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THE INTEGRATION OF LEAN ORGANIZATION AND SOCIAL- TECHNICAL SYSTEM

Dr. Kifaya Abdullah[1]
[1]Assistant Professor, Dept of Production Planning and Control,
Hittien College, Amman, Jordan

ABSTRACT

Many studies tried to apply the lean system but their experiments failed when the tools were applied and the essence and philosophy of this system were ignored. To achieve the ambition of building the lean organization requires the organization to absorb the essence of the social technical system, dimensions and identify the frameworks used to build the lean organization. This paper is divided into three parts: In the first presents literature review, in the second part indicates the concept of lean organization and social organization system in Theoretical framework and in the last part provides the framework integration of lean organization and social technical system proposal was developed by author to contribute to the building of the lean Organization includes: the philosophy, culture, leadership and teamwork.

KEYWORDS: *social technical system, lean organization, philosophy, culture, leadership and teamwork.*

INTRODUCTION

Many studies tried to apply the lean system but their experiments failed when the tools were applied and the essence and philosophy of this system were ignored. To achieve the ambition of building the lean organization requires the organization to absorb the essence of the philosophy, dimensions and identify the frameworks used to build the lean organization.

As Bhasin, et al (2006) point out: Lean should be viewed more as a philosophy or condition than as a process.

The book by Womack et al. (1990), The Machine That Changed the World' benchmarked manufacturing companies around the world and found, at the time, the Japanese manufacturers w ere typically more productive and efficient than their Western counter parts.

That is, lean refers to systematically identifying and eliminating waste through continuous improvement using the pull production with a view to get perfection (Farhana, et al, 2010)

Many studies show the reason for the low level of success lean on organization; other explained the DNA of the Toyota production system and the Contribute of social science in success lean organization. In the first part of the paper presents literature review that related

LITERATURE REVIEW

Dominici and Palumbo (2013) argued that the reason for the low level of success of lean production outside its native country is the lack of understanding of the strong interactions which hold between enterprises and business systems.

They confirms that To understand how to effectively export the lean production system from Japan, it is very important to identify the links this production system has with the business environment; an analysis of the system in a viable-systemic perspective can be very useful for this aim. They think that the viable systems perspective has the potential to deliver an accurate and dynamic interpretation of the LPS firm, through analysis of its features and its relations with the external environment.

According to the viable systems view, can explain many of the failures that occur in exporting LPS outside Japan, and can serve as a basis for research into ways of implementing it effectively in different environments. This might not just be a way to achieve profit, but could also have social relevance, if we consider that the links with a particular environment and the quest for agility and fast adaptation to customers (typical of LPS) might be a reason to avoid locating industrial plants in other countries, thus having a great impact on employment levels and fighting the crisis of advanced economies.

Spear and Bowen (2006) explained that decoding the DNA of the Toyota production system when the authors show why many company fail to implication lean system because managers adopt lean system practices, without applying the four unwritten rules that make TPS successful. Like strands of DNA, these rules govern how people carry out their jobs, how they interact with each other, how products and services flow, and how people identify and address process problems. They found that people in companies following the Toyota Production System share a common goal. They have a common sense of what the ideal production system would be, and that shared vision motivates them to make improvements beyond what would be necessary merely to meet the current needs of their customers. This notion of the ideal is very pervasive, and they believe it is essential to understanding the Toyota Production System.

Although there are different definitions for lean production, it is often described as a relationship between the technical and the social organization of work. The technical system often includes items like standardized work, visual control, planned maintenance and the just-in-time inventory system. The social organization system has a direct impact on the quality of work life and typically includes screening and selection in human resource (HR) practices, quality training, suggestions, employee discretionary authority, and management support and management commitment. (Sim and Chiang, 2013)

Rask and Johansson (2008) comments that the main focus in Socio-Technical System (STS) is on the situation for the individual worker performing the unit operation, and STS promotes limited horizontal division of work (integration).

Where lean production (LP) strongly promotes integration with respect to vertical division of work, while there is an acceptance of segregation in the horizontal division of work.

Additionally STS proposes relevant product and system information in a wider context to the worker and the group. The wider context and knowledge is expected to support the development and quality of work by the individual worker and the group. Visibility is frequently stressed in LP. Interruptions in one part of the production system are expected to be visible to workers in other areas.

Therefore, STS has a first general focus on the production system, which is analyzed through its constituents the technical and social systems. The study of the social system introduces the group as important in the system. The general focus in LP is the value flow in the production system. (Rask and Johansson, 2008)

Kosuge(2014) suggests that high performance is exhibited by a hybrid production system consisting of elements of both STS and lean. Moreover, the movement to implement lean while taking advantage of the tradition of STS has been echoing the perspective that lean should be implemented in a form that fits each organization's context. The main implication of the integration is that management style based on socio-technical practices can fit well with problem solving that accompanies the improvement of flow. Although STS principles do not emphasize flow creation, they can be adapted to focus on systematic problem solving, particularly in the form of reflection by autonomous teams.

Michael, et al (2006) obtained The concept in social science, It can be described as implicitly selecting some aspects of perceived reality as more salient than others, thus orienting problem definition, causal interpretation, moral evaluation and eventually action recommendation. The authors expose this fundamental difference in perspectives by exploring four deep frames that pervade the TPS: performance mindset, problem awareness, solving problems the "right" way, and developing people through problem-solving.

PURPOSE AND METHODOLOGY

This paper aims to explore that how to building the lean organization when integrate Socio-technical system and purpose to identify the components contribute to build the lean organization.

The methodology/ approach: surveys the Literature Review and studies to develop framework to building lean organization

THEORETICAL FRAMEWORK

In this part indicates the concept of lean organization and social technical system as literature obtained.

Lean system:-

Some authors'state that a definit ion different of Lean includes both the people and the process components on the one hand and internal (related to the firm) and external (related to supplier and customer) components on the other hand. In this sense, Shah and Ward's definition of LP h highlights mechanisms needed to achieve the central objective of waste elimination. (Alireza2011)

While Rachna & Peeter. (2007) defined the Lean production as: lean production is an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer, and internal variability.

Indeed, going lean, improving organizational performance, seeing problems, solving them the right way, and in doing so continually increasing the intellectual capacity and skill of all members of the organization. (Michael, Godefroy, Art, 2006)

Toyota has turned operational excellence into a strategic weapon. This operational excellence is based in part on tools and quality improvement methods made famous by Toyota in the manufacturing world, such as just-in-time, kaizen, one-piece flow, jidoka, and heijunka.

These techniques helped spawn the lean manufacturing revolution. But tools and techniques are no secret weapon for transforming a business. Toyota s continued success at implementing these tools stems from a deeper business philosophy based on its understanding of people and human motivation. Its success is ultimately based on its ability to cultivate leadership, teams, and culture, to devise strategy, to build supplier relationships, and to maintain a learning organization. (Likers, 2004)

As (Lawrence, 2004) point out the strategy deployment house includes: spiritual capital, social capital, human capital, innovation capital and financial capital.

Benefits: The concept may appear :The benefits of lean manufacturing are evident in factories across the world and companies report improved product quality, reductions in cycle time, reduced work-in-progress (WIP), improved on-time deliveries, improved net income, decreased costs, improved utilization of labor, reduction in inventories, quicker return on inventory investment, higher levels of production, improved flexibility, improved space utilizat ion, reduction in tool investment, a better utilization of machinery, stronger job focus, and better skills enhancement.(Farhana,Amir,2010)

Bhasin and Burcher (2005), proposes that the TPS is an interlocking set of three underlying elements: the philosophical underpinnings, the managerial culture and the technical tools.

Ohno (1998), demonstrated that the Toyota production system, was not just a production system, but a total management system.

Socio- technical system:-

Kosuge (2014) viewed the Socio-technical system (STS) an organization or a work unit is a combination of social and technological parts, with the purpose of joint optimization of quality of working life and technological performance.

Rask and Johansson (2008) point out the theories of socio technical system (STS) design in manufacturing were developed during the 1950ies and onward in opposition to the tayloristic production systems. The STS theory developed by F. Emery, E. L. Trist and others at Tavistock Institute approach production environments as a system with two integrated parts, the technical and the social system.

They suggest that both these part systems must be considered simultaneously during the development of a production system. With the introduction of the social system, STS drew the attention to team work. Ten principles (compatibility, minimal critical specification, variance control, boundary location, information flow, power and authority, the multifunctional principle, support congruence, transitional organization and incompletion) are used by Chern to describe the STS theory.

Kosuge (2014) comments that Sandberg (2013) show about Characteristics of style management based on STS principles and practices include the following: participation and union influence; flat hierarchies; informality, open dialogue, and Consensus among levels and parties; autonomous workgroups.

the Toyota Production System, or Lean organization, based on a clear focus on the horizontal flow of the work, managed by highly empowered teams that can make decisions on-the-spot, has become the most successful form of organization. It is not only a work system, but a management system and a social system. These "lean teams" achieve both high intimacy and high economic efficiency. This should be the goal of every organization. (Lawrence, 2005)

Social Capital is the value of trust. The degree of trust you engender in others will determine the likelihood of being hired, customers purchasing your products or services or, employees working and sacrificing for your company. (Lawrence, 2004)

(Lawrence, 2004) There are two types of social capital that may be assessed: internal sociability or trust, and external relationships or brand equity

The relationship between socio-technical system and lean system:-

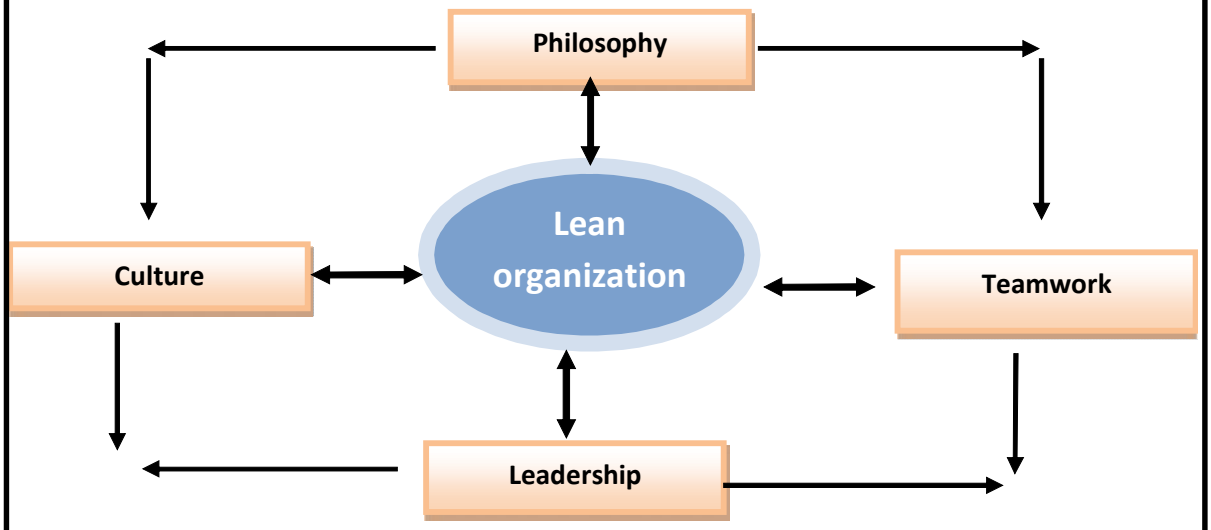
Lean implementation procedure need to combine the need to combine the "socio-technical systems"; that all work organizations combine a technical, i.e. technology, and a social system, i.e. people and organizational structures. Bhasin and Burcher (2005).

Sim and Chiang (2013) maintains , Because of its association with work life quality, and subsequently employee motivation as well as job satisfaction, anecdotal evidence indicates that the social organization system often dictates the success or the failure of the lean implementation in most organizations.

Kosuge (2014) suggests that the integrated style of lean and socio-technical practices is particularly suitable for the service context where improvisation in the face of uncertainty introduced by the customer is the norm of everyday working life. In such a fluid environment, a holistic and organic perspective based on the autonomy of individuals and teams will be helpful. Here, continuous improvement centers not on highly specified standards but rather on behavioral guidelines to be shared within the organization.

Accordingly, there is a possibility that this integrated style will spread to even service industries of countries that do not have a tradition of lean or STS. Regarding Japan's service industries, socio-technical practices might well comes to be embraced in the future.

The integration of Lean organization and social- technical system



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He proposed framework is a social system of the organization and its contribution to building the lean organization.

Social system consists of four components President: philosophy of the organization, the organization's culture and style of leadership and work teams as blow show.

Philosophy:-

The competent to build lean organization is Founding the philosophy

Liker (2004) has reviewed of lean system as "a philosophy that when implemented reduces the time from customer order to delivery by eliminating sources of waste in the production ûow".

Bhasin and Burcher (2005), is emphatic that lean should be viewed more as a philosophy or condition than as a process. Nonetheless, "Leanness is a relative measure".

Ohno (1988), conûrms that the Toyota production system did not happen overnight but through a series of innovations spanning over 30 years.

Liker (2004) insists that a right combination of long-term philosophy, processes, people, and problem solving is needed to convert an organization into a lean, learning enterprise.

The aim of lean system is shift in how corporations create strategy to enhance the creation of value for their shareholders, employees, and society. (Lawrence, 2004)

Hines. (2010), forward define clarity of vision; an indication of what the organization believes it will look like once the transformation is complete.

Undeniably, as reiterated by Liker (2004), lean requires a long-term commitment.

(Hines.2010) notes that requires a commitment everywhere in the organization to improve and to eliminate those obstacles that delay, prevent or inhibit improvements.

Bhasin and Burcher (2005), insists that to reap these beneûts fully, we need to view lean not as an abstract philosophy but one which includes both concepts – a philosophy, and practices, tools or processes.

Long-Term Philosophy. Toyota is serious about long-term thinking. The focus from the very top of the company is to add value to customers and society. This drives a long-term approach to building a learning organization, one that can adapt to changes in the environment and survive as a productive organization. Without this foundation, none of the investments Toyota makes in continuous improvement and learning would be possible. Liker (2004)

Culture:-

Organization communicates how the goals will be achieved. Organization need to build culture that support lean system thus, Bhasin and Burcher (2005) contends that Whilst lean is concerned with reducing waste at all levels, it is also about changing corporate culture; in this case there is a need to:

(1) Make decisions at the lowest level assessed by the number of organization levels.
(2) Ensure that there is a strategy of change whereby the
(3) Develop supplier relationships based on mutual trust and commitment
(4) Systematically and continuously focus on the customer.

Hines (2010) show that Lean behaviors include trust, honesty, openness, consistency, respect, reflection, observation, objectivity and listening. Wasteful behaviors include blame, ego, distrust, cynicism, sarcasm, ambiguity, subjectivity, insincerity, self-imposed barriers and negativity.

Bhasin and Burcher (2005), insists that an organization needs to live, breathe and mentor it in all of its aspects. Essentially, lean needs to be seen as a mind-set that governs how one looks at the business or processes. The Toyota Way can be briefly summarized through the two pillars that support it: Continuous Improvement and Respect for People. Continuous improvement, often called kaizen, defines Toyota s basic approach to doing business. Challenge everything.

More important than the actual improvements that individuals contribute, the true value of continuous improvement is in creating an atmosphere of continuous learning and an environment that not only accepts, but actually embraces change. Such an environment can only be created where there is respect for people hence the second pillar of the Toyota Way. (Likers, 2004)

Bhasin and Burcher (2005), notes "that lean happens on the shop ûoor, not in a conference room, that lean must be worked repeatedly".

Admittedly, changing the culture means changing "real stuff" that drives behavior. One way of addressing these is to address the "5S's" – Structure, Systems, Skills, Style and Symbols. (Lawrence, 2004)

Leadership:-

The leadership has the important role in lean organization

Toyota does not go shopping for successful CEOs and Presidents because their leaders must live and thoroughly understand the Toyota culture day by day. Since a critical element of the culture is genchi genbutsu, which means deeply observing the actual situation in detail, leaders must demonstrate this ability and understand how work gets done at a shop floor level within Toyota.

According to the Toyota Way, a superficial impression of the current situation in any division of Toyota will lead to ineffective decision-making and leadership.

Toyota also expects its leaders to teach their subordinates the Toyota Way, which means they must understand and live the philosophy. (Liker, 2004)

The effort leaders make to support the culture year after year so it can create the environment for a learning organization. (Liker, 2004)

(Hines.2010) notes that it is management and leaders' responsibilities to ensure that the organization takes actions on all employees' ideas and suggestions for improvement, and that good idea for improvement are acted on quickly so that wastes can be eliminated and improvements generated.

Without developing any real depth or loyalty from the employees. The problem with an outsider leading radical shifts in the culture is that the organization will never learn it loses the ability to build on achievements, mistakes, or enduring principles. This affects the ability of leaders to make effective changes.

On the other hand, in Deming s terms, Toyota uses constancy of purpose throughout the organization, which lays the groundwork for consistent and positive

leadership as well as an environment for learning. (Liker, 2004)

Featuring of the Team Manager/Coach:

1. Assign Process Responsibility 2. Develop Problem Solving Skills and Encourage

3. Develop and encourage Individuals and Teams 4. Assure Information Flow to Teams

5. Reward Continuous Improvement 6. Create Collective Wisdom 7. Pride in Team Achievement (Lawrence, 2005)

(Hines.2010) point out continually develop Lean leaders at all levels, on all shifts and within all areas of the business and adopt a 'leading the Lean lifestyle' programmer.

A common phrase heard around Toyota is before we build cars, we build people. The leader s goal at Toyota is to develop people so they are strong contributors who can think and follow the Toyota Way at all levels in the organization.

The leader s real challenge is having the long-term vision of knowing what to do, the knowledge of how to do it, and the ability to develop people so they can understand and do their job excellently. The payoff for this dedication is more profound and lasting to a company's (Liker, 2004)

Team work:-

Lean organization cannot work without the existence of efficient of team work

Toyota demonstrates this respect by providing employment security and seeking to engage team members through active participation in improving their jobs.

As managers, we must take the responsibility for developing and nurturing mutual trust and understanding among all team members. I believe management has no more critical role than to motivate and engage large numbers of people to work together toward a common goal.

Defining and explaining what the goal is, sharing a path to achieving it, motivating people to take the journey with you, and assisting them by removing obstacles those are management s reasons for being. We must engage the minds of people to support and contribute their ideas to the organization. In my experience, the Toyota Way is the best method for fulfilling this role. (Likers, 2004)

Hines (2010) notes that Seven Lean skills: Customer consciousness, Enterprise thinking, Adaptation, Taking initiative, Innovation, Collaboration and Influence.

The key to the Toyota Way and what makes Toyota stand out is not any of the individual elements.... But what is important is having all the elements together as a system. It must be practiced every day in a very consistent manner not in spurts. (Likers, 2004)

Lean organizations need Lean people who are both competent and capable of pushing themselves and their teams out of the comfort zone and into the stretch zone. (Hines.2010)

All systems are there to support the team doing value-added work. But teams do not do value-added work. Individuals do.

The teams coordinate the work, motivate, and learn from each other. Teams suggest innovative ideas, even control through peer pressure.

Nevertheless, for the most part, it is more efficient for individuals to do the actual detailed work necessary to produce a product. Teams can coordinate in meetings, but in most cases, not a whole lot of the detailed work gets done if individuals spend all their time in meetings. (Likers, 2004)

(Lawrence, 2005) Investigated the critical characteristics of lean teams or a team-based organization: 1. Design the Teams around the 2. Clarify the Purpose of Teams "Purpose of Teams" 3. Do it top to Bottom 4. Be Business Focused 5. Clarify Who Makes What Decision and How 6. Clarify and Redefine the Role of Managers.

Hines (2010) show that engagement people need communication, training and lean coaches.

Toyota has established an excellent balance between individual work and group work and between individual excellence and team effectiveness. While teamwork is critical, having individuals work together in a group does not compensate for a lack of individual excellence or understanding of Toyota s system.

Excellent individual performers are required to make up teams that excel. This is why Toyota puts such a tremendous effort in finding and screening prospective employees. It wants the right individuals to train and empower to work in teams.

When Toyota selects one person out of hundreds of job applicants after searching for many months, it is sending a message the capabilities and characteristics of individuals matter.

The years spent carefully grooming each individual to develop depth of technical knowledge, a broad range of skills, and a second-nature understanding of Toyota s philosophy speaks to the importance of the individual in Toyota s system. (Likers, 2004)

CONCLUSIONS

Lean Organization is a philosophy and style of thinking and not just a box of tools requires an understanding of the goals and means of process, tools, and taking into account the time because the application is at various stages in accordance with the conditions of the organization.(Abdullah,2014)

Human skills such as communication, problem solving, teamwork and leadership debates he recommends a change of focus; from controlling to helping; from evaluating to empowering; from directing to coaching and from planning to listening.(Bhasin and Burcher ,2005)

The most basic challenge for companies that want to learn from Toyota is how to create an aligned organization of individuals who each have the DNA of the organization and are continually learning together to add value to the customer. (Liker, 2004)

The Toyota Way model was intentionally built from the ground up, starting with a philosophy. And the philosophy starts with the chief executives of the organization. What should their goal be? To build an enterprise for the long term that delivers exceptional value to customers and society. And this requires long-term thinking and continuity of leadership. It may take decades to lay the foundation for radically transforming the organization s culture. (Liker, 2004)

(Hines.2010) notes that "[To achieve] waste elimination and continuous improvement... the organization as a whole [needs to have] the attitude, the culture and the capabilities at all levels within the organization to achieve continuous improvement and sustain itself in the future.

This paper suggests that the integrated lean organization and socio-technical system is particularly suitable for the service context where improvisation in the face of uncertainty introduced by the customer is the norm of everyday working life.

Here, continuous improvement centers not on highly specified standards but rather on behavioral guidelines to be shared within the organization.

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