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Review

A review on new strategy developments in SMEs for competitiveness

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Abstract

In most of the current situations, Small and Medium scale industries (SMEs) are struggling in their business due to product variations in market, economic crisis, and competitors market to overcome this difficulties, they are announcing volunteer retirement schemes and lay-off their employees and also even closed too. So that, instead of increasing the selling price, these industries they are thinking to reduce their internal costs for improving the quality of the product. The product depends on customer because they are deciding the market value related to cost and quality basis. Due to these reasons, this paper insists them to apply the most effective Lean manufacturing principles for different stages production systems and supply line also. This research work aims to incorporating the lean manufacturing and supply chain management principles especially in SMEs to get the better product efficiency with reduced cycle time through the quantitative analysis is the main criteria. On the basis of strong review, also some guidelines are suggested which will be the good strategies for the SCM for sustainable competitive advantage for their market shares and performance of their business, Further proper justification is given through this work.

Keywords: Lean Manufacturing Techniques, Productivity tools, Small business improvement, Survival of SMEs

INTRODUCTION

Small and medium scale enterprises are a driving force for all global manufacturing sectors and their economy, but limited efforts have been made towards the product efficiency and its long term consistency in market. Developing customer value to the product is most struggling factor for the SMEs employer. Always the firms are working with the global competitions environments, which can dealt with multiple suppliers and varied customers and these factors are required to mange the inventories of all supply, process and finished products using new and innovative approaches, and also restructuring manufacturing channels through possible ways to get the good results in their products are essential factors in current situations of customer trends with competitors.

Lean Manufacturing (LM) can be defined as "A systematic approach to identify and eliminate waste through continuous improvement by giving easy flow to product at the demand of the customer". Here define waste as anything other than the minimum amount of equipment, effort, materials, parts, space and time essential to add value to the product. LM concepts has become integral part of the advanced manufacturing process and it is the standard manufacturing mode of the 21st century, which provides the maximum performance in both production and supply line activities form the past decades and enormous ability to provide competitive advantage is very well accepted among both academicians and practitioners (Wood, S.J et al., 2004). LM is the set of principles in business processes,

implementing since from 1960 mainly inspired by Toyota Production System which focuses continuous flow within the whole manufacturing system by eliminating all types of wastes and performing towards continuous improvement related to product perfection, which enable the pull system from the customer in mass way. The sources of internal variations to the supply chain were also reduced in drastic way. So all the researches agreed and concluded effectively with their case study. LM is the cost reduction mechanism and also used to guide the world class organizations which has been implemented so far successfully in medium and larger organizations, but implementations of the smaller organizations were few documented so far Due to problems like top management less support and commitment, internal employees resistance against new changes in process, economical crisis and with huge competitors.

Even though really SMEs needs systematic lean concepts to their productivity goals and this will yields the maximum benefits like quality improvement, product efficiency, cycle time reduction and rapid customer response (Spann, M.S et al, 1999). The Lean implementation such as Preventive maintenance, Total Quality Management, Quality circles, Kaizen, Value Stream Mapping, 5s and employee empowerment are more feasible for the small organizations successfulness. Effective and suitable implementation of lean principles are most suited for SMEs, with less financial investment is the main factor (Bonavia and Marin, 2004). By considering the lean implementation to production process is not enough to get the product efficiency in maximum extent but use of lean concepts to both production process as well as supply chain activities is the new approach to strengthen the whole manufacturing process of the SMEs is the main criteria of this work. Others authors work gives the documentation for the manufacturing strategies were superior to lean under market conditions with customer satisfaction (Cooney, R, 2002). Here detailed literature survey of the various author's view of the lean concepts and its applications are analyzed and some of them are also suggested for the supply chain activities of the SMEs operational and marketing performance but the managerial guidelines are very much needed to the organizations. The proposed Lean principles and their practices to the smaller organizations will develop human resource and technological capabilities with minimum constraints of the product flow in the market demand. An incorporation of lean principles to the SCM in SMEs of the various author's views were summarized in the next section will provide foundation for next explanatory study of the research work.

Objectives of the literature review

The main objective of this research work is to exploration on survival and its consistency in market of SMEs in Indian and global context, than identification of effective LM principles like Kaizen, 5s, and Value Stream Mapping techniques and their implementations in SCM of SMEs. Finally and discussions and their developments are analyzed, sorted and presented with different view. Which highlight the sources of value addition to the product with lower cost. An extensive search of literature concern to our research work is carried out through the several methodologies were examined for the exact outcome in the field of Lean supply chain success, implementations and limitations in the manufacturing process of SMEs were analyzed and identified. The objectives of the in depth and closer review on present study is made in the fallowing areas.

i) Small and Medium Scale Enterprises (SMEs) conceptual ides and its problems
ii) Lean manufacturing principle and its implementation
iii) Kaizen and its applications
iv) 5s and its developments
v) Value Stream Mapping (VSM) Techniques
vi) Supply Chain Management concepts and its applications
vii) Lean and SCM concepts to SMEs and its limitations

The literature review is carried out to understand and access the current status of the above mentioned area.

SMEs Conceptual idea and its problems

Especially in the small and medium enterprises have played tremendous role in manufacturing sector all over the world. Which can play a vital role in the economic growth of developing countries, and pushing effective Implementation of lean production to its growth is significant. SMEs play an important role in Indian economy. It has emerged as powerful tool in providing relatively larger employment next to agriculture. It contributes more than 50% of the industrial production in value addition terms and generate one third of the export revenue. SME sector of India is considered as the backbone of economy contributing to 45% of the industrial output, 40% of India's exports, employing 60 million people, create 1.3 million jobs every year and produce more than 8000 quality products for the Indian and international markets. With approximately 30 million SMEs in India.

SMEs (Small and Medium scale enterprises) are plays an vital and dynamic role in the economies of all over the world, which contribute economic development by providing employment for rural and urban people, providing entrepreneurship opportunities for the young engineers. SME sectors of India giving nearly 50 percent of output and 40% of total exports and 42 million people working over 13 million units all over the country. Even though SMEs are facing very critical problems particularly in the area of human resource, technical capability, and

Table 1. SMEs Classifications according to full-time employees as per NSDC, 2006

Manufacturing Enterprises	Capacity	Investment in plant and machinery
Micro Enterprises	Less than 5 employees	Does not exceed twenty five lakh rupees
Small Enterprises	Between 5 to 50 employees	More than twenty five lakh rupees but does not exceed five crore rupees
Medium Enterprises	Between 51 to 150 employees	More than five crore rupees but does not exceed ten crore rupees
Service Sector Enterprises		**Investment in equipments**
Micro Enterprises	Less than 5 employees	Does not exceed ten lakh rupees:
Small Enterprises	Between 5 to 19 employees	More than ten lakh rupees but does not exceed two crore rupees
Medium Enterprises	Between 20 to 50 employees	More than two crore rupees but does not exceed five corerupees

poor access in finance and they are unable to meet the new challenges related with globalization market trends. SMEs are different from the large organizations like these resource limitations (Qian, G and Li, L, 2003) and they are higher rate of failure comparing to larger organization. In Indian economy which plays major role next to agriculture and larger employment creation, one third of revenue by means of value added products to the society is considered. While selling their products, SSI's were always having critical problems due to varieties of products and varied volumes in the global market by the competitors (Chakraborty et al., 2011) Compared to larger companies, SMEs often lacks of resources and competence to develop and improve their production systems (Von Axelson J, 2007). The difficulties faced by the SMEs have been discussed in Organization for Economic Cooperation and Development (OECD) and Asia-Pacific Economic Cooperation (APEC), the European Commission and the United Nations Conference on Trade and Development (UNCTAD) respectively for their struggle towards the quality within a specific time to market (Bititchi et.al., 2004). And marketing is also one of the major problems to overcome this disadvantage cluster to compete over the market. The roles of shareholders, managers, and owners of the companies are limited to corporate governance rules also. So to overcoming negative factors around the SMEs, the strategy implementations of advanced manufacturing techniques are needed for technological innovations in this area.

In accordance with the provision of Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 the Micro, Small and Medium Enterprises (MSME) are classified in two Classes

Manufacturing Enterprises

The enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the industries (Development and regulation) Act, 1951). The Manufacturing Enterprise is defined in terms of investment in Plant & Machinery.

Service Enterprises

The enterprises engaged in providing or rendering of services and are defined in terms of investment in equipment.

According to Limit for investment in plant and machinery / equipment for manufacturing / service enterprises, as notified, vide S.O. 1642(E) dtd.29-09-2006 are given in below Table 1

Lean manufacturing and its implementation

Lean is a standard manufacturing mode in 21st century, which is a business Philosophy that was developed at the Toyota Motor Company. Thus the Toyota Productions System (TPS) is synonymous with Lean Manufacturing and TPS is built on the two Principles Just in Time Production (JIT) and Jidoka, one is nothing will produced until it is required and the product is under pull system towards the user and the other is automation in manufacturing process to prevent defects on flow lines respectively. The objective is to eliminate all forms of wastes in the production process. Taiichi Ohno, the" Father of Lean. The actual roots of Lean go back to 1903 Henry Ford of his A3 his first automobile model A3 with close tolerances in mass production and interchange-ability of parts (Womack J.P et.al,1999), initially improved manufacturing methods and advanced manufacturing systems then latterly by 1980 onwards up to 2000 drastically lean manufacturing is developed due to huge demands and competitions in markets which builds customer confidence in short cycle time (Betsi Harris Ehrlich, 2002), The term Lean manufacturing coined by John Kkrafcik in 1988 and In 1990s came in to existence in Japanese manufacturing industries.

Lean Manufacturing is a business philosophy that was originally developed at the Toyota motor company (TPS) the objective is to eliminate all forms of waste (Non value

added activities) in the production process the Japanese term for waste is Muda, Waste is defined as anything that does not add value to the final product. These wastes are categorized in to seven categories. Every waste you will come across in your organization or even in day-to-day life will fall into one of these categories. Seven forms of Manufacturing Wastes includes

Waiting for Machines or Operator

Operators may wait for available machines or machines may wait until the operator is available.

Over Production

Using production equipment and machines faster than necessary without regard to output of the machine is required,

Transportation

Unnecessary movement of the parts or people around the production facility.

Process Waste

Resulting from inefficient, poorly designed processes duplication of effort,

Excess Motions

Operators leaving workspace to fetch required supplies carrying goods.

Excessive Inventory

Unnecessary work in process and finished goods beyond what is needed on a normal basis to keep the business running,

Waste of Rework

Producing Defective parts: it requires higher inspection

Underutilization of human Resource

In the top of the world today it is the eight waste**,** *Use human resource effectively to its full potential, and get ideas of al level of people in the organization towards better efficiency.*

The Lean Principle is perfect first time quality by zero defects, solving problems at source and other principle is waste minimization, (seven forms of wastes) ie eliminating non value added activities in manufacturing process, which leads to reduce lead time and cost, increases productivity, maximize profits to organization and customer oriented quality products with competitive price. The design of lean manufacturing and lean servicing system involves the fallowing tools and techniques refer Table 2

Lean Manufacturing (LM), refers to a business concept wherein the goal is to minimize the amount of time and resources used in the manufacturing processes and other activities of an enterprise, with an emphasis on eliminating all forms of wastage. So there are two important objectives of lean manufacturing are:

- Identifying and elimination of waste in the process: Over Production, Waiting for Machines or Operator, Transportation, Process Waste, Excess Motions, Excessive Inventory, Waste of Rework through Producing Defective parts
- Give flexibility using automation and multi skilled workers at all levels of the organization: Continuous Improvements, Culture of Team Working

Lean manufacturing can be applied to all industries and considered as strategic weapon in competitive market. Which is the best way to earn more profit, increase the quality wise productivity? The empirical objective of this study is to identify theoretical and operational concepts of past researchers to obtain general insight in to measurement aspects which are reliable to minimize different wastes and variability in production systems based on various fields. Like Critical success factors for lean implementation within SMEs is the Global and emerging technologies having enormous impacts on the manufacturing industry around the world market. The critical success factors of LM depends on leadership, Management, finance, flexibility and resource allocation, organization culture and skill of an operator, Using computer simulation for the flexibility of resource allocation and policies are depends on the effective Lean tool implementations in SME, also the lean principles are applicable to IT industry in advanced manner, (Bamber L and Dale B.G 2000) for which the pull system design for make to order using effective lean tools like Kanban, Kaizen, SMEs, 5s,VSM etc are most essential for current trends and market competition. Discussed by the author by referring the various types of IT applications in lean manufacturing has increased productivity.

Kaizen and its applications

The concept originated from Japanese words Kai, meaning ‘change’ and Zen, meaning’ betterment’. Otherwise continuous improvement’. Kaizen is thus, a

Table 2. Lean Tools

Lean Tools	Methods	Advantage
Production Cells	Small, Flexible, Multipurpose machines are arranged as U shape production cells	Operators can do multiple tasks while standing and moving parts freely within production cells, and sequencing and changing is easy
Single minute exchange of dies(SMED)	Quick changeovers in multipurpose machines developed by Shiego Shingo , Toyota	Continuous flow in small batch production, huge time saving
Kanban system	Which are cards to give signals needed to goods replenish the bin	Minimizes the inventory and goods are arrived at just in time
Kaizen	Close to the action	Minimizes time
Visual control	Visual information is available through signals in production lines, light or sound is activated when problem occurs	Level of information is available, and minimizes defective products, improves the quality of product
The 5s	Rule of safe and clean the production process. Sort, separate, scrub, stabilize and sustain around process	Minimizes the non value added activities
Poka-Yoke	Mistake proofing device, sensor based built in process	Easily identifies the mistakes, avoid defective parts. quality improves
Card board engineering	Modeling a potential production cell before actual implementation (assembly line is transferred to U shaped line)	Work flow analysis is easy before production
Emphasis on training and development	Skilled and cooperative force required	Identification of root cause of the problem as quality of product improves

continuous process of improvement carried out by the person who is doing the job in the day-to-day workplace. All over the world the Kaizen techniques have been particularly distinguished as the best methods of performance improvement within companies since the implementing costs were minimal, which involves everyone, managers and worker alike, for ongoing improvements. Kaizen is a Japanese term which means a change of wisdom for continuous betterment. Only daily incremental modification based on scientific method can bring about a great success in every sphere of workplace. Which strengthen the Continuous improvement of an entire value steam or an individual process to create more value with less waste. Kaizen means a constant effort not only to maintain but also to upgrade standards, which pronounces perpetual development in all walks of our life. Kaizen shows a lead role for improving the productivity and quality of the products, which is a strategy to include concepts, systems and tools within the bigger picture of leadership involving people and their culture, all driven by the customer (Phillip Marksberry et al., 2010) By taking an example of Nissan Motor Plant in the UK, The key role and authority of each supervisor as a leader of his team has been described. Kaizen is more than just a means of improvement because it represents the daily struggles occurring in the workplace and the manner in which these struggles are overcome. Kaizen can be applied to any area in need of improvement (Abdolshah M and Jahan A, 2006). By the consideration of Kaizen, the involvement of employee at work place is the main criteria .Which is a quality oriented lean tool, simply it should be realized due to each employee‘s involvement. And shows mindset of the workforce which produces quality wise products economically to meet the customer’s satisfaction. In small and medium scale industries. While implementing the kaizen principle the financial and human resources are the major constraints to be considered to reducing the production cycle time of especially in SMEs. By changing the day by day activities using the ideas of the operators with in the work environment can makes a lot of changes.

5s and its developments

5S system is a popular Lean tool originated from Japan and it was first developed by Hiroyuki Hirano, used for set up working environment in a better way to achieve quality in an organization towards the efficiency of products, Such organization can organize and manage companies which require less space, human effort, accurate time, and products with less defects with systematic work cell order, clean and disciplined manner (Chapman, C.D, 2005). In general routine activity of every organization, daily works that support company and neatness are fundamental to an efficient activities flow (Bayo-Moriones, 2010). The philosophy of the 5S has its roots in Japan. The words of the fallowing meanings like Seiri (sort), Seiton (set in order), Seiso (shine), Seiketsu (standardize) and Shitsuke (sustain). 5S focuses on the need for the workplace in order. Tools, equipment, and materials must be systematically arranged for the easiest and the most efficient access. There must be a place for everything, and everything must be in its place. Success key of the 5S is skil-led training to the operators. 5S implementation is not

possible without proper training and employees are not capable to actively standardize the 5S Organization (Kumar and Kumar, 2010) should pay attention to this fact that resistance to change is one factor which will be occurring during implementation. Therefore, it is believed that continuous training is required to change the organization culture, and assessment should made until its complete establishment in any organization (Nilipour, A. and M. Jamshidian, 2005).The presentation of continuous improvement strategy aiming to improve manufacturing at Auto car Exhaust system using 5s has worked clearly. The important steps to be undertaken while implementation of 5s and its effective benefits towards the type of organization is essential. The implementation of 5S has given immediate and significant effect on the sequence of activities in the work process, thus influencing the performance of the same is analyzed in IT industry (Kumar and Kumar, 2012) Implementation of 5S on small scale plastic molding industry and also showed the its advantages and benefits toward the work force and management level improvements are focused. 5S is applied in most of the factories in manufacturing sections with priority compare to other sections with different ways which can be attributed to the maturity of the 5S programme (Warwood, S.J. and G. Knowles, 2004) 5S can be a reflection of our behavior. If we have a consideration to 5S, the majority of our routine problems that we face in everyday and work could be solved easily with in stipulated time. The most important barrier for implementation of 5S effectively is poor communication, which can cause waste resources, time and money, and lowering moral amongst employees. The results of evolving communication systems in an uncontrolled fashion in industries could be confusing and complex. There must be an applicable way for using 5S as an improvement tool for communication system; another significant barrier is the space between managerial level and shop floor employees and the poor training and awareness of 5S. Since some critical decisions of 5S activities, including time and budget performance must approve and support by management, therefore more cooperation is recommended during implementation period. Implementation of 5S management system in a company can helps to reduce waste, organize the work place in a customer friendly manner which improves the data base management towards their efficiency in any of the organization.

VSM and its developments in SMEs

Value Stream Mapping (VSM) is one of the most important and powerful Lean tool for an organization to implement and improve on its Lean journey. The car manufacturer Toyota co. Japan was the first company to use VSM techniques in its lean concepts implementation. VSM has been thoroughly analyzed. A team created to improve the productive system of a manufacture application, it is a graphical tool which is created using a predefined set of standardized icons that helps the organization to see and understand the flow of material and information as the product goes along different stages. After drawing the value stream it helps the organization to differentiate value added and non-value added activities from current condition, and identify kaizen opportunities. By practicing VSM, elimination of waste and streamlining the business is very effective. There are four stages of implementing the VSM techniques are identify what product or family of products to be mapped, draw the current state of VSM, Identify where the improvements can be done to eliminate waste, then draw and implement the future VSM. Value stream Mapping is defined as all the mapping of value-added and non value added actions required bringing a specific product, service or combination of product and services to the customer, including those in overall supply chain as well as those in internal operations (Papadopoulu T.C. and ozbayrak. M, 2004).VSM is commonly used in lean environments to identify opportunities for improvement in lead times, although VSM is associated with manufacturing, it is also applied in logistics, supply chains, and service related industries including health care, software and product development.

The literature survey is carried out, to explore how VSM is adopted to SMES of different organizations in global context and its usages. The development and application of VSM to supplier network of electronic, electrical and mechanical components for a distributor were studied (Hines, P., Rich, N. and Esain, A,1999), Explanation of VSM approach in manufacturing and service settings including administrative processes made as remark (Keyte et al., 2004), VSM is an excellent tool for any organization that wants to become lean. Study of VSM highlighting process inefficiencies, transactional and communication but also guides the improvement by application of current and future maps, VSM and other Lean principles were adopted at a large integrated steel mill in India to improve the process (Abdulmalek F.A. and Rajgopal J, 2007), The degree to which responses customer orders as needed in Flexible, quick and low cost from one member of a product family to another through Leanness, VSM is a suitable tool for redesigning the production system of a plastic casing mobile phone manufacture based on global review (Lasa, I.S et.al ,2008) VSM helps in usage levels of shop floor practices aimed at increased human and machine productivity. study on wait time and service time for patients visiting emergency rooms was focused and got succeed in hospital case (Preetinder Singh Gill,2012), Planning, preparation, identification the target process, product family, or service through mapping team were explained (Martin et al.2013). VSM process symbols were used to discuss lean implementation stages in the auto-

parts manufacturing unit. Investigation related to difficulties and limitations during the application of VSM technique were analyzed (Ana Julia Dal Forno et al., 2014) on the global review, VSM applications on SMES are limited, so implementation of VSM to eliminate Non value added activities in SMES through the case study is the main motive of this work Any delay can be analyzed through value stream mapping. By performing the technical suitability, economical justifications and feasibility analysis, we are have suggested the recommendations, which have reduced the cycle time, increase the productivity, ensure no time delay for delivery of products to the customers in effective way. VSM helps to identify NVA activities in the process thus helps to increase the usage levels by the proficiency of shop floor practices aimed at increased human and machine productivity, so that the process improvement is possible.VSM helps in mapping current and future state maps for the process also, which is the powerful tool for lean manufacturing and allows companies to understand and continuously improve its goals towards lean achievement.. Ultimately the main goal is to identify, demonstrate and decreases the activities that added no value to the final product. Here we discussed the importance of VSM tool to achieve effective process improvement strategy to shorten the cycle time.

Supply Chain Management concepts and its developments

SCM has received attention since the early 1980s, yet conceptually the management of supply chains is not particularly well-understood, and many authors have highlighted the necessity of clear de "national constructs and conceptual frameworks on supply chain management. Supply chain is sequentially connected organizations and activities involved in creating and making a product available and SCM is viewed as value chain or demand chain also. The term SCM was coined in 1982 by Keith Oliver, a management consultant at Booz allen Hamilton Oliver used the term to develop a vision and separated as production, marketing and distribution. The principle of supply chain activity is receiving input from firm's suppliers-add value-deliver to customer .A supply chain encompasses all the parties that involved, directly or indirectly, in fulfilling a customer request. Supply chain management is the chain activity throughout the manufacturing process which helps to give the link between the responsible activities outcomes for the customer requirements. Supply chain management is a set of approaches utilized to effectively integrate suppliers, manufacturers, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and the right time, in order to minimize system wide costs while satisfying service level requirements (Simchi Levi,2002). The major tools involved in SCM are Supply management, operations, Logistics, Information technology, Supplier integration, communication.

The product quality performance and business performance and importance of trust cooperation and knowledge is essential for the business (Mark Ko,2010) for customer satisfaction with competitors. The main purpose of is to investigate and application of lean practices in the field of manufacturing and service industries are to reduce waste in the process line and create customer value to the product is the main intension. Developing a municipal organization by the help of lean practices to SCM line is described clearly (Arawati Agus, and Mohd Shukri Hajinoor, 2012).Another way of using SCM practices in to IT fields can examined Soft computing unique methodologies were contributed mainly Expert System (ES), Fuzzy Logic (FL), Neural Networks(NN), and Evolutionary Algorithms (EA), which provides flexible Information processing capabilities to solve real-life problems in SCM line, and application of IT in to SCM comprising strategic planning, E-commerce and knowledge and IT management were explained. Environmental performance and supply management are implemented in Canadian based companies. The five determinant factors like top management commitment, workers participation, environmental factors, technology, public policies and potentials of suppliers are focused in the real work (James C et al., 2013), by the above literature survey of Lean principles to SCM for SMEs Developments are discussed clearly as a new paradigm for the research studies (Taz. S, 2005) on the basis of integrating the total flow of materials, products and information flows from supplier to ultimate customers through the philosophy to manage the total flows of materials, products and information from suppliers to the ultimate customers.

Lean and SCM Concepts to SMES

In any production system that involves continuous flow with in sully chain by eliminating all wastes towards product perfection through continuous improvement, but waste is nothing but non value added activities present in the system (Bamber L and Dale D.G,2003) Lean application to SMES will increasing the lead time, quality, and accuracy and also customer satisfaction by implementing like 5s and quality circle. There is no standard practices for implement lean practices to SMEs but the common goal is with least investment, lean implementation to SCM of SMEs also depends on size of the firm and top management response to new change is one of the big issue, and success and failure of Supply chain are ultimately determined in the market place by the end consumer (Rothenberg, S. and Cost, F, 2004) Principles of Lean thinking" Extreme programming (XP) which focuses on rapid software development by

Eliminating seven wastes of development, Extra steps: code directly from customers (Herbold and Robert, 2002), the authors analyzing the benefits of lean manufacturing and VSM mapping Via simulation, and made case study of value stream mapping applications in ABS Co, produces several grades of steel by blast furnace, author's collected Value added & non value added actions and apply the kanban system for process improvement (Fawaz A et al, 2007), Through the work "Applying the lessons learned from 27 lean manufacturers the relevance of relationships management" where 27 Italian companies were operating in international markets are participated, findings are reduce set up time by cellular manufacturing, and preventive maintenance, innovative practices in planning and control like, multilevel MPS and Design review, QFD, FMEA were discussed (Roberto Panizzolo 1998), Implementing technologies through change agents, here Japan companies Change agents (who are inside /outside the co.s technical Specialists and consultants to co,) transfer their selected lean manufacturing .techniques like kaizen principles, leadership skills, and continuous improvements. from Japan automotive mfg,co. to UK through changeagents"and succeed in the improvements in product (Colin Heron., Cristian Hicks, 2008) "Lean manufacturing: context, practice bundles, and performance" shows application of lean principles to 48 items which can Identify the dimensional structure Underlying lean and develop valid scale to it. Eliminate duplicate records. The simultaneous integration of Lean paradigms in SCM may help SCs to become more efficient, streamlined and sustainable, so Improved supply chain agility and leanness imply that a supply Chain is capable of quickly responding to variations in customer demand with cost and waste reduction. Investigation of lean practices in the municipal sector in a service supply chain management (SCM) context waste reduction and customer value creation in production is introduced as a device for developing a municipal organization (Jan Stentoft Arlbjorn, 2011),. Supply chain issues of six Indian SMEs were analyzed and recommended strongly for innovation and learning measures, and poor negotiation power, small batch size, inventory reviewed and revised, and further improvement in use of internet and trade directories or magazine for searching potential suppliers clearly discussed (Jitesh Thakkar, 2012), The detailed SCM relations with ERP applications and its developments focused on reducing shorter lead time with customer satisfaction (Huin S.F et al, 2003), Transnational Corporations (TNC) provides global supply chain interaction for SMEs and which can provide better means of product efficiency with competitors market in (Viswanadham, 2000), According Asia-Pacific Economic Cooperation (APEC), the European Commission and the United Nations Conference on Trade and Development (UNCTAD) the major problems faced by SMEs can be minimized through Global Supply Chain Management.(David et al., 2000). RFID information can provide real time environment to manager and operators to control supply chain activities like production schedule and customer needs in efficient manner, implementation of internet supply chain practice in UK SMES and their competition were studied and explained related quality data's are most important for the further forecasting (M. Quayle, 2003). The SMEs benefits and capabilities are revealed greatly from dynamic, knowledge base (Dodourova and Bevis, 2014). And the SMEs Studies are mostly conducted in context with European, China and Korean based research work (Hossain, 2015).

The author explored the view of software solutions for design, Planning and operation management of complex, networked organizations to manage huge logistics flows in case of SMEs organizations. For sustainability of a supply chain in SMEs solutions like reduce, reuse, recycle, recover, re-design, principles considerations in different SCM tiers are analyzed.

CONCLUSIONS

In this paper, we discussed the sustainability and adoptability of Lean manufacturing and SCM in small and medium sized enterprises. Because of their importance in the present market condition and competition. And in In order to surviving, SMEs should look forward to improve their existing system and fulfill the customer needs. One of the approaches which reconsidered best management practice to SMEs is leaning towards advanced manufacturing techniques like Lean manufacturing principles. This survey has focused on feasible lean practices which are required to be implemented in order to be successful in lean implementation. The systematic implementation of LM principles on supply chain management in SMEs will provide cycle time reduction, quality improvement, and customer response in good manner.

Future scope of the work

The manufacturing organizations even in SMEs constitute a very important factor of the industrial and social Community. These organizations are having important approach to maintain competitiveness in their global market for the purpose of achieving quality, time and efficiency of the product in world class standard and customer complete satisfaction to survive in market place with strong industrial networks. For this reason, now days many companies moving towards advanced manufacturing techniques like lean manufacturing, agile manufacturing Just in time, Quality function deployment, total quality management, Supply chain manufacturing are the most popular in manufacturing field. In case of

raw material to finished product application of lean manufacturing principles are most effective in nature, but in case of finished product to end user or the customer, strengthening the supply line using supply chain management technique is the best and economical method. By the above reviews according to various authors, Application of Lean manufacturing principle to the manufacturing field to reduce non value added activities or wastes in process is the common phenomenon and various author's are explored the LM application to different fields like employee empowerment, improvement in machines, working process, material flows, inventory reduction, network changes in production lines using Kanban, kaizen, 5s, layout modifications, quality circle, automation and Multifunction employee. To increase the supply line activities supply chain management techniques like supplier management, ERP, MRP, logistic management and customer development are effective and discussed in the above review. But in our new approach in current manufacturing trends, the gap is found for the development of the product efficiency no one has tried to implementing the lean manufacturing principles to the supply chain activities development along with process development reflection. That means the getting efficiency in both production as well as supply line using lean principle to get the better results in related to product efficiency and reduction of cycle time with suitable case study is more effective in nature. And it will become good work in the field of SMEs survival in manufacturing competitive field.

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