EXTENDED ABSTRACT

REVIEW OF THE ROLE OF GREEN LEAN CONCEPT FOR THE PRODUCTIVITY IMPROVEMENT IN THE BUSINESS

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Abstract

Many businesses draw their attention to improve the productivity in many ways. This study is a review of how the concept of "Green Lean" (GL) makes a significant contribution towards the improvement of productivity in the business in the existing literature This is qualitative study in nature. The sample of thirty peer reviewed research papers published in reputed journals are drawn. The content analysis method is used as the analysis method of the study. The analysis data revealed that the GL Concept will significantly contribute to the improvement of Productivity in the viewpoint of three aspects such as, Technical Productivity, Social Productivity, and greener productivity. Green lean will improve the technical productivity in the foam of acting as a problem-solving tool, value and wealth generation strategy, production cost reduction method. Social productivity is improved under the GL concept in the foam of sharing goals among office mates, Team participation, workforce Management in the organization. Personal Family ties. Greener productivity is improved under the GL concept in the form of waste reduction strategy in the businesses Process.

Keywords: Green lean, productivity, productivity improvement.

1. Introduction

Today many business organizations are marching towards the improvement of their business processes to generate competitive advantages with the aim of make competition in the marketplace. Therefore, they practice many strategies to overcome this challenge in reducing waste, cycle time, etc., as well as improving efficiency, effectiveness, productivity. The concept of productivity is well known practical aspect that any organization can apply regardless there, size and the nature of the business. (Viktoria and Tatyana 2012; Golzarpoor and Gonzalez 2013). It highlights that how effectively resources are utilizing in the business process. It is considered as the optimal (Effective) use of innovation and resources with the aim of improving the value-added content of a product or service (Dües et al, 2011). According to Prokopenko 1987, the measurement of productivity will generate more value for businesses by indicating the changes in the computed values In the aim of improving productivity, business organizations employ many strategies such as Six Sigma (Kabir et al., 2013), Lean Manufacturing system (Palange & Dhatrak, 2021; Shah & Patel, 2018),Lean Six Sigma (Yadav, 2014; Nizam et al., 2012) and systematic layout planning (Syed et al., 2016). But these strategies only focus on the viewpoint of the technical productivity, the relationship between the output and

input of the business and less attention towards the Environmental impact. According to (Dües et al, 2011) that the Green approaches also improve the productivity in the business process and it will be able to consider for the business process improvements with the aim of sustainability. The concept of Green Lean is a combination of the lean manufacturing system which was introduced to the world by Toyota automobile manufacturers in Japan and the greener concepts that focus on the environment by reducing the carbon emission from the business processes. This concept is need of the hour to think about greener production with the aim of responsibility of treating the limited resources for the current usage and thinking about the future generation. This was a success in many business organizations achieving a win-win situation in both productivity improvement and less environmental impact from the business processes. (Bergmiller & McCright, 2009; Golzarpoor & González, 2013). Therefore, the combination of these two concepts of Lean and Green will generate a significant contribution towards the productivity improvement of the business organizations (Salleh et al., 2012; Chandra Kumar et al., 2012) in different aspects. The combination of Lean and Green will reduce the disadvantages of generating fewer advantages in separate application of Lean and Green. Therefore, the researchers expect to find how this Lean and Green concept make a significant contribution towards the improvement of productivity in the foam of technical productivity, social productivity and greener productivity in business activities in the existing literature.

2. Research problem.

Based on the literature review, the researchers make an attempt to find 'How the concept of "Green Lean" (GL) makes a contribution towards the improvement of productivity in the business?'. The main study objective is derived as to Identify the How the concept of "Green Lean" (GL) makes a contribution towards the improvement of productivity in the business.

3. Methodology

This study is qualitative in nature. Existing research papers that are related to the Concept of green Lean are considered for the study. Productivity improvement through Green Lean is identified in the three aspects of productivity as Technical Productivity, Social Productivity and Green productivity. Thirty Research papers are taken as samples from Google Scholar and reputed Journals such as Science directory, Elsevier, search engines such as Research gate are considered. The Content Analysis method is used in order to analyses the papers to reach the study objectives

4. Data Analysis, Results and Discussion

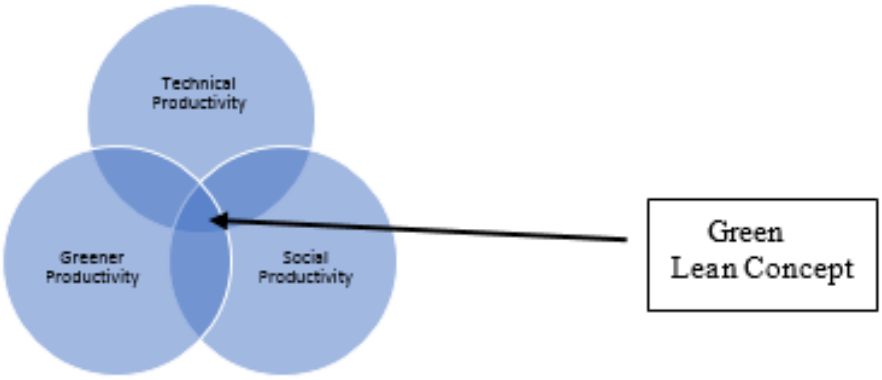

Figure 1. Focus area of the Green Lean Concept

4.1 Sample profile

The majority of the research papers from the sample are, focused on the improvement in green productivity which leads to the concept of sustainability. The application of the Green Lean concept is overlapped with the other productivity improvement spheres such as Technical Productivity, Social Productivity and Greener Productivity. Green Lean Concept address the overall productivity of the organization by addressing Technical, Social and Greener Productivity in different aspects. Figure 1 Highlights the element where the Green Lean concept is the focus on the improvement of productivity.

Table 1 highlights the analyzed papers which focus on technical, Social and Green productivity improvement, and how they impacted technical productivity improvement. But many papers are overlapped with the greener benefits from the application of the Green Lean concept.

Table 1. Studies related to the improvement of Technical, Social and Green Productivity from the Green Lean Concept.

Technical Productivity Improvement element	Social Productivity Improvement element	Green Productivity Improvement element
Lean and Green Wastes Matrix to solve the problems in innovation environmentally friendly and profitable manufacturing. (Viktoria, Tatyana, 2012)	Mapping for environmental improvement within Lean implementations; and Lean able to move to many improvements such as environmental improvement, Shared common goals and workforce involvement. (Biggs, 2009)	Modelling waste management system based on LM with three level. (Fercoq et al., 2013)
Green Lean enhance the efficiency and effectiveness of the business which leads to productivity (Tiwari , 2016)	LG is a successful platform for private companies and public authorities to work together on one common goal. It reduced the Carbon emission (Anten et al., 2014)	Indirect effect of lean practices on environmental performance through green practices is stronger for the environmental and operational performances. (Green & Inman, 2018)
LG aid operation management in improving productivity and profit of the organisation.	LG is positively related to growth of the business and it highly related with high level of managerial powers and family ties. (Lartey, et al., 2019)	LG is the natural step towards achieving more sustainable manufacturing systems which leads to sustainability. (Abualfaraa et al., 2019)
LM model application showed the operational cost savings at the cell level. Also LG Model can reduce resource use from 30 to 50% on average (Pampanelli et al., 2014)	The suggested Framework of LG and CSR will influence on triple bottom line practices than individual practices. (Wu, et al., 2015)	Lean green has three types of relations with the waste reduction, the combination will generate greater performance push interrelationship with waste and environment(Hallam and Contreras, 2016)

LG strategies resulted in the reduction of approximately 10.8% of the production costs of a representative part. (Nancy, Annabel, Sebastian, 2013)		The organizations who desire to improve sustainable performance are suggested to initiate with lean, and subsequently, move in to green.(Pathmalatha, 2020)
costs, incomes, social responsibility and sustainability can be improved when environmental innovation is applied, transforming the traditional production system into a lean system.(Aguado et al., 2013)		lean production associated with environmental management contributes to reducing waste in production processes. (Vasconcelos et al., 2019)
Reduced the idle times were up to 88%. Carbon Footprint results were reduced up to 81% (Júnior et al., 2018)		Leanness facilitates the supplier collaboration on environmental programs and positively contributes to environmental and operational performance. (Pietro and Alfio, 2020)

The Green Lean concept will make a significant contribution towards the improvement of Technical Productivity in different aspects of the business spheres while Green Lean is contributing to the improvement of Technical Productivity as a problem-solving strategy, income and revenue generation tool, Facility increasing of the business, cost reduction, source of innovation and value in the aim of improving technical productivity

The concept of Green Lean is contributing as tools of improving social productivity while overlapping with the improvement of technical as well as green productivity. Shared common goals and the benefits for the workforce, teamwork, family ties are influenced by the Green Lean concept in increasing Social productivity

The Green Lean concept contributes to the improvement of greener productivity mainly in the way of reduction of waste. Most researchers found that waste reduction is focused on considering the environmental aspects of the business activities through the concept Green Lean. Reduction of waste generates more environmentally friendly benefits from the lean greener concept.

5. Conclusions

Many researchers Identified that the blend of greener concept with the lean manufacturing system will significantly improve productivity in the form of Technical Productivity, Social Productivity, and Environmental productivity. These three aspects will contribute to the overall performance of the business activities. But less attention is drawn by the researchers towards the improvement of social Productivity is separately from the application of the Green Lean concept In the view of Technical Productivity, Green Lean concept will influence the efficiency and the effectiveness of the business activities as it will act as the problem-solving tool, value and wealth generation strategy, production cost reduction method with the profit-oriented target. In the viewpoint of Social productivity improvement, shared goals, team participation, workforce management, family ties make significant contribution to improve the social productivity through the Green Lean concept. Also, in the greener productivity view, that Green Lean concept act as the waste reduction strategies in the business activities. Mainly this concept focuses the environmental aspects in the foam of waste reduction. Therefore, overall view of the Green Lean concept produces significant contribution

to the overall productivity of the business performance in the viewpoint of Technical productivity, Social Productivity, and green productivity of the businesses.

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