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Vol. 1 No. 4 (2024) · “Milliy iqtisodiyotni barqaror rivojlantirish va yuqori iqtisodiy o‘sish sur’atlarini ta’minlashning ustuvor yo‘nalishla...

ta’minlashning ustuvor yo‘nalishlari” mavzusidagi xalqaro ilmiy-amaliy anjuman

investorlarni jalb qilishga sharoit yaratadi. Boshqa shu kabi sharoitlarda ham aynan qaysi sohaga tegishlilik omili investitsiyalarni o‘ziga jalb qilish ko‘lamini oshiradi.

Xulosa

Bizning fikrimizcha, tadqiqotning natijalari korxona innovatsion faoliyati darajasini aniqlash va amalga oshirishni amalga oshirishga imkon beruvchi va oqibatda sanoat korxonalari innovatsion faoliyatini baholash usullarini takomillashtiruvchi kompleks ko‘rsatkichlarni ishlab chiqishga sharoit yaratib beradi. Shuningdek, har bir hududdada sanoat korxonalarini innovatsion asosda rivojlantirish orqali qo‘shimcha qiymat yaratish mintaqa iqtisodiyotini rivojlantirishning lokomotivi bo‘lib xizmat qiladi.

Umuman, xulosa sifatida ta’kidlash mumkinki, bugungi kunda sanoat korxonalari mamlakatimiz iqtisodiyotini yuksaltirishdagi etakchi drayver bo’lib xizmat qilmoqda. Shuning uchun, sanoat korxonalarini yanada rivojlantirish davlat siyosati darajasiga ko’tarilgan.

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THE INTEGRATION OF LEAN MANUFACTURING IN GREEN ECONOMY FOR SUSTAINABLE DEVELOPMENT OF UZBEKISTAN

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Abstract. This study examines how the integration of lean manufacturing principles with green economy will enhance Uzbekistan’s industrial efficiency and minimize environmental impacts within country framework. Over the last years, Uzbekistan is navigating significant economic reforms, the need for sustainable development practices becomes increasingly critical. Lean manufacturing aims to maximize value while minimizing waste and it has a potential role in fostering a green economy by improving resource efficiency and decreasing carbon emissions. In this paper more than 20 research works and reports were analyzed, to know future opportunities, predictions in case of practices how combination of lean manufacturing and green sustainability can impact to environmental sustainability of Uzbekistan.

Key words: Lean manufacturing, Green sustainability, Uzbekistan’s environmental conditions, Economic reforms, waste reduction.

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1. Introduction

Nowadays, many people around the world are increasingly aware of nature, and this shift in consciousness aligns with significant environmental standard trends in today’s global market. Consequently, the integration of Lean manufacturing and the green economy is improving gradually, as many emerging countries also strive to enhance awareness of sustainable development within their territory. This growing awareness complements Lean manufacturing’s crucial role in improving operational efficiency across various industries, which in turn leads to significant waste reduction and cost savings. The advent of the green economy provides a crucial framework for advancing sustainability, encouraging businesses to adopt environmentally conscious practices while embracing Lean principles. Collectively, these movements are transforming industries and promoting a more sustainable approach to production and consumption. Consequently, the integration of Lean manufacturing and the green economy is vital in addressing the challenges of environmental responsibility in today’s market [1].

In recent years, Uzbekistan has made significant strides toward aligning its economic development with the principles of sustainability to undercover International Environmental Standards. Under the leadership of Uzbekistan’s President Shavkat Miromonovich Mirziyoyev, the nation has emphasized the importance of a green economy as a cornerstone of its long-term growth strategy. In his speeches, President SH. Mirziyoyev has consistently highlighted the need for innovative approaches to boost productivity while protecting the environment, setting the stage for the integration of lean manufacturing principles into Uzbekistan's industrial landscape. Lean manufacturing, which focuses on maximizing value while minimizing waste, has gained global recognition as an effective strategy to enhance operational efficiency and competitiveness. In 2019, during a national reform, President SH. Mirziyoyev underscored the significance of embracing advanced technologies and best practices in manufacturing to foster a more resilient economy and under his control a number of laws, reforms and projects like “Yashil Makon” nationwide project, Decree of the president of the Republic of Uzbekistan dated December 2, 2022 No. 436 “On measures to increase the effectiveness of reforms aimed at the transition of the Republic of Uzbekistan to a green economy by 2030” were adopted [2]. His call to action resonates with the growing acknowledgment that economic success cannot be separated from environmental sustainability. Moreover, the government has initiated various programs aimed at facilitating this integration. For example, in his recent remarks at an international conference on sustainable development, President of Uzbekistan reaffirmed the government’s commitment to creating a favorable environment for businesses that adopt green and lean practices. This commitment is evidenced by policy reforms that facilitate investment in sustainable technologies and practices. As Uzbekistan addresses challenges related to resource scarcity and environmental degradation, the integration of lean manufacturing into its green economy offers a promising avenue for enhancing industrial efficiency while advancing sustainable development goals. This study will examine case studies from various sectors around the world, alongside insights from leading academics and industry experts, in order to illustrate the tangible impacts and potential challenges of this strategic alignment. In conclusion, the integration of lean manufacturing principles with a green economic framework establishes Uzbekistan as a model for other emerging economies undergoing comparable transformative processes. As this investigation progresses, the importance of continuous improvement and innovation in both

manufacturing and environmental stewardship cannot be overstated, indicating a promising future for Uzbekistan's sustainable industrial landscape.

2. Literature review

2.1 Lean Manufacturing

Lean manufacturing is the systematic approach to identifying and eliminating waste through continuous improvement. It creates a smooth production process flow with shorter lead times and little waste [3]. Lean manufacturing is a production system that uses minimal energy and waste to fulfil consumer demand with precision. Developed in Japan as the Toyota Production System, it aims to implement continuous improvement (Kaizen), enabling companies to reduce costs while eliminating waste and improving process optimization to increase customer satisfaction and reduce manufacturers’ production damage to the environment. According to the principles of lean manufacturing, there are seven types of production waste, collectively known as MUDA [4]. Table 1 provides comprehensive information about this.

Table 1. Wastes in Lean Production (MUDA) [5]**.**

WASTE TYPES	DESCRIPTION
Transportation	Unnecessary movements of parts and materials
Inventory	Stockpile of materials or information that increases lead time
Motion	Operational movement that often leads to fatigue or lowers performance of workers
Waiting Time	An operational stop that causes machine or workers to halt
Overproduction	Producing in excess of the required demand
Over Processing	Performing above the requirement as stipulated
Defects	This includes re-work, repair, re-inspection due to bad quality
Human Resource	Inefficient use of workforce

2.2 Green Economy

The green economy aims to significantly reduce environmental risks and scarcity of resources while emphasizing sustainable development without degrading the environment [6]. By focusing on improving human well-being and social equity, it seeks to promote sustainable practices that balance economic growth with ecological preservation, ensuring the effective use of natural resources. Ultimately, the green economy strives to create a more resilient and sustainable future while addressing the pressing challenges of climate change and resource scarcity.

3. Integration of Lean Manufacturing in Green Economy for Sustainable Development

3.1 Comparison of Lean Manufacturing and Green economy by similarities

Similarly, to Lean Manufacturing, there are several types of waste in Green economy, as well, Table 2 describes different types of Green Waste.

Table 2. List of Green Waste [7].

Green Waste Types	Description
Energy	Over utilization of power from various machinery
Water	excessive use of water
Material	non-recyclable material or defective products would constitute as garbage contributing to the landfills causing pollution
Gas Emission	Release of toxic gas into the atmosphere

Transportation	Unnecessary movement of materials or people from one location to another
Biodiversity	Disposal of items that contribute to garbage accumulation leading to environmental challenges
Garbage	Disposal of items that contribute to environmental challenges

The preceding table categorizes various types of waste relevant to the Green Economy, which exhibit significant similarities to the Lean Manufacturing wastes, commonly referred to as MUDA. The Lean Manufacturing paradigm primarily emphasizes operational efficiency within production systems, utilizing methodologies such as Just-In-Time production, Kaizen, and value stream mapping to identify inefficiencies and optimize processes. The overarching objective of this approach is to enhance productivity while concurrently minimizing costs and waste. In contrast, the Green Economy framework transcends mere operational efficiency; it adopts a comprehensive perspective that prioritizes environmental sustainability by aiming to reduce carbon footprints, promote renewable energy sources, and foster sustainable practices across diverse industries. Furthermore, this approach incorporates social responsibility, striving to create equitable economic opportunities and enhance the quality of life. Consequently, although both frameworks share the common goal of waste elimination, the Green Economy uniquely integrates broader environmental and social dimensions into its strategic framework. Figure 1 shows a potential integration of Lean manufacturing, Green production and Sustainability issues.

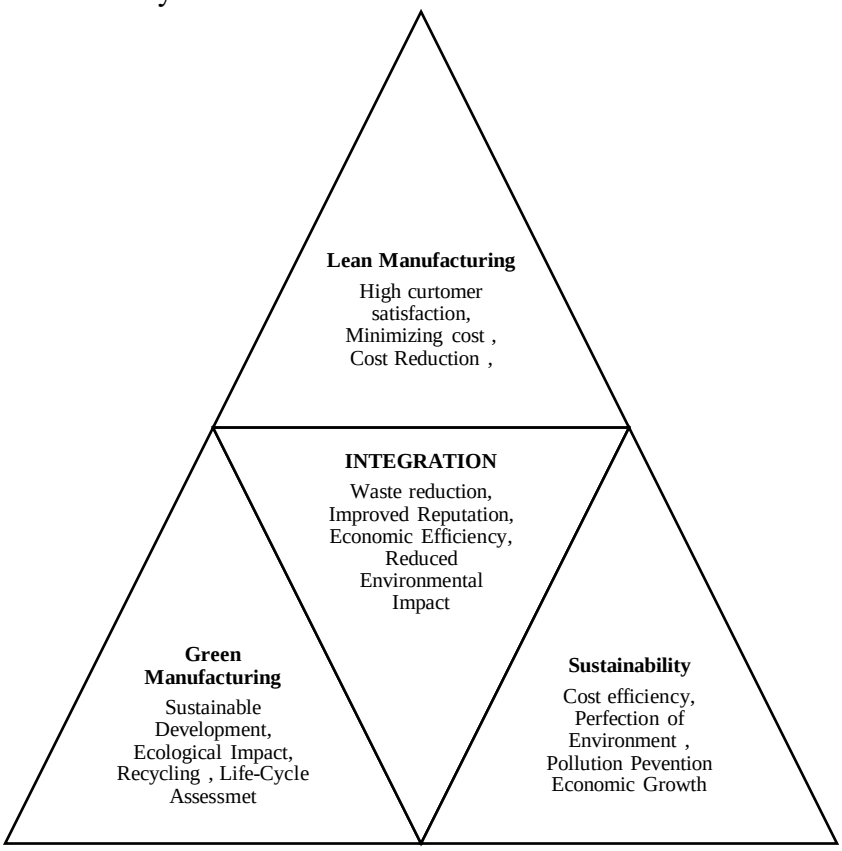


Figure 1. The integrated aspects of Lean manufacturing, Green production and Sustainability.

Conclusion

Lean manufacturing plays a significant role in adopting a Green Economy and sustainable development of the Uzbekistan in near future. Particularly, Lean can improve the waste reduction, increase the economic efficiency of the manufacturing companies as well as reduce the environmental impact of the production processes. The integrated approach of Lean and Green manufacturing supports the smooth transition of the traditional economy to the more sustainable ones.

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AGRAR SOHADA INDEKSLI VA TURLI RISKLARGA EGA SUG‘URTA MAHSULOTLARINI QO‘LLASH ORQALI SAMARADORLIKNI OSHIRISH ISTIQBOLLARI

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Mahalliy agrobiznesni yuritishda yuqori darajali ishlab chiqarish riskining mamlakatimizning geografik joylashuvi bilan ham, qishloq xo‘jaligi uchun yaroqli hududining muhim qismi riskli dehqonchilik zonasida yoki qishloq xo‘jaligi zonasida joylashganligi bilan bog’liq risk ortdi.

Demak, riskli dehqonchilik zonalarida ishlab chiqarishni yo‘lga qo‘yayotgan qishloq xo‘jaligi ishlab chiqaruvchilarining asosiy vazifasi ularning daromadlarini samarali barqarorlashtirishdir. Shu munosabat bilan salbiy ob-havo va iqlim hodisalari oqibatlarini kamaytirish imkonini beruvchi moliyaviy vositalar alohida ahamiyatga ega. Qishloq xo‘jaligi ishlab chiqaruvchilari risklarni boshqarish uchun ko‘plab imkoniyatlarga ega. Ularni 2 ta asosiy guruhga birlashtirish mumkin: korxonadagi risklarni kamaytirish strategiyalari va risklarni boshqa xo‘jalik yurituvchi subyektlar bilan o‘tkazish va bo‘lishish strategiyalari. Hozirgi kunda dunyoning rivojlangan mamlakatlarida riskni qoplashning eng keng tarqalgan usullaridan biri sug‘urta hisoblanadi.