

INNOVATIVE METHODS TO REDUCE THE RISK OF DEVIATIONS BETWEEN OFFICIAL AND ACTUAL WAGE ESTIMATES IN LABOR MARKET CONDITIONS

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INTRODUCTION

The main component of the income of the general population in Ukraine, as is known, is the official salary. However, in practice it often turns out that the official data on the size of the salary do not correspond to reality. After all, the real fact is that many employers simply ignore the guaranteed level of the minimum wage and force employees to work for a small salary, and sometimes do not declare their wages at all. Or vice versa, wanting to avoid unnecessary, in their opinion, expenses, they give salaries in “envelopes”. In this case, we are talking about “shadow” earnings, from which taxes are not paid and deductions are not made to the Pension Fund. As a result, by agreeing to receive a salary in “envelopes”, most people do not think that they are deliberately depriving themselves.

At first glance, it seems that there is nothing wrong with this: it is beneficial for both the employer and the employee, because the former does not pay taxes, and the latter receives a decent amount of earnings. However, in reality, this benefit is completely illusory. An employee who receives a salary unofficially is completely defenseless against the employer. Having a very dubious gain today, you can get a definite loss in the future. Since, having applied to any instance for the protection of his rights, the employee will not have any evidence confirming the amount of salary that he actually received.

In addition, by receiving a salary in an “envelope”, the employee commits a serious offense – in fact, he helps the employer to violate the law, and deprives himself of a decent pension in the future, since a low salary gives a low earnings coefficient, which is taken into account when calculating the pension. The oral agreement is not legally fixed in any way, the employer pays as much as he considers necessary and for as long as he considers necessary. As a result, the employee has no evidence to confirm the actual amount of his salary and length of service.

Therefore, at present, the audit of payroll calculations plays an important role in the national policy system. In addition to identifying violations, this is also explained by the fact that accounting for labor and wages is labor-intensive, requires attention and concentration, as it is associated with the

processing of a large amount of primary information, have many similar operations, the implementation of which requires a lot of time.

Each enterprise in the conditions of market relations can apply different forms of remuneration and material rewards. Therefore, the auditor determines what kind of remuneration is applied at the enterprise, and accordingly chooses the way of verification. Thus, in the case of hourly remuneration, the validity of the application of tariff rates and compliance with the terms of contracts is clarified, and in the case of piecework – the fulfillment of quantitative and qualitative indicators, the correctness of the use of norms and prices, etc.

When conducting an audit of payroll calculations, the following sources of information are used: labor legislation, the Labor Code, legislative acts on the enterprise and entrepreneurship, settlement and payment statement, settlement statement, payment statement, personal account, regulatory and reference information for accounting for labor and wages, primary documents, accounting registers, inspection reports, orders, cards, personal files of employees, employment agreements and contracts, accounting information, regulatory documents for calculating wages, vacation pay and other documents related to the object of study, time sheets, work orders, balance sheet, General ledger, etc.¹

The main tasks of the audit of payroll calculations are: confirmation of the reliability of accruals and payments to workers and employees, reflection of these processes in accounting; clarification of the legality and completeness of deductions from wages and other payments to employees in favor of the enterprise, other entities; verification of the organization of analytical accounting of payroll calculations and the relationship between analytical and synthetic accounting; assessment of the measures taken by the administration to timely collect employee debts are important sources of information for checking these issues.

1. Methods and techniques used during the audit of payroll calculations

During the audit, various methods and methodological techniques are used: recalculation, review, assessment of actual availability, comparison, assessment. Thus, to verify payroll calculations, methods of comparing accounting data with primary documents (salaries approved in the staffing table and actual accruals, timesheet and salary calculation) are used,

¹ Самофалова М. О. Заробітна плата як один із чинників впливу на ризик плинності кадрів. *Ефективна економіка*. 2014. № 9. URL: <http://www.economy.nayka.com.ua/?op=1&z=3349>

recalculations (the auditor recalculates the amounts that were withheld and compares them with the norms of current legislation), etc.²

There are also certain methods of verifying documents. For example, primary documents that are the basis for calculating and paying wages (timesheets, settlement and payment statements) are studied in a combined manner, that is, in a continuous and selective manner (if the auditor has checked a certain number of primary documents of the same type and found no errors, then he can assume that all the documents are error-free).

Important indicators that the auditor examines are labor productivity, the level and amount of wages. From the beginning of the audit, the organization and efficiency of labor, the correct application of wage conditions, control over the use of the wage fund, the economic feasibility of production standards, and the interest of employees in increasing output and increasing labor productivity are studied.

When starting the audit of payroll calculations, the auditor must find out what forms and systems of payroll are used at this enterprise, whether the enterprise has internal regulations on the remuneration of workers, a collective labor agreement, a list and average number of employees, how accounting for payroll calculations is organized (qualification of accountants, provision of regulatory materials, who monitors their work, whether these areas are automated), whether the number of employees who receive cash for business and other expenses is limited, whether the enterprise issues loans to workers, sells goods on credit, and how these transactions are formalized, etc. This is necessary so that the auditor can determine audit risk (the probability that some errors or violations may remain undetected).

To determine the degree of risk, the auditor conducts a general examination of the object using a test and, based on the results of such testing, the auditor may refuse to conduct an audit or take measures to reduce the risk. In order to get an overall picture and answers to these questions, it is possible to conduct testing of internal control and accounting from this section of the audit.

After testing, the auditor develops an audit program, according to it a detailed study of operations is carried out. The sequence of studying business operations regarding the accrual and withholding of wages can be reflected as follows: personal cards, agreements, contracts. Personnel accounting documents, entries in accounting accounts, orders on hiring, dismissal, vacations, documents on accounting of production and deviations, labor reporting.

² Калініченко Л. Л. Управління кадровим ризиком на основі застосування когнітивного моделювання. *Ефективна економіка*. 2012. № 7. URL: <http://www.economy.nayka.com.uaop=1&z=1275>

At the same time, settlement and payment information, personal accounts of employees, as well as primary documents (timesheets, work orders, etc.) on the basis of which payroll is calculated are checked. It is necessary to pay attention to the correctness of filling out these documents, their compliance with current legislation and regulatory documents.³

During the verification of primary documents, the completeness of filling in all the details, the presence of appropriate signatures of authorized persons responsible for accounting for the work performed, the absence of corrections in the documents are established. When analyzing orders for piecework by the dates of their issuance, it is necessary to compare the names of workers in the orders and in the time sheets with the personnel accounting data. The auditor determines whether there are any cases of including dummy persons in them, re-calculation of amounts previously paid according to primary documents. Arithmetic control method is used to identify errors in calculations in primary documents or in settlement statements.

Attention is drawn to the correctness of registration and accrual of various payments to workers. These include incentive payments (bonuses, rewards based on the results of work for the year), compensatory payments (increments and additional payments for night work, overtime), payments for unworked time (payment for regular and additional vacations, temporary disability, etc.), payment for downtime, shortages. The auditor must take into account that the accrual of bonuses must be approved by order of the manager, stipulated in the collective agreement, contract). Downtime not due to the fault of the worker is registered in a downtime sheet and is paid at a rate not lower than 2/3 of the tariff rate.⁴

Additional payments in connection with deviations from normal working conditions are issued in the form of work orders for piecework, which indicate additional technological operations not provided for by the technological process. A complete (irreparable) or partial (reparable) defect in production not due to the fault of the worker is approved by an act and paid.

When checking the correctness of the payment of benefits in connection with temporary disability, it is necessary to pay attention to the sick leave,

³ Калініченко Л. Л. Управління кадровим ризиком на основі застосування когнітивного моделювання. *Ефективна економіка*. 2012. № 7. URL: <http://www.economy.nayka.com.ua?op=1&z=1275>

⁴ Економічний ризик: методи оцінки та управління: навч. посібник / Т. А. Васильєва, С. В. Леонов, Я. М. Кривич та ін.; під заг. ред. д-ра екон. наук, проф. Т. А. Васильєвої, канд. екон. наук Я. М. Кривич. Суми : ДВНЗ “УАБС НБУ”, 2015. 208 с. URL: https://essuir.sumdu.edu.ua/bitstream-download/123456789/50229/5/Ekonomichnyi_ryzyk%20.pdf;jsessionid=0E2D7629FB779AB87F8C1C0D8CC4CE9E

which is the basis for calculating such a payment. The leave must be signed and stamped by the hospital. It is also necessary to check the employee's length of service (the percentage of the basic salary, according to it the amount of the benefit is determined, is calculated based on the length of service).

Attention is paid to checking payments under contract agreements and other civil law agreements (commissions, mandates, property leases from individuals, etc.). It is necessary to find out whether such work was actually performed, and whether it was performed by this person. The correctness of the execution of contracts, economic expediency and correctness of their conclusion, the correctness of calculations under contracts, tax deductions (mandatory payments to the pension fund in the appropriate percentage of the remuneration amount) and reflection in accounting are established.

When checking the correctness of the calculation of the average salary, it is necessary to determine the period for which the salary is accrued, the payments that are included in the average salary, the procedure for calculating payments in all cases of salary retention and for providing assistance in connection with temporary disability.

The auditor examines whether the procedure for calculating the average wage is appropriate for the period of granting employees annual and additional leave or paying them compensation for unused leave, granting employees who are studying without interruption from production, leave in connection with their studies, their performance of state public tasks during working hours, transferring employees to another, lighter and lower-paid job due to health conditions, in the case of providing women with additional breaks for feeding a child, business trips, temporary transfer of an employee due to production needs to another, lower-paid position, and in other cases where, in accordance with current legislation, payments are made based on the average wage.

When examining the correctness of the calculation of average earnings, it should be taken into account that its amount includes all types of payments, except for payment for work performed overtime, on holidays, by employees working part-time, for time that was not actually worked, bonuses that are not included in the payroll, and other payments that are temporary in nature.

When checking the correctness of the calculation of payment for the current vacation, it is important to establish whether the order of the enterprise correctly determines the duration of the vacation and the calculated amount of the employee's earnings before the vacation, as well as the average monthly and average daily earnings, which are the basis for the calculation. It is necessary to find out the reasons for not granting vacation within the established period, especially to financially responsible persons. It is important to study the impact of factors violating the law on the results of the enterprise's activities. Thus, not granting vacation to an employee and

replacing it with monetary compensation is a violation of the law and leads to overspending of the payroll and consumption fund, as well as to abuse.

The auditor also examines the timeliness and completeness of deductions from accrued wages. As already noted, the main attention is paid to personal income tax. During the audit, arithmetic control of the amounts of withheld tax is carried out.

The legality of the application of benefits provided for by current legislation is confirmed.

Cases of non-withholding or partial withholding of income tax from the amounts of material assistance, gifts and compensation payments are established. According to the data of insurance contracts concluded with insurance companies, payment orders and personal accounts of employees, the facts of transfers of funds from the company's accounts in favor of the employee under voluntary insurance contracts are determined. The amounts of insurance compensation are taxed with income tax at the time of their payment.

Withholdings under executive orders should be made only if they are available or upon a personal application by the employee. Withholdings for goods sold on credit and on loans are made on the basis of an order-obligation or contracts. Next, the correctness of the correspondence of accounts indicated in the accounting registers and the amount of accrued wages and deductions from them in the accounting period is established.

The correspondence of analytical accounting for wages to synthetic accounting for account 66 "Payroll settlements" is investigated. In this case, the balance reflected in the balance sheet for the account on the 1st of the month is compared with the data of the settlement and payment statement, and the amount of debt according to the settlement statement is compared with the amounts of the payment statement, according to which wages were paid to employees. In practice, there are cases of forgery of documents when paying wages to employees.

The auditor must make sure that the specified amount of money was actually received by the persons indicated in the payment statement. When paying wages for one-time work under an employment contract, it is necessary to find out whether this or that work was actually performed. In addition, the correctness of the calculation (of total amounts before issuing them to recipients, both vertically and horizontally), should be checked. The calculation of wages for temporary employees is especially scrupulously studied. It is necessary to find out the reason for these expenses and clarify whether there were any cases of calculating wages based on forged documents or orders to fictitious persons. The legality of the transactions carried out on the relevant accounts is established.

All documents attached to the journals are studied, it is also necessary to check the statement according to which the salary was accrued. In this case, attention is paid to the total amounts for each line both horizontally and vertically. During such an inspection, various violations can be detected that are caused by falsification of amounts in the settlement and payment statements. For example, the final amount of the accrual and the amount to be issued were mechanically increased and thus more was accrued and written off than was actually issued.

During the study of the correctness of payroll calculations, errors were identified that were made by accounting staff which did not sufficiently master the regulatory acts and did not take into account the changes made to them. When checking the payment of bonuses and other incentives, regardless of the type of activity of the enterprise, it is necessary to find out whether all the conditions under which a bonus can be paid have been met, since there were known cases when, under the guise of paying bonuses, money was used for other purposes (material assistance, receptions).⁵

Therefore, when starting the audit of payroll calculations, the auditor must find out what forms and systems of payroll are used at this enterprise, whether the enterprise has internal regulations on payroll, a collective labor agreement, a list and average accounting staff, how accounting for payroll calculations is organized (qualification of accountants, provision of regulatory materials, who monitors their work, whether these areas are automated), whether the number of employees who receive cash for business and other expenses is limited, whether the enterprise issues loans to workers, sells goods on credit, and how these transactions are formalized.

During the verification of primary documents, the completeness of all details is established, the presence of appropriate signatures of authorized persons responsible for accounting for the work performed, the absence of corrections in the documents. The auditor examines whether the procedure for calculating the average salary is in accordance with the procedure for granting employees annual and additional leave or paying them compensation for unused leave, granting employees who are studying without interruption from production, leave in connection with training, their performance of state public tasks during working hours, transferring employees to another, lighter and lower-paid, job due to health conditions, in the case of providing women with additional breaks for feeding a child, business trips, temporary transfer

⁵ Економічний ризик: методи оцінки та управління: навч. посібник / Т.А.Васильєва, С. В. Леонов, Я. М. Кривич та ін.; під заг. ред. д-ра екон. наук, проф. Т. А. Васильєвої, канд. екон. наук Я. М. Кривич. Суми : ДВНЗ «УАБС НБУ», 2015. 208 с. URL: https://essuir.sumdu.edu.ua/bitstream-download/123456789/50229/5/Ekonomichniy_ryzyk%20.pdf;jsessionid=0E2D7629FB779AB87F8C1C0D8CC4CE9E

of an employee due to production needs to another, lower-paid position and in other cases when, according to current legislation, payments are made based on the average salary.

The auditor also examines the timeliness and completeness of deductions from accrued wages. As already noted, the main attention is paid to personal income tax. During the audit, arithmetic control of the amounts of withheld tax is carried out, and a sample assessment method is also applied. Thus, the payment of wage accruals made to employees (bonuses, material assistance, gifts, etc.) is usually checked selectively.

This method allows obtaining representative sample wage estimates from actual data and comparing them with official estimates. To do this, data for different professional groups are included in the sample, and after appropriate calculations, estimated sample estimates are obtained, which, as practice shows, are more realistic than official data, due to the avoidance of systematic and random observation errors.

2. Innovative methods for comparing official and actual estimates

Standard methods for comparing official and actual estimates of wages include the use of audit sampling when conducting a financial audit. Domestic internal audit standards define financial audit as an assessment of the institution's activities regarding the legality and reliability of financial and budget reporting, and the correctness of accounting. Financial audit focuses on financial processes, focusing on control mechanisms in them, financial transactions, accounting and reporting.

At the same time, the methods of its conduct and preparation of the report (audit opinions) are generally standardized, and the knowledge required for its conduct is usually limited to the areas of the budget process, accounting, public procurement and law. One of the key objectives of a financial audit is to provide an audit opinion (in international practice, the term “providing sufficient guarantees”) on the reliability of reporting.

Thus, the classical foundations of financial auditing provide for the provision of two key objectives of such an audit:

- to test the reliability (efficiency and effectiveness) of control measures applied in the studied process;
- to provide an audit opinion (or assurance) on the reliability and fairness of the institution's financial statements.

As a rule, the criteria for the audit opinion are established at the national level and characterize the accepted level of errors in the preparation of the audit opinion on the reliability of financial statements. Each state individually approaches the definition of such criteria. In Ukraine, such clear criteria at the legislative level have not been established to date.

For example, in the Netherlands, at the level of the general methodology for the needs of internal financial audits, typical groups of criteria for providing an audit opinion are defined⁶:

1) if the financial statements contain errors, then their level is analyzed in the volume of the totality covered by the audit sample of transactions:

- errors < 1% – an unconditional positive conclusion;
- errors > 1%, but < 3% – a conditionally positive conclusion;
- errors > 3% – an adverse conclusion;

2) if the financial statements contain uncertainty – the lack of complete information regarding the confirmation/refutation of the authenticity of individual transactions, then their level is analyzed in the volume covered by the audit sample of transactions:

- uncertainty < 2% – an unconditionally positive conclusion;
- uncertainty > 3%, but < 10% – a conditionally positive conclusion;
- uncertainty > 10% – a disclaimer of opinion.

For the purpose of obtaining an audit opinion, the “assurance level” and “materiality” are defined. The “assurance level” refers to the reliability of the audit opinion. This is the so-called sufficient level of confidence (guaranteed by the auditor) that the statements do not contain material errors.

The “assurance level” is supplemented by audit risk. Audit risk means the risk that the internal auditor takes in terms of providing an incorrect conclusion or opinion.

In European countries, the “assurance level” is usually 95%, and the audit risk is $100\% - 95\% = 5\%$. Reducing the “assurance level” below 95% will be results in a decrease in the number of transactions to be verified, and at the same time a decrease in the value of the audit opinion. Accordingly, increasing the assurance level means increasing the volume of the audit sample, but at the same time increases the value of the audit.

The level of “materiality” means the accepted (tolerable) level of errors, inconsistencies or inaccuracies. As a rule, it is associated with the “risk appetite” of the institution's management. The level of “materiality” can be determined both in absolute values (UAH, EUR) and as a percentage of the volume covered by the audit of transactions. The level of assurance, materiality, as well as a number of other aspects important for calculating the volume of the audit sample, are determined at the stage of preliminary

⁶ Економічний ризик: методи оцінки та управління : навч. посібник / Т. А. Васильєва, С. В. Леонов, Я. М. Кривич та ін.; під заг. ред. д-ра екон. наук, проф. Т. А. Васильєвої, канд. екон. наук Я. М. Кривич. Суми : ДВНЗ “УАБС НБУ”, 2015. 208 с. URL: https://essuir.sumdu.edu.ua/bitstream-download/123456789/50229/5/Ekonomichniy_ryzyk%20.pdf;jsessionid=0E2D7629FB779AB87F8C1C0D8CC4CE9E

research in the audit program, which is actually a logical conclusion of the completion of this stage.

Today, the internal audit department in the internal audit programs establishes the following criteria for providing an audit opinion. If the financial statements contain errors (their level in the total volume is analyzed), covered by the audit sample of transactions:

- errors < 5% – unconditionally positive conclusion;
- errors > 5%, but < 15% – conditionally positive conclusion;
- errors > 15% – negative conclusion.

Assurance level is 95%, audit risk – 5%, materiality level – 5%.

A very important stage of the internal financial audit process is preliminary planning of the study. It is necessary to clearly understand what goals the auditors face during the study, to study the internal environment of the object of the study, what to focus on, which stages of a certain process are the most risky. In any case, at this stage of the financial audit, it is necessary to conduct the so-called process analysis, which is based on a detailed study of the environment, systematization and thorough analysis of the financial flow / transaction scheme, including systemic control measures implemented in this process. The ultimate goal of the process analysis is to determine the most risky stages / transactions and control measures that are reflected in the reporting, in order to carry out their detailed control at the subsequent stages of the financial audit.

As a rule, the most risky financial flows and transactions include primarily those that contain strategic risks (are politically significant, important for management or unreliable from a control point of view) and financially significant (a significant percentage of the total amount of financial statements).

An innovative tool or method for analyzing a process is its schematic representation, i.e., building a process flowchart, in which special attention should be paid to the systemic control measures provided for within it.

The next stage of the payroll process analysis is the analysis of risks that affect the institution's financial reporting and the most important business transactions. Based on the results of such analysis, the most risky transactions and control measures are selected for their further testing, in particular, information from a practical study of the payroll process.

Analysis of the payroll process in accordance with the above flowchart provides for the following types of current (internal) control, namely:

– the personnel department of the institution carries out current control of such main stages of the payroll process as checking time sheets, drawing up orders for setting salaries, allowances, additional payments, etc., transferring

time sheets and administrative documents to the economics and finance department;

- the personnel department carries out the above stages of the payroll process, which is provided for by the Office Management Instructions, job descriptions of the department's employees and the document flow schedule;

- the economics and finance department carries out the following stages of the payroll process: accrual of wages and cash benefits; deductions from wages and cash benefits; drawing up memorial order No. 5; drawing up reporting.

Analyzing the stages of the payroll process, during which current control is carried out by the institution's departments, we can conclude that the greatest risks may arise at the stage of accrual of wages and cash benefits by the economics and finance department. By studying the stage of accrual of wages, it is possible to identify errors at the stages of the process that occurred earlier. In addition, errors detected at the accrual stage are mostly systemic in nature.

After determining the most risky stage, namely payroll, it is necessary to conduct preliminary testing of control systems through sample tests. Conducting such an assessment is important, because the CR indicator – control system risk – is one of the key components for calculating the size of the audit sample based on monetary valuation, on which the methodology for conducting financial audits is based.

Audit sampling or sample testing means performing audit procedures on less than 100% of the data set to be examined. At the same time, the results obtained should allow the auditor to obtain audit evidence that will not only be sufficient to characterize individual verified facts, but will also allow the auditor to extend (extrapolate) the obtained conclusions to the entire data set, that is, to make an objective assessment of their reliability. Extrapolation is the procedure for extending the results of the verification of sample data to the general population.

At the stage of planning the audit sample, it is extremely important to assess the risks using the audit risk model: Audit Risk (AR) = Inherent/Inherent Risk (IR)*Control Risk (CR)*Detection Risk (DR). $AR=IR* CR* DR.$ ⁷

⁷ Економічний ризик: методи оцінки та управління: навч. посібник / Т.А.Васильєва, С. В. Леонов, Я. М. Кривич та ін.; під заг. ред. д-ра екон. наук, проф. Т.А.Васильєвої, канд. екон. наук Я. М. Кривич. Суми : ДВНЗ “УАБС НБУ”, 2015. 208 с. URL: https://essuir.sumdu.edu.ua/bitstream-download/123456789/50229/5/Ekonomichnyi_ryzyk%20.pdf;jsessionid=0E2D7629FB779AB87F8C1C0D8CC4CE9E

In this case:

- Audit risk (AR) is an addition to the assurance level (100% – (minus) the assurance level). Usually the assurance level is 95%, and the audit risk is 5% (provided for by the audit program).

- Inherent risk (IR) is the risk that an error will be made, regardless of the existing controls. Aspects that affect the inherent risk: personnel qualifications, complexity of the rules, management actions based on the audit results.

- Control risk (CR) is the risk that control measures will not be able to prevent or detect material deviations in a timely manner and, therefore, are ineffective.

- Detection risk (DR) is the risk that the auditor's substantive (main) tests, including sampling, will not detect an error.

After determining inherent risk and control risk, detection risk can be determined as follows, using the audit risk model: $DR = AR / (IR * CR)$.

When determining the sample size, the internal auditor should consider that the size of the audit sample is influenced by:

- the maximum amount of errors that the internal auditor is willing to accept in the entire population (materiality level);
- the level of confidence that the internal auditor should give to his or her conclusion;
- the size of the sample population;
- the internal auditor's assessment of inherent risk and control risk.

Internal auditors must determine the level of risk they are willing to accept in order to determine the number of substantive tests and the number of sampling units needed to provide sufficient appropriate audit evidence. An audit risk model is used to determine the risk associated with audit procedures and in particular with substantive tests. The sample size can be calculated based on the formula: $\text{Sample Size} = (\text{Population} * \text{Reliability Factor}) / \text{Materiality}$. Reliability Factor (RF) – the level of confidence converted to a confidence factor.

The confidence level (CL) is a value that indirectly depends on the risk of non-detection and is calculated as follows: $CL = 100 - DR$.

The reliability coefficient is calculated based on the probability of errors occurring compared to the level of confidence that is to be achieved. The expected number of errors can be determined either from the results of previous internal audits or based on the auditor's professional judgment.

Sampling interval (k) = Population/sample size.

Based on a statistical sample, the auditor can estimate within which limits the actual amount of errors lies. Two indicators are important for determining these limits:

MLE – most likely error, which is calculated based on the total amount of errors in the sample, extrapolated to the entire population.

UEL – the highest level of errors that the internal auditor expects based on the sample results.

It was obtained that the upper error limit: $UEL = A1+A2+B1+B2 = 0+170375.19+1101563.79+102151.64=1374090.62$ UAH or 6.2% of the total sample. Therefore, according to the results of the study of the labor remuneration process, the upper error limit UEL was 1374090.62 UAH or 6.2% of the total sample.⁸ Thus, in accordance with the established criteria, a conditionally positive conclusion was given on the reliability and legality of the information reflected in the financial statements, based on the results of the operations carried out regarding the labor remuneration process.

Ensuring the effectiveness of measures to eliminate and minimize risks and threats requires the use of modeling mechanisms, among which, in conditions of uncertainty when studying weakly structured systems, the cognitive approach is promising. From this point of view, the expert-cognitive method of risk management in the field of labor remuneration is considered promising, which is based on the application of an iterative procedure of expert assessment of the main factors of the external and internal environment that influence the occurrence of risk situations, as well as for the purpose of discrete adaptation of the risk management mechanism used to minimize possible deviations of controlled indicators of identifiers of the occurrence of risk situations.⁹

In essence, this method is graph theory, which has been “discovered” independently many times. In general, graphs are applicable in all fields where there are elements and connections between them, so graph theory is a relevant applied branch of mathematics. Informally, a graph looks like a diagram, that is, a set of points in the plane (vertices, or nodes) connected by lines (edges). The diagram gives an idea of the connections between the elements (vertices), but says nothing about the metric properties of the elements (the length of the lines, their shape, etc. are have not significant importance).

The specified iterative procedure consists of two main stages:

1. Identification of the most significant risk factors of the external and internal environment and determination of the initial set of effective measures to reduce the possibility of risk situations or minimize their consequences.

2. Based on the information received, selection of an effective management decision according to the specified criterion.

⁸ Офіційний сайт Державної служби статистики України. URL: <http://www.ukrstat.gov.ua/>

⁹ Koval, S., & Bielova, A. (2019). Problems of unformal employment at the market of Ukraine's labor. URL: <https://useful.academy/3-1-2019-0004-bielova/>

In order to assess the relationship between the listed factors (causes, indicators, risk portfolio and measures to eliminate them), it is proposed to build a fuzzy cognitive model. The main stages of its construction are as follows:

- 1) justification of the composition of the structure (set of concepts) of the fuzzy cognitive model and assessment of the relationships of systemic factors;
- 2) specification of a set of concepts that characterize the identified sources (dangers of occurrence) of risks.

The fuzzy-logical procedure for selecting risk management solutions in the field of remuneration should take into account four main groups of elements and parameters:

- type of risks;
- environmental factors that influence the occurrence and level of various risks;
- indicators of the occurrence and development of risk situations;
- a list of measures to prevent or reduce the level of various types of risks.¹⁰

The relationships between these elements, characterizing their mutual influence on each other, should also be determined. When developing this procedure, it is necessary to ensure the possibility of formalizing the direction and strength of these relationships in the presence of, mainly, only qualitative expert information.

Risk factors, indicators of risk situations, types of risks and complexes of measures to prevent and minimize personnel risks form a set of basic elements and parameters that must be taken into account in the fuzzy-logical procedure for choosing risk management solutions in the field of remuneration.

CONCLUSIONS

Thus, the above confirms the relevance of developing issues related to risk management in the field of labor remuneration. As a result of the analysis and assessment of risks using special methods, scenarios for the development of possible risk events, the probability of their occurrence and consequences were obtained.

The following methods turned out to be the most innovative and suitable for analyzing risks in the field of labor remuneration in market conditions:

- 1) the Neumann-Morgenstern function allows you to assess the utility that a specific person determines for each of the alternatives – the outcome of the

¹⁰ Koval, S., & Bielova, A. (2019). Professional aspects of the market of Ukraine. URL: <https://useful.academy/3-1-2019-0005-bielova/> DOI: <https://doi.org/10.32557/useful-3-1-2019-0005>

event, depending on his attitude to risk, as well as determine the amount of reward for the risk;

2) the advantages of the Black-Scholes-Merton models are high predictive ability, simplicity of calculations, acceptable forecast accuracy, as well as openness of information available to all market participants;

3) the main advantage of using the “decision tree” method in the field of labor remuneration compared to other methods is the ability to link goal setting with actions to be implemented, that is, using this method it is possible to evaluate different paths and choose the least risky one;

4) the main advantages of the bootstrap method are:

- the ability to clearly fulfill the condition for the distribution of sample characteristics after a practically unlimited number of repetitions of the operations of the procedure of this method;

- with a sufficient number of iterations, the bootstrap method gives more accurate results than other traditional methods;

- this method is a more economical method of statistical research compared to other methods of non-continuous observations, since it does not require additional sample surveys;

5) the formation of a sample population based on salary based on actual data from a survey of Internet resources allowed obtaining representative sample estimates of salaries and comparing them with official estimates;

6) based on methods of comparing official and actual wage estimates in accordance with the established criteria, a conditionally positive conclusion was given on the reliability and legality of the information reflected in the financial statements, based on the results of operations carried out regarding the wage process;

7) using the expert-cognitive method, a flowchart of the elements and parameters of the risk management procedure in the field of wage management was developed and a cognitive map was constructed for wage risk management.

The proposed model for assessing the relationship between factors of the external and internal environment of the enterprise, which is based on the construction of fuzzy cognitive maps, will allow assessing the degree of influence of the selected factors on the main sources of risks and, based on the assessment obtained, more effectively select measures aimed at minimizing risks.

SUMMARY

The section considers the issues of innovative methods for reducing the risk of deviations of official and actual wage estimates in labor market conditions, confirms the relevance of developing issues related to risk management in the field of wages.

The main tasks of labor audit, methods and techniques used during the audit of wage calculations, as well as the most innovative methods for comparing official and actual estimates of this indicator are determined.

It is found that the sampling method allows for obtaining representative sample wage estimates based on actual data and comparing them with official data.

To do this, data for various professional groups are included in the sample, and after conducting appropriate calculations, estimated sample estimates are obtained, which, as practice proves, are more realistic than official data, due to the avoidance of systematic and random observation errors.

Analyzing the stages of the payroll process, during which current control is carried out by the institution's departments, we can conclude that the greatest risks may arise at the stage of accrual of wages or cash benefits by the economics and finance department.

By studying the stage of accrual of wages, it is possible to identify errors at the stages of the process that occurred earlier. In addition, errors detected at the accrual stage are mostly systemic in nature. After determining the most risky stage, namely – payroll, it is necessary to conduct preliminary testing of control systems through random test checks.

Risk factors, indicators of risk situations, types of risks and complexes of measures for the prevention and minimization of personnel risks form a set of basic elements and parameters that must be taken into account in the fuzzy-logical procedure for choosing risk management solutions in the field of remuneration.

The most innovative and suitable for analyzing risks in the field of remuneration in market conditions are 7 basic methods, as well as a model for assessing the relationship between factors of the external and internal environment of the enterprise, which is based on the construction of fuzzy cognitive maps, which will allow assessing the degree of influence of the selected factors on the main sources of risks and, based on the assessment obtained, more effectively select measures aimed at minimizing risks.

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