

Improving Accounting-Analytical Processes Of Personnel Management In The Context Of Relevant Threats And Risks For An Enterprise Economic Security System

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Abstract: A study of accounting-analytical systems of modern enterprises indicate a shift in emphasis from a simple statement of the facts of business operations to the plane of decision-making and the prevention of manifestations of their negative consequences. The formation of an effective system of economic security with the possibility of its prompt response to threats of various nature remains relevant for most enterprises. The basic element of such a system is the staff, since it is they, who implements the strategic decisions of the owners and senior management, necessitates the improvement of accounting and analytical tools for management accounting. The article proposes scientific methodological tools for improving the accounting and analytical work of the enterprise personnel, and the functioning of the economic security service with different statuses. This approach allows, based on the fuzzy logic, to minimize the negative manifestation of risks and threats and to optimize the functioning of the enterprise economic security service.

Index Terms: accounting, analysis, personnel, economic security, management decisions, risk

1 INTRODUCTION

Current trends in the development of socio-economic and accounting-analytical processes cause rapid changes in the activities of enterprises. At the same time, the transformational processes of the institutional environment generate dangers, threats and risks that negatively affect the state of economic security and require an enterprise management to make operational management decisions in almost all areas and types of activity, and it is the personnel that are one of the main “tricks” of managerial impact. The effectiveness of accounting-analytical processes of personnel management is one of the main conditions for economic security of business entities. Today, economic security is one of the key interdisciplinary categories, which manifests itself at all levels - from the macro level to the level of an individual enterprise.

Ensuring the economic security of the enterprise is aimed at its stable operation and protection against external and internal threats, which can lead to significant economic losses due to disclosure, leakage and unauthorized access to sources of confidential information; embezzlement of financial and material-technical means; destruction of property and values; disruption of the technical means of ensuring production activities, including informatization tools, which determines the relevance of research precisely in the plane of the accounting and analytical component of personnel management.

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In general, studies on the state of economic security at the macro-, meso- and micro levels were conducted by domestic and foreign researchers, such as Havlovska N [2], Kopytko M. [5], [6], Vasylytsiv T. [13], Illiashenko O. [3], [4], Kozachenko H., Pohorelov Yu. [7], [8], Rudnichenko Ye. [10], [11], Zlotenko O. [15], et al. The key categories of ensuring economic security in accordance with the need to jointly take into account both economic efficiency and the safety of the enterprise are accounting-analytical processes of personnel management, profit, profitability, danger, risk and threat. The content of such concepts is quite investigated: the concept of profit and profitability for the economy in general are classical and well reflected in modern works, and most scientific works on economic security at the macro-, meso- and micro levels [1], [12] studied in detail the essence of the categories “danger”, “threat”, and “risk”. Although the issues of their identification in specific areas of an enterprise activity and formalization within individual industries remain unresolved. In modern conditions, processes of accounting-analytical support of personnel management will require special emphasis in order to minimize the negative impact of threats and risks. That is why there is a constant search and improvement of risk-oriented management tools, including the field of personnel management, with a mandatory increase in the efficiency of the accounting, analytical and control component. These risk-oriented control tools include risk profiles with corresponding indicators that allow analyzing information flows both in structural divisions and between them, between senior management and external contractors in order to identify sources of negative impact on the economic security of the enterprise.

2 METHODOLOGY

The accounting-analytical processes of personnel management are based on appropriate management decisions that take into account the balance of benefits and potential dangers. The balance of benefits and dangers as a criterion for the feasibility of implementing the recommendations of services (departments) must be carried out taking into account the level of management at which the management decision is directly formed and adopted; Danger level of the potential threat. The objective variety of enterprise management processes led to the

emergence of horizontal (appointment of managers to manage units) and vertical (coordination of management activities) division of managerial labor. In general, the management level is a set of links that occupy a certain hierarchical level in the enterprise management system. T. Parsons identified three classic management levels: technical – provides daily operations and actions necessary for the organization effective work; managerial – provides coordination of the organization structural units; institutional – defines the mission and goals of the organization, provides long-term planning, the organization’s relations with the external environment [9]. These classic levels of management still exist in enterprises, because the vertical and horizontal division of management work is a prerequisite for the formation of a rational organizational structure of management. Three levels of management are matched by three groups of managers: grassroots executives, mid-level executives, and senior-level executives with appropriate responsibilities and functions. To determine the advisability of implementing the recommendations of the services (departments) of the enterprise according to the level of management, at which the management decision is directly formed and taken, using the developed matrices (Fig. 1, Fig. 2) is proposed.

Levels of management	institutional	–	–	+
	managerial	–	+	+
	technical	+	+	+
Danger Level		low	average	high

+ necessarily; – optionally

Fig. 1. Matrix for determining the advisability of fulfilling the recommendation of an enterprise services (departments) that objectify the economic security system with the status of the subsystem of the management system

Using the proposed matrices will clarify the powers and responsibilities of an enterprise structural units to ensure the enterprise economic security, avoid possible conflict situations between them and improve the existing accounting-analytical processes for the implementation of management decisions.

Levels of management	institutional	–	+	+
	managerial	+	+	+
	technical	+	+	+
Danger Level		low	average	high

+ necessarily; – optionally

Fig. 2. Matrix for determining the advisability of fulfilling the recommendation of an enterprise services (departments) that objectify the economic security system with the status of a supersystem

One of the most difficult aspects of using the proposed matrices is the assessment of a danger level of a managerial decision. The indicator "Danger level" is proposed as a

criterion for the decision of the company management on the advisability of implementing the recommendations of enterprise services (departments). To explain the meaning of the indicator "Danger level" it is advisable to refer to the general concept of "danger", which negation is the concept of "security". The concepts of "security" and "danger" are antinomial, since they, being the negation of each other, flow from each other. Regarding the economic security of the enterprise, it can be stated that the danger is determined by the probability of the negative impact, that is, the likelihood of circumstances, which might cause certain processes, phenomena, events or the functioning of individual objects in the external and internal environment, which can negatively affect the activities of the enterprise. The negative impact is determined by changes in the activities of the enterprise, which worsen its condition and operation results. A relationship between the concepts of "security" and "danger" is important for measuring the security of a particular object of an economic security system. The sources of danger to the security facilities of the enterprise economic security system can be various phenomena, processes occurring in the internal and external environment. For example, a decrease in qualifications of workers servicing equipment is a danger to its condition, which is objectified in the threat of disrupting the planned production volume due to equipment breakdowns and deterioration of product quality due to improper equipment settings. It is extremely difficult to measure the security of a particular security facility of an enterprise economic security system from the point of view of the provided explanation of a security nature, because a conclusion about safety of a facility under investigation indicates the absence of danger. Therefore, in a general sense, when measuring the safety of an investigated object of an enterprise economic security system, first of all, it is advisable to assess its danger (danger assessment is the result of an indirect danger measurement). So, accordingly, it can be stated the security level of the investigated security object of an enterprise economic security system is determined by its danger level. Based on the connection between the concepts of "security" and "danger", which is an antinomial nature, it is proposed to use the indicator "danger risk level" to describe the proposed criterion of danger of the security object of the enterprise economic security system. The concept of "risk" in this case is understood as the probability of a danger becoming a threat with a high probability of its implementation. The very concept of "risk" in accordance with its nature allows describing the danger level of enterprise activities most fully. Consequently, we are talking about the well-known triad ("danger", "risk", "security"), which links between the elements have been recognized in Economic safety science long ago (it's another matter that the type of connection is debatable) (Table 1).

TABLE 1.
Differences between categories "risk" and "danger risk"

Features	Risk	Danger risk
Definition	Probability of deviation of actual results from the set goals	Quantitative assessment of a danger or likelihood of realization of a real or potential threat to an enterprise economic security
Functions	Regulatory, protective	Signal
Objects of risk	System, which effectiveness and operating conditions have not been determined in advance	Objects of security of an economic security system, management decisions
Measurability	Low	High
Assessment methods	Quantitative and qualitative	Quantitative

Based on the foregoing, it can be stated that the task of the services when implementing certain functions of the enterprise economic security system, in particular, analytical and evaluation, is to identify dangers for security facilities of the enterprise economic security system, measure and analyze dangers, the results of which form the basis of safety recommendations on enterprise activities. Based on the connection between the concepts of "security" and actions assessment, measures for protecting security objects of an economic security system or management decisions of the enterprise using the indicator "danger risk" is carried out on a scale from 0 to 1: its value for actions, activities or management decisions with a small risk approaching 0. These recommendations are made to secure the most important security objects and, accordingly, to protect enterprise activities, which are submitted to its management in relation to the dangers. Such actions will allow avoiding the most dangerous scenarios of activity and development of an enterprise and choose scenarios with a minimum degree of risk. The "danger risk level" indicator should be calculated not only in relation to the security objects of an enterprise economic security system, but also in making important management decisions by its management and owners regarding an enterprise activity. An important decision is an economic decision that is made on economic criteria and has certain characteristics. The "importance of managerial decision" indicator in the existing classifications of managerial decisions has not yet been presented, perhaps because an important managerial decision is under certain circumstances, that is, in a specific situation. If these circumstances have changed, then the importance of the decision is changing (increasing or decreasing). An important managerial decision can be considered, for example, on the following grounds: the economic consequences of a decision implementation, significant investments for a decision implementation, change of relations with business partners, etc. In enterprise service, the value of this indicator is a criterion for increasing attention to management decisions. The "danger risk level" indicator is considered as one of the main criteria for a decision feasibility (inappropriateness) to ensure the safety of security facilities of an enterprise economic security system. If there are alternative options for managerial decisions on a reaction of an enterprise to dangers for its activities (for example, to avoid a danger or take it with a subsequent overcoming of consequences of its implementation), then managerial decisions can be ranked by the value of the indicator "danger risk level". Other criteria are also

possible for ranking management decisions on the enterprise's response to dangers to the security facilities of the economic security system. Then such a managerial decision can be made on the basis of a set of criteria, which from a formal point of view, if we ignore intuition, experience and managerial talent gives the decision-making process validity and balance. In assessing the value of the indicator "danger risk level" it is advisable to use provisions of the theory of fuzzy set, which describe business processes with uncertainty, which complicates and even eliminates a use of accurate quantitative methods and approaches [14]. Using the fuzzy set method provides several advantages, as it allows including qualitative variables in an analysis; operating with fuzzy input data; operating on linguistic criteria; quickly simulating complex dynamic systems and comparing them with a given degree of accuracy.

3 RESULTS

Introduction to an enterprise management practice of the indicator "danger risk degree" allows strengthening the safety orientation of an enterprise management by using this indicator as a criterion for checking management decisions at any management level; supplementing risk functions (regulatory and protective) with a signal function, according to which it is possible to monitor the occurrence of threats and determine the degree of their negative impact by this indicator. Let us show, by way of example, the decision to purchase components for the needs of our own production. Fig. 3 graphically shows the decision-making process for the components purchase according to the criterion "price" using the indicator "danger risk level". As can be seen from Fig. 3, the risk of the decision increases with prices increasing. In Fig. 3 there are three areas for decision-making (indicated in Arabic numerals): a high value of the "danger risk level" indicator: the danger level of the decision is 0.7 or higher. The decision to purchase components is made only with the consent of the top management of an enterprise or owners (for inventory items, which purchase volume is more than 5% (10%) in the structure of an enterprise expenses); the average value of the "danger risk level" indicator: the level of danger decision is in the range of 0.5-0.69.

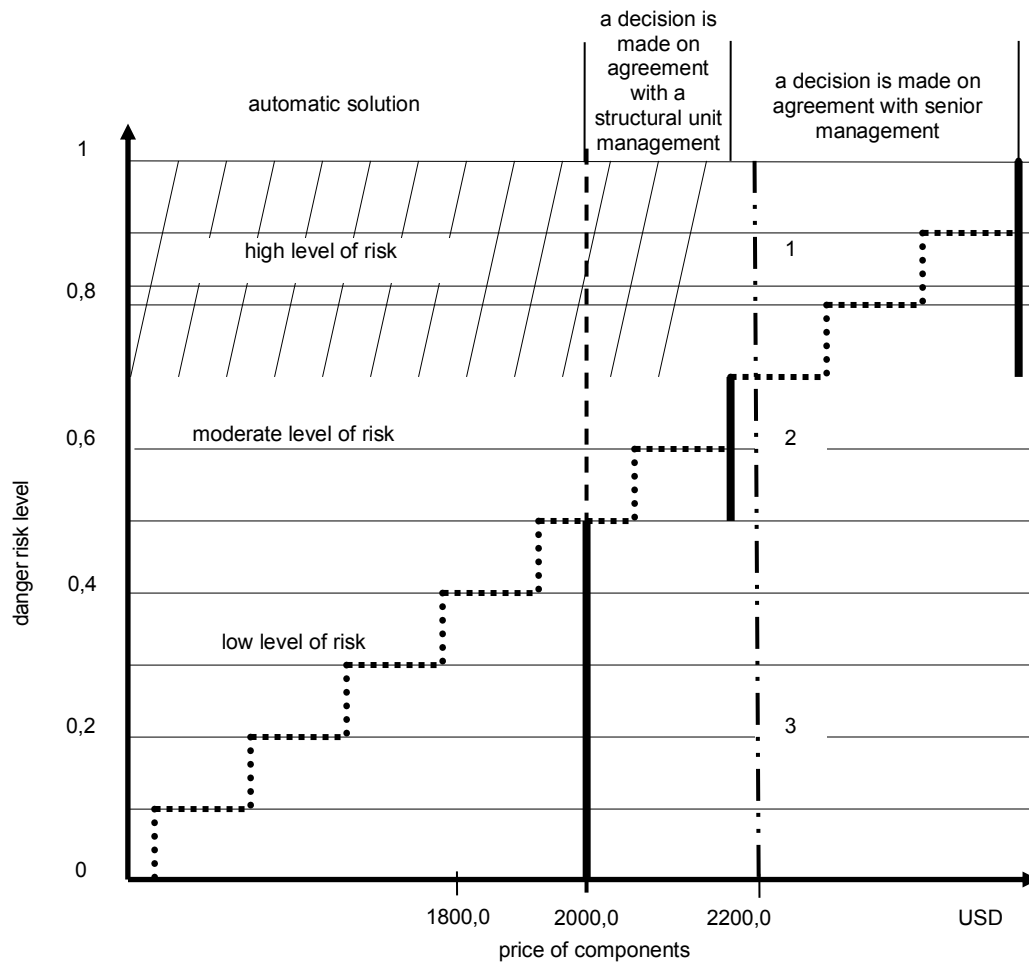


Fig. 3. The sequence of decisions on the purchase of components using the "danger risk level" indicator

The decision to purchase components is made by the management of the relevant structural unit (marketing or material support); low value of the "danger risk level" indicator: the danger level of decision is below 0.5. The decision to purchase components is taken automatically. According to the results of the given example, three zones of managerial decision-making are identified, which are shown in Fig. 4.

the managerial level. Other decision-making options are possible depending on criteria provided (Table 2).

TABLE 2.

Options for decision-making on recommendations of services (departments) depending on price and specific gravity of supplies in enterprise cost structure

Price, USD	Risk	Share of supplies, %	Level of decision making
2200	0,72	4,5	managerial / technical
2200	0,72	15,0	institutional
2100	0,65	4,0	technical
2100	0,65	8,0	managerial

Levels of management and share of supplier goods in the structure of enterprise material costs, %	value of the "danger risk level" indicator		
> 10	managerial	institutional	institutional
5 – 10	managerial	managerial	institutional / managerial
0 – 5	technical	technical	managerial / technical
	0-0,49	0,5-0,69	0,7-1,0

Fig. 4. Management decision-making areas

If the price for components is \$ 2,200, their share in the structure of an enterprise expenses is insignificant (up to 5%), and the value of the "danger risk" indicator exceeds 0.7, then the recommendations of the services (departments), provided taking into account this output, will be performed by employees of technical level in agreement with managers of

The considered example of using the indicator "danger risk level" is demonstrative. It is clear that in the actual practice of deciding on a supplier, it is necessary to be guided not only by price, but also by such criteria as quality of goods, transportation costs, and supplier reliability. So, a decision on the feasibility of implementing certain measures to ensure safety of security facilities of an enterprise economic security system, actions and decisions of management, as well as enterprise projects (investment, organizational or innovative) that are proposed for implementation can be made using the "danger risk level" indicator. This indicator may become one of the main instruments of decision-making expediency (inappropriateness) and ranking (selection of alternative options) according to the criterion of the minimum value of the risk of danger. However, ultimately

recommendations of services (departments) in overwhelming majority of cases are indicative, therefore, the final decision on ensuring activities of an enterprise according to recommendations provided by a service (department) falls within the competence of management (current decisions) and owners of an enterprise (strategic decisions). It is advisable to use the profiling method when using the proposed "danger risk level" indicator in activities of an enterprise, which helps testers and economic security analysts identify risks. A risk profile built for each security object of the enterprise economic security system or management decision contains risk indicators. The procedure for calculating the risk level depends on a combination of risk indicators and indicators values. A list of potential dangers and estimates of a likelihood of their transformation into threats to an enterprise economic security depends on the risk level. The key indicator of the danger risk profile is the danger risk indicator – a criterion that is a practical tool for selecting and identifying the actions of structural units to protect the security facilities of an enterprise economic security system in order to increase the level of an enterprise economic security as a whole. Profile characteristics together with other information and operational data provide a basis for identifying potential threats to security objects of an enterprise economic security system and, finally, an enterprise economic security as a whole. A danger in the example that is considered is a supplier's behavior (the way a supplier interacts with an enterprise). The supplier's behavior is a comprehensive concept, which describes quality of products supplied, compliance with delivery conditions (terms, batch size, packaging, prices, etc.), a supplier's quality characteristics (reputation, attitude to contractors, etc.). All these components together determine such characteristics of a supplier's behavior as important for an enterprise as its predictability and acceptability. Deviations in a behavior of a supplier can create a danger to activities of an enterprise with its subsequent transformation into a threat (delay in supply and non-compliance with their conditions). The "danger risk level" indicator is determined in a risk profile for each indicator, which "net" level is determined as the average value of indicators (Table 3). An importance of a supplier in the example is determined by the specific gravity of its supplies in the structure of supplies of inventory items to an enterprise (Table 4). The value of a "net" level of the supplier's danger risk is specified using the indicator of share of its supplies in the structure of inventory supplies to an enterprise.

TABLE 3.
Danger risk assessment of potential enterprise suppliers

Danger risk indicator	Suppliers		
	1	2	3
1. Reliability of bank where supplier is serviced	0,5	0,8	0,3
2. Compliance of party supplies to the needs of company	0,3	0,5	0,9
3. Type of activity (manufacturer or dealer)	0,2	0,6	0,6
4. Compliance with delivery dates	0,3	0,7	0,7
5. Having debt to a budget, banks or other entities	0,5	0,7	0,8
6. Quality of supply	0,3	0,7	0,5
7. Reputation of supplier	0,3	0,8	0,8
8. Financial capacity	0,3	0,8	0,6
9. "Net" danger risk level (sum of rows 1-8 / 8)	0,34	0,7	0,65
10. Weighting coefficient of supplier	1	1	1,25
11. General danger risk level (row. 9 x row. 10)	0,34	0,70	0,81

TABLE 4.
Weighting factor of a supplier

Indicator	Weight of supplier, depending on the share of its supplies in supply structure of certain type of materials			
	0-25	26-50	51-75	76-100
Weighting coefficient	0,75	1,0	1,25	1,5

The fuzzy logic clause was used to determine values of danger risk indicators, according to which membership function of a plural element can take any values in the interval [0,1]. Using fuzzy logic is mathematically adequate to solve the danger risk assessment problem. Fuzzy logic in processing of non-deterministic data made it possible to operate with linguistic variables, which often cannot be avoided in describing elements of an enterprise economic security system. According to the table 3, in this example the accountant or analyst of the service (department) is more likely to recommend the enterprise material support service to cooperate with supplier 1 according to the danger risk criterion, since the danger risk level of its supply is 0.34. The ratings on cooperation of an enterprise with suppliers 2 and 3 will be negative. If this enterprise economic security system has the status of a subsystem of an enterprise management system, an enterprise top management should make the final decision on cooperation with suppliers. If an economic security system at this enterprise is a supersystem of an enterprise management system, then recommendations of service on cooperation with suppliers are mandatory.

4 CONCLUSIONS

Accounting-analytical processes of personnel management of a modern enterprise are not necessarily rigidly tied to the existing system of accounts and standards, since the management accounting system today significantly affects the vital activity of enterprises and its economic security. Personnel of an enterprise is viewed through the prism of main risks and threats arising from a functioning of respective units. This situation requires new approaches to a formation of accounting-analytical processes, as well as processes for ensuring economic security. In general, the perception of enterprise services (departments) recommendations depend on two main factors: management level at which management decision is directly developed and adopted, and danger level of a potential threat. In order to solve the main tasks of effective management and establishment of accounting-analytical processes, the article developed matrices for the implementation of enterprise services (departments) recommendations, an objective economic security system with a status of a subsystem and supersystem of an enterprise management system depending on a managerial level and a danger level. This allows significantly improving and expanding management tools and operating with new concepts in the field of management accounting and economic security.

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