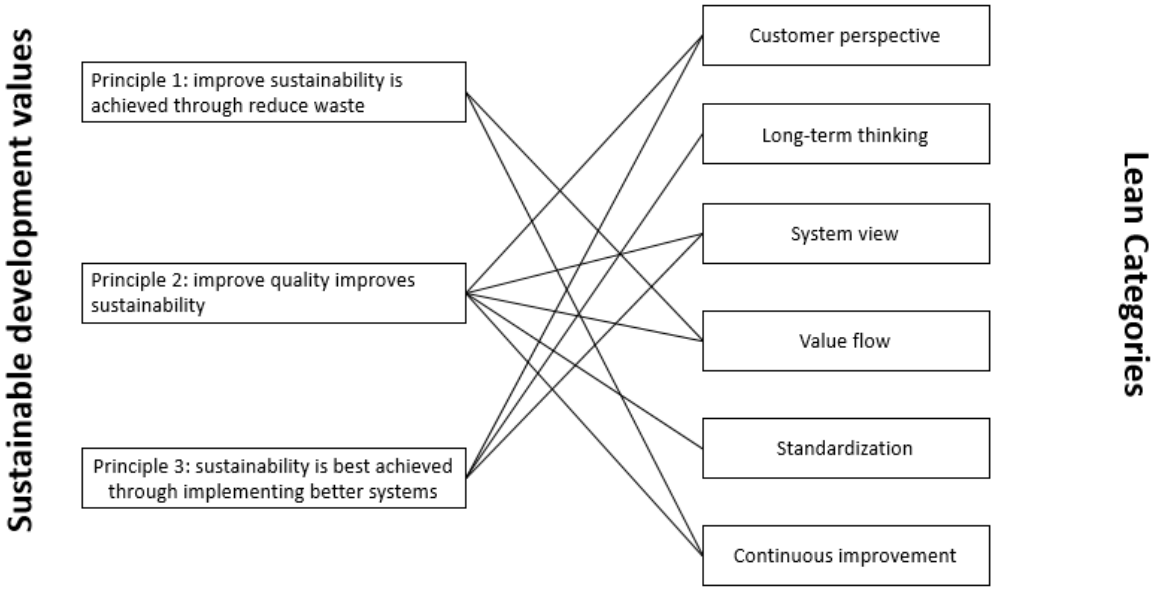
Involving all employees and making them understand the need for improvement, any company will create a cultural organization for improvement of all operational aspects, from acquisition to recycling. Developing an organizational culture of continuous improvement will give any company the chance to innovate and to gain competitive advantage.



(Source: made by the author, 2019)

Figure 2. PDCA model: Continuous Improvement for Sustainable Development

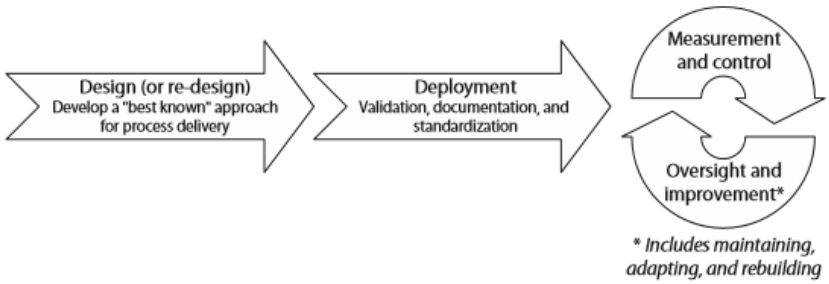
Lean concepts can be defined as a management system developed to meet the organization's demands and to achieve better results for stakeholders. Radnor et al. (2015) defines Lean " as a management practice based on the philosophy of continuous process improvement either by increasing customer value or by reducing value added activities, process variations, and poor working conditions".
A Lean complex system can be defined as an interconnected network of independent components that work together to try to achieve the purpose of the system. The parts or properties of a system make sense in the whole system, but they may appear to have little or no meaning when analyzed separately. Lean focuses on the supply chain, where production within the organization is part of a flow of value from suppliers to the final customer, the real beneficiary of Lean's implementation.
Interactions of Lean values on the sustainable development of an organization are developing in several directions, see Figure 3.



(Source: Martensson, 2015)
Figure 3. Interaction between sustainable development and Lean values

The Sustainable development Values are inter-connected with Lean categories, as you can see in Figure 3 Principle 1 has two connections, Principle 2 has five connections to the Lean categories, while Principle 3 has three. System View, Customer Perspective, Continuous Improvement and Value Flow have two connections, and Standardization and Long-term Thinking each have a single connection (Martensson et al. 2015).
In order to develop a sustainable system and to gain a competitive advantage, a long-term plan is needed in an organization, because changes take longer than planned, everything is tightly linked to creating flow in an organization's processes, eliminating waste, value within Lean is not enough. Lean is a long-term process, and each organization that awaits results in the short term must focus on immediate action tools rather than changing organizational culture, a change that often lasts a long time.
Mallory (2018) insists on process science and to implement improvement models for every system, see figure 4. For every system implementation the recommended tool is DMAIC (Design, Measure, Analyze, Improve and Control), the main important issue is that you have to standardize first any process or system before you can implement tools for improvement. Mallory (2018) splits the system into four phases:

- Design and documentation
- Deploy and standardize its use
- Monitor and analyze
- Implement the basis for continuous improvement



(Source: Mallory, 2018)
Figure 4. Four phases of process and system management

Emiliani (2010) argues that one of Toyota's basic assumptions is that people are doing everything they can and need to focus on the process, if the emphasis is on continuous improvement, the organization will never really be Lean and reach to a real Lean management, there must be respect for people. Organizational culture is made up of the common rules, values and beliefs of members of the organization and has an important function: it helps the employee to understand the environment and how to react (Watanabe, 2018). Establishing a new organizational culture or changing an existing organizational culture is a long-term process, but if a strong organizational culture is created, it can improve organizational performance in two ways: attracting their superior ideals and undefined values; and forms and coordinates behaviors and decisions, leadership is important when it creates a culture. By establishing a strong culture, leaders can indirectly influence members' attitudes and behaviors (Schein, 2016). Culture may be an obstacle rather than an amplifier of leadership influence over the values and beliefs of the organization's members if they do not fit the goals of the leaders (Watanabe, 2018).

Nicholas (2018) argues that a main reason for Toyota' s success and rise to preeminence is emphasis on continuous improvement, which is embedded in Toyota' s vision and goals, expectation of employees and suppliers, daily operations and management practices, and culture. At the corporate level, management sets challenging goals related to customer needs and wants, and these goals become the basis for setting challenging shorter-term targets throughout the company— challenging because they require continuous improvement of processes. Improvement through finding and removing barriers to targets is built into workers' daily routines and is guided and supported by standards and management. Elements of TPS such as reduced setups, small-lot production, and pull production mandate improvement; they expose obstacles— sources of waste— and challenge everyone to remove them. Management' s role is to establish targets related to better satisfying the customer, and to coach and support the production system— especially its workers— to meet those targets. It is no stretch to say that the culture at Toyota is continuous improvement, and through that culture the company has moved from a position of disadvantage to world leadership, the result of an endless series of daily improvements made everywhere and at every level of the company.

Quality management is a useful tool when implementing environmentally sustainable practices, a cause may be shared beliefs and common principles between Quality Management and Sustainability. The beliefs and principles identified are: long-term focus - economic and social, multifunctional approach, continuous improvement, employee empowerment, an integrated perspective, and the participation of the entire value chain.

Nicholas (2018) also states that the three Quality, Lean and Environment practices put Lean, Quality and Lean practices at the same level, Lean may also be referred to as quality management initiative, practices, and comparable underlying philosophies. Waste disposal is at the heart of Lean and environmental practices and focuses on quality, among others, leading to waste reduction. Lean promotes continuous improvement, waste disposal involving workers throughout the organization. The definition of quality has been extended to include stakeholders, not just customers, environment, safety and social aspects (Nicholas, 2018).

The methodology was conducted through a review of the literature, focusing on the values of sustainable development and Lean and their interactions. The identified sustainable development values were then compared to the categories that represent the Lean values. The agreed categories are: customer perspective, long-term thinking, system visualization, value flows, standardization and continuous improvement.

2. METHODOLOGY AND RESULTS OF THE PRESENT ANALYSE REGARDING THE INTEGRATION OF LEAN MANAGEMENT VALUES FOR BUSINESS SUSTAINABLE DEVELOPMENT

Lean concepts are a system that is developed to respond and deliver better results than the current situation of the business of any company. In Lean, customers need to be considered when it comes to value chain, Lean values are defined for the customer, to create value. To gain competitive advantage and for a sustainable development it takes a vision of the entire system and a long-term thinking, especially when trying to create value and looking at a product life cycle. According to Lean, increase the viability and performance in the entire life cycle of a product or service is achieved by wastage reduction, with value flow connections and continuous improvement (PDCA). Identifying value, improving people, processes, and systems in processes helps to visualize waste, and it can be prevented and eliminated.

The attention paid to clients and the flow of values are seen as more visible in the best practices identified. On the other hand, customer attention along with long-term thinking were the two main areas that were most identified in the improvement streams. The contradictions that are visible when it comes to customer focus may be signs of a lack of shared values and, therefore, a lack of a strong organizational culture. Long-term thinking has connections with a vision of the entire system when considering a product life cycle. Lack of performance and deficiencies become apparent when a company's goal is that it should provide support for the product lifecycle (Kováčová, 2016).

The research indicate that the presence of Lean concepts contributes to creating a framework for improved conditions for sustainable business development, but organizations cannot forget to focus on their culture and values.

Table 1: Lean and Sustainability are Connected

LEAN CONCEPTS	SUSTAINABILITY
Long term philosophy- create value for people, community/ including environment/, economy	Invest in long term- consider people, community, financials, environment
Create the right process to produce the right result	Ensure the ecosystem is in balance, if necessary, intervene in system
Add value by developing people and partners	Invest in people- consider stockholders including your staff and partners/e.r. suppliers/
Continuously making problems visible a solving root causes drivers organizational learning	Be transparent and consider the whole system vs. treating symptoms
Minimize or eliminate waste of any kind	Creating waste harms something else in the system

(Source: Kováčová, 2016)

In the following work we will explain the processes and implementation of Lean systems for the development of sustainable products and the development of sustainable businesses.

According to Kováčová (2016) all industries use now lean management, both in production and service. Further development of weak processes, after analysis and implementation, creates framework for sustainable development. Lean Management is caracterized as a business system for managing operations, customer relationships, product development and suppliers that require less use of material, less effort, reduce space, less investments, and shorter time to develop new products with lower defects and higher life cycle, compared to the previous production system. Lean's goal is described as "to get the right things in the right place at the right time for the first time, minimizing waste and being open to change". The Lean principles have implemented in the company processes to deliver on demand, maximize the use of multi-skilled employees, minimize inventory, concentrate resources where needed and apply the management structure. The ten Lean management rules can be summed up:

1. Waste disposal
2. Empower the workers
3. Respond to customer requirements
4. Maximize flow
5. Create a culture of continuous improvement
6. Drag the production at the customer's request
7. Make it the first time
8. Minimize inventory
9. Partner with suppliers
10. Design for a quick change (Kováčová, 2016).

Green saving energy in production can be used to plan improvement in performance and to develop sustainable products or services, and businesses are defined as creating products that use energy and natural resource-saving processes, are not polluting, are economically safe for consumers and are healthy for all stakeholders. They must include plans in avery company strategy for renewable energy production, energy efficiency, green building and other ecological products. Sustainable production is defined as a method of developing and transforming technologies for greenhouse-gas-free materials. The term "green" is often used interchangeably with "green safety". The point of sustainability is the opposite of short-term financial thinking. Like Lean, he emphasizes cyclical thinking, rather than linear, goal-oriented thinking. It goes even further into the thinking of the whole system, which causes practitioners to look for unintended long-term consequences of their decisions. Sustainability implies that resources are finite and therefore resources should be reused and reused again.

Sustainability can be considered as extended to a much broader goal, it focuses on three bottom lines - profitability, people and the planet and it works the same way - the only difference is the decision-making criteria.

Long Lean Philosophy: - Creates value for people, community, including the environment and economy. Lean is long-term investment: consider people, community, financial, and environment and consider the whole system vs treatment symptoms to minimize or eliminate waste of any kind.

For Lean use, there are many tools that are easily adapted and extended for sustainability, as illustrated by the following examples:

1. Value Stream Mapping: Widely used in poor thinking to see a whole picture and decide where to focus improvement efforts, extends easily to sustainability, especially to the environmental side. Just add appropriate values, such as the hazardous material used / generated, the water used and the energy used.

2. Working teams: As well as in the weak, work teams are the heart of sustainability - they make the most of thinking, data collection, analysis, generation of ideas and implementation. Work teams, by their very nature, implement the social aspect of sustainability.

3. 5S: For sustainability, some companies add a sixth S, Safety and Seventh S, Sustainability.
4. Analysis tools: Teams focusing on sustainability can incorporate weak analytical analytical tools such as Pareto diagrams, Ishikawa diagrams, and why. For example, hazardous material and toxic substance emissions can be analyzed as if they were process defects (Kováčová, 2016).
As a key objective of sustainability is to live in natural income, the use of key resources, such as materials and energy, should be monitored as processes are improved or redesigned. In addition to measurements that typically guide poor operations, some are often associated with sustainability, which are guided by PDCA principles.
There are many similarities between products and the environmental benefits, the main are waste and it is mandatory to implement the principles and practices of Lean production in order to achieve higher levels of environmental performance. Operator training programs focusing on the development of practice standards within operating units diminish manufacturing variations, which reduces the amount of waste products and raw materials. Kanban or traction systems established in the manufacturing process have greatly contributed to the reduction of materials and waste. Kanban practices are designed to deliver the right materials at the right time to support manufacturing needs. Cell-based manufacturing processes that signal an attraction for product-based materials can significantly reduce the consumption of raw materials by reducing the amount of waste delivered in landfills and reducing the demand for raw material resources (Kováčová, 2016).
Kováčová (2016) explains the tools used for increase the life cycle and to increase the performance, one of such tools is SMED or time reduction, it has the potential to reduce the amount of waste generated by raw and unprocessed raw materials left in the factory for processing.
Tools for eco-efficiency:
1. Environmental risk assessment
2. Environmental management systems through stakeholder involvement
3. Responsible for the business environment
4. Employee management
5. Lifecycle Management
6. Efficiency analysis
7. Life Cycle Analysis
8. Life cycle cost management
9. Organizational / management environmental management systems
10. Integrated Product Policy (IPP)
11. Suppliers / Acquisition, management of the green supply chain
12. Green procurement
13. Marketing and communications
14. Reports on the corporate environment
15. Ecolabelling
16. Involvement of stakeholders
17. Production and distribution
18. Prevention of pollution
19. Design and development of environmental products
20. Project management / design of green buildings
21. Design of green buildings
22. Environmental Impact Assessment
There are many decision-making tool for identifying environmental tasks, process or service over its lifecycle from procurement to recycling, covering the acquisition of resources, product manufacture, product use and final evaluation - key elements:
• Considerations on the stages of several life cycles
• The physical sequence of operations from a product system, from a swing to a swing or from the ground
• The primary steps are the acquisition and processing of materials, manufacture, use and disposal at the end of the life cycle in each of these stages; sub-stages or unit processes are defined
• Consider more environmental and resource issues
• Change process and product reuse of waste products
Life Cycle Assessment can help decision-makers:
• identify unintended impacts of actions (eg upstream greenhouse gas emissions that can offset the perceived benefits of a new technology)
• Pollution should be prevented or reduced at source whenever possible
• Communicate more effectively with stakeholders on the systemic consequences of project or technology options (for example, to communicate the full impact and / or benefits of changes to a product system)
For products, the strategy focuses on reducing the impact throughout the product lifecycle, from raw material extraction to final disposal of the product, cleaner production is a broad term that includes the following concepts:
• Minimizing and avoiding waste
• Environmental Management, Substitutions for Toxic and Dangerous Materials
Among the three pillars of sustainability, which consist in the longevity of the environment, social and economic, and the prediction of a company, we focus on the environmental component. Specifically, based on company-based argumentation, we will assume the impact of environmental management on plant performance. The environmental initiatives taken into account include ISO 14000 certification, pollution prevention, materials recycling and waste reduction; the performance of the plant is assessed by the dimensions of the four competitive capabilities of quality, delivery, flexibility and cost. We suggest that the

recent focus on these environmental initiatives has been greatest among plants in emerging economies, compared to their counterparts in industrialized and developing countries.

What differentiates competitiveness in any companies is the way that each designs and builds products or services. Paying attention to creating value to customers and knowing what they want is a fundamental beginning. Given to increase competitiveness companies pay attention to what customers want, the key to competitiveness then becomes production capability. The differentiator between competitive companies and others is that winners are better able to continuosly provide products or services that are competitive with regard to time (faster), quality (better), price (cheaper), and response to change (agile). To this end, companies adopt different strategies, methods and philosophies. These differences are part of what distinguishes lean companies from traditional companies.

 Making things faster : Producers rely on robotics and flexible manufacturing systems, improved labor– management relations, and location of facilities. Lean companies emphasize broadening of workers' jobs, continuous reduction of lead times and setup times, and equipment maintenance.

 Making things better: Manufacturers strive for quality by relying on computer-aided design (CAD)/computer-aided manufacturing (CAM) to enhance product design and manufacturability. In contrast, lean firms rely more on cellular manufacturing and group technology, proper placement of equipment and good condition, smaller manufacturing units, and improvement-focused employee teams. Both kinds of manufacturers rely on defect-reduction programs, statistical process control and vendor quality programs.

 Making things cheaper : Manufacturers tend to rely on automation, job enlargement programs and robotics to reduce direct labor content. In contrast, lean firms seek to achieve low cost by standardizing products, redesigning and simplifying products and processes, and reducing lead times and cycle times.

 Being more agile : The ability to to respond quickly to changing customer demands and introduce new products is an area where lean companies enjoy a wide lead over traditional firms. Traditional firms plan changes for agility through technology, quality management, process flow improvements and cross-functional improvements. Lean firms consider agility an important part of a system, programs to improve areas, an integral part of quality and delivery capability.

3. FUTURE RESEARCH

This study can be further supplemented with more data collected by measuring the Lean culture in different parts of an organization, to explore if these parts have similar values. Other data that could support the study include harder measurements that indicate Sustainable development in economy, social aspects and environment. The study can also be expanded with research on different cases in the economy. Dedicated co-worker, one of the identified values within Lean, was not studied in this case. The co-workers are of importance when it comes to the organizational culture and which values that permeate the organization, this is also an interesting area to do more studies in.

CONCLUSIONS

The literature study indicates that implementing Lean concepts helps to create the framework for Sustainable Development, but organizations cannot forget to focus on their culture and values, developing continous improvement culture will create best practices and will develop the culture of innovation (Martensson et al. 2015). Identified best practices in the companies indicates that the framework for Sustainable Development are weak and they will need improvement plans for new standardization. This is based on visible contradiction within the company and that all Lean categories couldn´t be identified, any company had a lack of value flow, for instance customer focus need to be the start for creating value. A lack of outspoken strategies and objectives, and not taking the product's life cycle into consideration could show that the company needs to elaborate system view and long-term thinking. One positive factor is that companies understand and can identify deficiencies, identifying them can make strategies for waste management, cost reduction and gain competitive advantage. Including in the company strategy Lean concepts and PDCA values for continuous improvement can lead and create frameworks for innovation. Lean is initiated by the co-workers, in every company the employees need to be part of developing the culture of innovation, improvement and to find waste, which could affect the initiatives' condition to be sustained since the leadership when it comes to creating a culture is not present see e.g. (Ingelsson, 2013).

The customer is who can define value, it can be seen as significant in this case. The customer perspective is depending on ho the customer is, it may depend the company strategy to clarify the customer and to identify the needs. There is no indication that the companies have expanded their definition of customer to also include stakeholders, but with systems for customer focus, there might be conditions to do that. Studying separate parts it may help those who are active in sub-systems, to give informations about the system, however to understand their contribution to the system.

Any company needs to find ways to gain competitive advantage, to find ways to reduce waste and increase the performance of every process and employee. Continuous improvement (PDCA) can create the framework for innovating and be more flexible in moments of changes.

REFERENCES

1. Kováčová, L. (2016) - The Integration of Lean Management and Sustainability, *Košice, Technical University of Kosice*
2. Martensson, A. , Ingelsson, P. and Oberg, L.(2015) - Can Lean values contribute to Sustainable Development, *Östersund, Mid Sweden University*
3. Mallory, R. (2018) – Lean System Management for Leaders, *Routledgea Taylor & Francis Group, Boca Raton, New York*
4. Nicholas, J. (2018) – Lean Production for Competitive Advantage, *Boca Raton : Taylor & Francis, CRC Press*
5. Watanabe, S. (2018) – Japanese Management for a Globalized World, *Tokyo, Japan, Research and Development Initiative Chuo University*