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Management of Innovative Development of Enterprises Considering Their Financial and Resource Opportunities in the Context of Security

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ABSTRACT

The kea task of the study is the formation of a methodological approach in determining the viable resource provision options of the management system for the innovative development of an enterprise. The methodology includes methods of systems analysis, methods of multicriteria assessment of alternatives, and the method of paired comparisons with the advantage of options. In modern conditions, the formation of new effective economic relations that meet the needs of the market, resource management acts as a peculiar type of practical activity and as an organizational system. The system of management of innovative development is understood by us as a set of controls, divisions and performers aimed at fulfilling the tasks assigned to them, a set of methods that contribute to management. The development of modern concepts of the theory of organization and management of innovative development is inextricably linked to resource capabilities. As a result, we proposed a methodological approach based on the formation of alternative resource provision options with the possibility of choosing the appropriate one among them. The result, decision-making and selection of the appropriate level of security are based on a comprehensive consideration of all types of resources (human, organizational, financial).

1. INTRODUCTION

Today, strategic management of innovative development of engineering enterprises is of particular importance, orienting activities to consumer requests, allowing for more flexible response and timely changes, and achieving competitive advantages in the long term. A feature of the innovative type of development is the shift in emphasis on the use of fundamentally new progressive technologies, the production of high-tech products, operational management decisions in innovation activities related to both micro- and macroeconomic processes - pursuing a resource-saving policy, creating technology parks, servicing the economy. The ability to continuously innovate is one of the basic conditions for the competitiveness of an enterprise.

A characteristic of the innovative development of an enterprise is the reorientation of production not to the mass consumer, but to the specific needs of individual individuals. Modernization of people's lives leads to an increase in requirements for the quality and variety of goods and services. Society is becoming more open to innovation to achieve the required diversity.

The modern model of economic growth, based on an innovative type of development, presupposes a change in the very concept of scientific and technological progress and scientific and technological development. There are such social priorities as welfare, intellectualization of production activities, the use of high and information technologies, environmental friendliness. This model requires effective stimulation of innovation, new financial and credit policy, development of knowledge-intensive and reduction of nature-exploiting industries - at the macro level; changes in the type of entrepreneurial activity, active involvement of small and medium-sized private businesses in production - at the micro level.

The management system for the innovative development of an engineering enterprise is a complex process that requires significant resource costs and, without proper resource provision, it is impossible to implement effective management decisions. That is why the relevance requires a study of the features of choosing the most rational option for resource provision for implementing management decisions on the innovative development of an engineering enterprise. There are several alternative options for resource provision, but not all of them may be needed for the management system for the innovative development of an engineering enterprise. The kea task of the study is the formation of a methodological approach in determining the viable options for resource provision of the management system for the innovative development of an engineering enterprise and maintaining an appropriate level of security.

The main contributions of this paper provide for the formation of a methodological approach in determining the viable resource provision options of the management system

for the innovative development of an enterprise.

2. LITERATURE REVIEW

There is a sufficient number of scientific works on the topics of resource provision of the enterprise management system.

For example, Chlivickas et al. [1], investigated and emphasized the importance of human resources for the enterprise management system.

Other scientists also noted the importance of not only human resources, but also organizational ones [2-4].

But financial resources have always been key, as noted by Stankevičienė et al. [5], Entringer and other [6].

We agree with the assertion of scientists [1-5] that the innovative paradigm of economic development, which dominates in modern economic conditions, significantly changes the principles of the functioning and development of an industrial enterprise. The effectiveness of innovative activities of business entities becomes a determining factor that affects their viability, therefore, in conditions of high volatility of the influence of environmental factors, it becomes necessary to restructure the management system for innovative development of enterprises.

Analyzing the scientific literature, one cannot but agree that the enterprise has certain groups of resources that are critical for ensuring the management system for the innovative development of the enterprise (organizational, financial and personnel).

A high level of safety is a key factor in the innovative development of the enterprise. As noted by Bazyliuk et al. [7], it is impossible to implement any management decisions without security.

Ensuring security for engineering enterprises is also impossible without resource provision. Therefore, we agree with the opinions of scientists [8-10] that the importance of resources for this process.

For example, analyzing the materials of Kryshtanovych et al. [8], we can agree that security for an engineering enterprise is closely related to innovation and resource provision. We agree with this.

At the same time, the opinion of Fakiha [9] is interesting, which notes that countering any threats to the control system should be accompanied by appropriate resource support.

Maceika and Jančiauskas [10] confirm the fact that innovative development is impossible without resource provision. An important result of the process of ensuring innovative development is resource provision, which includes the justification of resource needs, the identification of sources of resources and the mobilization of resources, the formation of innovative potential.

An analysis of the literature gives a clear understanding that resources play a key role in the enterprise management system and its security.

The issues of developing the theoretical foundations for managing innovative development are reflected in the works of many researchers and, despite a large number of theoretical and methodological studies from a specific problem area, further scientific substantiation requires many questions.

However, making a proper scientific contribution to the development of various aspects of the problems of the management system and ensuring the security of the enterprise, today it is still relevant to search for new methods for assessing the variability of the resource provision of the management system for the innovative development of the engineering enterprise.

3. METHODOLOGY

Our study involves the formation of a theoretical and methodological approach to the formation of a management system for the innovative development of an enterprise, based on the use of methods of system analysis, methods of multicriteria assessment of alternatives and a matrix of paired comparisons for the advantage of options. All this allows us to form the alternative options for resource provision desired for our study with the possibility of choosing among them the optimal one based on different needs for the implementation of management decisions on the innovative development of the engineering enterprise and ensuring an appropriate level of economic security.

The process of making managerial decisions in the context of stimulating innovative development directly depends on the correct assessment of the real situation and the availability of alternative solutions for the above development. Each person responsible for making a decision should be guided by the goals and objectives set for the enterprise. Accordingly, each set goal must meet the specified criteria, allowing to assess the success and level of achievement of the set goals and objectives. For this, methods of multi-criteria evaluation of alternatives and a matrix of paired comparisons can become an effective tool.

The proposed methodological approach in mathematical science is not new, but its novelty in our study lies in its application in the innovation development management system. Given this, its effectiveness can be confirmed by its active use in the mathematical sciences.

Therefore, to begin with, one should allocate the key resources that are necessary for making management decisions on the innovative development of the engineering enterprise and ensuring a consistently high level of economic security: financial resources; organizational resources; company personnel.

The structure of the management system for the process of innovative development in an enterprise is based on making decisions synthesized in the process of using a system of alternatives and variability, namely, the presence of a large number of options and the subsequent selection of the most optimal and suitable one. As a result of the availability of alternatives, an enterprise can make the best use of available resources and ensure a stable level of economic security. Let's highlight several options for each of the three resource groups:

1. Financial resources: those resources that were allocated in the normal (regular) mode; those resources that are obtained as a result of redistribution in other areas of activity; those resources that have been allocated from the reserve capital.

2. Human resources: those personnel specializing in the innovative development of the engineering enterprise; the personnel involved from other divisions of the enterprise; that personnel additionally involved from outside.

3. Organizational resources: those organizational measures that are developed within the company; those measures that are formed due to the acquisition of new experience; those measures that are obtained by third-party enterprises.

The scale for assessing the level of resource endowment of the management system for the innovative development of an engineering enterprise in the context of ensuring its economic

security will include:

1. Maximum level. It means opening up new opportunities to speed up the process of innovative development.

2. Normal level. This means that innovative development is possible and the system can work.

3. The minimum level. It means the inhibition of the process of managing innovative development.

Besides the proposed methods, we also conducted research by many scientists and used the method of systems analysis [11-13].

In order to make it as easy as possible to further determine the benefits of certain levels of resource provision over others, we will provide the established levels with the corresponding mathematical notation (Table 1).

Table 1. Designation of levels of provision of financial resources (w_j) with human resources (x_j) and organizational resources (y_j)

Level	Resources		
	w_j	x_j	y_j
Minimum level	w_1	x_1	y_1
Normal level	w_2	x_2	y_2
Maximum level	w_3	x_3	y_3

Let us also define a special scale of relative importance at the level of providing optimal resource system to the management system for the innovative development of an enterprise (Table 2).

Table 2. The scale of the relative importance of the levels of resource provision of the management system

Score, points	Explanation
1	Balanced resource provision
2	One level of resource provision is insignificant, but exceeds the other
3	One level of resource provision normally exceeds the other
4	One level of resource provision significantly exceeds the other
5	One level of resource provision is as much as possible totally exceeds the other

The next step in our research will be to use a pairwise comparison matrix to compare the main levels of resource provision.

4. RESULTS OF RESEARCH

Note that for the main two levels of providing resources with comparable resources, depending on what level of their impact on the management system for the innovative development of an enterprise, we can get an assessment of the importance that will make up a certain element in the matrix in the position (w_j, w_m). Thus, in the context of the chosen research method, the diagonal elements of the matrix correspond to the value of unity, while the lower part is their reciprocal values.

So, we form a matrix of paired comparisons at the level of providing financial resources w_j the management system for the innovative development of an engineering enterprise (Table 3).

To determine the degree of consistency of the main numerical valuesof these paired comparisons of the levels of support of the enterprise innovative development management system presented in Table 3, we must calculate the normalized vector of the main priorities of the matrix E_n (Table 4).

We also have to calculate the eigenvalue of the matrix λ_{max}, and the so-called *IU* index and the consistency ratio *WU*. All these calculations are presented in Table 5.

It should be noted that we performed all calculations using a special software. As a result of comparisons in Table 3, we can speak of satisfactory results ($WU \leq 0{,}1$). This suggests that there is a normal level of convergence of the process of comparison and consistency in relation to the values of the levels of financial support of the management system for innovative development of the enterprise.

The next step will be the process of comparing the levels of resource provision of the innovative development management system specifically with human resources (Table 6).

We will expand the existing matrix of pairwise comparisons for human resources with the corresponding row with the results of calculating the components of the normalized vector of priorities of the matrix. It is necessary to determine the measure of the consistency of the numerical values of paired comparisons of the main levels of resource provision of the enterprise innovative development management system, which are erected in Table 6, we will again calculate the values of λ_{max}, *IU*, *WU* but already for human resources (Table 7).

As can be seen from Table 7, the results are positive. So, as a result, we got the optimal level of convergence ($WU \leq 0{,}1$). The implementation for organizational resources of the management system for the innovative development of the enterprise will be similar (Table 8).

Also, it is necessary, in the same way as for financial and human resources, to determine λ_{max}, *IU*, *WU*, but already for the organizational resources of the engineering enterprise innovative development management system (Table 9).

Table 3. The results of comparing the levels of provision

w_j	w_1	w_2	w_3
w_1	1	4	5
w_2	1/4	1	2
w_3	1/5	1/2	1

Table 4. Components of the normalized vector of priorities of the matrix of paired comparisons of the levels of provision

w_j	w_1	w_2	w_3
E_n	0.683	0.199	0.116

Table 5. Determination of the consistency of the matrix of paired comparisons of the levels of provision

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.024	0.012	0.021

Table 6. The results of comparing the levels of provision of with human resources

x_j	x_1	x_2	x_3
x_1	1	2	3
x_2	1/2	1	1
x_3	1/3	1	1
En	0.683	0.199	0.116

Table 7. Determination of the consistency of the matrix of paired comparisons of the levels of provision

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.018	0.009	0.016

Table 8. The results of comparing the levels of provision of the management system with organizational resources

y_j	y_1	y_2	y_3
y_1	1	2	3
y_2	1/2	1	1
y_3	1/3	1	1
En	0.625	0.238	0.136

Table 9. Determination of the consistency of the matrix of paired comparisons of the levels of provision of the management system with organizational resources

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.018	0.009	0.016

There is also a satisfactory result here ($WU \leq 0{,}1$). Consequently, as a result, using the already well-known methodology of paired comparisons for the advantage of options [14, 15], we have the opportunity to determine the optimal resource provision of the management system for the innovative development of an enterprise and maintaining a high level of security. The first step in this will be an assessment of alternatives to provide this system with financial resources. Let's establish the appropriate mathematical notation for each type of financial resources: those resources that were allocated in the normal (regular) mode (*A*); those resources that are obtained as a result of restoration in other areas of activity (*B*); those resources that have been allocated from the reserve capital (*C*).

It should be noted that to determine the utility functions for financial resources, it is important to compare these types of resources in accordance with the existing levels of provision of the latter. All the results of these comparisons were placed in the tables below.

Consequently, the results of comparing financial resources precisely at the minimum condition to ensure the management system for the innovative development of the engineering enterprise and maintaining the level of security are show in Table 10.

For minimum level, the consistency should be determined according to the priority vectors λ_{max}, the *IU* consistency index and the WU consistency ratio (Table 11).

Table 11 shows the level of consistency of the results of comparing monetary resources at the "maximum" level, when Table 9 for organizational resources, taking into account the similarity of the calculation results.

The results of comparing financial resources precisely at the normal condition to ensure the management system for the innovative development of the engineering enterprise and maintaining the level of security are show in Table 12.

It should be noted that the difference between Tables 10 and 12 is that in Table 10 the calculation was made for the minimum level of providing support for the innovation development management system, while in Table 12 this happened for the normal level.

For a normal level, the consistency should be determined by priority vectors λ_{max}, the *IU* consistency index, and the *WU* consistency ratio (Table 13).

It should be noted that the results of the process of comparing financial resources at the maximum level of provision of the management system for the innovative development of the engineering enterprise and maintaining the level of security are presented in Table 14.

For the maximum level, the consistency should be determined according to the priority vectors λ_{max}, the *IU* consistency index, and the *WU* consistency ratio (Table 15).

It should also be noted that the aforementioned level of consistency according to the results of the comparison of the category of financial resources can be considered positive, given that we have obtained an acceptable level of coincidence ($WU \leq 0{,}1$).

Table 10. The comparison of financial resources with a minimum level of support for the management system enterprise

Min	*A*	*B*	*C*
A	1	1/2	1/4
B	2	1	1/3
C	4	3	1
En	0.625	0.238	0.625

Table 11. The level of consistency of the results of comparing financial resources with a minimum level of provision

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.018	0.009	0.016

Table 12. The comparison of financial resources with a normal level of support for the management system

Norm	*A*	*B*	*C*
A	1	1/2	1/3
B	2	1	1/2
C	3	2	1
En	0.163	0.296	0.539

Table 13. The level of consistency of the results of comparing financial resources with a normal level of provision

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.009	0.005	0.008

Table 14. Comparison of financial resources with a maximum level of support for the management system

Max	*A*	*B*	*C*
A	1	1/2	1/2
B	2	1	1/2
C	2	2	1
En	0.195	0.310	0.493

Table 15. The level of consistency of the results of comparing financial resources with a maximum level of provision of the enterprise

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.054	0.027	0.046

The main results of calculating the utility function of the main options for financial resources in the context of different levels of support for the management system for the innovative

development of the engineering enterprise and maintaining the level of security, which are presented above to simplify the calculations, are summarized in the following Table 16.

Table 16. Summary table of the usefulness of the types of financial resources of the management system for the innovative development

u_{FRij}	u_{FR1}	u_{FR2}	u_{FR3}
u_{FR1}	0.136	0.238	0.625
u_{FR2}	0.163	0.296	0.539
u_{FR3}	0.195	0.310	0.493

Table 17. Comparison of human resources with a minimum level of support for the management system

Min	*D*	*E*	*F*
D	1	½	¼
E	2	1	1/3
F	4	3	1
En	0.136	0.238	0.625

Table 18. The level of consistency of the results of comparing human resources with a minimum level of provision of the enterprise

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.018	0.009	0.016

Table 19. Comparison of human resources with a normal level of support for the management system

Normal	*D*	*E*	*F*
D	1	1/2	1/3
E	2	1	1/3
F	3	3	1
En	0.157	0.249	0.593

Table 20. The level of consistency of the results of comparing human resources with a normal level of provision

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.054	0.027	0.046

Table 21. Comparison of human resources with a maximum level of support for the management system

Max	*D*	*E*	*F*
D	1	1/2	1/3
E	2	1	1/2
F	3	2	1
En	0.163	0.296	0.539

It should be noted that the main elements of the normalized vector of priorities of the matrix of paired comparisons of the levels of provision of the system for managing the innovative development of the enterprise with financial resources, which was presented above in the text, allow us to establish the weight s_i of all options for financial support.

So, we have three different options for utility function values u_{FRi} of financial resources at different levels of support for the management system for the innovative development of an enterprise and maintaining security (1):

$$\begin{aligned} U_{FR1}&=s_{FR1}u_{FR11}+s_{FR2}u_{FR21}+s_{FR3}u_{FR31}\\ U_{FR2}&=s_{FR1}u_{FR12}+s_{FR2}u_{FR22}+s_{FR3}u_{FR32}\\ U_{FR3}&=s_{FR1}u_{FR13}+s_{FR2}u_{FR23}+s_{FR3}u_{FR33} \end{aligned} \quad (1)$$

Substituting our values to (1) we can get the following results:

$$\begin{aligned} U_{FR1}&=0.683\times0.136+0.199\times0.163+0.116\times0.195=0.148\\ U_{FR2}&=0.683\times0.238+0.199\times0.296+0.116\times0.310=0.257\\ U_{FR3}&=0.683\times0.625+0.199\times0.539+0.116\times0.493=0.591 \end{aligned}$$

Consequently, according to the calculation, the maximum effect of resource provision of the management system for innovative development of engineering enterprises and support of security among financial resources is possible through the option U_{FR3} (those resources that have been allocated from the reserve capital).

The next step will be the calculation of human resources to ensure the management system for the innovative development of the enterprise and maintain the proper level of safety. Mathematical notation for all options: those personnel specializing in the innovative development of the engineering enterprise (*D*); the personnel involved from other divisions of the enterprise (*E*); that personnel additionally involved from outside (*F*).

The established matrix of paired comparisons, at the minimum level, is shown in Table 17.

For the minimum level, the consistency should be determined according to the priority vectors λ_{max}, the *IU* consistency index and the WU consistency ratio (Table 18).

The results of comparing human resources precisely at the normal level of provision of the management system for the innovative development of the engineering enterprise and maintaining the level of security are shown in Table 19.

For a normal level, the consistency should be determined by priority vectors λ_{max}, the *IU* consistency index, and the *WU* consistency ratio (Table 20).

Table 20 shows the level of consistency in the results of the comparison of human resources, when table 15 for cash, taking into account the similarity of the results of the calculation.

The results of comparing human resources precisely at the maximum level of provision of the management system for the innovative development of the engineering enterprise and maintaining the level of security are placed in Table 21.

For the maximum level, the consistency should be determined according to the priority vectors λ_{max}, the *IU* consistency index, and the *WU* consistency ratio (Table 22).

All calculations on the utility functions of the types of human resources were performed correctly, as the values of λ_{max}, *IU* consistency index, and *WU* consistency ratio for each of the matrices above are within the norm ($WU \leq 0{,}1$).

Table 22. The level of consistency of the results of comparing human resources with a maximum level of provision of the enterprise

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.009	0.005	0.008

Table 23. Summary table of the usefulness of the types of human resources of the management system

u_{HRij}	u_{HR1}	u_{HR2}	u_{HR3}
U_{HR1}	0.136	0.238	0.625
U_{HR2}	0.157	0.249	0.593
U_{HR3}	0.163	0.296	0.539

The main results of calculating the utility function of the main options for human resources in the context of different

levels of support for the management system for the innovative development of the engineering enterprise and maintaining the level of security, which are presented above to simplify the understanding of the calculations are reduced to the data shown in the Table 23.

Table 24. Comparison of organizational resources with a minimum level of support for the management system

Min	*G*	*H*	*I*
G	1	3	5
H	1/3	1	3
I	1/5	1/3	1
En	0.625	0.238	0.136

Table 25. The level of consistency of the results of comparing h organizational resources with a minimum level of provision

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.038	0.019	0.033

Table 26. Comparison of organizational resources with a normal level of support for the management system

Normal	*G*	*H*	*I*
G	1	3	4
H	1/3	1	2
I	¼	1/2	1
En	0.625	0.238	0.136

Table 27. The level of consistency of the results of comparing organizational resources with a normal level of provision

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3,018	0.009	0.016

Table 28. Comparison of organizational resources with a maximum level of support for the management system

Max	*G*	*H*	*I*
G	1	2	3
H	1/2	1	1
I	1/3	1	1
En	0.549	0.240	0.209

It should be noted that the main elements of the normalized vector of priorities of the matrix of paired comparisons of the levels of provision of the system for managing the innovative development of the enterprise with human resources, which was presented above in the text, allow us to establish the weight s_i of all options for human resources support.

As in the case of financial resources, we substitute the obtained values into our system of equations:

$$U_{HR1}=0.683\times0.136+0.199\times0.157+0.116\times0.163=0.143$$
$$U_{HR2}=0.683\times0.238+0.199\times0.249+0.116\times0.296=0.245$$
$$U_{HR3}=0.683\times0.625+0.199\times0.539+0.116\times0.539=0.607$$

Consequently, the calculations made allow us to say that the highest possible effect in the resource provision of the enterprise innovative development management system and maintaining a high level of safety in terms of human resources will reach through the U_{HR3} option (human resources that personnel additionally involved from outside).

Already in a similar way, we will establish a mathematical designation for all options for organizational resources: those organizational measures that are developed within the company (*G*); those measures that are formed due to the acquisition of new experience (*H*); those measures that are obtained by third-party enterprises (*I*).

The established matrix of paired comparisons, at the minimum level, is shown in Table 24.

For the minimum level, the consistency should be determined according to the priority vectors λ_{max}, the *IU* consistency index and the WU consistency ratio (Table 25).

The results of comparing organizational resources precisely at the normal level of provision of the management system for the innovative development of the engineering enterprise and maintaining the level of security are shown in Table 26.

For a normal level, the consistency should be determined by priority vectors λ_{max}, the *IU* consistency index, and the *WU* consistency ratio (Table 27).

The results of comparing human resources precisely at the maximum level of provision of the management system for the innovative development of the engineering enterprise and maintaining the level of security are presented in Table 28.

For the maximum level, the consistency should be determined according to the priority vectors λ_{max}, the *IU* consistency index, and the *WU* consistency ratio (Table 29).

The main results of calculating the utility function of the main options for organizational resources in the context of different levels of support for the management system for the innovative development of the engineering enterprise and maintaining the level of security, which are presented above to simplify the understanding of the calculations are reduced to the data shown in the Table 30.

Table 29. The level of consistency of the results of comparing organizational resources with a maximum level of provision of the enterprise

matrix λ_{max}	*Consistency index IU*	*Consistency ratio, WU*
3.018	0.009	0.016

Table 30. Summary table of the usefulness of the types of organizational resources of the management system

u_{ORij}	u_{OR1}	u_{OR2}	u_{OR3}
U_{OR1}	0.625	0.238	0.136
U_{OR2}	0.625	0.238	0.136
U_{OR3}	0.549	0.240	0.209

Table 31. Assessment of alternative resources options system of innovative development of the engineering enterprise

Resources	u_{ORi1}
U_{FR1}	0.148
U_{FR2}	0.257
U_{FR3}	0.591
U_{HR1}	0.143
U_{HR2}	0.245
U_{HR3}	0.607
U_{OR1}	0.621
U_{OR2}	0.251
U_{OR3}	0.125

As in the case of others resources, we substitute the obtained values into our system of equations:

U_{OR1}=0.625×0.636+0.238×0.625+0.136×0.549=0.621
U_{OR2}=0.625×0.258+0.238×0.238+0.136×0.240=0.251
U_{OR3}=0.625×0.104+0.238×0.136+0.136×0.209=0.125

Therefore, the maximum positive effect in providing organizational resources for the management system of innovative development of the engineering enterprise is possible through the option U_{OP1} (those organizational measures that are developed within the company).

Summarizing the results of calculations, we form a table of estimates of all options for resource provision (Table 31).

Therefore, the proposed approach in calculating the rational option of resource provision of the management system of innovative development of the engineering enterprise and maintaining the appropriate level of security in the future may be able to be used to improve the monitoring system in the enterprise.

5. DISCUSSIONS

Discussing our results, let's highlight how our analysis differs from others and how it develops other ideas.

The main aspects of financial resources and security were investigated by Rushchyshyn et al. [16]. However, our research did not focus only on financial resources, but we also looked at others for security.

Many scientists paid their attention to the problems of innovative development of enterprises and, therefore, how important are resources for this [17-19]. For example, as noted by Stachová et al. [20] organizational and human resources play a key role in the management system for innovative development. We strove to develop such opinions and focused attention and analysis of resource provision for the management of innovative development in the context of ensuring economic security.

As a result, we received the scientific development of the formation of an effective theoretical and methodological approach regarding the management system using original mathematical methods, which made it possible to implement the formation of some news and another's options for resource support with the ability to choose which of them are the most adequate in a given situation for innovative development and support big level of economic security.

It should also be noted that the methodological approach proposed by us does not have any total superiority over others, however, in our opinion, for determining the resource support for supporting management decisions on innovative development, it seems to be more appropriate and accurate in calculations. That is why we are more inclined to talk about its relevance in this area.

6. CONCLUSIONS

Today, in the conditions of economic development, the achievement of competitive advantages by enterprises in the markets is possible only with the efficient use of intellectual resources and innovative development.

Therefore, for each enterprise, the question arises of developing its own strategy for managing innovative development, which should be based on the formulated conceptual provisions that contribute to ensuring consistency in the process of developing the innovative strategy itself, create conditions for organizing innovation management and will form an effective toolkit for its implementation.

But it should be noted that in the course of the study, it was proved that resources are needed for the management system for the innovative development of an enterprise. Not all options for resource provision may be immediately suitable for one or another management decision on innovative development. As a result of the research, we create a methodological method based on the formation of alternatives for the source of the approach with the possibility of choosing the best one. Subsequent research involves analyzing the issue of determining the major threats to the system of innovative development of engineering enterprises and its system of economic security.

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