

Review Article

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A Literature Review of Contribution of Green Productivity to the Success of Business Performance

R.A.S.A Perera¹ and T.S.M. Amarasena^{2*}

¹School of Business National Institute of Business Management (NIBM) Kurunegala Campus Sri Lanka

²Department of Decision Sciences, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Sri Lanka

ABSTRACT

Green Productivity (GP) is integrated for enhancing the profitability of the organization by improving productivity and environmental performance for overall socio-economic development. It considered the win-win situation of uplifting the quality of life in the foam of generating profits to the business and considering the less impact to the environment from the business processes which leads to the greener business practices. The objective of this research paper is to review the existing Literature about the practical application of the GP to identify the business areas which are influenced by the GP methodology. This is Qualitative research in nature. Twenty existing research papers from reputed Journals are considered for the study. The contents analysis method is used to analyse the research papers. The analysis results highlighted that GP methodology can be applied to any organization regardless of nature and the size of them and it will generate a significant contribution to the overall profitability of the organization by creating a competitive advantage in the market. GP will contribute to the organizations in two areas 1. Productivity through reducing manufacturing cost, cycle time, risk, and waste as well as increasing competitive advantages through Social productivity, Labour, and Capital productivity of the business. 2. The environment in the foam of reducing waste with many environmental concepts such as 3R, 5R Concepts and releasing less carbon emission to the environment. It is crystal clear that this GP Methodology practice will enhance the development of Socioeconomic and sustainability which uplifts the living standard of all living beings in the natural environment.

*Corresponding author

Sudath Manjula Amarasena, Department of Decision Sciences, Faculty of Management Studies and Commerce University of Sri Jayewardenepura, Sri Lanka. E-Mail: sudath@sjp.ac.lk

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Introduction

Today we live in a highly modern competitive world where all are expecting to be the winners in this market structure by addressing the customer's requirement of delighting them speedily with low cost and high-quality products and services. Industrial development of the world now in a different angle in the form of industrialization and urbanization making potential opportunities for addressing social objectives such as employment, poverty eradication, gender equality, labour standards, and greater access to education and healthcare while generating a negative impact on the environment. Creating scarcity of the resources in generating access growth, producing pollutants causing climate change, loss of natural resources, air and water pollution, and extinction of species and many more. [1]. Therefore, the attention about the environmental concerns along with economic development was drawn into consideration in 1987 by introducing the concept of Sustainability to the world by the United Nations [2]. With the help of this concept many business organizations made an attempt to consider an environmental responsibility in their development agenda and integrate environmental into their strategies and produce many environmental innovative products in order to make positive outcomes to the environment. The standard of the family which is introduced by the International Organisation for

canalization ISO as ISO 14000 which focuses on environmental management and its guidelines are adopted by many organizations and their performances were significant [3]. According to [15] most of the organizations use this ISO 14000 standard for their reputation and little significant consideration on waste reductions but the expectations of the standard is almost lost and it is unable to address the companies' requirements of improving products quality, market share, sales, and overall companies' profits and reduction of the overall cost. Further, the researchers found that this Standard is almost suitable for manufacturing companies rather than non-manufacturing organizations. Therefore, the need of the hour is to consider the integration of the organizational performances (Improving productivity) with environmental considerations in order to achieve sustainability in a greater manner. Green productivity is the most suitable option for making a win-win situation as it ensures the profitability of the business, enhances the positive environmental impact and lead to the enhancement of quality of life. This concept was introduced very recently in 1994 by Asian Productivity Organisation. Green Productivity (GP) is a strategy as well as an integrated approach for enhancing productivity and environmental performance for overall socio-economic development. Green productivity is considered as the heart of the Sustainable development concept [4]. According to the that the green productivity concern about customer focus by considering quality to achieve the profitability balance and

environmental performance and many researchers found that Green Productivity increased their business performances in the viewpoint of improving product quality and reducing scrap and rework cost, pollution, waste, and risk [5]. Therefore this paper is highlighting the perceived impact of Green productivity towards the organizational performance based on the research articles literature reviews [6, 7].

Significant of the Study

With the modern competition in the marketplace, many organisations make an attempt to apply many strategies which bring a win-win situation in the form of profitability for the business and fewer environmental impacts from their business processes. Therefore, a structured mechanism such as Green productivity will address the current issues in making more profits and the marching towards sustainability. Through this review of the literature, the researchers expected to identify the importance of GP application and identify the business areas which are influenced by the GP methodology. This will help the decision-makers in taking optimal solutions to achieve business financial and environmental objectives simultaneously; also, it aids future researchers in bringing more advantages in consideration of this type of practical philosophy to take a different view of sustainability.

Literature Review

The term Green Productivity (GP) is introduced and has been promoting science 1994 by the Asian Productivity Organisation. This concept is targeted for socioeconomic development with the ultimate objective of sustained improvement in the quality of human life by integrating the environmental Improvement and enhancement of productivity which leads to the profitability [8]. Further they highlighted that this holistic approach of GP challenges the environmental issues and make business competitiveness by enhancing the business productivity with the tools such as pollution prevention, environmental management systems, eco-design, green procurement for the sustainable manner of the Small Medium enterprises. GP uses three terms and phrases: 1. Strategy 2. Productivity and environmental performance 3. Socio-economic development [9]. GP is a multidimensional and comprehensive strategy which highlights the innovative thinking in the business processes. Water logic which considered as excellent thinking tool for exploration can be applicable for GP for encourage innovation process of the businesses. In nature water flows and it holds onto one principle without exception; as business processes should flow in the natural flow and different thinking strategies will lead to critical innovating new products and processes. [22]. GP generates the process of innovation which is considered as primary driver of economic growth as well as GP starting line was productivity as a cost reduction strategy. Therefore, GP leads towards the economic growth by holistic strategy of cost reduction through innovations [9]. Productivity provides the framework for the continuous improvement in GP. Together with Quality Management other related GP tools improve the productivity by eliminating unwanted variances and mistakes and waste in serial aspects of the business. In GP context productivity incensement can be achieved when less utilisation of resources by using more renewable energy resources and eco-friendlier chemicals in manufacturing process [10]. By applying 3R concepts (Reduce, Reuse and Recycling), Recycling in the GP practices will lead toward the organisational profitability as well as create low carbon society [11]. GP Practices also reduced the waste, especially harmful waste in both manufacturing and services sectors [9]. Under the third point of stage socio-economic development developers are new wealth generators who bring

environmentally friendly innovative products into the community in different regions all over the world and lead to the export-oriented opportunity [11-14]. GP developers pump money into the community with the help of all stake holders by creating value added job opportunities and security of them in aim of strengthen the residents [10]. According to APO 2002 GP is an integrated approach and it is characterized by four distinguishing criteria such as 1. Integrated people-based approach which focuses on the involvement of the worker and the team-based approach. This criterion highlights the working environment, worker health and safety, non-discrimination and related social welfare issues. Transparency and the Accountability of the people's involvement is ensured in these criteria. 2. Productivity Improvement basically Kaizen approach of continuous improvement is drawn into consideration for the improvement of the productivity under these criteria. The aim improving productivity PDCA cycle (Plan – Do- Check- Act) is considered for the organisational productivity improvement as well as environmental improvement. of 3. Environmental Compliance which highlights that the heart of the GP is the environmental protection in the forms of pollution prevention and resource reduction through the GP tools and techniques 4. Information-driven improvement. In this final criterion the stages of the documentation and reporting from the Management system is highlighted which can be integrated with the Quality management systems and the Environmental Management System. The six steps with thirteen tasks and tools related to each step are involved to march towards the success of the GP. By considering the triple focus of GP such as 1. Environment, represented by sustainable development, 2. Profitability defined by factor inputs and 3. The quality voiced by the customer GP Productivity targeted the profit and the competitive advantage of the organisation while improving the environmental fitness. Many organisations successfully applied this GP projects in the business in the different spheres and achieved the success of it for the sustain for them. This research paper highlights the review of such GP application to identify the different aspect to apply in future business and environmental cases.

Methodology

This is a qualitative study in nature. Twenty research papers which are included GP application in real business practices are considered for the review. The objective of this research paper is to review the existing Literature about the practical application of the GP to identify the business areas which are influenced by the GP methodology. Research papers from Google scholar and reputed journals such as Science directory, Elsevier, Research gate are taken into consideration. The contents Analysis method is used in order to analyse the papers to reach the study objectives.

Analysis

The considered research papers are related to the Green Productivity application in the different industries in many countries. As a summary of them, these GP concepts successfully applied in to Manufacturing organizations as well as to the services organizations. According to GP was successfully applied to the Iran Aseman Airline company and achieved success by recording descending trends in the field of water consumption, electricity consumption Airplane's fuel consumption and environmental pollutants [6]. According to Liu et al 2018, the GP of tourism in YREZ in China was positively contributed to the economic development of the area and it was stimulated by technological progress.

The summary was highlighted in table no 01.

Table 1: Summary of the GP applications in Services sector

Research paper topic	Authors	Year	GP contribution	GP Contribution sphere
Implementation of green productivity management in airline industry	Naser Moharamnejad AND Sahar Azarkamand	2006	consumption of energy, water, airplanes fuel and evaluating environmental pollutants and recommendations are done to reduce the paper, fuel, airplane fuel, and pollutants from washings and other activities.	Profitability of the company by saving the materials. And environmental by reducing pollutants.
Study on Measurement of Green Productivity of Tourism in the Yangtze River Economic Zone, China	GangLiu Pengfei Shi, Feng Hai, Yi Zhang and Xingming Li	2018	there are significant provincial differences between the energy consumption and carbon emissions of tourism in the YREZ, and technological progress has become the main reason of the growth in green productivity in YREZ,	Environment by considering carbon emission and economic development productivity by considering the Tourism activities in four greener types

When considering the GP application in Service sector it is highlighted that the GP provides a significant contribution to the improvement in productivity and economic development and the less Environmental effects. GP contributed to the analysis of the current situations of the organization by considering different materials and input consumption for the productivity improvement aspects, and the carbon emission to analyse the environment impact from the processes. Therefore, GP tools can be successfully applied to map the current process to evaluate the current productivity levels and the environmental impact of the service organizations.

Table 2: highlights the summary of the GP applications in the Manufacturing organizations and their achievements in applying GP methodology.

Table no 02: Summary of the GP applications in manufacturing sector

Research paper topic	Authors	Year	GP Contribution	GP Contribution sphere
Sustainable development with green productivity in manufacturing	Tan Lin Sheng, Mohd Zamri bin Shamsudin , Loh Chin Ling	2005	Practiced three key sustainable development initiatives; 1.Chemical waste reduction 2.Total Chemical safety and environmental management 3.5R pollution presential practices	Profitability and Productivity by reducing waste environmental by applying 5R Concept.
Importance and role of green productivity in industries: A Review	GangLiu Pengfei Shi, Feng Hai, Yi Zhang and Xingming Li	2011	Companies can apply waste minimization programs and build formal management system to support GP programs, GP helps to have competitive advantage	Financial and the productivity development of having formal framework of the management and having competitive advantage
Sustainable growth through GP; A Case of edible Oil industry in India	A.K.Saxena , K.D.Bhardwaj and KK Sinha	2003	Company reduced the Hexane losses oil by 13% and oil losses in de oiled cake (DOC) by 20%the boiler efficiency increased from 60% to 80%. Company received ISO 14001 Certificate.	Profitability increasement, efficiency increasement and Productivity incensement and other recognition benefits such as obtained ISO 14001 Certificate
Managing green productivity: a case study	R. P. Mohanty and S G Deshmukh	1999	Addressing the concept of “Wastivity”and minimising the harmful waste and Reuse strategy provides competitive advantage	Wastivity and competitive advantage lead to the productivity improvement
Motives in implementing Green Productivity among EMS 14001 certified companies in Malaysia	S. MJ Logaa and Suhaiza Zailani	2013	GP Practices increase the product quality, reduce scrap and rework costs. Reduce waste and pollutants and reduce risk, reduce cycle time, reduce unit manufacturing cost, absenteeism, increase worker participation and healthier environment	Productivity improvement by reducing waste and cycle time. Improve social productivity and Environmental improvement
Environmental Management System and Green Productivity (EMS_ GP) Implementation in Kurdistan Cement Plant	Jahanbakhsh Balist1, Ebrahim Sargazi, Hassan Hoveidi, Shahrzad Faryadi	2016	Integrated Environmental Management System and GP to find Optimal solutions for the environmental causes faced by the Kurdistan Cement Plant	Environmental improvement by making optimal solutions for the Environmental issues
Green Manufacturing and Operational Performance of a Firm: Case of Cement Manufacturing in Kenya	Selina Mukonzo Eshikumo and Stephen Ochieng Odock	2017	Significant relationship between green manufacturing practices and Operational performances. Gp will focus on eliminating and controlling all kinds of pollution	Improving Productivity By identifying the operational performances and Environmental improvement by identifying the kinds of pollution

Green productivity in the Indonesian leather-tanning industry	Febriani purba, ono suparno, ani suryani2	2020	develop alternatives to current processes that would improve its environmental and economic impacts buy using two small medium tanneries.	Improving Productivity by selecting best options among the alternatives
Alternative Selection in Reducing Wood Scrap with Green	Dini Wahyuni1,, Irwan Budiman, and Mangara Tambunan		Select the best option from three alternative to reduce scrap wood with green productivity approach	Improving Productivity by selecting best options among three alternatives for reduction of scrap wood
Green productivity application for improving productivity and environmental performance through the selection of the best solution scenario in the agroindustry	A Mubin	2019	Select the best production system which effect to productivity and the environmental performance, as well as the competitiveness of the company.	Improving Productivity, profitability (Generating competitiveness) by selecting best options among production system alternatives manufacturing processes
The impact of green productivity strategy on environmental sustainability through measurement of the management support: A field study in industry sector in Jordan	Majd Mohammad Omoush	2021	Identified the roles played by the top management in the efforts towards green productivity. adoption and strategic implementation in the Jordanian environment	Improving Productivity in the attention of the top management
Green productivity Implications on long Run sustainable. Economic growth	Elsadig Musa Ahmed	2019	Contribution of the factor productivity, green labour productivity, and green capital productivity. to the green productivity and sustainable development	Improving the Green Productivity by considering the labour productivity and capital productivity in the foam of green.
A green productivity-based process planning system for a machining process	Seung-Jun Shin, Suk-Hwan Suh & Ian Stroud	2014	Conducted GP-based process planning algorithm that enables the derivation of process parameters for improving GP in machining. operations.	Improving productivity in machine operating planning
The drivers of China's regional green productivity, 1999–2013	Guangtian Liu Bing Wang, Zhenxing Cheng, Ning Zhang,	2019	technological progress is the main diver in chines GP improvement, energy conservation. and emission reduction performance are also the critical drivers of green productivity	Improving productivity and environmental factors by identifying main diver such as technological progress and energy conservation and emission reduction
Green Productivity Improvement and Sustainability Assessment of the Motorcycle Tire Production Process: A case study	Marimin, Muhammad Arif Darmawan, Rum Puspita Widhiarti, Yuliana Kaneu Teniwut	2018	Applied green productivity and sustainability assessment to the motorcycle tire production process and Improved the productivity of motorcycle tires were a combined treatment of controlling raw material characteristics. and reusing water and materials.	Improving Productivity by evaluating the practices in the production.
How innovation efficiency contributes to green productivity? A financial constraint perspective	Dongyang ZHANG, Samuel VIGNE	2020	Green Total Factor Productivity (GTFP) calculated by DEA- Malmquiste Luenberger method to measure the joint economic and environmental efficiency, innovation efficiency has a positive and significant impact on GTFP.	Financial constraints negatively impact on the relationship between innovation efficiency and GTFP,
What drives the fluctuations of “green” productivity in China’s agricultural? sector? A weighted Russell directional distance approach	Ying Liua, Chao Fengb,	2019	Technological progress in terms of agricultural output, energy use and pollutant treatment were the most powerful factor of growth in GP.	Improving Productivity in identifying the factors for the success of the GP In Agricultural industry

Value chain analysis for green productivity improvement in the natural rubber supply chain: a case study	Marimin, Muhammad Arif Darmawan, Machfud, Muhammad Panji Islam Fajar Putra, Bangkit Wiguna	2014	Deciding the manufacturing process by natural rubber cultivation combined with latex production improvement and waste minimization was the best green productivity improvement strategy. The best selected strategy for the production process was reusing the processing water.	Improving productivity in waste minimisation as well as environmental concern by using reusing concept
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According to the above researchers GP projects will make a significant contribution to the development of the organization's performance in the foam of increasing the efficiency, productivity, financial ability, making competitive advantages by reducing waste in the organizational process and the cycle time. Therefore, GP will contribute to the organizational performance in every aspect as well as to reduce the negative impact to the environment from the business activities. It will aid to make a win-win situation of the organizational performance and the social and environmental impact which lead to sustainability.

Discussion

Many researchers apply GP with the aim of reaching organizational profits objectives, and reduction of the environmental impacts of the business processes. This GP Methodology is considering the greener planning's of the business process and control of them. The six steps of this methodology will make significant changes in the business processes towards greener production.

This methodology is successfully applied to the services as well as manufacturing organizations. In service organizations, GP will make a contribution to the reduction of waste of the services inputs. It will lead to savings in materials and other inputs which are directly contributed to the profitability of the firm by creating competitive advantages to the business. When it considers the manufacturing sector, most of the time it is utilized as a waste minimizing methodology which focuses on improving productivity in every aspect such as Capital, material, labour, social and green productivity. GP methodology targets improve productivity which tries to achieve profitability by reducing waste. This target is achieved by many organizations in the considered studies and the Ultimate result of this methodology is to create business processes freethinkers to recreate the business activities which are focused on making environmentally favourable business designs. Some organizations applied this methodology as a business decision-making method of selecting the optimal greener solutions for the business. Through these aspects, GP has achieved the success of reaching the profitability goals and environmental goals of the businesses. This GP methodology can be successfully applied with other greener programs such as ISO 14001 standards etc. It indicates that this Methodology is a business flexible methodology.

Conclusion

According to the previous researcher's application of Green Productivity in practical scenarios will make a significant contribution to improving the business processes in the foam of Improving productivity, Financial capabilities, and environmental improvements regardless of the size (Small and medium) and the nature of the business. (Service, Manufacturing, Agribusiness, industries). GP Projects will contribute to the Productivity in the ways of reducing waste, cycle time, cost of the production, risk as well as improving the Efficiency Social productivity, Labour productivity, and capital productivity. It will use as an environmental impact decision-making methodology to obtain optimal decisions from the alternatives. In the aim of reaching GP objectives, GP projects create the formal framework for the proper management structure which will make guidance to improve

productivity. In the form of financial improvement, alternative energy usage will be taken a considerable consideration in the GP methodology. Reduction of carbon emission and the application of environmentally friendly concepts such as 5R and other concepts will be taken the consideration of environmental development. In the end, all these three spheres which were identified in the GP contribution areas such as Productivity, Financial and environmental will lead to maximizing profits which are considered as one of the objectives of the business organizations by making Competitive advantage in the marketplace. GP will contribute towards non-quantitative aspects such as obtaining environmental certificates such as ISO 14001 standards and other green labels which will improve the goodwill of the organization [15-26].

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