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THE INTRODUCTION OF THE CONCEPTION «LEAN 6 SIGMA» AS A WAY TO SUSTAINABLE POSITIONS OF TRANSPORT ENTERPRISE ON THE WORLD MARKET

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The article deals with the need to implement an integrated variations concepts «six sigma» and the concept of «lean» production. The basic concept of these concepts are analyzed. The advantages of implementing an integrated concept of «LEAN 6 SIGMA» have been proposed.

Keywords: «six sigma», «lean» production, «lean 6 sigma», motor vehicle transport, world market.

Introduction. Developing own independence, including the economic backdrop, Ukraine faces a lot of difficulties, including in the area of restructuring of production in accordance with the latest global trends. The undisputed fact is the need to improve the competitive position of domestic enterprises in the global market. So at the forefront in the management now the new approaches come to solve this problem. It should be noted that domestic enterprises and the economy as a whole do not have sufficient funds for the investment and implementation of innovative products in the required scale, so you should seek means to achieve the set goals within the enterprise, that's introduce the new management system that will provide an opportunity to build more efficient production. These systems can serve as the concept of «lean» production management concept and «Six Sigma».

Analysis of recent researches and publications. The current problems of the concept of «lean» production management concept and «Six Sigma» are in a big attention of many native and foreign scientists, including the issue engaged M.L.

George [1], J. Womack and D. Jones [2], Eliyahu M. Goldratt [3], J. Cox, D. Jacob, S. Bergland [4] and others.

Previously unsettled problem constituent. The current global financial crisis and subsequent recession changed the operating business conditions. In the changed realities for the business managers the critical questions are the cost reduction, the customer loyalty, the increase of the responsiveness in changeable external conditions and so on. However, it is important to ensure the readiness of scaling operations to start the economic growth. The analysis of the company during the previous recession has shown that the leaders of the industries after the recession were organizations that were able to achieve high operating efficiency.

The conditions in which companies find themselves today may be regarded as an opportunity to obtain the new skills that had been requested at the stage of rapid economic growth – skills for continuous improvement of the efficiency of operations and cost reduce. Therefore, the development of the new integrated approaches to improve the production efficiency is quite relevant today, but it is not earned the sufficient level of the development.

Main purpose of the article. The purpose of this research is to study the feasibility of using the combined concept of «lean» and «Six Sigma» as means to improve the Ukrainian road transport enterprises competitiveness.

Results and discussions. Today the concept of «lean» is one of the leading contemporary theoretical and practical achievements in economic science. The result of further development is a large number of variations concepts and business models.

The concept «lean» («lean production», «lean manufacturing») were introduced in the second part of the 90s of the twentieth century by the Englishman Daniel Theodore Jones and by the American James Potter Vumek. Lean System includes a large number of tools and techniques of these approaches and often the same management approaches. Key management tools and approaches that are part of lean manufacturing tools are «Just in Time», «Kaizen», «5S», «Andon», «Kanban», SMED (Single Minute Exchange of Die), etc. [5].

Many of these approaches and tools can be used separately but the united concept of lean manufacturing with tools and approaches gives a significant result. The combination of methods, tools and approaches facilitate and enhance each other, thanks this the system Lean becomes more flexible.

Let's look at the another conception of management production - methodology «Six Sigma». This methodology is used to measure and improve performance of the company by identifying and detecting defects in business processes, i.e. processes of the production or service provision [6].

The term «Six Sigma» was introduced into practice by Motorola in the mid 80's XX century. Among the companies that use this methodology are Motorola, General Electric, Honeywell, Samsung Electronics, Seagate Technology, Microsoft, Nokia

Mobile Phones and others. «Six Sigma» is the level of efficiency of the process in which for every million opportunities or transactions accounts for just 3.4 defects [7].

For any transaction or at any step of the process can determine the number of the defects, such as lack of response to the request of the customer, the error in ordering goods, the wrong account and other. The modern business world uses the concept of «Six Sigma» in almost all areas – in manufacturing and in services, medicine and education, and even in the defense sector.

One of the key success factors of the system is its high organization. All activities carried out under the project, each with its target, terms, budget, allocation of responsibilities and authority, requirements for assessing the risks, recording and more. Another important factors of «Six Sigma» are so effective leadership, active top management attitude and making right decisions which are based on the evidence without speculation.

The purpose of the methodology «Six Sigma» is the reducing deviations during the manufacturing process and its improvement through the implementation of the so-called improvement project «Six Sigma», which is divided into a sequence of steps DMAIC (define, measure, analyze, improve, control): definition, measurement, analysis, improving and control.

At the stage of «determination» (define) are defined the aims and scope of the project, find out the problems which should be solved to achieve a certain level of variation. The aims may be different in different levels of the organization – for example, at the senior management level it may be a great return on investment or gain more market share. At the operations level it could be the increase in output of the plant. At the project level – reducing the number of spoilage or increase the efficiency of the particular process.

At the stage of «measurement» (measure) is gathering information on the current state of affairs to obtain data on the basic level of performance and identify areas that require the most attention. At this point the defined metrics let to assess the degree of approximation to the set goals.

In «analysis» step (analyze) are found the main causes of the problems in the ensuring quality, then the right choice of these reasons is checked using the special tools of data analysis.

At the stage of «perfection» (improve) implemented solutions which are targeted directly to the main causes of the problems identified in the analysis stage. Such solutions can include project management and other management tools and planning.

The purpose of the «control» phase is the assessment and monitoring the results of previous stages. At this stage, backed by a modification of improving incentives and rewards, sets of rules, procedures, systems, MRP, budgets, instructions for staff and other control levers. To ensure correct documentation can be provided, for example, its compliance with ISO 9000 specifications.

Another important aspect of the project «Six Sigma» is a division of roles between experts. It should be appointed by the «performers» the following key roles:

- «leader» – a member of the senior management of the company, which, in fact, should decide the launch of «Six Sigma», and then to implement it, removing all possible obstacles and providing adequate resources;
- «Black Belt» – high-level expert, an expert in «Six Sigma»; he instructs the project group, manages and teaches the use of methods and tools «Six Sigma»; He is responsible for the full implementation of training programs;
- the specific work on the implementation of the project conducted by a group of «Six Sigma». This group includes experts in the areas that are affected by the project, trained on the methodology. They provide the necessary support during the project and share their knowledge.

In a systematic approach to the implementation of «Six Sigma», i.e. the active support and participation of, the necessary infrastructure and technological support, etc., the company gets a huge economic achievement by reducing all types of losses [8].

The modern view on the implementation of these concepts is the introduction of the combined variation that is the concept of production management «Lean 6 Sigma» – the practical methodology of business improvement.

This phenomenon aimed at creating benefits for each product, process or transaction within the organization and as a result of the synergistic effect of combining the above concepts of management.

The «Lean 6 Sigma» concept is disciplined, evidence-based approach that aims to transform business performance by improving quality, reducing costs and creating new opportunities.

Note that the unifying element of these two concepts is mutual interest in a single process. This is essentially distinguishes them from many «predecessors», focused on the general scope and are linked to the concepts of the new generation, such as re-engineering of business processes. Concept of «Six Sigma» and «Lean Management» perfectly elaborate each other. The answers to the questions regarding the complementarity of these concepts can be found in the publications of George Michael, who is one of the first ideologues Lean Six Sigma [9].

Implementation of Lean 6 Sigma allows to:

- increase customer satisfaction;
- achieve significant cost savings;
- increase the number of business processes related to performance;
- generate new markets;
- generate higher levels of income and profits [10].

Also implementation of this concept allows to organize and achieve sustainable noticeable improvement in the organization.

Conclusions and further researches directions. The success of the concept of «Six sigma» and «lean» in foreign enterprises should cause among the native enterprises uncontrollable desire to implement these approaches in their activities and irresistible movement towards continuous improvement of its competitive position requires further implementing various integrated approaches in its symbiosis will get significantly best effect, which is positively affect to the performance indicators of the company.

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**ВПРОВАДЖЕННЯ КОНЦЕПЦІЇ «LEAN 6 SIGMA» ЯК ШЛЯХ ДО
СТАЛИХ ПОЗИЦІЙ ПІДПРИЄМСТВА АВТОМОБІЛЬНОГО ТРАСПОРТУ
НА СВІТОВОМУ РИНКУ**

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У статті розглянуто необхідність впровадження інтегрованої варіації концепцій «шість сігма» та концепції «ощадливого» виробництва. Проаналізовано основні поняття зазначених концепцій. Зазначено переваги від впровадження інтегрованої концепції «LEAN 6 SIGMA».

***Ключові слова:** «шість сигм», ощадливе виробництво, автомобільний транспорт, світовий ринок.*

**ВНЕДРЕНИЕ КОНЦЕПЦИИ «LEAN 6 SIGMA» КАК ПУТЬ К
УСТОЙЧИВЫМ ПОЗИЦИЯМ ПРЕДПРИЯТИЯ
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В статье рассмотрена необходимость внедрения интегрированной вариации концепций «шесть сигма» и концепции «бережливого» производства. Проанализированы основные понятия указанных концепций. Указано преимущества от внедрения интегрированной концепции «LEAN 6 SIGMA».

***Ключевые слова:** «шесть сигм», бережливое производство, автомобильный транспорт, мировой рынок.*