დასკვნა. ჩატარებულ კვლევებზე დაყრდნობით, აუცილებელია: 1) შემუშავდეს საკუთარი მიდგომა კორპორაციული მართვის დონის შეფასებისათვის (რეიტინგის შეფასებისათვის); 2) ჩატარდეს საერთო მდგომარეობის ექსპერტიზა და შეფასებული რისკების არსებული დონისაგან დამოკიდებულებით გაანგარიშდეს გადასახდელი თანხა მათთვის კორპორაციული მართვის ყოველი მდგენელის მიხედვით და მისი საერთო სიდიდე საანალიზო კომპანიის მიხედვით. რისკისათვის გადასახდელი თანხის მიღებული სიდიდე (სხვა მდგენელებთან ერთად) შემდგომში შესაძლოა გამოყენებულ იქნეს კომპანიის საკუთარი კაპიტალის ფასის გაანგარიშებისათვის, მაგრამ ამის განხორციელებამდე აუცილებელია კორპორაციული მართვის მოდელებისა და პრინციპების დამუშავება და მათი დახასიათების წარმოდგენა.

გამოყენებული ლიტერატურა

1. კორპორაციული მართვის კვლევა საქართველოს კომპანიებში IFC თბ.2008.
2. კორპორაციული მართვის სახელმძღვანელო თბ.2008.
3. კოოპერაციული მართვა, რისკი და ეთიკა,ბაფი 2014.
4. Кумбс П., Уотсон М., Кампос К. Вестник McKinsey, 2003, № 1(3): 39.

Methodology of Sustainable Development of Enterprises at the Structural Process Approach

Shakhnoza Khakimova, Muyassar Umarxodjayeva
Tashkent State University of Economics
shahnozochka2018@gmail.com, Muassarkhon@mail.ru

Abstract. Many companies try to implement the new strategies to advance product quality and environmental sustainability to achieve improved profitability. This paper investigates the effective way to develop the company's sustainability and increase its competitiveness. The objective of this study is to develop an integrated approach to evaluate the impacts of lean and green practices on organizational performance and prioritize improvements in the system. In this paper, a literature review is conducted to identify the actual possibility of combining lean and green practices, the current trends for implementing such combination and the potential sustainability improvements such implementation can lead. From a managerial perspective, this research provided a tool that enables companies to evaluate their lean and green systems and identify which practices should be prioritized to improve operational and environmental performance.

Key words: sustainable development, lean manufacturing, green methodology, cost reduction, quality improvement, environmental solutions, sustainability.

Introduction. Global factors like resource scarcity, climate change, increased globalization level and increased awareness of stakeholders on environmental and social responsibility, as well as in all industries, low-profit margins and aggressive competition, have forced companies for the attainment of long term survival to retain, regain, and sustain their competitive advantages [13]. Sustainability is considered to be the leading concept of the latest innovation wave [9]. Conditions which carry organizational long term survival include social, environmental, and financial excellence [15,][16]. Due to the lack of complete understanding of various perspectives, including sustainability, environmental, social, and economic excellence interdependency, it forbade companies from realizing and foreseeing potential gains, which can be achieved through initiatives of sustainable development or sustainability. True sustainability contributes towards organizations' economic prosperity, as well as environmental protection, natural resources preservation and the well-being of other living things and people [15]. So, our head of Uzbekistan signed on 4th of October the Decree under № 4477 "On approval of the strategy for transition of the Republic of Uzbekistan to a green economy for the period 2019 – 2030". According to that the low level of energy efficiency of the economy, irrational consumption of natural resources, slow technology update, weak participation of small businesses in the implementation of innovative solutions for the development of a green economy hinder the achievement of priority national goals and objectives in the field of sustainable development of the country. So, the scientists task is to do research in the theory of sustainable development of companies and make innovative models for the improvement the activities at the enterprises. The main purpose of this paper is to make the contribution to the development of sustainability methodology of organizations.

Literature review. This section presents review of literature in two types of technologies: Lean and green manufacturing for the sustainable development of companies. This section describe the importance of each approach, together with related practices and performance benefits, while the final sub section highlights total assessment models developed at the process-structure approach.

Lean methodology. Lean is a methodology to reduce waste in a manufacturing system without sacrificing productivity. The customer defines what is of value in terms of what they would pay for the product or service. Through lean management, what adds value becomes clear by removing or reducing everything that doesn't add value.

The general meaning of lean is that it consists of a set of tools that help to identify and eliminate waste. That waste can be created through an overburden and unevenness in workloads. The removal of waste from any system improves quality and production time, while reducing cost.

Lean methodology tools	
SMED (single-minute exchange of die, which is fast way to move from one manufacturing process to another)	5S (a workplace organization methodology)
Value stream mapping	Kanban boards (visualizes workflow)
Poka-yoke (error-proofing)	Total productive maintenance (improves integrity and quality of manufacturing process)
Rank order clustering (production flow analysis)	Single-point scheduling
Redesigning working cells	Multi-process handing
Control charts (for checking workloads)	

Goals and Strategy of Lean Manufacturing

Reducing or eliminating waste is essential to lean project management, but the ends that it serves can be different depending on who is asked. Some say it is increasing company profit while others maintain its improvements are solely to benefit the customer. Some common goals follow.

- ✓ Improve Quality: To stay competitive, companies can't be complacent, but must meet customers' changing wants and needs. Therefore, processes must be designed to meet their expectations and requirements. Adopting total quality management can make quality improvement a priority.
- ✓ Eliminate Waste: Waste is bad for costs, deadlines and resources. It takes without adding any value to a product or service.
- ✓ Reduce Time: Time is money, as the adage goes, and wasting time is therefore wasting money. Reducing the time it takes to start and finish a project is going

to create value by adding efficiencies. Learn and apply some time management strategies.

- ✓ Reduce Total Costs: Money is saved when a company is not wasting time, materials and personnel on unnecessary activities. Overproduction also adds to storage and warehousing costs. Understanding the triple constraint is the first step to understanding cost management.

In summation, the lean manufacturing methodology emphasizes flexibility and constant improvement of processes for greater efficiency.

Green methodology

There have been a few megatrends that have shaped the manufacturing industry this past decade. New digital technologies, advanced robotic systems, and green manufacturing practices just to name a few. These new trends have thrown the manufacturing industry into the 21st century greatly improving the industry as a whole. There has been an overwhelming push for the latest manufacturing technology and new collaborative robotic systems while green practices are largely an afterthought. Here's why this might be a mistake.

The green manufacturing can lead to shorten the life cycle of product and this reduces the cost of the product. Due to environmental and ecological responsibility, enterprises are trying to reuse, remanufacture and recycle the used products to reduce the negative impact on environment, especially the manufacturers of the electrical consumer products [14].

We'll be diving into the biggest benefits manufacturers can see from an investment into green manufacturing practices.

1. Cost savings

Businesses that take a forward-thinking approach to their manufacturing processes can see unbelievable cost savings. Machines and equipment are becoming much more energy-efficient and can have a lasting impact on a manufacturer's bottom line. Much of the equipment found on the average shop floor largely consist of legacy equipment that can be holding a business back from reaching their green manufacturing goals. Investment into new, energy-efficient equipment could be a fantastic way to cut costs over the long-term.

2. Reduced Material Use

Manufacturers that have a reverse logistics plan in place are able to reduce the number of raw materials needed to produce new components or products. Reverse

logistics is a process that ensures once a product reaches the end of its life-cycle, it will be returned to the manufacturer. Once the manufacturer takes the position of the used product, they can breakdown those used products and secure the remaining raw materials. Making use of materials that would normally be thrown away can mitigate what the manufacturer needs to spend on raw materials to make new products.

3. Reduce Carbon Footprint/Taxes

Focusing on green manufacturing and business practices will lead to a reduction in businesses' carbon footprints. It's all about carbon footprint management that will make a difference in how a business is run. This can have important tax implications and even result in receiving incentives from the federal government. Manufacturers can even receive additional incentives for investment into renewable energy infrastructures like wind turbines or rooftop solar panels. So not only will a manufacturer be producing their own energy, they will be paid for any energy they put back into the grid.

4. Improved brand Image

It isn't just manufacturers that have been focusing on the importance of going green. The public has shown that they would rather do business with a company that takes the environment into consideration throughout their manufacturing process. A manufacturer that is making a large investment in both time, energy and money to make sure their products are manufactured with the environment in mind can strike a chord with the public. A manufacturer's commitment to creating a green business can greatly improve their marketing effort. Explaining exactly what they're doing to ensure they reduce waste and their energy consumption can make them much more attractive to buyers.

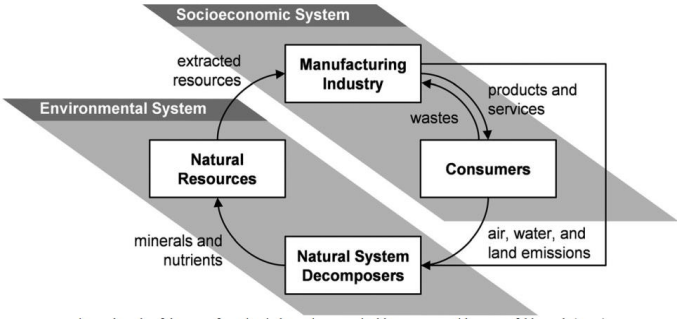


Fig. 1 The role of the manufacturing industry in a sustainable system David A. Dornfeld. Et.al.[2]

Fundamentals manufacturing is a business function, and, as such, engineers are well-versed in establishing the economic value of engineering solutions for manufacturing. Measuring environmental and social performance presents a more challenging engineering and business task. Sustainability-related impacts result from operations and activities that manufacturing processes and systems employ to convert input materials and energy into marketable products. Material and energy are necessary inputs of manufacturing processes and systems; wastes and emissions, which are generally classified as outputs, are, in turn, inputs to other industrial and natural systems, where their impact is felt socially, environmentally, and economically David A. Dornfeld. Et.al.,(2013). (Figure 1)[2]

Research methodology. Assessing a literature review of the last decade, the focus of researchers and practitioners tilted towards studying and practicing those manufacturing practices which contribute towards the achievement of the sustainability performance of the firm. These types of manufacturing practices result in significantly less damage to the environment and society as well as enhance the economic performance of the firm. Therefore, this research is an effort towards lean and green practices and their effects on the sustainability performance of companies.

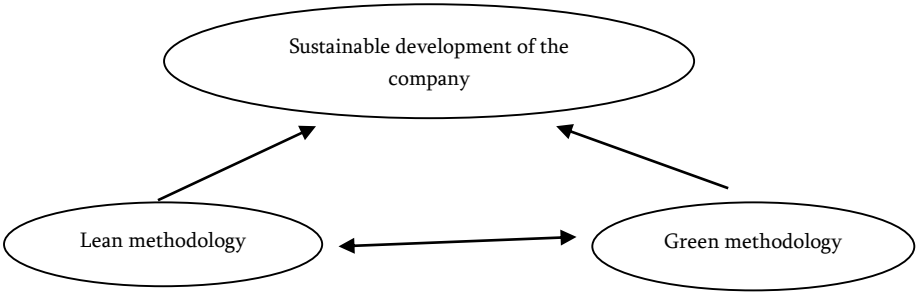


Fig. 2 The significance of two methodologies

Sustainable development of companies is based on above mentioned methodologies. Using them we study the process structural approach and its influence on changes of activities in the company.

As for sustainable development of company it is necessary to improve social, operational and environmental factors, we need to analyze four elements according to lean and green methodology practices.

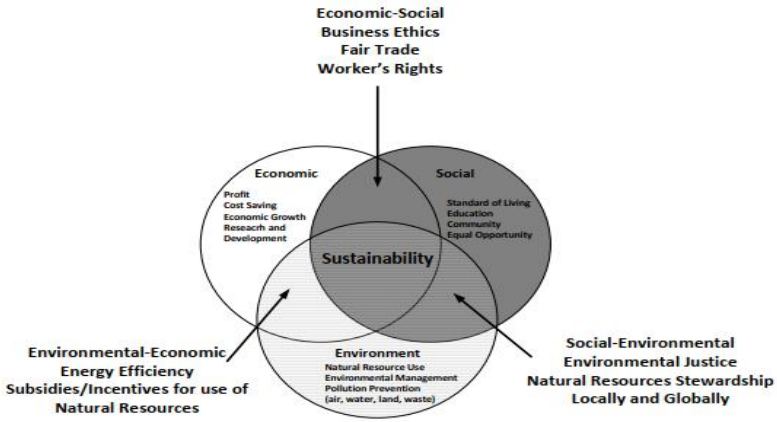
Although some promising results have been reported in the literature by adapting lean practices to address greener objectives [5], there are many researchers

that argue that lean practices have not reached the maturity level required to ensure sustainability yet [4]. In this line, they have suggested that, in order to be able to

Table 1. Target methods for key elements of the company

Key elements	Methods
Cost	SMED (Single Minute Exchange of Dies), 5S, Value stream mapping, Rank order clustering, Single-point scheduling,
Quality	5S, Total productive maintenance, Poka-yoke, Control charts, Redesigning working cells
Time efficiency	SMED (Single Minute Exchange of Dies), Kanban boards, Value stream mapping, Rank order clustering, Control charts
Environmental solutions	5 S, Poka-yoke

achieve sustainable results, the implementation of green manufacturing practices should also be considered [6]. Green practices are focused on reducing hazardous emissions, getting rid of the consumption of wasteful resources, recycling, and minimizing health risks throughout the entire manufacturing process, by minimizing the environmental footprint during the whole product life cycle [10].



Conclusion

Main success factors have been formed towards achieving sustainability performance by implementing the lean and green methodology at process structural approach:

1. The companies should set priorities and identify key goals [7].
2. Operational roles and responsibilities need to be broadened to include sustainability issues [1].

3. Sustainability metrics should be developed [8].
4. There is a need for openness of employees, stakeholders, customers, leaders and suppliers towards innovation[8].
5. Effective information management is crucial towards reaching sustainability improvements [12].
6. Management commitment is crucial for achieving sustainability standards [12].
7. A lean working environment, consisting in trained, engaged and committed employees, as well as continuous improvements culture, favours the implementation of green initiatives in combination with lean practices towards sustainability [3].
8. Customer focus and integration is crucial to achieve sustainable results [12].
9. Evaluation and review of performance and progress towards targets can lead to improvements in the sustainable results [12].
10. Wide understanding, acceptance and adoption of lean and green concepts are needed towards being able to actually implement them together in a synergetic way [11].

Finally, these useful theoretical and practical considerations as well as different implementation tools that can be used by researchers and practitioners as a starting point towards the adoption of lean and green practices at structural process approach.

References:

1. Cherrafi, A.; ElFezazi, S.; Govindan, K.; Garza-Reyes, J.A.; Benhida, K.; Mokhlis, A. A framework for the integration of Green and Lean Six Sigma for superior sustainability performance. Int. J. Prod. Res. 2016, 55,4481–4515.]
2. Dornfeld, David (Ed.) Green Manufacturing.Fundamentals and Applications. 2013. ISBN 978-1-4419-6016-0
3. Dües, C.M.; Tan, K.H.; Lim, M. Green as the new lean: How to use lean practices as a catalyst to greening your supply chain. J. Clean. Prod. 2012, 40, 93–100.]
4. Dieste, M.; Panizzolo, R. On the Relationship between Lean Practices and Environmental Performance. In Proceedings of the IOP Conference Series: Earth and Environmental Science; IOP Publishing: Bristol, UK, 2018; Volume 151
5. Fliedner, G. Sustainability: A new lean principle. In Proceedings of the 39th Annual Meeting of the Decision Sciences Institute, Baltimore, MD, USA, 22–25 November 2008
6. Garza-Reyes, J.A. Green lean and the need for Six Sigma. Int. J. Lean Six Sigma 2015, 6, 226–248. [CrossRef]
7. Kumar, M.; Rodrigues, V.S. Synergetic effect of lean and green on innovation: A resource-based perspective. Int. J. Prod. Econ. 2018, in press