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ИССЛЕДОВАНИЕ ПРОТИВОДЕЙСТВИЯ КОРПОРАТИВНОМУ МОШЕННИЧЕСТВУ: БУХГАЛТЕРСКО-ЮРИДИЧЕСКИЕ ПОДХОДЫ К ВЫЯВЛЕНИЮ ЗЛУПОТРЕБЛЕНИЙ

Предложено создание собственного агентства по финансовым расследованиям на предприятии, его организационная структура, функции, этапы выявления фактов злоупотреблений и таблица индикаторов злоупотреблений. Определено место фальсификации финансовой отчетности в финансовом мошенничестве. Обоснована необходимость оценки риска фальсификации финансовой отчетности и приведены наиболее существенные риски мошенничества с финансовой отчетностью.

Ключевые слова: корпоративное мошенничество, фальсификация финансовой отчетности, оценка рисков мошенничества, Агентство финансовых расследований.

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Kolos I.

INTEGRATION ON EFFECTIVE MANAGEMENT OF INDUSTRIAL ENTERPRISES ON LEAN PRINCIPLES

Встановлено за частотою згадувань фахівцями сукупність найбільш визнаних методів ощадливого виробництва. Розкрито доречність їх окремого запровадження через досягнення результату практичного використання. Обґрунтовано поєднання методів в різних комбінаціях для ефективного управління виробничими потужностями, матеріальним потоком та документооборотом і внутрішніми регламентами промислового підприємства. Обґрунтовано види синергії як результат підсилення дії окремих методів в різному поєднанні.

Ключові слова: *ощадливе виробництво, метод ощадливого виробництва, інтеграція методів, ефект синергії, промислове підприємство.*

1. Introduction

The priority direction of increasing the efficiency of domestic industrial enterprises in order to ensure sustainable economic development for the long term is the introduction of innovative management methods and tools with a focus on overcoming crisis and atypical situations in conditions of instability, risk and uncertainty. There is a need to revise, actively search for and introduce acceptable methods of effective management of an industrial enterprise with a focus on timely and quality performance of orders from buyers to ensure the proper and expected value. In this connection, there arises the problem of choosing rational methods of enterprise management taking into account the maximum use of the inherent advantages and simultaneous leveling of restrictions with a focus on the priority of achieving the desired results, subject to the consumption of limited resources, the specifics of the operation and the uniqueness of the production technology. In modern conditions, in all spheres of activity, combining methods and their integrated use, in particular on the basis of frugality, is becoming increasingly important, which contributes to integrated management and assessment of the functioning

of not only the industrial enterprise, but also the relationships with its partners, in particular suppliers and buyers.

2. The object of research and its technological audit

The object of research is methods of managing an industrial enterprise in their interaction, taking into account the focus of the result within the introduction of the concept of lean production.

It should be noted that the operation of each method is aimed at eliminating waste and reducing the cost of operations [1], but taking into account the dual nature of waste [2], the result can vary significantly in each industrial enterprise depending on the sector of the economy and the uniqueness of the technology. In case of separate use, there is a chance of providing a short positive result – a reduction in unproductive waste [1, 3]. For long-term success, it is advisable to consider using the integration of methods, which will allow to get the best result on the basis of synergy through the strengthening of the action of each without restriction or contradiction between them. The interaction of the methods of the lean production concept

is influenced by a significant number of factors in various combinations, it is simultaneously and necessarily necessary and difficult to take into account, and under certain circumstances it is not always possible. The key to rational and appropriate application of methods of lean production is the revision of the organizational culture and the attitude of the personnel of the enterprise to changes [4].

3. The aim and objectives of research

The aim of research is systematization of the theoretical and methodological provisions with the identification of features of the integrated use of the methods of the lean production concept.

Achieving this aim has made it necessary to solve the following tasks:

1. On the basis of the analysis of published results of studies of foreign and domestic specialists (scientists, consultants, practitioners) to establish a set of actively introduced methods of lean production.

2. To reveal the appropriateness of the methods of the lean production concept through the achievement of the results of the separate introduction of each of the positions to ensure the effective management of an industrial enterprise.

3. To justify the expediency of simultaneous use of methods of lean production with the aim of enhancing the effectiveness of everyone on the efficiency of the functioning of an industrial enterprise on the basis of lean.

4. Research of existing solutions of the problem

A critical analysis of the specialized literature from published research results on the outlined problems allowed to be systematized according to the thematic focus in the following areas:

- justification of the existing set of methods of the lean production concept with a focus on reducing waste (unproductive cost) [1, 3–19];
- grouping methods of lean production on various classification characteristics. Thus, in the works of the majority of researchers [5, 7, 10, 16, 17, 19], the unity of position regarding the separation of methods of lean production by countries of origin is traced: Japanese methods and American methods. The chronologically evolutionary aspect, which confirms the gradual development and adaptation to the national peculiarities by the countries of origin (Japan, USA) of these methods, is additionally taken into account in [16, 17]. Ukrainian scientists [19] differ two groups of methods in the aspect of functioning of the lean enterprise:

- 1) organizational and technical, whose action is aimed at improving the efficiency of the enterprise by designing technical and technological parameters and the nature of production, forms and methods of its organization;
- 2) socio-cultural, having a determining character for the content and consolidation of the results of lean transformations through the formation of organizational culture and moral and psychological climate in the team, development of a model of the expected behavior of workers in different situations. The classification of methods of lean production by wastes groups deserves in-depth study [1, 13, 14], which provides a correct targeted choice of methods for reducing waste (unproductive cost);

- attempting to make recommendations on the joint use of some methods of lean production to enhance the positive result [1, 13, 18].

Recognizing the importance of the scientific results obtained, certain theoretical and methodological problems of effective management of an industrial enterprise remain subject to discussion and require further research. In the published works, the possibilities of combining various methods of the lean production concept to ensure effective management of an industrial enterprise are insufficiently investigated, the urgency of this problem and the need for this study are determined.

5. Methods of research

In the course of research, the following methods are used to solve the tasks: critical analysis and generalization of theoretical studies – to establish a set of common methods of lean production and determine the results of their separate introduction; synthesis, induction, deduction – to justify the expediency of sharing the methods of lean production. At the same time, general scientific methods of scientific research – system analysis, monographic method are used.

6. Research results

Monitoring of the scientific base on the active dissemination of methods of the lean production concept shows that researchers are invited to use a set of different methods (Table 1).

Summarizing the presented results, it is necessary to note by frequency of references the most recognized ones: SOP, Kanban, JIT, 5 S, VSM, Visual Management, TPM, SMED, Kaizen, Poka-Yoke, Jidoka (another name – automation), Heijunka, Andon, 5 W, Team work.

So, SOP method is considered as an indispensable condition for achieving and maintaining the desired result and is based on the standardization of the work, the ultimate goal of which is the development and approval of internal standards for rational performance of tasks taking into account the features and the production situation. The standards are documented in the types of standard operations cards: production capacity sheet, standardized work combination table, standardized work chart, job instruction sheet, work standards sheet [1, 8–10].

The introduction of Kanban method involves establishing the relationship between business processes within the enterprise, coordinating the value stream in accordance with the requests of customers and consumers, and informing, allowing the most complete implementation of the principle of drawing by using kanban cards: (1) basic (kanban order, kanban selection); (2) additional (kanban-express, kanban state of emergency, through kanban map, common kanban map) [1, 5, 7–10, 19].

The introduction of JIT method is aimed at reducing the time and money spent by minimizing stocks in their storage areas and preventing receipts from suppliers of raw materials and materials of inadequate quality. Implementation of JIT method provides for a complete synchronization of the procurement process and the production process, as well as balancing the number of personnel, material resources and equipment in order to better meet customer requirements at a given time and the proper quality of the finished product [1, 7–10, 19].

Table 1

A set of methods of lean production concept in the works of researchers (compiled by the author)

Authors	SOP*	Kan-ban	JIT*	5 S	VSM*	Visual Management	TPM*	SMED*	Kai-zen	Po-ka-Yoke	Jido-ka*	Hei-junka	An-don	5 W*	Team work	Small-group activities	Han-sey	OTED*
M. Wader [1]	x	x	x	x	x	x	x	x	x	x	–	x	x	–	–	–	x	–
U. Levinson, R. Berick [3]	x	x	x	x	–	x	x	x	x	x	x	–	x	x	–	–	–	–
T. Ohno [5]	x	x	x	–	–	x	x	x	–	x	x	x	x	x	x	–	–	–
S. Shingo [6]	x	x	x	–	–	x	–	x	–	x	x	x	–	x	–	–	–	x
J. Liker [7]	x	x	x	x	x	x	x	–	x	x	x	x	x	x	x	x	x	–
C. Marchwinski, J. Shock, A. Schroeder, J. Ferro, D. Jones, J. Womack [8]	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	–	x	–
K. Dailey [9]	x	x	x	x	x	–	x	x	x	x	–	–	–	–	–	–	–	–
P. Hines, P. Fond, G. Griffiths, R. Harrison [10]	x	x	x	x	x	x	x	x	–	–	x	–	–	–	–	x	–	–
D. Hobbs [11]	x	x	x	x	x	x	–	–	–	–	–	x	–	–	x	x	x	–
R. Pereira [12]	x	–	–	–	x	–	x	x	x	–	x	x	–	–	–	–	x	–
D. Tapping, E. Dunn [13]	x	x	–	x	x	x	–	–	x	x	–	x	x	x	x	x	x	–
D. Tapping, T. Shuker [14]	x	x	x	x	x	x	–	–	x	–	–	x	x	x	x	x	–	–
J. Womack, D. Jones [15]	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	–	–
K. Safronova [16, 17]	–	x	x	x	x	x	x	x	x	x	x	–	x	–	–	–	x	–
N. Feigenson, I. Matskevich, M. Lipetskaya [18]	x	x	x	x	x	x	x	x	x	–	x	–	–	–	–	–	–	–
T. Omelyanenko, O. Shcherbyna, A. Vakulenko [19]	x	x	x	x	x	–	x	x	x	x	x	x	x	x	x	x	–	–
Number of mentions	15	15	14	13	13	13	12	12	12	11	11	11	10	9	8	7	7	1
Frequency of mention, %	94	94	88	81	81	81	75	75	75	69	69	69	62	56	50	44	44	6

Note: * Jidoka (other name – autonotation), SOP (Standard Operating Procedure), TPM (Total Productive Maintenance), SMED (Single Minute Exchange of Dies), VSM (Value Stream Mapping), JIT (Just-in-Time), 5 W (Five Whys), OTED (One-Touch Exchange of Die).

The implementation of the 5 S method on a systematic basis helps to improve the rules of the production process and creation of priority conditions for introduction of other methods of the lean production concept. It is advisable to apply to diagnose quality problems with a focus on minimizing waste. As a result – increased productivity, less loss and rejection, increased staff discipline, reduced injuries, eliminating possible accidental errors, improving the culture and safety of work [1, 7–10, 19].

VSM is a method for visualizing a complete value flow, covering all business processes from the receipt of an order for execution to the release of finished products to the customer, where in a graphic form the scheme of all phases of the movement of material, information and cash flows necessary for the fulfillment of the customer's order is determined: a current-state map (represents the current conditions for the current moment), a future-state map (reflects improvement options for achieving the best performance level at some point in the future time), ideal-state map (contains level of perfection that can be achieved when using lean production methods) [1, 7–10, 19].

The Visual Management method provides a visual representation of information about the planned values of the monitored indicators and the actual results of the

operation, ensures rapid identification of deviations and their corrections. Updates to the charts should be carried out regularly with an orientation toward achieving strategic guidelines [1, 7–10, 19].

TPM method provides a combination of efficient use of production facilities with maintenance costs in working order by reducing downtime and errors. In the course of its use, staff is actively involved in hierarchical levels and functional units. As a result, there is a reduction in time and money spent by minimizing malfunctions in the work of equipment with a zero defect orientation [1, 7–10, 19].

SMED method acquires a strategic importance in the case of the production of heterogeneous products requires the equipment to be reconfigured within the shortest possible time to 10 minutes with the involvement of a professional team of specialists [1, 9, 10, 19].

Kaizen method is improving on a continuous basis by introducing selected documented short-term intensive projects to improve and optimize the kaizen flow and kaizen process. It is expected to actively involve staff in the implementation of changes to achieve the desired result in terms of: time, resources, quality [1, 7–9, 12, 19].

Poka-Yoke method is aimed at preventing mistakes, it is implemented through a well-defined and standardized

procedure, in particular the selection of competent personnel, an appropriate lean competence model [1, 5, 6, 8, 9, 19].

Jidoka method (another name – autonomation) is one of the fundamental methods of the lean production concept and is considered as a basis with a focus on the built-in quality of each operation. Its implementation allows to stop the process when the work fails, without the intervention of the controller, and then determine the cause of the problem. As a result – increase in labor productivity, improvement of processes due to quality and elimination of key causes of defects [5, 6–8, 10, 19].

Implementation of Heijunka method allows to efficiently satisfy the needs and requirements of customers through the value stream by equalizing production volumes and product range within a certain period of time. As a result – avoidance or minimal level of wastes in the material flow and labor resources [1, 7, 8, 11–15, 19].

Andon method is designed to visualize the process from the position: the state of implementation (normality – abnormality), the level of achievement of the planned indicators (compliance – non-compliance), and the identification of problems and the establishment of deviations requires the rapid response of management to overcome them [1, 7, 8, 19].

Method 5 W (Five Whys) is considered as a universal method of studying the main cause-effect patterns by obtaining an answer to the five-time question «Why?» and identifying the root problem, explaining its causes, identifying possible methods for solving or overcoming. As a result – the inability to make the wrong management decision to overcome the problem [5–7, 13–15, 19].

Team work method provides the unification of employees for the implementation of an agreed command resolution of problems due to respect for each performer. As a result, initiative and individual responsibility in solving set tasks, creating opportunities for improving professional knowledge and developing staff skills on an ongoing basis through the introduction of innovative training programs [5, 7, 8, 11, 19].

Integration of methods of the lean production concept in various combinations provides a targeted integrated approach to the justification of the effective management system of an industrial enterprise on the basis of frugality. A weighted position on prioritizing [18]:

- improving the production process to reduce costs (SMED, JIT, Kanban, SOP, TPM, 5 S, VSM);
- continuous quality improvement (Kaizen, Jidoka);
- training and motivating staff (Kaizen, 5 S);
- creation of a system of requests from the end user of products (JIT, Kanban, VSM).

As part of research, the management of an industrial enterprise is proposed to consider the integration of lean production methods in such areas as production capacity management, material flow management, document management and internal regulations.

Thus, the use of 5 S+TPM+SMED combining is aimed at efficient management of production facilities with a focus on monitoring the maintenance of facilities with timely technical inspection, maintenance, as well as fast transitions under production requirements. Sharing 5 S+TPM+SMED+Jidoka provides in the value stream the independence of the automation of the production process based on the human intellect. The integration of 5 S+TPM+SMED+SOP+JIT+Poka-Yoke methods is aimed at achieving the desired results of using production capacities by balancing the standardized work

of a selected staff of professionals with lean thinking and timely received material resources.

Using the combined 5 S+SOP+JIT+VSM+Poka-Yoke allows to increase the efficiency of the material flow management system by the enterprise; to identify the key types of stocks and the factors affecting their balance in the storage areas; to optimize the volumes of output and its nomenclature; to redistribute the efforts of the staff, depending on the level of professional competence to prevent excessive stocks and increase the risk of freezing working capital. The integration of 5 S+JIT+Andon+Heijunka is proposed, which is aimed at bringing the cost of maintaining the reserves to the minimum value, provided that they are fully supplied in accordance with production needs by continuously tracking, identifying and reporting information on the causes and culprits of delays, errors, wait time waste.

The simultaneous use of the 5 S+SOP+VSM+Poka-Yoke methods is aimed at the formation of internal standards with the definition of organizational and technical characteristics and methodological requirements for performing certain functions within structural divisions and job duties at a separate workplace. Standardization allows identifying the problems, streamlining the activities of an individual specialist, a structural unit and an industrial enterprise within the value stream, and also contributing to the continuous expansion of professional competence and the development of professional skills. The integration of 5 S+SOP+Kaizen is proposed, involving the active involvement of specialists to achieve the desired result through the documentation of all value creation operations and processes, as well as proposals for improvement on a continuous basis.

Each of the methods enhances the action and effect of other methods, forms a synergistic relationship. In the work of the domestic scientist [20], the criteria for creating added value by types of synergy are: political, social, monopoly, market, financial, economic, innovation, personnel and organizational. Of course, this is worthy of attention, but from the position of the integrated use of lean production methods it is suggested to consider such types of synergy as:

- social – strengthening of social responsibility, formation of positive team spirit, improvement of labor safety and conditions;
- market provides for the establishment of interaction with customers and suppliers, increasing revenues, generating cash from operating activities;
- financial provides for an increase in the value of assets, increased investment attractiveness and financial stability;
- economic is manifested through an increase in the effect of combining in the flow of creating value for the consumer;
- innovation is determined by the level of introduction of innovative management methods, new technologies, research and development results into work, aimed at strengthening the competitive status of the enterprise, and is manifested in the identification and implementation of intellectual property rights in production technology;
- personnel is involved in attracting highly professional specialists, reducing unskilled personnel, creating a team of experienced specialists and spreading the effect of the transfer of competences;
- organizational reveals the benefits of changing the organizational structure (the rational distribution of job responsibilities, taking into account the level of professional competence without duplication of work).

7. SWOT analysis if research results

Strengths. The strength of research is the further development of a combination of lean production methods in various combinations, which provides a targeted integrated approach to the rationale and adoption of well-balanced, lean rational management decisions aimed at obtaining a synergistic effect on a continuous basis.

Weaknesses. Weaknesses is that when determining the prevalence of methods of lean production, the frequency of references in published works is used, which is subjective and may be incomplete and contradictory, so it is necessary to carefully study the results of scientific research in this direction.

Opportunities. Opportunities for further research are to confirm the feasibility of the practical application of the proposed combinations of methods of lean production, which will determine their priority for solving the tasks of managing an industrial enterprise in such areas as technological development, organizational effectiveness, and social responsibility.

Threats. Threats to further research is the difficulty of obtaining sufficient and reliable information about the results of the introduction of lean production methods by industrial enterprises in Ukraine, since the disclosure of such data depends on the level of competence of top management and the skillful use of professional judgments.

8. Conclusions

1. The conducted researches gave the basis for theoretically establishing the set of the most recognized and actively introduced methods of lean production by the frequency of mentions by foreign and domestic specialists: SOP, Kanban, JIT, 5 S, VSM, Visual Management, TPM, SMED, Kaizen, Poka-Yoke, Jidoka (another name is autonomation), Heijunka, Andon, 5 W, Team work.

2. The relevance of the practical use of the totality of the most recognized methods of lean production is revealed through the importance of the results of a separate introduction of each, consisting in the direction to address the actual problems of effective management of an industrial enterprise on the basis of frugality.

3. The combination of lean production methods in various combinations for effective management of an industrial enterprise on the basis of frugality has been further developed in the following areas: management of production capacities (5 S+TPM+SMED, 5 S+TPM+SMED+Jidoka, 5 S+TPM+SMED+SOP+JIT+Poka-Yoke), management of material flow (5S+SOP+JIT+VSM+Poka-Yoke, 5S+JIT+Andon+Heijunka), document management and internal regulations (5 S+SOP+VSM)+Poka-Yoke, 5 S+SOP+Kaizen).

The advantages of this approach are the following:

- 1) reducing costs/wastes in the value flow;
- 2) increase the efficiency of the use of limited resources, identify the causes of ineffective performance of individual executives and structural units, and develop measures to prevent/timely overcome them;
- 3) obtaining more objective information about the level of quantitative and qualitative indicators of the effectiveness of management of an industrial enterprise;
- 4) the rationale and adoption of management decisions with the focus on satisfying the customer's needs for finished products. The types of synergies (social, market,

financial, economic, innovative, personnel, organizational) are justified as a result of strengthening the effect of individual methods in a different combination.

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**ИНТЕГРАЦИЯ МЕТОДОВ ЭФФЕКТИВНОГО УПРАВЛЕНИЯ
ПРОМЫШЛЕННЫМ ПРЕДПРИЯТИЕМ НА ПРИНЦИПАХ
БЕРЕЖЛИВОСТИ**

Установлена по частоте упоминаний специалистами совокупность наиболее признанных методов бережливого производства. Раскрыта уместность их отдельного внедрения через достижение результата практического использования. Обоснованно сочетание методов в различных комбинациях для эффективного управления производственными мощностями, материальным потоком и документооборотом и внутренними регламентами промышленного предприятия. Обоснованы виды

синергии как результат усиления действия отдельных методов в различном сочетании.

Ключевые слова: бережливое производство, метод бережливого производства, интеграция методов, эффект синергии, промышленное предприятие.

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RESEARCH OF SCIENTIFIC ACTIVITIES IN HIGHER EDUCATIONAL INSTITUTIONS: PLANNING, ORGANIZATION, CONTROL, REGULATION

Проведено аналіз особливостей провадження наукової діяльності у вищих навчальних закладах України, що належать до сфери управління Міністерства освіти і науки України, у контексті основних функцій менеджменту – планування, організування, контролювання та регулювання. Сформульовано пропозиції для її удосконалення з метою забезпечення формування і досягнення основних цілей вищих навчальних закладів.

Ключові слова: вищі навчальні заклади, наукова діяльність, планування, організування, контролювання, регулювання.

1. Introduction

Higher educational institutions, like any other socio-economic organizations, show different effectiveness. The stability of their functioning and development largely depends on the quality of management and actions of all employees [1, 2]. That is why the activity of higher educational institutions in general and, in particular, its scientific activity is important to consider in the context of the main provisions of management. General management functions – planning, organization, motivation, control, regulation – through specific and with the help of unifying functions are involved in all administrative processes of scientific activity of higher educational institutions. The analysis of the effectiveness of the implementation of these functions promotes an understanding of the processes in the sphere of the production of scientific activity of higher educational institutions and is extremely important for making managerial decisions with a view to improving it.

2. The object of research and its technological audit

The objects of research are higher educational institutions (universities, academies, institutes), belonging to the sphere of administration of the Ministry of Education and Science of Ukraine.

3. The aim and objectives of research

The aim of research is review and analysis of the basic principles of scientific activities in higher education institutions, develop proposals for its improvement.

To achieve this aim, the following main tasks are identified:

1. To conduct an analysis of the planning of scientific activities of leading universities in Ukraine, taking into account the main directions of its production.
2. To analyze the features of the organization and control of scientific research in universities of Ukraine in accordance with the current legislation.
3. To formulate proposals for improving planning, organizing, monitoring scientific activities.

4. Research of existing solutions of the problem

The publication of many scientists [3–8] is devoted to the study of the issue of scientific activity in higher educational institutions of Ukraine. So, in [3] examples of organizational and functional forms of universities of the advanced countries of the world are given, they receive a considerable amount of scientific and scientific-applied results. The study [4] considers the features of functioning in universities of such organizational forms as scientific and pedagogical research groups and scientific schools, which form a favorable innovation environment for universities.