

THE INFLUENCE OF MANAGEMENT CREATIVITY ON THE OPTIMALITY OF MANAGEMENT DECISIONS OVER TIME: AN INNOVATIVE ASPECT

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ABSTRACT

The study aimed at establishing the close relationship between the creativity of managers and the time spent making managerial decisions at the enterprise level. A linear least squares regression model determined the coefficient of dependence of time spent on management decision-making and creativity. The research used a quantitative approach and a sociological survey of heads and managers of enterprises of various sizes and organizational and legal forms. The authors compiled models of the formation of creative management in the enterprise based on motivational factors and the process of forming management decisions on the basis of management creativity. In the study, and for the first time, a scale of the creativity level and a scale of managers' motivation were proposed. The results of conducted sociological research and the use of the regression model of the factors taken into account show that the average level of creativity of managers involved in decision-making and their motivation coefficient has the greatest influence on the time spent on managerial decisions. The research has theoretical and practical significance, and managers can use its results in practice to save time and improve the efficiency of management decision-making and staff motivation.

Keywords: creative management; management decisions; innovativeness; idea generation; enterprise competitiveness

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INTRODUCTION

Market conditions, transformational processes, and extremely dynamic innovative development

cause challenges and create risks for the production function of enterprises. Overcoming such situations and minimizing them depends

not only on the quality and volume of production but also on the enterprise's competitiveness. According to Heyden et al. (2018, p. 1505), "Management innovation entails the introduction of new-to-the-firm changes in management structures, processes, and practices intended to improve organizational functioning." At the same time, a decisive role is assigned to the involvement of creative, proactive, and competent employees in production processes, whose skills and professional qualities depend on the rationality and optimality of management decision-making. Gilson et al., 2004, p. 465 stated, "Through understanding the antecedents to creative processes, researchers and managers should be better able to take the next steps in helping teams to be more creative and hence, ensuring that creativity is fostered rather than stifled". Another study by Zhou et al. (2019, p. 2570) stated that "creativity can add value to organizations after it is perceived, evaluated, and eventually adopted". In this case, the non-standard approach to solving complex production situations or the creativity of management personnel is essential. Therefore, a competent and creative manager is the source and driver of innovation in the enterprise and is a key element in ensuring the competitive advantage of the business structure on the market. This is supported by Heyden et al. (2018, p. 1524), which stated that "As firms need to combat inertia in both market-side and intraorganizational activities, this poses a clear challenge for organizations in how to manage both similarity and dissimilarity to balance the pursuit of different forms of innovation."

The need to introduce creative management at modern enterprises as an element of the modern enterprise management system was discussed by Khristenko (2022), who emphasized in his research that the management of personnel creativity involves the creation of a basis for the development and use of creative abilities of employees, the formation of additional motivators of creative energy, the generation of innovative ideas, the adoption of creative, managerial engineering decisions and the development of innovative products for further commercialization, etc.

For the sustainable development of society, creative management acts as one of the main mechanisms for coordinating innovative developments, creating a bank of innovative

ideas, and developing strategic scientific and industrial development directions. In addition, for the construction of an innovative society, developing a program for the intellectual development of human potential, which would become the basis for implementing creative thinking, is of great importance. Also, creative management contributes to creating innovative mechanisms of partnership development in all socio-economic spheres related to the functioning, competition, and evolution of the human potential of society (Polenkova, 2021).

Creative management is needed in the 21st century for a business to survive and maintain its competitive advantage. The main skill that managers are looking for in qualified employees today is creativity. This is because creative people are independent thinkers and innovative problem solvers. Creative thinking is based on logic, which contributes to obtaining desired results. Creativity management ensures the development of an individual's creative skills and his ability to generate fundamentally new ideas to bring them to a concrete result (Bortnikova, 2022).

The presence of creativity in managers and employees leads to the emergence of new and useful ideas, products, or services in the team, the production of which is provided by an individual or a group of people working together. This leads to better results of the enterprise's work and the possibility of its dynamism and adaptation to the market environment. It allows using development opportunities and increases competitiveness in optimal terms. We agree with Drury-Grogan (2017, p. 1) that "Understanding the decision processes and heuristics helps individuals make better quality decisions."

This study's task was to establish the level of dependence of time spent on making management decisions on the creativity of enterprise managers. To visualize the research results, models were developed, i.e., the formation of creative management at the enterprise based on motivational factors and the process of forming management decisions on the basis of management creativity. The research was conducted using a dialectical approach to the studied phenomena. According to Drury-Grogan (2017), the creativity of the managers of the enterprise and its employees and their personal quality characteristics in unity and interconnection with economic relations are

considered as conditions for reducing the time spent on making managerial decisions, which will generally contribute to increasing the competitiveness of the enterprise. A set of factors influencing the motivation of managers has been established based on the principles of the functional approach method, along with the use of elements of graphic and spatial description,

LITERATURE REVIEW

Social production, as well as the market economy in general, makes special demands not only on equipment and work organization but, first of all, on employees who ensure the effective functioning of equipment and more rational forms of labor organization. As a result, and taking into account a number of factors, and primarily in connection with the integration of science and production, the intellectualization of work is taking place. There is an increasing need to develop alternative solutions, both for the present and the future. As noted by Polenkova (2021), an innovative society arises as a result of the effective application of creative management. It was created by modern technoparks and information networks aimed at spreading innovations. Creative thinking is determined by producing innovative ideas that create progressive mechanisms for the functioning of an innovative society and are directly dependent on the development of education, science, culture, and the economy.

In such cases, highly qualified training, creative culture, and a non-standard situation vision become crucial for implementing economic and social tasks. Thus, on the one hand, the economic and organizational environment of the enterprise's functioning determines the deployment of an employee's creative, intellectual, and creative potential, strengthens cognitive activity, are requirements for initiative and responsibility, and the level of reliability and effectiveness of mental activity. On the other hand, there is motivation for the constant professional and spiritual growth and enrichment of the inner world of the employee with new interests and values. What determines the relevance of our research is the establishment of a close relationship between the degree of creativity of the manager and the time spent on making the optimal management decision.

Possible forms of implementation of the

human factor are extremely diverse, which is determined by its place in the system of social relations. An employee at an enterprise essentially simultaneously is a producer of material goods, a co-owner of socialized means of production, and a person who is forced to perform certain civic functions. Therefore, in the economic system, the employee should be considered as an individual employee of society. The human factor is the core of interests also in the social and spiritual-ideological spheres of public activity. In each of the specified functional roles, a person, as an employee, has certain features of realizing his potential and different opportunities and responsibilities at different levels and in different spheres of activity. We agree with Hirst et al. (2009, p. 280) that "a cross-level model of individual creativity, integrating goal orientation theory and team learning research." It also is important to study authors such as Klein & Knight (2005; Bhat et al. (2022); Lu et al. (2019); Mueller et al. (2018); Havlovska et al. (2022); Kasych et al. (2019); and Polenkova (2021), who considered the meaning and importance of the perception or recognition of creative ideas by the recipients of the ideas for the enterprise.

The development of the human factor must be considered dynamic in which all the various, even contradictory, characteristics – both objective and subjective - of the dynamics are considered. The research of Küttim et al. (2011) plays an important role in determining the influence of personality traits on the formation of an individual's creativity in entrepreneurial activity. According to Korsunskaya et al. (2022, p. 255), "The need to introduce mechanisms for managing the creative potential of employees in a modern enterprise is conditioned by the increased role of the human factor, which is one of the essential indicators of improving the organization's efficiency". Is it something like this: An employee's interests and values are dynamic and are affected by the employee's personality, both of which influence behavior, the stimulation of which is one of the main functions of management? A manager's personal traits, in particular conscientiousness and extraversion, are directly related to team effectiveness (see in particular Endriulaitienė & Cirtautienė, 2021; Chiu et al., 2016; Enyinda et al., 2019; Havlovska et al., 2022; Meiyu Fang & Barry Gerhart, 2012; Kasych et al., 2013; Pawlowski et al., 2019; Pavlenchuk et al., 2019).

In practice in a team, the employees' attraction

to creative work and partial detachment or passivity to low-content work, especially monotonous work, can be clearly traced. As Zhou et al. (2019, p. 2571) noted, "Practically, though some workers might generate and realize new ideas by themselves, the implementation of new ideas is often a social process that involves support, collaboration, and sponsorship from other people. As such, only after a creative idea is recognized and positively evaluated by others can the idea add value to the organization". The need to attract and stimulate participation in team management is increasing. The manager's neglect of circumstances of this kind significantly increases the contradiction between the capabilities of the human factor and their use, while managing such circumstances is a significant and constant source of successful growth in all activities. At the same time, management's main task is to encourage and stimulate an employee to develop his initiative, interest, and creativity. This is the continuous process of enriching the individual's potential. The internal perceived need to use one's own opportunities, abilities, and the desire for social recognition, naturally encourage a person to replenish his knowledge and skills, accumulate experience, and develop creativity, which enables him to work with even greater dedication and productivity.

The importance and significance of the development of managers' creative abilities and their stimulation at the macro level were considered by Küttim et al. (2011, p. 370), who focused on the fact that "In order to capitalize on the development of creativity, innovation, and economic growth in the creative industries, the state can implement a wide array of support measures, including means that contribute to the development of entrepreneurial competencies of creative entrepreneurs." The connection between the civic behavior of the organization and its effectiveness, the formation of the working environment, and the involvement, stimulation, and motivation of employees have been thoroughly investigated (Alhashedi et al., 2021).

In the works noted above, the authors paid a great deal of attention to the creative characteristics of employees, the importance of creativity for entrepreneurial activity, and the possibility of using individual creativity for the team's effectiveness. However, the influence of

managers' creativity on the amount of time they spend on management decisions and individual motivational factors needs to be studied more.

METHODOLOGY

The theoretical significance of the research lies in the proposed creativity level scale, which will allow managers to assess the professional competence of team members and delegate tasks to them corresponding to a level of creativity.

We used sociological research methods to identify managers' creativity level and its impact on time spent generating ideas and forming management decisions. The survey of respondents was conducted with the help of an author's questionnaire, the content of which was aimed at determining the opinion of managers regarding the gradation of motivation factors and the influence of their creativity on time spent for making managerial decisions, and as a result, of increasing the competitiveness of the enterprise in general. The respondents were heads and managers of enterprises in various economic spheres - commercial enterprises, hotel and restaurant business, agricultural production, light industry and food industry - who use various CRM (customer relationship management) software in their activities to account for time expenditure. Due to the complexity of organizing the experiment due to the war in Ukraine, the sample size was limited. A 300 questions survey was sent to heads and managers of enterprises that use the relevant software in their work with personnel. The group consisted of 252 respondents, of which 114 were heads of enterprises and 138 were general managers. The respondents' ages were as follows: 22.7% were aged 25 to 35, 51.2% were 36 to 50, and 26.1% were over 50. The subject of the study was the level of creativity and motivation of the managerial staff as a factor in saving time when making managerial decisions.

The obtained research results can become an informative basis for further research and can be used in researching the effectiveness of innovative ideas or in the calculation of additional profit received by the enterprise as a result of their implementation.

DISCUSSION

The result of the successful formation and development of creative management at the

enterprise is the formation of a new organizational model called an innovative organization; that is, an organization that is constantly modernizing, self-learning, and producing innovations based on the management of creative activities and thus ensuring success in tough competition in the face of unexpected changes in the external environment (Khristenko, 2022).

As was noted by Shvets (2020), managerial creativity is a socio-professional competence of the subjects of activity, which involves the ability to engage in productive activity, the result of which is the formation of new non-standard approaches, technologies and methods of performing functions for managing social groups and organizations. It should be noted that managerial creativity is ensured by the personal traits and properties of not just one manager or head of the enterprise but in combination with similar traits of team members. As Zhou et al. (2019, p. 2577) noted, "Early research showed that the creators' biographic information and personality attributes affected creativity receiving. Studies in entrepreneurship, marketing, and sociology revealed that creators could leverage their reputation, affective displays, and impression to affect how their new or creative ideas are evaluated. They provide insights for management research to draw from".

We agree with Shvets (2020), who stated that creative management significantly affects the goals and functions of the enterprise and its management and decision-making methods. The creative style of management allows using the enterprise's existing innovation and investment potential as effectively as possible, using both material and human resources. Only people can generate new, creative ideas. We agree that by focusing on idea generation as the primary creative activity of the group process, existing theoretical concepts provide less insight into how groups develop problem structure, retain new ideas, and construct and develop ideas (Harvey & Kou, 2013). Zhou et al. (2022, p.2) noted, "Organizations have invested enormous resources to encourage creative idea generation in the hopes of improving work processes, introducing new products, and retaining and attracting customers. Anecdotes suggest that rather than a shortage of creative ideas, it is often

the lack of endorsement of new ideas that result in organizations' not capitalizing on their employees' creativity to gain a competitive advantage". "The best ways of acquiring entrepreneurial competencies were education and experience, also communication and networking. The aspects that satisfied the creative entrepreneurs about entrepreneurship courses were useful knowledge, suitable teaching methods, new contacts and networks, and creative industry specialized courses." (Küttim et al., 2011, p. 377).

"To promote creativity and innovation, organizations need to identify creative talents. Thus, individuals may also be the target of creativity evaluation" (Zhou et al., 2019, p.2574). Here it is appropriate to also take into account work by Jordão et al. (2020, p. 654); "Decision-making plays, however, an increasingly important role for the manager, whose cognitive competence is reflected in his ability to identify potential opportunities, to detect and solve the problems he faces immediately, and to predict and prevent future threats," and also that "that these managerial traits can play a positive role" Hackbarth (2004, p. 843) Considering the research made by (Zhou et al., 2022, p. 8) "Because experiencing power leads one to endorse creative ideas, organizations in need of capturing creative ideas should assign individuals experiencing more power to receive and assess creative ideas." and (Gong et al., 2013, p. 443) «The results indicated that core knowledge employee creativity was negatively related to firm performance when riskiness orientation was high. The relationship was positive when it realized absorptive capacity was high. Finally, the relationship was more positive in small and large firms. We discuss the implications of our findings for creativity research and managerial practices.» Tkach et al. (2019); Velinov & Malý (2016); Wulantika et al. (2023); Popova et al. (2021); and Skrynkovskyy et al. (2022) also agreed with the ideas mentioned above authors. Based on the analysis of available research, we have developed a model for forming creative management at the enterprise based on motivational factors (Figure 1).

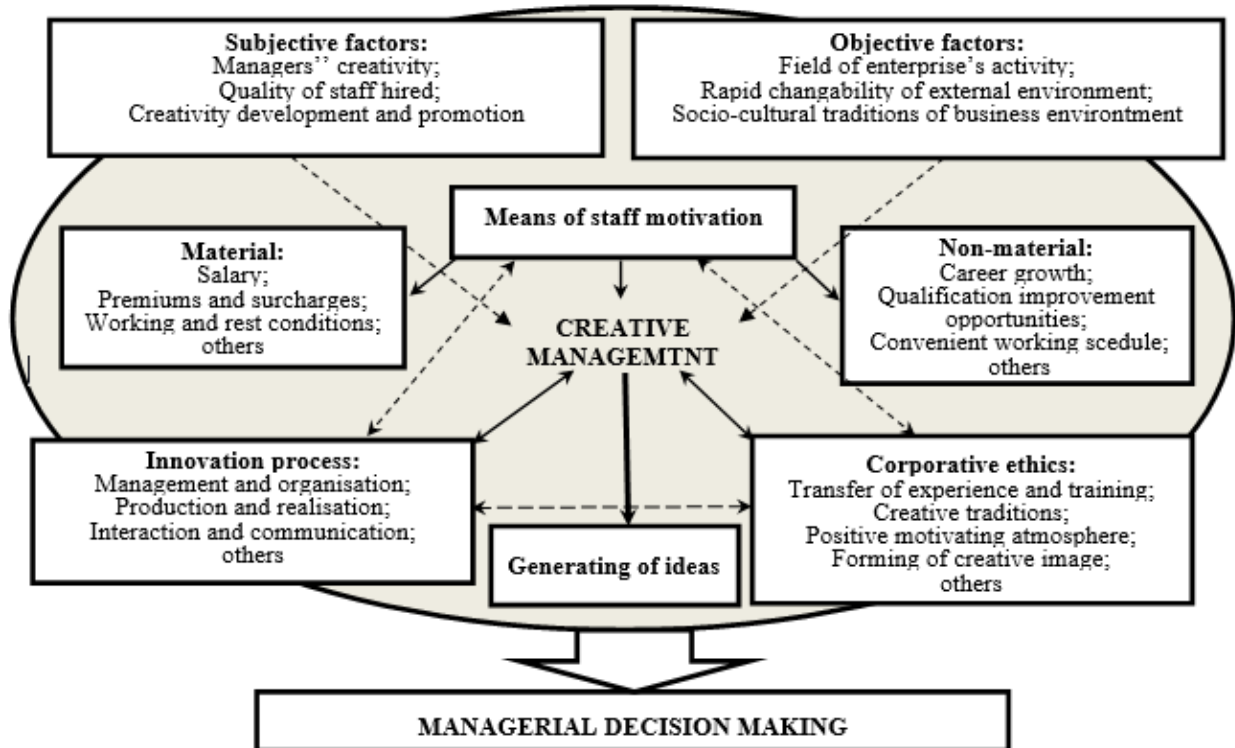


Figure 1. Model of formation of creative management at the enterprise based on motivational factors
Source: author's work.

Market conditions, management style, and methods require personal creativity, entrepreneurship, risk-taking, independence in decision-making, material responsibility, and creativity from the manager. A manager must have an analytical mindset and be able to think logically and critically. However, more is needed for a good, effective manager. Jordão et al. (2020. p. 664) noted that managers "...are prone to rely on simple heuristics and routine reasoning when making decisions". Dirler & Podruzsik (2022. p. 288) also investigated the causes of conflicts and their impact on costs and why it was important to create a friendly and favorable team atmosphere, noting that "...conflict costs lead to remarkable costs for organizations [and to] remain competitive, managers need to balance the opportunities and difficulties of conflicts and carefully manage their costs".

Along with analytical thinking, a manager must understand and correctly interpret the feelings of other people, be able to see the situation from another person's point of view, sensitively perceive people's feelings and moods, behave by the situation, and then from the received information be able to create a team atmosphere that would contribute to the successful

completion of the assigned task or the correction of an existing situation. With such managerial skills - with a creative perception of the situation - it is possible to create a friendly team atmosphere, with which there will be a success for the company, organization, or institution.

His active self-development largely ensures the formation of a creative manager as an effective leader through self-observation, self-assessment, self-control, and external information. According to Aggarwal et al. (2021. p. 1214): "The idea generation process is simultaneously influenced by multiple activities: knowledge acquisition from participants' interactions with each other's ideas, deliberate practice through persistent participation, and learning through failures." The same idea is followed in the work by Shepherd (2015): "The ability of managers to cope with a surfeit of data to formulate effective decisions depends on their ability to draw upon both rational approaches and intuition.".....Although some workers might generate and realize new ideas by themselves, implementing new ideas is often a social process that involves support, collaboration, and sponsorship from other people. As such, only after a creative idea is recognized and positively

evaluated by others can the idea add value to the organization". Zhou et al. (2019, p. 2574) added, "Managers may foster an environment where new ideas are valued, recognized, and implemented. At the organizational level, having a culture in which innovation and creativity are valued facilitates creativity perception".

As Zhou & Woodman (2003, p. 631) noted, "The recognition and support of creative ideas from employees is a crucial component in organizational creativity. ... that the manager's 'creativity schema' dictates the recognition of creative ideas in the work setting. This creativity schema is influenced by personal characteristics of the manager, by aspects of the manager's relationship with the employee, and several organizational influences". They also agreed with the ideas mentioned above and elaborated on them in their articles (Gilson & Shalley, 2004; Hon et al., 2014; Fehér & Reich, 2020; Kaliyeva et al., 2022; Kasych et al., 2021; Onegina et al., 2020). Self-development determines the specifics of an employee's activity. The main motivating factors for self-development are failures and mistakes in management activities. Careful observation and recording of such errors make it possible to establish their logical connection with the final result and, thus, to correct the situation if necessary. In addition, self-development should dynamically correspond to the system of requirements presented to the manager depending on the management level. As one approaches the top of the management pyramid, the amount of highly specialized occupations decreases, and the amount of knowledge in the field of management increases. A top manager must possess knowledge that would allow him to: identify problems, build hypotheses and forms of perspective work, make optimal decisions taking into account the opinions of various specialists, efficiently manage and control the work of employees, be capable of perspective thinking, and accept responsibility.

The choice of the motivation method depends on many factors, in particular, the stage of establishment and development of the enterprise, its production orientation and financial situation, material and technical support, structure and number of employees, the safety of working conditions, the form of

organization of production and work, etc. (Pavlenchuk et al., 2021). At the same time, it is extremely important to understand what motivates the employee the most. The entire motivation system aims to increase the effectiveness and efficiency of the enterprise in general and of an individual employee in particular. The employee must be motivated according to the goal, determined by his needs and desires to satisfy them. Motivation is the best way to reveal the potential hidden in a person to achieve his initiative and maximum return.

RESULTS

The analysis of the conducted questionnaire made it possible to develop a 10-point scale of the level of motivation of managers involved in management decision-making. Respondents were offered a comprehensive list of motivational factors from which they chose the most important. The next question was to rate the selected motivational factors on a 10-point scale. Using the statistical grouping method, we grouped their answers and defined the coefficient of influence of some factors on managers' motivation. This enabled the formation of a rating scale of motivation, which included salary, bonuses, working and rest conditions; career growth opportunities; stimulation of professional development; convenient work schedule; moral encouragement; the atmosphere in the team, and the opportunity to show creativity and initiative (Table 1).

Table 1. Results of respondents' motivational factors rating

Groups according to the managers' level of motivation	The coefficient of influence on managers' motivation factors									The average coefficient of managers' motivation
	salary	bonuses	working and rest conditions	career growth opportunities	stimulation of advanced training	stimulation of advanced training	moral encouraging	atmosphere in the team	creativity and initiative opportunity	
I - low	0.97	0.92	0.52	0.70	0.44	0.57	0.08	0.76	0.35	0.59
II - average	0.92	0.89	0.57	0.74	0.65	0.65	0.17	0.87	0.50	0.66
III - high	0.90	0.83	0.73	0.89	0.90	0.78	0.28	0.87	0.98	0.80
The average level of factor significance	0.93	0.88	0.61	0.78	0.66	0.67	0.18	0.83	0.61	x

Source: author's work.

The data analysis in Table 1 shows that the predominant factors affecting the motivation of managers are financial incentives. Although such motivational components as "opportunity for career growth" and "atmosphere in the team" are quite significant. The grouping of respondents' questionnaire answers by the motivational level revealed that managers who prefer such factors of motivation as "salary" and "bonuses" mostly fell into the group with a low level of motivation. Managers with a high level of motivation gave preference to "opportunities to show creativity and initiative" - by 60.7% more than the average indicator for this factor among all groups - and "stimulation of professional development" and "salary," respectively, by 36.4% more and 3.2% less.

The block of the questionnaire related to managers' motivation was compiled so that the respondents, depending on their priorities, evaluated the value of each motivational factor on a 10-point scale. As a result of processing the results of the respondents' survey and grouping their answers, we developed a 10-point scale of managers' motivation:

- 0 - 3 - low level of motivation;
- 4 - 6 - average level;
- 7 - 10 - high level.

At a low level of motivation for managers, the main motivational factors and incentives for work efficiency are salaries and the opportunity to receive various cash bonuses. At the same time, moral encouragement and the opportunity to show initiative and creativity have the lowest

coefficient of influence.

The average level of motivation is common for managers interested in career growth opportunities and is at the same level as material incentives. At this level of motivation, the atmosphere in the team is important, which indicates the need for collective support and a team's presence for the manager's effective work.

A high level of motivation is characteristic of managers who seek the opportunity to show their creativity and initiative at the same motivational level as the stimulation of professional development and salary. This indicates that highly motivated managers stress the importance of opportunities for self-development and self-improvement, which determines their ability to generate new, non-standard ideas and solutions.

The influence of the manager's competence in the time spent on identifying problems and making management decisions was addressed in research by Jordão et al. (2020, p. 654), which stated that "Decision-making plays, however, an increasingly important role for the manager, whose cognitive competence is reflected in his ability to identify potential opportunities, to detect and solve the problems he faces immediately, and to predict and prevent future threats."

In order to determine the level of creativity, respondents were asked to answer a number of questions that revealed the specifics of their use of traditional and innovative methods in solving

production problems and tasks. The questions were also formulated so that the respondents analyzed the time they spent on certain stages of managerial decision-making or activities. The proposed scale of the managers' creativity level takes into account the time spent, which involves dividing it into the following levels:

- 0 - 3 - low level;
- 4 - 6 - average level;
- 7 - 10 - high level.

At a low level of creativity, managers in analyzing a situation or problem are guided by traditional methods or means of solving them. About half of the time spent on the final management decision is allocated to analyzing internal and external environments.

At an average level of creativity, managers emphasize analyzing risks and threats regarding future decision-making and spend part of their time on this. According to their level of creativity, such managers systematically and independently monitor the internal and external

environment of the enterprise, as well as possible risks and threats. This makes it possible to save time in making management decisions (Figure 2).

A high level of creativity is characterized by the least time spent making a management decision. This is because a creative manager immediately generates an idea for a solution from the moment a problem is identified. Managers of all levels and experts are involved in the idea-generation process and its implementation. This level of creativity allows the manager to spend less time analyzing the environment, choosing alternative solutions, etc. The situation or problem in the production process directly determines the formation of a strategy for its solution. Managers with a high level of creativity generate ideas based on their professional skills, qualifications, intuition, self-development, self-improvement, and non-standard thinking. Therefore, at first glance, the existing risk of a creative solution is minimized.

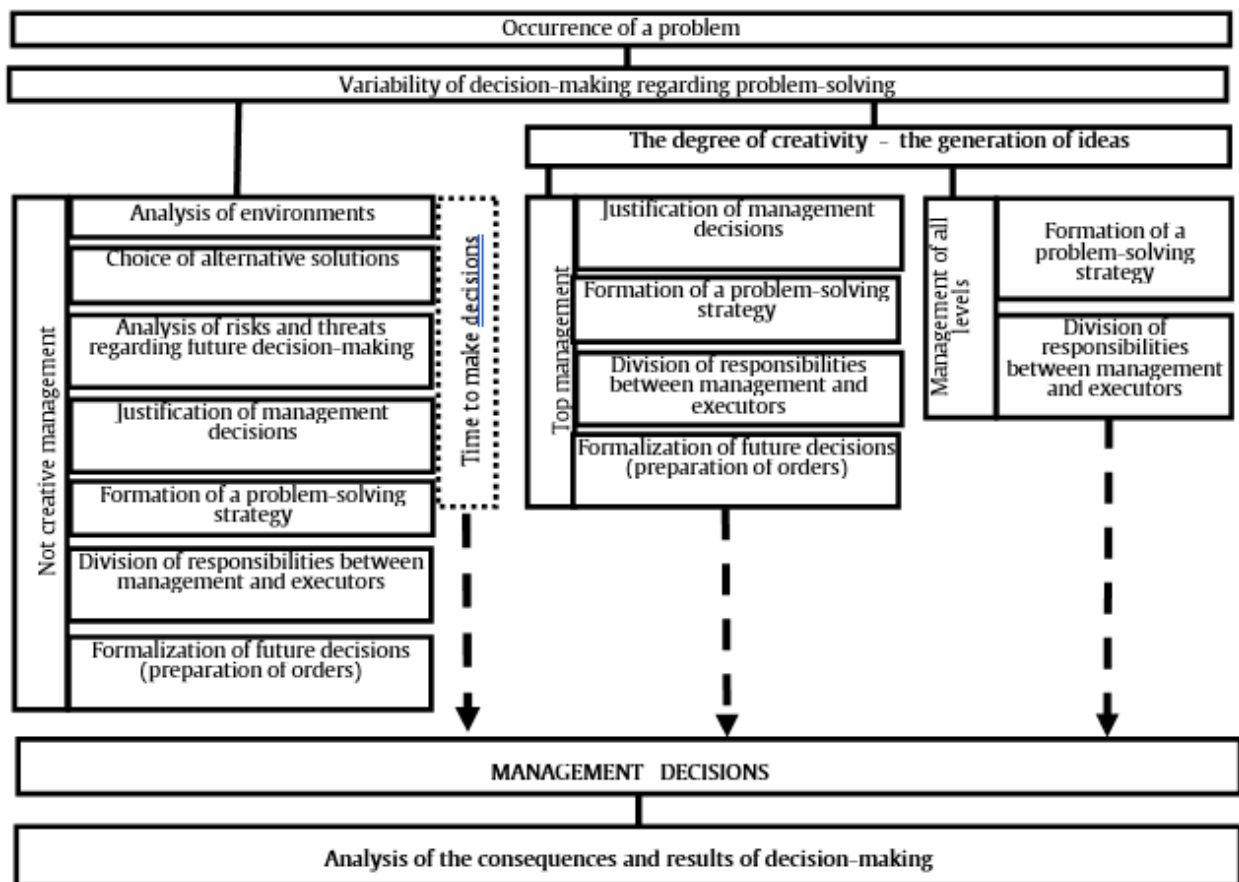


Figure 2. Model of the process of management decisions development based on management creativity
Source: author's work.

In the block of the questionnaire addressing the time managers spend on the specified types of managerial activities while forming managerial decisions, the respondents had to indicate their structure. Processing and grouping the results allowed us to determine the relationship between managers' creativity level and the time spent making managerial decisions regarding the individual components that form them. To calculate the ratio of time spent on types of managerial activities to the formation of managerial decisions, the time required for making a managerial decision from the

appearance of a problem to the actual instructions to subordinates to solve it was taken per unit. It should be noted that according to the results of a sociological study, the total time spent on deciding by managers with a low and medium level of creativity is 32.2% and 15.6% higher, respectively, than that by managers with a high level of creativity. The relationship between the level of creativity and time spent on making managerial decisions, in terms of individual types of managerial activity, is presented in Table. 2.

Table 2. The relationship between the managers' creativity level and the time spent on making managerial decisions

Groups of managers by creativity level	The ratio of time spent on types of managerial activities in the formation of management Decisions						
	Analysis of environments	Selection of alternative solutions	Analysis of risks and threats	Grounds for management decisions	Formation of a problem-solving strategy	Distribution of responsibilities between management and staff	Formalization of future decisions (orders issued)
I - low	0.14	0.13	0.20	0.22	0.18	0.10	0.03
II - average	0.05	0.04	0.04	0.25	0.27	0.25	0.10
III - high	0.01	0.28	0.05	0.14	0.22	0.20	0.10
Average coefficient	0.07	0.15	0.10	0.20	0.22	0.18	0.08

Source: author's work.

Table 2 shows that the structure of time spent on individual operational actions about the process of making a management decision differs significantly among groups of managers by the level of creativity. In particular, managers with a low level of creativity need 13.0% more time to analyze their environments than those considered the most creative; for risk and threat analysis, 15.0% more, respectively. However, managers of the third group, because of many generated ideas for solving the problem, are forced to spend 15.0% more time choosing alternative solutions than managers of the first group and explaining the accepted ideas to their subordinates for implementation.

Skoda et al. (2021. p. 180) noted, "The importance of correct and clear decisions during a complex and difficult situation is very easy to understand, but not so easy to achieve. Especially

in situations where decision-makers must decide under time pressure and uncertainty". The risks that accompany the process of making managerial decisions have been studied by many scholars (Hodgett et al., 2019; Lyu et al., 2020; Van Hai Trieu & Pavelková, 2022; Vipul Aggarwal et al., 2021). At the same time, we fully share Škoda et al.'s (2021. p. 180) opinion that "Decision-making under the uncertainty, subjectivity, and ambiguity of human knowledge is specific especially to upper levels of management. One of the situations that is typical for the high level of uncertainty is a crisis situation".

The same opinion is held by Hodgett & Siraj (2019), Lyu et al. (2020), and Yaping Gong et al. (2013). As Hon et al. (2014. p. 937) put it: "Managers can foster a climate that encourages risk-taking, accepts challenges to the status quo,

and is open to progressive thinking and action, and they can adopt an empowering leadership style that is based on trust, autonomy, and self-direction." Moreover, "Managers of companies engaged in significant creative efforts should develop an open and modern environment, foster empowering leadership styles, and ensure that coworkers are willing to support each other and share knowledge. In so doing, these managers are likely to foster higher levels of creative performance among their employees" (Hon et al., 2014. p. 938).

To determine the dependence of the time required for making management decisions on the factors that influence it, and in particular, the level of creativity, we used the generalized linear method of least squares:

$$\sum_{j=0}^n x_{ij}a_j = y_i \quad i = \overline{1, k} \tag{1}$$

where: k - is the number of respondents, n - is the number of influencing factors.

In matrix form, this formula is

$$XA=Y \tag{2}$$

Where $X = \begin{pmatrix} x_{10} & \dots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{k0} & \dots & x_{kn} \end{pmatrix}$ - is the matrix of influencing factors,

$A = \begin{pmatrix} a_0 \\ \vdots \\ a_n \end{pmatrix}$ - is the vector of the sought coefficients of the regression equation,

$Y = \begin{pmatrix} y_1 \\ \vdots \\ y_k \end{pmatrix}$ - is a vector of coefficients of time spent on making a management decision in the studied periods.

The model includes the following factors that influence the total cost of management decision-making time (Table 3):

x_{i1} - the level of remuneration of managers who participate in decision-making, UAH (thousand);

x_{i2} - the number of people participating in decision-making;

x_{i3} -level of creativity of managers involved in decision-making, points;

x_{i4} -age of persons participating in decision-making, years;

x_{i5} -score of the instability of the external environment, determined by an expert;

x_{i6} is the motivation factor of managers involved in decision-making;

$x_{i0}=1$ for all $i = \overline{1, k}$ the coefficients for the free element of the linear function.

Table 3. Initial data for determining the dependence of time spent on making management decisions on factors

Factors affecting the aggregate time spent on management decision-making	Sign	Average value
The average level of remuneration of managers who participate in decision-making, UAH (thousand)	x_1	24.8
The average number of people involved in decision-making	x_2	5
The average level of creativity of managers involved in decision-making points	x_3	7.4
The average age of persons participating in decision-making, years	x_4	37
The average score of the instability of the external environment, determined by an expert	x_5	9.3
Coefficient of motivation of managers involved in decision-making	x_6	0.68

Source: author's work.

The formula for calculating the column vector of unknown parameters using the usual MNC in matrix form looks like

$$A=(X^T X)^{-1} X^T Y \quad (3)$$

where X^T is the transposed matrix.

According to this formula, the result was obtained:

$$\begin{aligned} a_0 &= 1.061073; & a_1 &= 0.001026; & a_2 &= -0.00337; \\ a_3 &= 0.00376; & a_4 &= 8.6310^{-5}; & a_5 &= -0.01643; \\ a_6 &= 0.06269. \end{aligned}$$

Using the obtained results, it is possible to predict the time required for making management decisions and minimize the impact of the least important of them. As evidenced by the results of sociological research and the use of the linear method of least squares, the average level of creativity of managers involved in decision-making and the coefficient of their motivation greatly influence the time spent on management decisions. Also, the fewer people involved in decision-making, the less time is spent on this process.

Practice shows that highly effective management largely depends on the competence of managers and specialists, on how well they know their business, possess the necessary knowledge, and replenish it. To manage, a manager needs to be competent, fully and perfectly know all the conditions of production and its specifics, know the technology of production at its modern status, and have a certain scientific basis. The time that a manager spends on making management decisions is an indicator of the effectiveness of his work. The effectiveness of the manager's work should be considered as the effectiveness of management activities, characterized by the technical, economic, and social effects and costs of tangible managerial work to achieve these results. This is consistent with the findings of a number of experts, such as Shaukat et al. (2017); Skrynkovskyy et al. (2022); Vrtana et al. (2021); Victor et al. (2018); Nguyen et al. (2016); and Hadziahmetovic et al. (2017). Determining the effectiveness of managerial work is associated with several difficulties, among which it is appropriate to highlight the following: the effect of managerial work is not always under the direct control of that unit or person whose work efficiency is subject to evaluation; the effect of managerial work consists of various technical

and economic, social and political, and other results that are not subject to quantitative assessment; and the effect of managerial work is embodied not only in a material product but also in the form of an idea that can be used repeatedly.

CONCLUSION AND RECOMMENDATION

To form an effective team for an organization, it is extremely important to understand what motivates an employee the most. The entire motivation system should be aimed at increasing the effectiveness and efficiency of the enterprise in general and of the individual employee in particular. The employee must be motivated according to the goal, determined by his needs and desires to satisfy them. Motivation is the best way to provide an opportunity to reveal the potential hidden in a person, to achieve his initiative and realize a maximum return. The research results show that managers with a high level of motivation preferred such a factor as "opportunities to show creativity and initiative" - 60.7% more than the average indicator for this factor among all groups and "stimulation of professional development."

The study's results indicate that the predominant factors affecting the motivation of managers are financial incentives. The grouping of respondents' questionnaire answers by motivation level revealed that managers who prefer such motivation factors as "salary" and "bonuses" mostly fell into the group with a low level of motivation. Managers with a high level of motivation preferred "opportunities to show creativity and initiative," as well as "stimulation of professional development." Based on the respondents' survey results and the grouping of their answers, we developed a 10-point scale of managers' motivation, which defines three main levels - low, medium, and high.

A high level of creativity is characterized by the least time spent making a management decision. This is because a creative manager immediately generates an idea for a solution from the moment a problem is identified. Managers of all levels and experts are involved in the idea-generation process and its implementation. This level of creativity allows the manager not to spend much time analyzing the environment, choosing alternative solutions, etc. The situation or problem in the production process directly determines the formation of a strategy for its

solution. Managers with a high level of creativity generate ideas based on their professional skills, qualifications, intuition, self-development, self-improvement, and non-standard thinking.

Processing the results and grouping them allowed us to determine the relationship between managers' creativity level and time spent making management decisions regarding the individual components that form them. To calculate the ratio of time spent on types of managerial activities to the formation of managerial decisions per unit, the time necessary for making a managerial decision from the appearance of a problem to the actual orders to subordinates to solve it was taken. It should be noted that, according to the results, the total time spent on making a managerial decision by managers with a low and medium level of creativity is 32.2% and 15.6%, respectively, higher than by managers with a high level of creativity.

It is possible to forecast the time required for making management decisions and minimize the impact of the least important of them using the obtained results. As evidenced by the results of this research and the use of the linear method of least squares, the average level of creativity of managers involved in decision-making and the coefficient of their motivation influence the time spent on management decisions. Furthermore, the smaller the number of people involved in decision-making, the less time is spent on this process.

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