

CONCEPTUAL PAPER ON THE IMPACT OF LEAN MANUFACTURING PRACTICES ON SUSTAINABILITY PERFORMANCE IN SRI LANKAN WESTERN PROVINCE SMES

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ABSTRACT

Small and medium-sized enterprises (SMEs) are playing vital role in any present society. Actually, it can be identified as the backbone of economic growth of any economy. In Sri Lanka over 85 percent of businesses are SMEs which contribute to generate employment, accelerate economic growth and reduce poverty, income inequality, inflation and balance of payment. The purpose of this paper is to suggest a conceptual framework where the investigation can be made on the impact of lean manufacturing practices (flow management, process management, customer management, supplier management and workforce management) on sustainability performance (economic, environmental, and social). Since the majority of SMEs are established in Western province and considering the time and data availability constraints, this study suggests a data collection of 100 SMEs in Western province for the sample using a structured questionnaire. Then the hypotheses will be tested using structural equation modeling. Final outcome of the study will be a support for both academic and industry experts, especially where the managers will be able to get the support of their stakeholders to implement lean by convincing their stakeholders.

Keywords: Lean Manufacturing, Small and Medium-sized Enterprises, Sustainability Performance, Triple Bottom Line

Introduction

In the present day society, most of forward thinking organizations are looking for attaining sustainability performances beyond the traditional achievement; profit maximization. According to the traditional approach it didn't emphasize how managers should get an idea on developing new strategic directions and how to create new opportunities in the midst of different changes. The new approach proposed a broader definition for the word "stakeholder" as "any group or individual who is affected by or can affect the achievement of an organization's objectives". Stanford Research Institute (now SRI International) concerned on enhancing the use of term 'stakeholder' is the start to grow up as management practice. Managers needed to understand the importance of concerning about shareholders, suppliers, customers, employees as well as lenders and society in order to developing organizational objectives. It was obviously affected to the long term success. Therefore management must pay the attention on all the expectations and needs of every stakeholder when they had explored developing business strategies (Freeman, 1984). It was the focal point to pay more and more attention towards sustainability performances to achieve organizational long term success. Recent years, global attention was received by the concept of sustainability development just focus for the short term aims (Wang et al., 2015).

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Small and Medium-sized Enterprises (SMEs) sector has been recognized as a vital sector in economic development of a country because it contributes to generate employment, accelerate economic growth and reduce poverty, income inequality, inflation and balance of payment. According to Mr. Bandara Jayathilake, Senior Executive Vice President of SME Banking at Nations Trust Bank, over 85 percent to 90 percent of businesses are SMEs that plays a significant role in the country (Daily News, 2018).

When it comes to Sri Lankan context, in 1983 the number of employments in SMEs was 29 percent of the total employment of industrial sector. It improved to 45.7 percent in 2013/14 showing a significant increase. Employment in SMEs in 2014 was 633,933 which is 50 percent higher than the number of SMEs' employment in 2004 (Premaratna, Priyanath, & Kodippiliarachchi, 2017). And also out of total GDP of Sri Lankan economy, 52 percent is contributed from SMEs (Wickramathilake, 2018).

When it comes to Sri Lankan context, getting the maximum successfulness through deploying lean practices in SMEs is comparatively lesser than large scale companies. The critical trouble exists through having less knowledgeable people regarding to this area. This study will therefore focus on what is the impact of lean manufacturing practices (LMPs) on sustainability performance of an organization where the result will show managers whether it is important or not to consider on lean manufacturing for their long term success.

Literature Review

Today sustainability proposed as a vital priority of any company besides quality, cost, flexibility, innovation etc. (Krause, Vachon, & Klassen, 2009). Hollos, Blome, & Foerstl (2012) addressed sustainability performances are not substitutable, curious and most critical resource as well as competitive advantage which a firm can ever gain for a longer success. The newest way to define organization's sustainable performance has advanced the triple bottom line (TBL) approach (Elkington, 1997). A sustainability emerged in a firm is a system of aligned on all business activities over the lifecycle of the product which obviously causes to gain more value to the stakeholders, dives towards the commercial success and enhance the well-being of people and environment. Above idea was also emphasized according to the Carter and Rogers (2007) through the concept of sustainability that was integration of economic, environmental and social sustainability criteria. For attaining social sustainability end throughput result should be aligned with the expectations of customers and the business process should concern all the stakeholders of company. To gain economic sustainability, the key objective of operation should be maximizing profit by decreasing the use of raw materials, inventory and production cost whilst for achieving environmental sustainability, it should be minimizing the nonrenewable resources and eliminating the wastage which generates through production process (Zhou et al., 2000).

According to the Cheng, Yang, Jochen, & Patricio, (2010), in order to overcome the threats and deal with competition increased in the global market, businesses had to enhance their capacity and efficiency as well as reducing the operational cost to achieve better performance comparatively with the competitors. In addition to that, environmental and social sustainability were also being considered as vital segment as well as economic sustainability. According to Gladwin, Kennelly, & Krause (1995), if any organization seeks to position in the market well they have to satisfy "triple bottom line" sustainability; people, profit and planet at the same time.

Companies which were belongs to various economic sectors were adopted to engage in lean manufacturing practices in case they have resulted an enhancement and improvement the competitiveness through it (Moyano-Fuentes & Sacristan-Diaz, 2012). Though some companies were able to implement the lean manufacturing practices successfully, some companies couldn't achieve the results as what they had expected.

Lean was referred as "lean manufacturing" if not "lean production" world widely and most of manufacturing companies were trying to use this technique mainly focusing on improving production process as well as final production through reducing wastage (Holweg, 2007). One of basic practice/method of lean management which was used by some organizations were adding extra components which have capacity to improve the value of product and removing the unnecessary components which gains more cost for the product (Holweg, 2007). So, the main objective of lean management was reducing cost (Drohomeretski et al., 2013) on the other hand improving quality was also concerned as critical thing in lean management (Wang J., 2010). In addition to that, "improving customer value" could be added among the objectives and aims of the lean management (Albert, 2009). Lean methodology mainly emphasized and focused to eliminate seven types of wastages; excessive production, extra amount of inventory, waste of time due to slow processing, employee or equipment motion resulting in waste, over processing, lack of value to product in transportation, and waste due to defects (Wang J., 2010). Over the years many lean techniques and tools were implemented and developed as lean practices such as 5s, Kanban, six sigma and Single Minute Exchange of Die (SMED), etc.

Small and medium size enterprises are playing vital role in any present society. Actually it can be identified

as backbone of economic growth of any economy. It contributed to generate employment, accelerate economic growth and reduce poverty, income inequality, inflation and balance of payment also. Various numbers of facts and criteria were used to define SMEs by different countries and institutes (Rahman, A comparative study of TQM practice and organisational performance of SMEs with and without ISO 9000 certification, 2001). But in Sri Lanka there was no proper definition for SMEs until year 2015 and Ministry of Industry and Commerce finalized and introduced the criteria as the annual turnover and the number of employees to classify SME in 2015 (Wickramathilake, 2018).

Usually in manufacturing sector in any economy, SMEs are engaging the components, supplies which are used as inputs for production in large scale organizations because SMEs are specialized to produce those under cheaper value than large organizations could achieve in-house. When we compare with large scale organizations, SMEs were operating with small and simple procedures which aligns flexibility, understanding and towards the customer needs and expectations, quick response and feedback, decision making process. Various pressures on SMEs were conformances to quality, low-defect rates, product features or attributes, competitive price and performance (Crobett & Campbell-Hunt, 2002). In spite of this situation SMEs were in a troublesome position to sustain in domestic market as well as global market also. The common thing what SMEs couldn't achieve is inability to maintaining expected results along medium and long term (Lucey, Bateman, & Hines, 2005). Instead of come away from the market, SMEs were able to improve their sustainability performances not only focusing on daily activities and production processes but also seeking the long term targets by change and continuous improvements. Based on this, SMEs had to align with effective performances by adaptation of various processes and management practices. One of the useful methodologies which SMEs were able to operate with is lean manufacturing practices.

The association among LMPs and sustainability performance was addressed by different authors. Most of the prior researches had been conducted based on pharmaceutical, automotive, fast moving consumer goods industry which belongs to more larger scale industries where the effects and results of those research were more importance and vital for large scale organizations than SMEs (Shah and Ward, 2003). The thing was when we compare with large organizations; SMEs have being considering about lean practices with less awareness and attention. When we refer the global context, according to (Johnstone & Labonne (2009), SMEs were far less likely to emphasize their environmental and social impact at primary stage because financial limitations and cost criteria associated with the tools which are aligned with the large scale organizations. On the other hand, (Cooney, 2002) stated that most of small manufacturing organizations are less likely of implementation on lean practices.

According to the global context past researches have mostly justified on expressing impact of LMPs on sustainability performance of SMEs in terms of regional wise such as western countries and Asian countries like India. When we refer the previous researches most of them were examined the linkage between LMPs and sustainability performances separately as economic sustainability, social sustainability and environmental sustainability (Filho et al., 2016; Bonavia and Marin, 2006; Upadhye et al., 2013; Rahman et al., 2010; Panizzolo et al., 2012; Khanchanapong et al., 2014; Zhou, 2016). It is very rare to find out the studies entirely focused on lean practices and sustainability performances though in global context. And when we refer Sri Lankan context it is also same as previous situation mentioned above. Some papers were to examine relationship between SMEs' attitudes, awareness on environmental issues and their environmental management practices (Weerasiri, 2012). According to Wijethunga (2017) majority of Sri Lankan SMEs were involving Supply chain practices in medium level to enhance the organizational performances. Sri Lankan SMEs were reluctant to emerge lean practices in comparison to large scale organizations. It is less to find out the studies which are focused on expressing the relationship between vital factors for succeeding with lean implementations and productivity improvements in Sri Lankan SMEs (Perera, 2016). In some researches, just economic sustainability dimension was more concerned while ignoring environmental sustainability and social sustainability (Perera, 2016, Ranadewa 2018). So this study is based on describing the impact of lean practices on sustainability performance covering triple bottom lines according to the Sri Lankan context by covering all triple bottom lines which were not covered by prior researches which have been done according to the Sri Lankan context.

Research Objectives

Following research objectives will be studied in order to fulfill the research gap we have identified.

Key objective

- To measure the impact of Lean Manufacturing Practices (LMP) in Sri Lankan SMEs on their sustainability performance.

Specific objectives

- To what extent Sri Lankan SMEs are practicing lean manufacturing.
- To identify the relationship between LMPs in SMEs and their sustainability performances.
- To identify the relationship between dimensions of LMPs and sustainability performance.

Research Questions

According to the identified research objectives following research questions will be addressed in the study;

- What is the impact of LMP in Sri Lankan SMEs on their sustainability performance?
- To what extent Sri Lankan SMEs are practicing lean manufacturing?
- Is there any relationship between LMPs in SMEs and their sustainability performances?
- Is there any relationship between dimensions of LMPs and sustainability performance?

Significance of the Research

Outcome of this study is important for both academic and industry experts because it will provide a vital understanding on the impact of LMPs on the sustainability performance in SMEs. Through that the importance of implementing lean practices in SMEs can be identified for those who are not yet practicing the lean and more improvements and developments can be made for those who are currently practicing and benefiting through the lean.

As the SMEs are playing a major role within the country long term success of them are the long term support for country's economy. If the study outcome suggest implementation of lean practices not only makes SMEs success economically but also environmentally and socially by convincing stakeholders through that result of the study management will be able to get more support in implementing lean such as changing mind and attitude of the workforce towards implementing LMPs.

Methodology

Conceptual Framework

The developed framework for the study is as in Fig.1 below. It triggers to identify the relationships between the lean practices and the sustainability performances of a company which is considered as overall company performance. Majority of the prior researches are focused only economic and environmental dimensions which directly influence to the sustainability performances of SMEs. That's why this framework is developed as follows covering triple bottom line sustainability dimensions including social dimension.

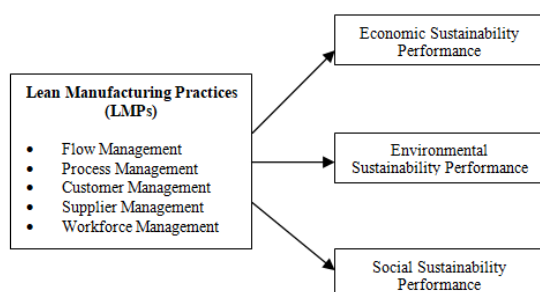


Fig.1. Conceptual Framework

Hypotheses

Hypotheses will be developed in order to achieve stated research objective, “To measure the impact of LMP in Sri Lankan SMEs on their sustainability performance.” According to the literature review hypotheses will be proposed as below;

H1: LMPs will positively impact on environmental sustainability performances.

H2: LMPs will positively impact on Economic sustainability performances.

H3: LMPs will positively impact on Social sustainability performances.

Data Collection and Analysis

As the study is targeted on SMEs in Western Province Sri Lanka which has the highest number of SMEs comparing with other provinces, by considering the constraints such as time and data availability researcher will collect data from sample size of 100 SMEs for the study using a structured questionnaire. Although the analysis tools such as SPSS and AMOS require a large number of sample size, SmartPLS tool requires very less number of sample size and therefore this study will use the SmartPLS software as the data analysis tool.

Structural Equation Modeling (SEM) technique will be used to test the hypotheses developed and for further discussions on the research questions.

Conclusions

In an environment that most of the businesses in Sri Lanka are SMEs and trends are about sustainable developments, it is important to know areas that must be improved and developed for the long term success of a business. Therefore, this study will be a support to identify the impact of the lean manufacturing practices on sustainability performance and which will again be an eye opening for those who haven't adapt the concept yet within their organization. Further, through the study researcher will be able to add some insights and knowledge to the theory and practice.

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