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Transforming explicit and implicit lean knowledge of supply chain management for the accelerated economic development

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Abstract

The purpose for this literature submission is to discuss how the Lean management Work with a manufacturing environment while collaborating with the culture and a comparative analysis of 'Best Practices' in Lean Management Systems; how well and how far in advance do local organizations plan for Lean Management Work, and how this could be transformed through explicit and implicit measures. What might be some cultural barriers to its implementation. The analysis will focus on the lean management systems with an exploration of Toyota production system unique approach to production which has dominated manufacturing trends despite that huge influence of the lean movement have been superficial. The research will cover sources of literature from personal understanding, learning details with some comprehensive and thorough coverage of lean management that is available in the organizations making attempts to achieving of lean, and by drawing the research insights from publications and books that have contributed to the revelations about the nature and issues that may be an important part of Lean and Toyota way and the Toyota production system. The study will cover aspects concepts of Tacit versus Explicit Knowledge, some challenges that relate to capturing, sharing and converting tacit knowledge into explicit knowledge, giving analysis of, and the key learning's from the article, including the comments on the questions concerning cultural influences on Lean Knowledge Work; Commenting on the relationships between Lean Management Systems and: A) Conflict resolution B) Communications C) Structure D) Problem Solving and E) Leadership Engagement

Keywords: Lean Management, tacit knowledge, elicits knowledge, conflict resolution, Communications, structure, problem Solving and Leadership Engagement

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I. INTRODUCTION

Lean Knowledge management, culture and organisational management systems are important in supply chain management. The concept of a lean management brings out the importance of conceptualising supply chain management and then using the various forms of knowledge to streamline processes. This article discusses the importance of analysis of lean management and cultural aspects of organisational management systems as they applied in the processes of explicit and tacit knowledge. The relationships between lean management systems and conflict management systems brings out a mapping between streamlining and just merely responding to challenges that relate to capturing knowledge and using this for improving production systems. The article includes comments detailing cultural influences on lean management systems.

II. Lean Management

Lean is about developing principles that are right for the organization and diligently practicing them to achieve high performance that continues to add value to customers and society and eliminating waste, meaning being competitive and profitable. In lean improvement initiative, this processes comes because of a large number of non-valued steps that are squeezed out, in the process the value added time is also reduced in our training programs; so like for lean manufacturing (Liker, 2004), there is a need for a close management of people, machines, or workstations in a processing sequence thereby creating cells to facilitate one piece flow of a product or service through the various operations as an application for a one piece flow to all business operations, by correlating the Toyota way principles into the four categories of philosophy, process, people/partners, and problem solving., and when you empower procurement.

Well, maybe easy is a stretch, but the journey to sustainability with consideration for lean can be made simpler by committing to several key principles, including an open approach to communications, collaborating with suppliers, peers, and competitors through the upstream to downstream flow of the deliveries and, crucially,

embedding these values into the organisation's core culture (Campbell et al.2011 p.72). With consideration for the supply chain networks, a critical aspect of the software systems is that these systems are all based on models of the supply chain. Some of the models are explicit and directly modifiable by users. Supply chain design systems display a conceptual model of a chain in a graphical form to help designers understand and alter the structure of the chain. These systems then assess the quality of a design by expressing it in the form of a mathematical or simulation model and evaluating that model to see how well it performs. Designing a supply chain is, in effect, an exercise in modelling.

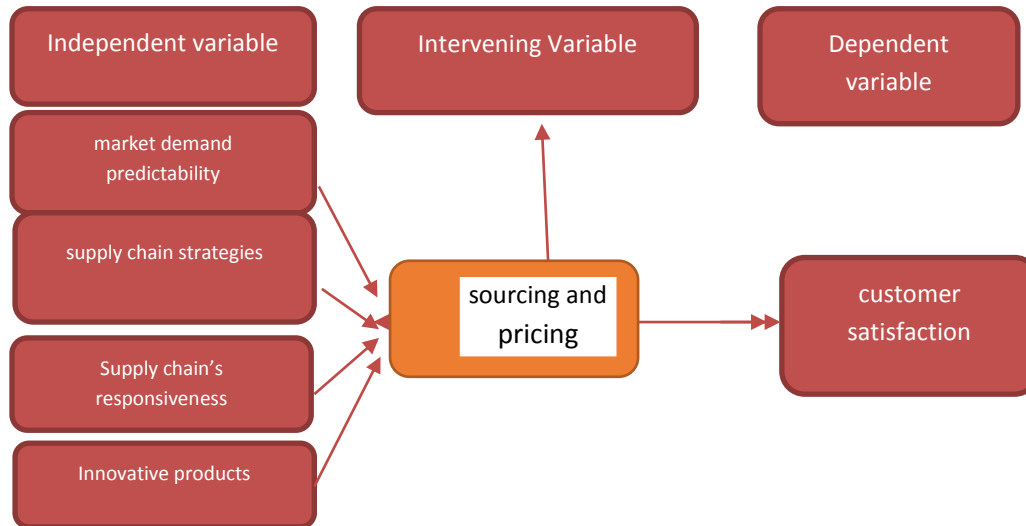


Figure: Conceptual Framework

As stated by Fynes (2005) that to divide our variable supply chain cooperative relationship to 4 dimensions: trust, commitment, communication, and adaptation. Knowledge could be divided into explicit knowledge and implicit knowledge by judging whether it can be encoded with formal and systematic language and record clearly. Various kinds of knowledge make different influences on knowledge sharing, so we will divide knowledge to explicit knowledge and implicit knowledge. Researcher Beamon proposes that supply chain performance can be divided to resource, output, and flexibility three sides, in which resource side includes cost, inventory, and return on investment (ROI), with the goal of minimum cost and maximum efficiency; output side mainly include market, aiming at high quality of production service and customer satisfaction; flexibility side focuses on a company's ability to make immediate response when facing uncertainty.

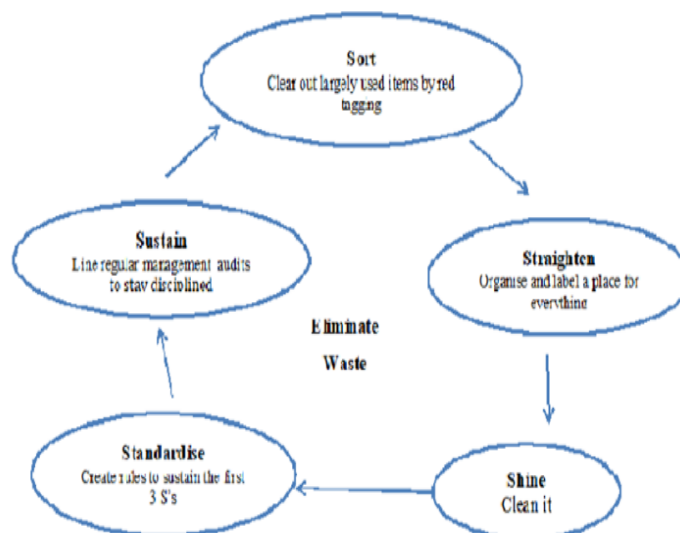


Figure : The 5S's

III. CULTURAL BARRIERS TO LEAN IMPLEMENTATION

Dealing effectively with both coworkers and customers in today's diverse workplaces requires a good deal of cultural intelligence (Kreitner, 2009), and making a sort of cultural accommodation is a little easier when there is knowledge about the sources of cultural diversity as cultures. And the other most difficult part to get started is by overcoming the inertia present in the brownfield organization, of which might require the change agent and a core of lean knowledge, where the significant emphasis (Mangan, Lalwani, Butcher & Javadpour, 2012) is placed on quick machine turnovers, elimination of waste, even production flows, low levels of inventory, faster total process time and achieving total quality, and a particular focus of attention to serve a level for a change, there should be a map that should be drawn for a value stream (Womack & Jones, 2003), of which should help to determine the adaption of a quick value creating activities in order to produce rapid results. Without lean thinking, huge opportunities for reducing waste by getting rid of or shrinking non – valued added steps cannot be seen, so workers/lecturers are charged with the ongoing task of increasing efficiency and eliminating waste in their jobs, and it is this collection of ideas that is often termed “lean.” With the application of Lean system, the use of the 5S (Sort, straighten, shine, sustain and sort) to support a smooth flow to takt time as a tool to help make problems visible; and if used in a sophisticated way, it is advisable that part of visual control of a well-planned lean system as Liker (2004) citing Hirano (1995) as visual control systems which is also about improving value added flow is considered.

IV. THE CONCEPTS OF TACIT VERSUS EXPLICIT KNOWLEDGE

The concepts of Tacit and explicit knowledge are incredibly important as these brought out critical understanding of various harmonisation of concepts related to knowledge management. Knowledge management is important in any field of management.

KNOWLEDGE MANAGEMENT

The important aspect of the organizational performance is the idea of knowledge management (Mullins, 2010), defined in terms of a range of practices or processes to identify, create, distribute, and share knowledge throughout the organization, and is all linked to organization learning with an attempt to constantly align training with the needs of the business. And it sees learning as a key integrated component of culture. Knowledge management draws a fundamental distinction between two types of knowledge: tacit knowledge and explicit knowledge.

TACIT KNOWLEDGE IN SUPPLY CHAIN

As stated by Mullins(2010), ‘In the past, organizations relied largely on the stability of the organization’s structure for knowledge transmission, and managers would tend to know who to go to for advice and would seek out the order and experienced employees who held the ‘know how’ as many of the processes in knowledge operations are worked out inside an employee’s head and may be invisible to others and hard to articulate into concrete, replicable steps; the knowledge and wisdom, accumulated over years of work, and acted as a precious store of information, and the store is formalized or articulated, and this Tacit knowledge (Kreitner,2009, p.217) is personal and private, intuitive, and undocumented information about how to skilfully perform tasks, solve problems, and make decisions and is communicated to the next generation of employees forming part of the organization’s culture and socialization process.

EXPLICIT KNOWLEDGE IN SUPPLY CHAIN

The practice of writing down exactly how to perform a task- clearly defining the substance, order, timing, and desired results has delivered a significant value to manufacturers, and it allows the actual and expected outputs to be compared (Liker, 2004), as explicit knowledge is readily sharable information because it is verbal, textual, visual, or numerical form as it can be found in presentations and lecturers, books, and magazines, and explicit knowledge is public (to varying degrees) documented and sharable information; and when a mismatch is discovered the organization will then indicate the presence of a problem with the adherence to the process of the process itself, and can then take action and fix it; so Mullins (2010, p.189) citing Nonaka, who called knowledge as that which is easily communicated, quantified as explicit knowledge.

Explicit knowledge must consider lean metrics to measure the success of lean supply chain management initiatives. These metrics to be used for the measurement of the success of lean supply chain management initiatives which should inventory turns for the measurement of how often inventory is sold and replaced as a high inventory turn rate indicates that inventory is being used efficiently. The lean matrix is based on the cycle time to complete a process where a short cycle time indicates that the process is efficient; and the cost of goods sold as the cost of the materials and labor used to produce a product where a low cost of goods sold indicates that the product is being produced efficiently. Value stream mapping as a visual representation of

the flow of materials and information through the value stream and used to identify waste and to improve flow; Kanban as a pull system (Campbell et al.2011 p.301) using the visual signals to control the flow of materials and used to reduce inventory and to improve flow; and the 5S as a method for organizing and maintaining a workplace used to improve efficiency and to reduce waste.

Implicit Knowledge in supply chain: The implicit knowledge is supposed to be considerate of the culture as lean supply chain management requires a culture that of continuous improvement as this was created for the good of empowering employees (Vokey and Higham, 2000), providing training, and rewarding success; leadership which is strong and committed to lean principles for the motivation and inspiration of the employees; and effective which must be open and transparent, flow up and down, and across the organization for the successful lean supply chain management.

V. CAPTURING, SHARING, AND CONVERTING TACIT KNOWLEDGE INTO EXPLICIT KNOWLEDGE

A successful company is a knowledge creating company, as stated by Mullins (2010), that is one which is able to consistently produce new knowledge, to disseminate it through the company and embody it into new products or services quickly; and the companies that are able to use both kinds of knowledge are likely to make the creative breakthrough, and the knowledge creating companies do systematically ensure that the tacit and explicit feed into each other in a spiral of knowledge as the tacit knowledge is converted into explicit knowledge by articulation, and that explicit knowledge is used within an individual's cognitive understanding by a process of internalization.

However, the systematic and regularly scheduled communication between workers and managers allows management access to a valuable form of information termed tacit knowledge as stated by (Jaffee, 2008) citing (Polanyi, 1967). All workers in in our organizations possess the unique and privileged understanding of the aspects of their work, tasks, but these are typically beyond comprehension or easy formalization of management; so if managers are able to gain access to the intricacies of the labour process in the lean management, the aspects of the work process that are problematic (Jaffee,2008), cumbersome, or time consuming, then they can take the information and convert into explicit knowledge that informs the organization of production and further rationalizes and streamlines the production system.

CULTURAL INFLUENCES ON LEAN KNOWLEDGE

Lean approach create truly dedicated product teams with all the skills needed to conduct value specifications, general design using a proved team decision making methodology commonly called the Quality Function Deployment (QFD) where development teams are expected to standardize work so that a team follows the same approach every time, as it is possible to accurately measure throughout time (Womack & Jones, 2003) and to continually improve the design methodology itself. The Strategic management writers have gone further suggesting an approach of creating a culture of creativity that managers will be required to go beyond relational/logical thinking and use their senses of feeling (Mullins, 2010.P.195), creativity and intuition to create business for the future.

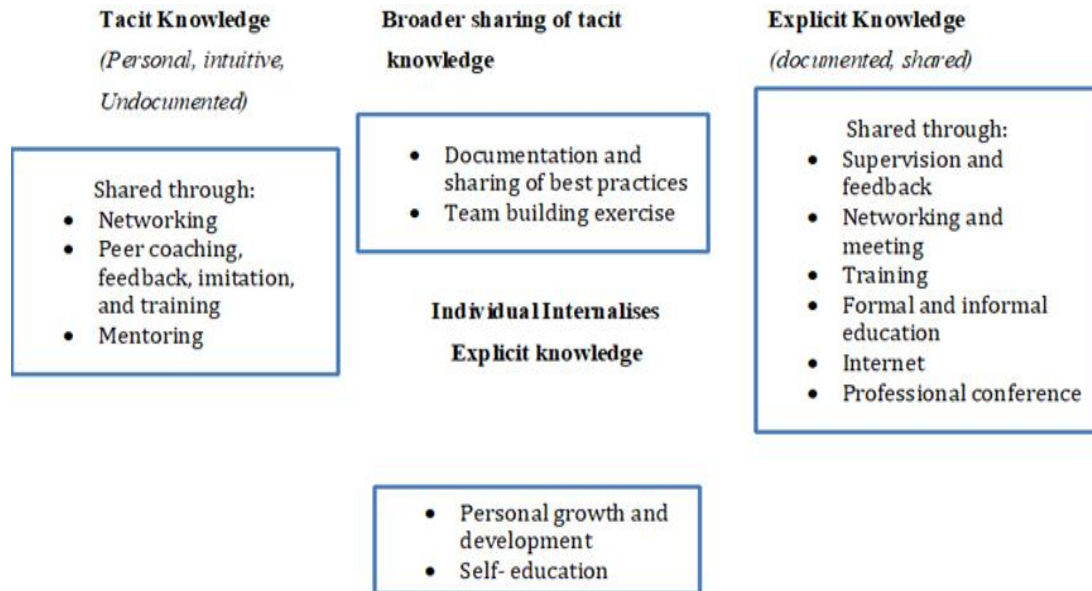


Figure: Key Dimensions of Knowledge Management (Kreitner, 2009, P. 218)

LONG TERM INVESTMENT

Companies moving into lean requires to make serious long-term investment to educating and changing the culture so that employees can adapt to and use of many of the lean principles (Liker, 2004, P.300) covering the identification of value for what customers want done by understanding their needs and wants, and by mapping the value stream; removing waste from the process which may not be adding value to the product or service; reducing variability by standardizing processes and by making sure that everyone is working from the same information; improving the flow of the materials and information through the value stream for the reduction of the batch sizes, using pull systems, and balancing the workload; and pursuing perfection for the never-ending journey of always for improvement.

KNOWLEDGE SHARING ON LEAN.

Knowledge sharing and learning from the experiences of others (Mullins, 2010, P.189), is important to complement social with technological solutions for managing knowledge design process of not only the know, why (design rational and reasoning (best practice) but the know-who (mapping expertise and skills) and know-how (promoting communities of practice for learning in a dynamic context. Knowledge management is also required as it allows people to share, analyse and revise ideas.

BUILDING A CULTURE OF LEAN

The organization should make efforts in developing a principle of building a culture of defining customer value, defining the value stream in the training processes and focusing on making the training flow of studies semester by semester amongst the institutional workers a value adding process without interruption (one piece flow), and working to fix problems and get quality right the first time (Liker, 2004, p.38); a culture for pull system that is cascading back from the demand by ensuring that the provisions of training is taken at short intervals and everyone to strive for the continuous improvement.

A culture of defining customer value is important for organisations in determining the efforts of managers and how well the organization could produce. Hence, the quality for the product or service to the customer will drive company's value proposition and should as well use all the modern quality assurance methods available (Liker, 2004, p.7) to build into the organization support systems for a quick resolve of problems in mitigating challenges as a counter measure. These also should be cultivated to build a culture of philosophy of stopping or slowing down to quality right (Campbell et al. 2011 p.72) the first time to enhance productivity in the long run; should strive to build into the equipment the capability of detecting problems and stopping itself, developing a visual system to alert team or project leaders that a machine process needs assistance.

RELATIONSHIPS FOR LEAN MANAGEMENT SYSTEMS WITH CONFLICT RESOLUTION

Conflict being a behaviour intended to obstruct the achievement of some other person's goals and is based on the incompatibility of goals and arises from opposing behaviours (Mullins, 2010,p.96); and management establish boundaries that distinguish acceptable and non-acceptable behaviour from employees, the conflict theory (Jaffee, 2008, P.15) is based on the assumption that all societies are characterized by the ongoing conflict between groups and persistent social change.

And with lean management it is expected that while the organization is working on the change to lean the structural functionalism should tend to emphasise stability and order by establishing control of work place and be able to distribute profits in an effort to control the human factor of production and the more general unintended consequences of organization; the conflicts (Womack & Jones,2003, P.120) in turn will stimulate changes in labour management relations and to a larger extent bring about increased production through a careful identification of conflicts in requirements for skilled personnel far ahead of time; some of which could be solved by moving a few specialists from one team to the other and back, as needed, to help with conflict resolution.

RELATIONSHIPS FOR LEAN MANAGEMENT SYSTEMS WITH COMMUNICATIONS

A lean system from which the institution is working on has already shown a promotion of good communication by articulating the ways in which it is carried out, defining the personnel at the communication centre who should be communicating, how often, and what should be communicated; with the realization that communication is essential for inspiration and uniting of people around a common sense of purpose and identity (Daft, 2011,P235), so the institution thinks that they are duty bound to engage championing of a visibly and symbolically communication based activities through both words and actions to build relationship with followers and keeping everyone lined up in the same direction.

There should as well create a shared understanding where members of the knowledge teams increasingly work across geographical, cultural, linguistic, and functional boundaries as they may not have the same take on what is being communicated; with well specified communications, individuals understand the work they are working on allowing them to spend time solving problems rather than trying to figure out the job at hand. One of the important features of the Toyotaist system involves the communication, interaction, and exchange of ideas between workers and managers (Jaffee,2008), with the objective being the improvement of the production process, the elimination of wasteful work practices, and the establishment of total quality.

RELATIONSHIPS FOR LEAN MANAGEMENT SYSTEMS WITH STRUCTURE

Recognizing that several problems may be too big or complex for one person to handle, organizations should increasingly apply an approach of teams to do knowledge work, as when multiple teams are involved in the process. Communication should be structured using an approach where project tasks are listed along the rows, columns of a matrix so that routine, well defined tasks should have a high degree of structure (Daft, 2011), and each team marks whether a particular item related to the others, designating each relationship as either a direct dependency or a feedback loop. The need to structure communication and build a shared understanding is to specify exactly how the supplier should communicate and express the ideas, as the extent to which a leader is able to benefit from the task orientation and directing of subordinate's work activities toward goal achievement is by initiating a structure.

Hence, the since system requires employee (Jaffee, 2008) training in quality assessment, quality standards, and problem solving. The organisations require a labour management communication system that should provide formal channels for raising, discussing, and acting upon production related issues. And with the lesson from Toyota production system (TPS) where there is a vital connection between the kanban and kaizen on the element of the Japanese lean production model that involves the process of continuous improvement (Liker,2004), with the kaizen system emphasizing the notion of "learning by doing;" so the organization is also expected to be looking at the timeline.

RELATIONSHIPS FOR LEAN MANAGEMENT SYSTEMS WITH PROBLEM SOLVING

Just as there is no organization that has been found to be free of crisis that may be willing to take the necessary steps to adopt lean thinking (Womack & Jones,2003, p.250) across the board in a short period of time, so if the firm is in crisis already, the company should seize the invaluable opportunity, and Toyota way as a fundamental goal may work to turn an operation into a problem solving engine whose core of scientific method of articulating an explicit and measurable . With the use of the scientific method the company will be able to

solve the problems as soon as possible, and the people who created the problems should fix it; the other notable principle is that problems and processes (Liker, 2004, p.40) should be solved by going to the source and personally observing data (even high level managers and executives should go) rather than theorizing on the basis of what other people or computer screen tell you; thinking and speaking should be based personally verified data.

RELATIONSHIPS FOR LEAN MANAGEMENT SYSTEMS WITH LEADERSHIP ENGAGEMENT

The teams that have leaders who are heavily engaged in the lean initiative by providing education to their teams and persuading them that lean efforts would improve performance, have been successful than teams whose leaders who were not (Campbell et al.2011 p.263); So, managers should be engaged as frontline personnel to generate and implement new ideas while influencing change, sharing ideas as they play a supporting role for middle and senior managers in launching the process.

Leadership involves influence that occurs among people who intentionally desire significant changes which reflect purposes shared by leaders and followers, so leaders as noted should exhibit a paradigm (Daft,2011,P.8) of a mindset that should be shared to represent a fundamental way of thinking about perceiving, and understanding the world focusing on change and crisis management by keeping things in a constant motion; empowerment through power distribution to increase an organization's brain power and get everyone in the organization involved and committed; collaboration by stressing teamwork and cooperation, diversity as a way to attract the best human talent and develop an organizational mindset broad enough to thrive (Campbell et al.2011 p.67), higher ethical purpose with an emphasis to accountability, integrity and responsibility to something larger than individual self- interest that should include employees, customers, and all stakeholders; and humble where the leader in his/her quest to provide should quietly build a strong enduring organization enduring organization (institution) by supporting and developing the employees for the lean to succeed.



Figure: Paradigm Leadership requirements (Daft, 2011, P.5)

VI. CONCLUSION

In most organizations, management is organized by process or function such that the manager owns the steps in the process of creating value for the customers, and nobody else is responsible for the value stream. Hence, as in lean thinking, the recommendation is about creating a value stream manager (or head of department) who should be expected to have complete responsibility for the value stream and should be able to answer to the customer's concerns (Womack & Jones,2003) and allowing worker's involvement for the tacit knowledge that could be transformed into elicited knowledge. Whenever a crisis arises, this should prompt a lean movement so that the workforce gets serious about lean; but what is of importance is to create a structure for communication and hiring the experts for getting quick results that are likely to facilitate transformation and getting of quick outcomes to keep the momentum building. So, Toyota way is all about working and prospering with a great investment of time and energy and developing a unique culture for growth.

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