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OPTIMIZATION OF THE MANAGEMENT DECISION-MAKING SYSTEM AT A CONSTRUCTION ENTERPRISE

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Abstract. *Optimizing the managerial decision-making system at construction industry enterprises of Ukraine in present-day difficult economic conditions is one of the main factors critical not only for adjusting and improving the enterprise management system, but also for ensuring its stability and competitiveness. The results of the analysis of the essence of the process and ensuring the efficiency of managerial decision-making indicate that there is a large number of scientific opinions regarding the development of many theories and methods of achieving the required results in this area, but there is still no single generalized solution. The presented paper considers the theoretical aspects of optimizing the managerial decision-making. On the example of the construction company LLC Dongarantbud, the main factors that negatively affect the managerial decision-making system have been determined and analyzed. Relying on the opinion of many scientists to regard an organization as a single complex system and considering the financial possibilities for implementing changes in small and medium-sized enterprises, appropriate solutions for optimizing the managerial decision-making system, which are based on the reduction of negative factors influencing the effectiveness of decision-making, managerial decisions have been chosen. On the basis of the data obtained, a package of measures was formed, which in current realities is able to optimize the process of making management decisions at the construction enterprise LLC Dongarantbud and ensure its efficiency.*

Key words: *managerial decision, managerial decision-making process, management system, influence factor, optimization, efficiency of managerial decisions*

I. INTRODUCTION

One of the main components of the process of ensuring the effective functioning of an enterprise is managerial decision-making. Today, in connection with constant changes in the external environment and an increase in the number of negative factors that affect the company's activity, the process of making managerial decisions is complicated. Thus, unlike more ‘classical’ economic and financial crises, which the world community has so far been able to predict and choose countermeasure algorithms in advance, the crisis caused by a natural phenomenon such as the coronavirus disease (COVID-19) had unpredictable consequences. They significantly influenced the economy of Ukraine and the way the run business activities of many enterprises, including those in the construction sector. To stop the spread of the new virus, countries around the world were forced to choose a policy of unprecedented quarantine restrictions and lockdowns. Of course, the introduction of such measures caused a global economic recession. For the economy of Ukraine, these events became true trial. Particularly tough times have come for small and medium-sized businesses, which, because of insufficient stocks and working capital, were not only unable to operate due

to restrictions, but also were uncapable of fulfilling their obligations to their employees. This fate did not pass the construction industry enterprises, which, because of the character of the activities they are engaged in, could not perform work in the remote mode, since they are clearly linked to a particular construction site or construction object.

However, quarantine restrictions stimulated digital transformation and significantly influenced approaches to the system of performing many managerial processes both at enterprises and in the whole country. Currently, most businesses in Ukraine operate in conditions of uncertainty and instability. Yet, despite all the present hardship, the main areas of activity for enterprises in the construction industry remain to be:

- ensuring competitiveness in the market;
- creating optimum operational organizational structures;
- implementing an effective personnel policy management system;
- balancing and regulating collective relations;
- dealing with the issues of creating and maintaining a positive image.

Therefore, the development of ways to optimize managerial decision-making at an enterprise is an actual scientific problem and a necessary toolkit for enterprise managers.

The scientific value of the obtained research results is that, basing on the analysis, a set of measures was formed to increase the effectiveness of managerial decision-making in conditions of uncertainty, including the implementation at the enterprise of a unified electronic communication system - kanban. The results of the research on optimization of the managerial decision-making system have important practical meaning and will be used in the activities of LLC Dongarantbud to improve the efficiency of its management system and activities.

Article was published on the topic of the scientific work:

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II. ANALYTICAL ANALYSIS

A narrow circle of domestic and foreign scientists can be attributed to the study of problems and the development of ways to optimize the managerial decision-making system at enterprises of various industries. A significant contribution to the research of the processes of making efficient managerial decisions was made by such scientists as M. V. Borovyk, Yu. E. Petruna, F. I. Khmil, M. M. Shkilniak, L. Nalyvaiko, T. Symonenko, K. Uschapovskyi, Kostin Y. D., Batiuk B. B., Voronyi I. V., Degtiar A. O., Ponomarenko V. S., Minukhina S. V., Besedovskyi O. M., Chaban V. V. These authors considered various aspects of managerial decisions. At the same time, the issues of optimizing the managerial decision-making system still remain insufficiently resolved.

III. SUBJECT, OBJECT AND RESEARCH METHODS

The purpose of the scientific work is to study the factors that have a negative impact on the functioning of the managerial decision-making system on the example of the construction company LLC Dongarantbud and to develop a set of measures to ensure its optimization. According to the purpose of the study, the following tasks were set and solved: to identify and analyze the main factors affecting the managerial decision-making system; based on the information received, to formulate recommendations for the optimization of each of the factors affecting the managerial decision-making system at the enterprise LLC Dongarantbud.

The object of the study is managerial decisions.

The subject of the study is the theoretical, methodological and practical development of a package of measures to optimize the managerial decision-making system at the enterprise LLC Dongarantbud.

The following research methods were used in the work: logical generalization and analysis when studying literary sources on the research topic; vertical (or structural) analysis, horizontal (or trend) analysis when studying the company's reporting indicators, analysis of relative indicators (coefficients) when assessing the financial condition of the company, comparative analysis when studying the dynamics of financial condition indicators, SWOT analysis.

IV. RESULTS OF THE STUDY

In changing external environment, the main task facing present-day management is to make effective decisions that can ensure the stability of the enterprise, its current and future competitiveness. To ensure effective life activity, each construction organization defines goals, the achievement of which is determined by performing certain actions and implementing them in the required sequence, which is a way of solving individual and partial tasks. The future of the construction company depends on how justified, clear and coordinated the decisions will be. That is why the priority direction of construction organization management in conditions of uncertainty is the identification and systematization of factors that negatively affect the efficiency of managerial decision-making and the formation of a package of measures to optimize these processes [2].

Based on this advanced experience of scholars and scientists who studied the topic of the efficiency of managerial decision-making, we collected the main materials of informative search. During the search, the definition of the term ‘managerial decision’ proposed by the scientists was cited, and the results were collected and listed in Table 1.1.

Table 1.1 – Approaches to defining the ‘managerial decision’ term

Author	Concepts (comments, additions)
M. V. Borovyk	A managerial decision (as a process) is a search, grouping and analysis of the required information, development, approval and implementation of a managerial decision. A managerial decision (as a phenomenon) is an action plan, a resolution, a verbal or written order, etc. A managerial decision is a creative act of a management entity that determines the program of activities for the effective solution of an pending problem based on knowledge of the objective laws of the functioning of the system that is being managed and analysis of information about its condition. Thus, a managerial decision is a choice that a manager must make in order to fulfill the duties imposed by his position [5] A managerial decision (as a phenomenon) is an action plan, a decree, an oral or a written order etc. A managerial decision is a a creative act of a management entity that determines the team's activity program for the effective solution of an urgent problem based on knowledge of the objective laws of functioning of the system managed and analysis of information about its condition. Thus, a managerial decision is a choice that a manager is to make in order to execute the obligations arising from his position [5]
Yu. E. Petrunia	A managerial decision is the result of a choice of a course of action made by a management entity (body) aimed at solving a specific managerial issue [4]
M. M. Shkilniak	A managerial decision is the main form of manifestation of the manager's response to all economic and management processes taking place in the organization, the result of which is solving the issues of formation, functioning and development of the organization, the maximum approach to the goal set [2]
L. Nalyvaiko, T. Symonenko	A managerial decision is the result of a management entity choosing the best alternative aimed at solving a specific management problem. Since the managerial decision is formed in the process of choosing an alternative, it is a certain summary of management activities, the result of considerations and analysis of actions and intentions, conclusions, discussions, forecasts aimed at realizing the management goal [1]

Based on the above-stated notions, we have summarized and expressed our views on this issue. In our opinion, a ‘managerial decision’ is a product that represents a reaction of a person or a group of persons empowered to form it, to the request of the internal or external environment, which defines a certain problem that needs to be solved. The managerial decision is the result of the activities of the competent body, and represents the best option compared to all other alternatives.

After analyzing scientific studies, as well as the practices of Ukrainian enterprises, by performing a SWOT-analysis, we have highlighted the relevant factors influencing the managerial decision-making system for enterprises in the construction industry. [8]. The important selection criteria were indicators such as the possible rapidity of implementation of optimization measures and their economic basis. Thus,

we received a list of the following influence factors for the managerial decision-making system that needs to be optimized, namely:

- system factors (in terms of the enterprise organizational structure);
- human factor;
- the factor of communication and means of work.

System factors, as one of the main factors of influence on the managerial decision-making system, has constituent parts, which include: system's compliance, management mechanism and scientific organization of management work. The essence of the idea of systemic influence factors is based on the assertion that individual elements that are combined into a general system are able to endow it with new qualities, and vice versa, the formed system affects management objects, which significantly influences the efficiency of managerial decision-making [5].

The management mechanism, as a constituent part of system factors, in turn consists of the following components:

- management goal;
- management methods;
- management incentives;
- control levers;
- organizational structure of management.

When conducting the research, we shall focus on the organizational structure of the company LLC Dongarantbud and the interaction between its elements (Fig. 1.1).

It should be noted that the organizational structure is formed depending on the goals of the enterprise and the divisions required for this [1]. It is the units that perform the functions that make up the business processes of the enterprise. The analysis of the organizational structure of LLC Dongarantbud made it possible to conclude that it belongs to the linear type, because each division is subordinate to the director (the executive body of the Company, who is appointed to the position by the supreme management body - the general meeting of the sole member of the Company).

The main duties assigned to the director of the Company include the following: representing the company in all institutions and organizations, concluding contracts on behalf of the company, managing property, issuing decrees and orders for the company, hiring and dismissing employees, in accordance with labor legislation, applying incentive measures and imposing correspondent penalties [17].

With the existing management structure of the enterprise, the following are subordinate to the director: Executive Director, Chief Engineer, Chief accountant. To the Executive Director – the inspector of the HR Department, the lawyer, the estimator, and the construction facilities manager. To the chief engineer – the Occupational Safety and Health engineer, drivers-mechanics and foremen who perform their duties in accordance with the current legislation and job instructions approved by the company. Therefore, we see the presence of only one-channel interactions and the concentration of the entire complex of management functions and developing managerial activities in one management link.

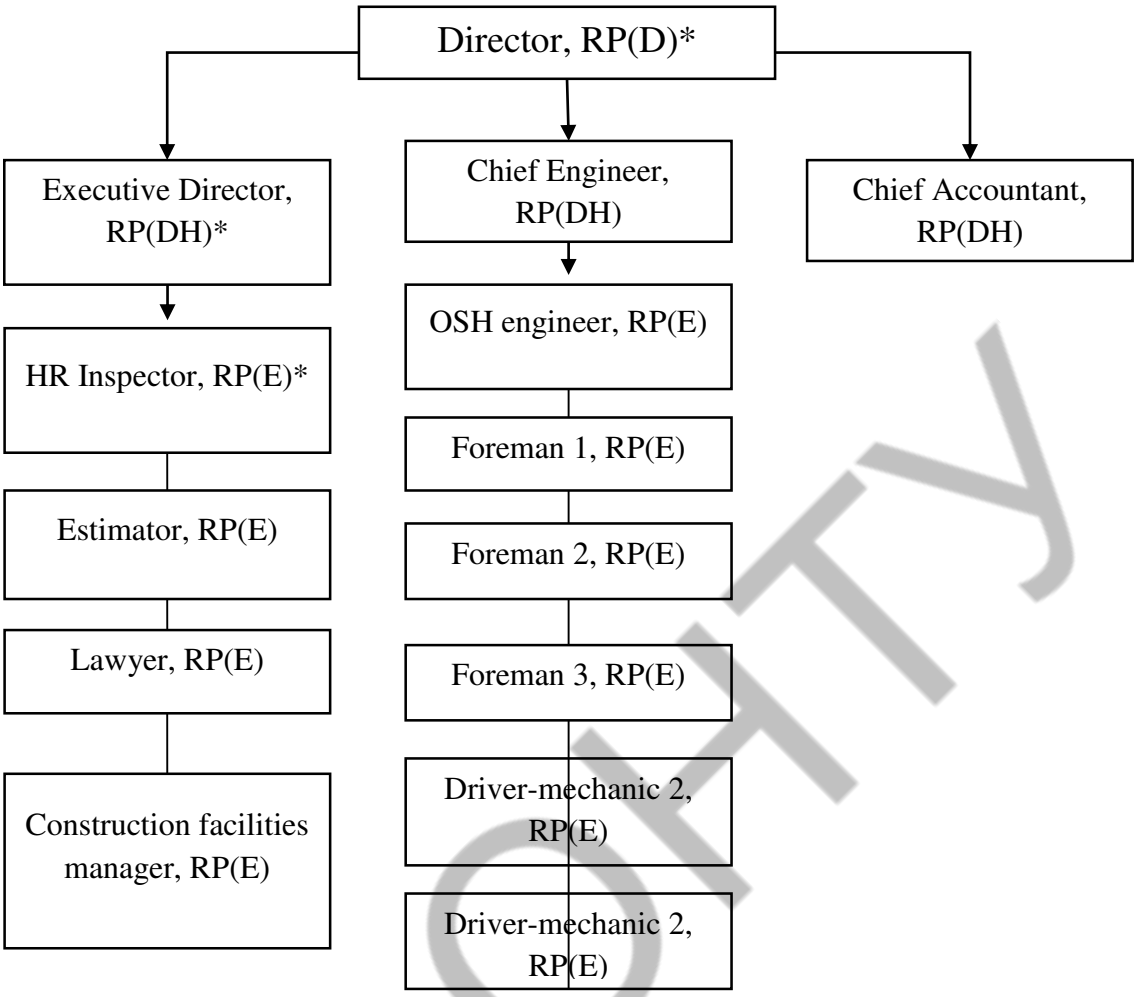

Fig.1.1 – The Organizational Structure of LLC Dongarantbud

The next influencing factor is the human factor. This is due to the fact that in the process of making and implementing managerial decisions at many enterprises, the main role is given to a person: executors of works, managers of various levels, heads. The question of their engagement in one or another process remains open. This, at first, depends on the scale of the organization and the management system structured in it.

For small construction enterprises, the basic complex of managerial decision-making can be divided into the following stages:

- identifying a problem and becoming aware of the need to solve it;
- developing and making a decision;
- implementing the decision at the enterprise (implementation) [3].

For the effective implementation of the managerial decision-making program, certain performers, specialists and managers of different levels should be engaged at each stage. The quality and rapidity of implementing correspondent decisions depends on their professional, spiritual and socio-psychological characteristics. Table 1.2 presents the process of making a managerial decision at the enterprise LLC Dongarantbud, according to the stage and phases it passes.

Table 1.2 – The Process of Managerial Decision-Making in LLC Dongarantbud

Stage I Identifying a problem and becoming aware of the need to solve it		
Stage of developing a MD	Responsible person/ group of persons	Decision-making person/group (DMP)
Identifying a problem	RP * (DH *; E*)	RP (D*; DH)
Formulating a problem	RP (DH; E)	RP (D; DH)
Setting goals	RP (DH; E)	RP (D; DH)
Defining assessment criteria	RP (DH; E)	RP (D; DH)
Stage II Developing and making a decision		
Alternative studies	RP (DH; E)	RP (D; DH)
Weighing up and processing alternatives	RP (DH; E)	RP (D; DH)
Rejecting irrational alternatives	RP (DH)	RP (D; DH)
Comparing alternatives	RP (DH)	RP (D; DH)
Developing and substantiating proposals	RP (DH;E)	RP (D; DH)
Modeling expected results	RP (DH)	RP (D; DH)
Reasonable choice of a rational decision	RP (DH)	RP (D; DH)
Stage III Implementing the decision at the enterprise (implementation)		
Organizing the decision implementation	RP (DH)	RP (DH)
Supporting and controlling the decision implementation	RP (DH)	RP (DH)
Feedback and correction	RP (DH; E)	RP (D; DH)

* RP (D; DH; E) – responsible person – an enterprise employee, who solves the assigned tasks, having the appropriate authority to do so and carries direct responsibility;

* Director – the director of the enterprise, according to LLC Dongarantbud, the director of the enterprise should be considered the first-level manager;

* DH – department heads, respectively, second-level managers. At the LLC Dongarantbud, the following should be considered Level II managers: the Executive Director, the Chief Engineer and the Chief Accountant;

* E – employees of LLC Dongarantbud (foremen).

The analysis of the managerial decision-making process gives a clear understanding that a generally collective system of engagement in solving problematic issues and achieving the set goals has been created at the LLC Dongarantbud enterprise [6]. Thus, as a rule, employees of all management levels are involved in developing managerial decisions (D; DH; E).

The next factor that should be paid attention to when optimizing the managerial decision-making system is the factor of having effective communications and means of work. We believe special attention should be given to the organization of the information structure and information support. At construction industry enterprises, as practice shows, a well-constructed system of communication channels through which

information flows circulate has a great influence on the efficiency of managerial decision-making [10]. The authors see the influence factor of means of work as the possibility of identifying reasons that have a negative effect on the performance of management processes and which should be optimized through the introduction of new means of automating the management process, the use of new technology, mechanization, software complexes or software support at the enterprise.

So, having analyzed the factors influencing the managerial decision-making system at the LLC Dongarantbud enterprise, we consider it expedient to optimize each of them (Table. 1.3).

Table 1.3 – The Directions of Optimizing the System of Managerial Decision-Making in LLC Dongarantbud [developed by the author]

Direction of Optimization	Recommendations on the implementation of measures
Optimization of system factors	Based on the results obtained after the analysis of the organizational structure of the enterprise LLC Dongarantbud and the interaction between its elements, the main recommendation is the transition to a mixed organizational structure - linear-functional. This will help to optimize communication channels and create conditions for the rational use of both vertical communications (command lines) and horizontal communications - cooperation of equal elements (communication lines).
Optimization of human factors	Based on the fact that a generally collective managerial decision-making system was created at the enterprise LLC Dongarantbud, the main recommendation for optimizing this factor is the implementation of programs for training and upgrading the enterprise employees' and managers' qualifications, including for the possibility to enable them to introduce new measures at the enterprise regarding the optimization of the managerial decision-making system. The goal of the implementation of the measure is to achieve a general, collective, optimal level of knowledge, which will allow making efficient managerial decisions and adapt to modern business standards.
Optimization of factors of effective communication and means of work	To optimize the factors of effective communication, it is necessary to introduce a document management and information exchange system at the enterprise, both in paper and electronic form. It should be an approved system with the same rules of use for all employees. To optimize the factors of means of work, to provide for the possibility of conducting work in remote mode, it is necessary to introduce a single electronic system of work organization and a combination of information flows, on the example of electronic kanban.

Thus, we created a package of measures to optimize the factors influencing the managerial decision-making system at the construction enterprise LLC Dongarantbud, which will provide for improving the quality and efficiency of operational management, appropriate to implement at other enterprises in the construction industry. For this purpose, a general scheme for optimizing management decisions at the enterprise is proposed (Fig 1.2). It has the following components: organizational, informational and controlling. Thanks to their successful operation, the enterprise will be able to increase the efficiency of management decisions.

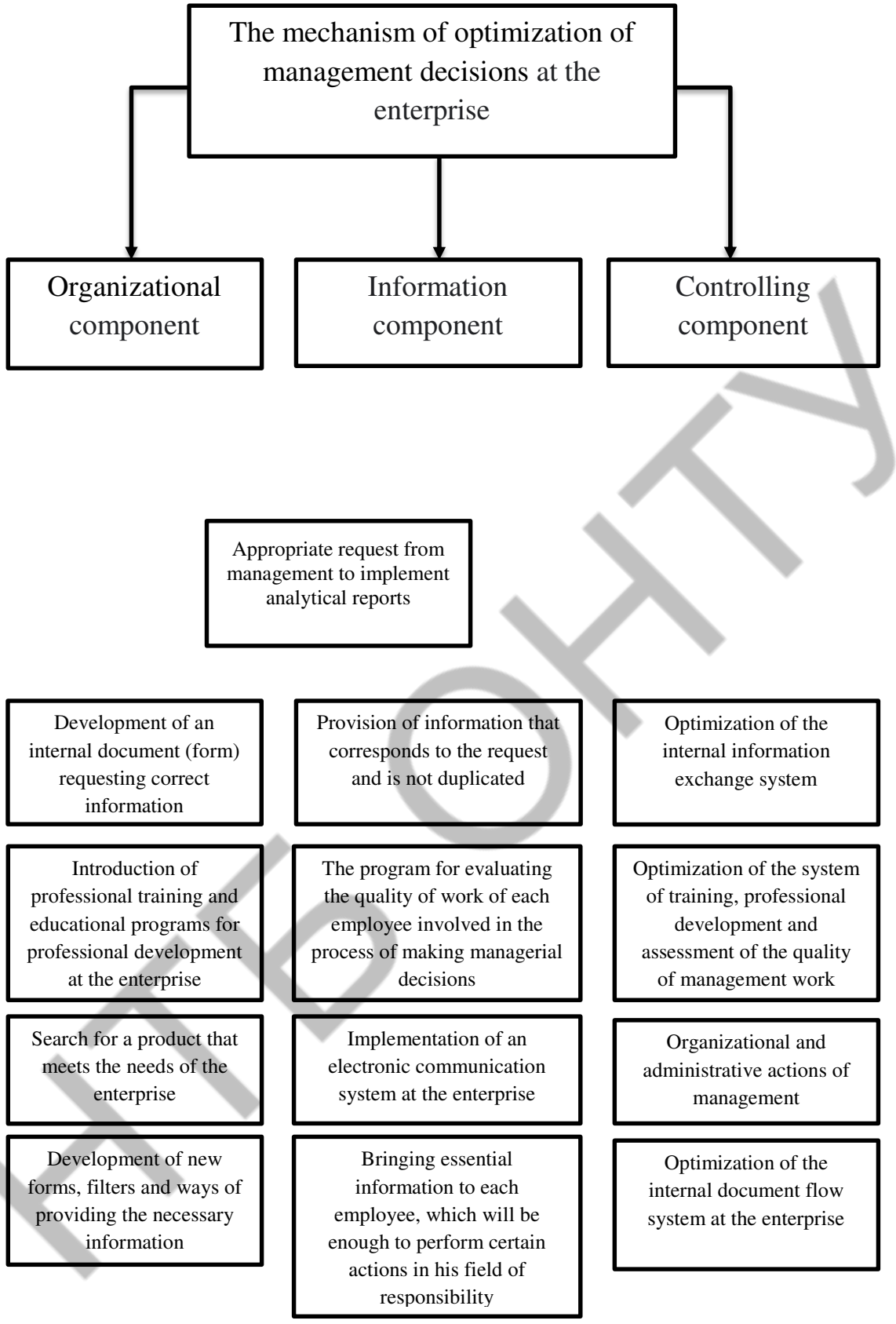

Fig. 1.2 – The mechanism of optimization of management decisions at the enterprise [developed by the author]

In our opinion, in the present-day period of remote management of a large number of work processes, special attention should be paid to the introduction of an electronic unified communication system between managers and employees at the enterprise, to enable rapid and clear setting of the tasks and monitoring their implementation. After all, communication plays a key role in enterprise management. Due to this, separate divisions are capable of solving various issues at different levels quickly. Sometimes the fate of an entire project can depend on efficiency. Thus, the above-mentioned issues were considered in more detail and our views on the communication links at construction industry enterprises in today's working conditions were formed. [20].

There are various theoretical and methodological approaches to defining the concept of communication. In terms of the topic the scientific paper dwells on, of course, it is about constructing such a communication system at the enterprise that allows developing, implementing and controlling managerial decisions effectively, both within the enterprise itself and for the purpose to receive feedback from partners and customers. It is a system that puts together information flows, makes an analysis and provides an opportunity to receive feedback. To solve the above-mentioned problems, the authors proposed to introduce an electronic kanban system at the enterprise LLC Dongarantbud.

The history of its creation dates back to the distant 70s of the previous century and takes it origin in Japan, then gradually spread around and, as of now, the kanban principles is implemented in enterprises all over the world. In fact, it is a system of organizing a continuous and flexible production flow. We want to note that depending on the functionality and types of enterprises, the kanban system can be implemented and adapted to any role and task. Now we shall analyze its essence, principles and goals in more detail.

The kanban system in today's digital format is a software or a software complex containing clearly defined tasks and a clearly organized work process, the purpose of which is to effectively achieve the goal set. In the context of the topic, the main direction that will be of interest to us is the paths a managerial decision goes through from the moment of its origin in the form of a problem (deviation of the system from ultimate indicators) to the moment of its implementation. It is the kanban that will help to monitor all stages and quickly make the necessary adjustments.

The principles of the system are based on the visualization of processes, which means that all tasks are added to the general plan and their status can be changed during the production process. Also, task grouping as a system principle is responsible for separating each task into ‘to do’, ‘doing’ and ‘done’, it is what helps to navigate in the productivity of organizational work. In the process of performing the task set, the manager will clearly see when it is not being performed for a long period of time (not enough attention is paid), or the work has stopped at some stage and needs additional intervention and assistance.

The main goals of the kanban system specific to construction industry enterprises (because each industry and company by introducing such a system follows its own, unique goal) include the following:

- ensuring the efficiency of managerial decision-making;

- minimizing warehouse stocks;
- flexibility and improving the efficiency of interaction between divisions, departments, managers, specialists and workers at different levels;
- openness of processes, which makes it possible to plan and strategically structure the activities of both separate units, managers, specialists, workers, and the enterprise as a whole;
- personal and system analysis;
- the possibility of rapid inclusion of third parties or their joining the work process;
- rapid identification of needs and response to specific requests [7].

Nowadays there is a lot of software that is generally aimed at solving the issues of systematization of business processes. The kanban system is intended to simplify communication between employees of different levels and save time, so that they can perform their direct duties. An example of such a product is CRM system (literally, it is Customer Relationship Management - a notion that covers the concepts used by companies to manage relationships with consumers, including the collection, storage and analysis of information about consumers, suppliers, partners and information about relationships between them), namely Bitrix24. With its help, you can create tasks and monitor their performance not only for a specific employee personally, but also for yourself and the department as a whole. Creating tasks is not a difficult undertaking. We shall now present several stages of problem setting.

At the first stage, it is necessary to enter the object with which work will be conducted into the system. The directions are different, they can be customers, clients, counterparties, partners and others (Fig. 1.3).

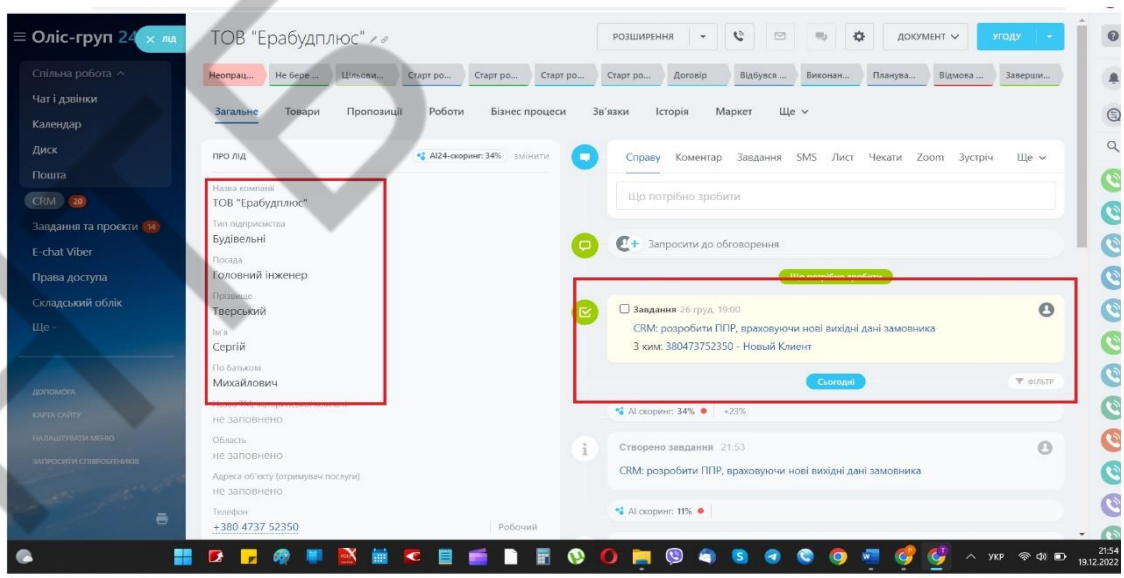

Fig. 1.3 – Entering information about the counterparty into the kanban system

At the second stage, you can start setting out specific tasks, which will display the person responsible for their implementation and deadlines: the beginning and the end of the task performance, which is shown on Fig. 1.4.

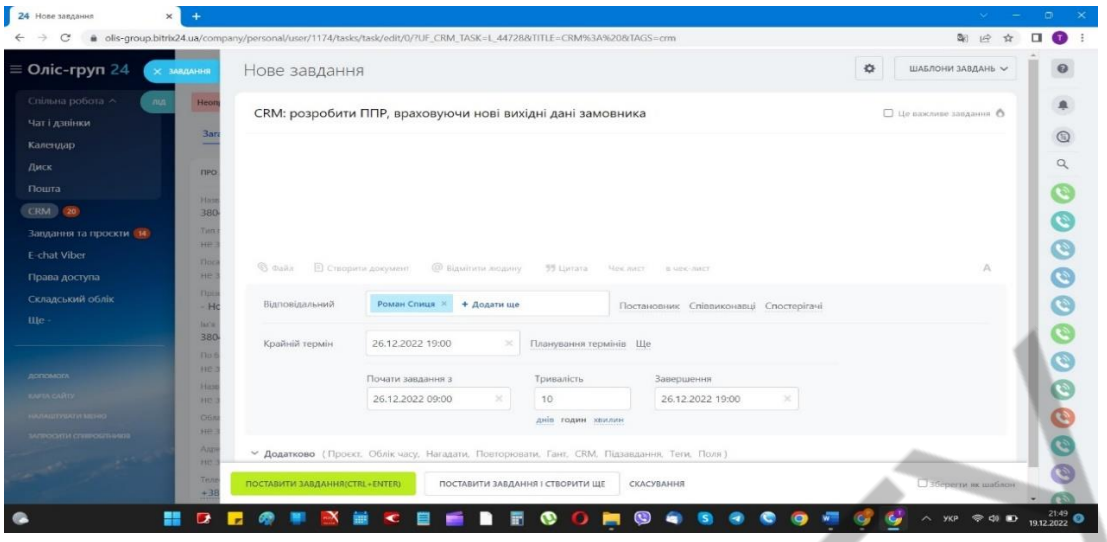

Fig. 1.4 – Assigning a task, the responsible person and the deadlines

When the task is set, the responsible person receives a message to the internal e-mail box, which is also duplicated in the program itself. After receiving the message (SMS), the responsible person confirms that he/she is familiar with all the conditions and confirms the start of the task performance. After completing the task, the responsible person gives feedback, and provides a finished product or other result of his/her activity, attaching it to the control panel. After that, the manager or the person who set the task receives a message confirming the completion of the task by the responsible person. The task stops glowing in a certain color, now the control panel looks like this (Fig. 1.5).

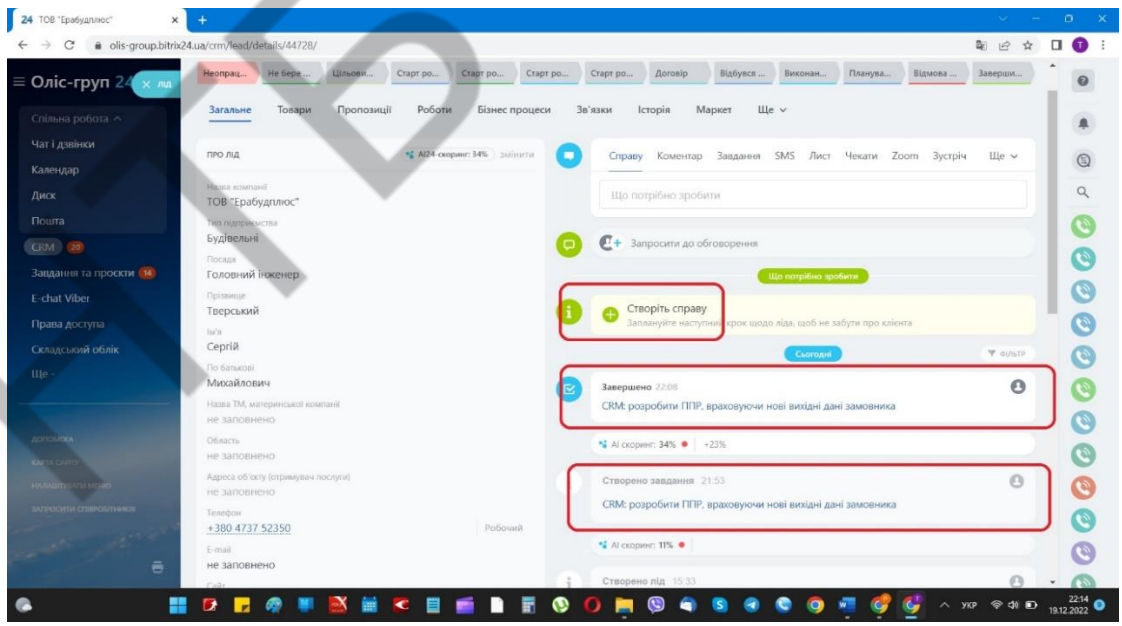

Fig 1.5 – Completion of the task

You can monitor the plan implementation process using analytics, which can be displayed in the form of charts, graphs, and other visualizations (Fig. 1.6). In general,

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