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Model of internal auditing organization with the use of accounting information technologies

Introduction. An essential condition for the successful management of an enterprise is the necessity and expediency of internal audit conducting. The organization, role and functions of internal audit are determined by the owner and management of the company, depending on: the content and specificity of the activity, the scale of the performance indicators, the existing management system, the state of internal control etc. The main objective of the internal audit is to increase the efficiency of the enterprise operation, to protect its activity from the impact of business environment risks. Implementation and proper organization of the internal audit system will affect the financial position of the enterprise as a whole and determine its place in the market of goods and services. An important condition for the effective organization of internal audit is the correct calculation of audit risk.

Analysis of basic researches. A significant contribution to the development of organizational, theoretical foundations, methodological support of internal audit, description of its system elements was made by such scientists as I.A. Avrova, A.V. Bazyliuk, F.F. Butynets, Z.V.

Gutsailiuk, R.N. Anthony V.I. Efimenko, G.G. Kireitsev, V.V. Kovalev, V.I. Korshunov, Yu.M. Kuznetsova, B.M. Litvin, V.G. Linnyk, V.F. Maksimova, M.R. Mattius, A.P. Michalkevich, Ye.V. Mnich, S.O. Nikolaeva, V.D. Novodvorskaya, V.F. Palii, D.O. Pankov, O.M. Petruk, M.S. Pushkar, Ya.V. Sokolov, V.V. Sopko, S.A. Stukov, V.I. Tkach, N.V. Chebanova and others.

In spite of significant scientific developments, the place and role of internal audit in the management system, the organization of information support and the procedure for calculating audit risk need to be clarified.

Objectives setting. The subject of this article is to substantiate the theoretical provisions and develop practical recommendations for improving organizational and methodological support of internal audit in Ukrainian enterprises on the part of the development of an information model for internal audit organization and the definition of audit risks.

Main material. Widespread use of computer technology and modern information technologies led to the study of the feasibility of a methodology for conducting an audit at enterprises in the conditions of automated information systems functioning. Modern software development allows you to use a computer to conduct logical and calculation procedures during inspections.

Each audit, both in external and internal audit, is carefully planned. Planning of the audit is necessary for drawing up an audit program, determining the procedures for its implementation, the scope of the audit required for the audit of resources, the nature and complexity of the audit tasks, the period of inspection, etc.

When developing the program the following factors are taken into account:

- 1) the objectives of the audit, the terms of its conduct;
- 2) the period covered by the audit;
- 3) procedures used by internal auditors to collect, analyze and document information during an audit;
- 4) the nature and extent of the testing and verification required to achieve the objectives of the audit;
- 5) specific risks, processes and transactions subject to audit;
- 6) methods and techniques of the audit.

The program is approved by the Director of the Internal Audit Department (the head of the internal audit unit) and presented together with the audit report to the structural divisions of the enterprise in which it is planned to be held. The form of the program for conducting an internal audit is shown in Fig. 1

An audit program

The audit task _____

Auditors _____

The structural unit in which the audit is carried out _____

Date of beginning and end of check _____

List of audit procedures	Deadline	Implementer	Reference to working document

Auditor _____

Signature

Fig.1. An audit program

When planning an audit using automated data processing a list of the main tasks needed to be solved during the audit process is formed.

These tasks include:

- verification of the accounting nomenclature application correctness;
- verification of accounting indicators calculation correctness;
- checking the completeness of incoming information;
- verification of the final output information;
- checking the compliance of the documentation with legislative acts, the procedure for exercising control over it;
- verification of the procedure for correction of normative reference information and summary output information;
- verification of the current storage of information on both machine and paper carriers.

An important point during the audit is the systematic organization of the technological process of data processing, the execution of which is provided by the control program.

For successful operation, the control program must use the following data:

- list of all audit tasks;
- information on the interdependence of accounting, control and audit tasks;
- a set of factors that ensure the possibility of solving each audit task;

- information on the sequence of problem-solving;
- notification of completion of each audit task.

The control program allows you to determine the sequence of audits, the implementation of the decision of certain tasks, and in some cases, the need for their change.

On the basis of the list of audit tasks an informational model of auditing for certain areas of accounting is formed. According to the information model, the sequence of the decision of the audit tasks and their interconnection is established.

For example, the model of the audit of working capital using a management program is shown in Fig. 2

The current assets audit begins with inventory and determination of its results. When checking the results of inventory using a computer, the purpose of the audit is to detect the mistakes made. Operations carried out on the results of the inventory, with typical operations are also checked and compared automatically.

The completeness and correctness of the primary information formation and the timeliness of its display in the registers is performed in the following steps:

- checking the availability of the necessary accounting information in the primary documents;
- verification of the completeness of the display of primary data in the accounts;
- checking the correctness of the display of mistakes made in the primary documents.

One of the main stages of the circulating assets auditing is the auditing of the conformity of analytical and synthetic accounting data, auditing of the conformity of analytical and synthetic accounting data with reporting data.

The automated verification of the correctness of the formation of conducting the audit is carried out by comparing the actual ones with the typical economic operations according to the Directory of typical business operations.

An important point is to verify the correctness and completeness of the formation of accounting registers while automating the comparison of data displayed in registers with primary data.

While conducting an automated audit it is important to determine the auditing risk. There is no single methodology for determining auditing risk. It is usually developed by each audit firm or individual auditor

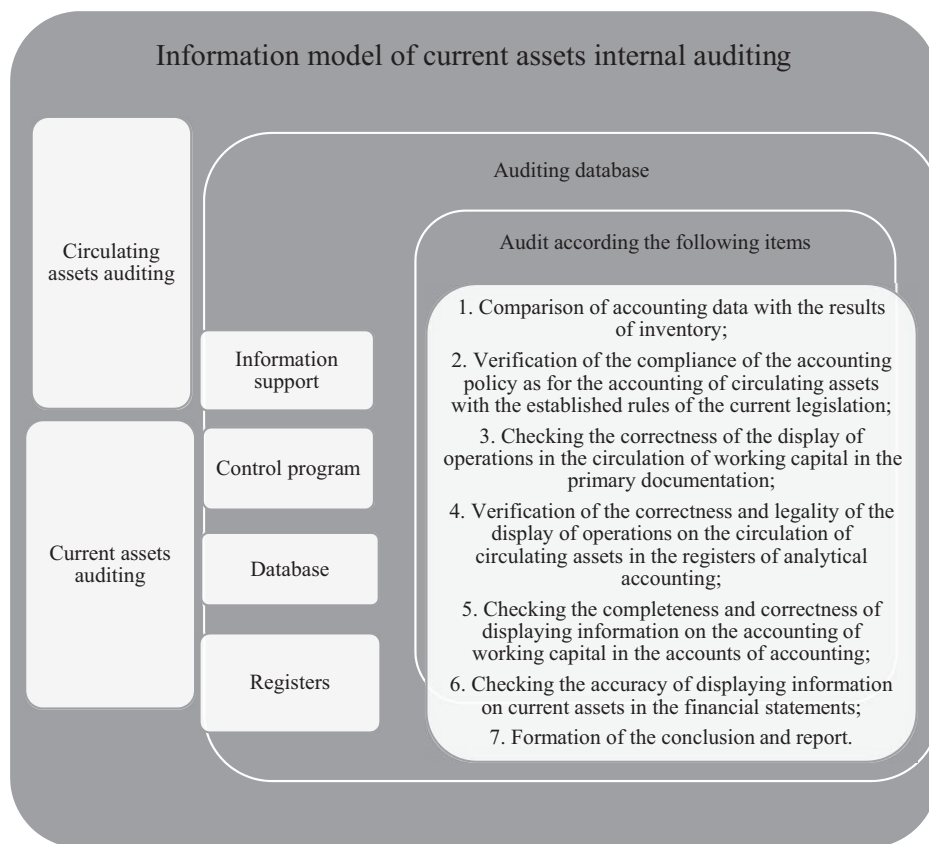


Fig. 2. Information model of the audit of circulating assets

following the terms of a specific auditing. For this purpose, so-called models of auditing risk are being created and are constantly improved.

When choosing the methodology for determining auditing risk and its admissible value, it is necessary to take into account the specific conditions of the auditing, its term, the nature of the client's activity, the competence and qualifications of the auditor, and other factors.

To determine the risk, you can use both a matrix and a factor model.

When conducting an audit in the banking sector, the matrix model is used. The filling of the matrix is carried out depending on the assessment of the specific situation. The matrix model determines the dependence of the level of audit risk on the indicator of non-negative risk, risk of control, risk of non-detection.

In our opinion, to determine the auditing risk in conducting business audits with automated data processing, it is appropriate to use a factor model based on the model developed by J. Robertson [3].

This model can be expressed by the following formula:

$$AR = RA \times CR \times DR \quad (1),$$

AR - auditing risk;

RA - risk of accounting system;

CR - risk of internal control system;

DR - the risk of non-detecting errors by the auditor.

The factor model for determining auditing risk involves the following steps:

- conducting a questionnaire survey of experts to determine the factors that can significantly affect the elements of the model;
- expert evaluation of the importance of each factor in partial models;
- drawing up of work tables;
- determination of auditing risk.

At the first stage, a group of 20 experts was specially selected, which included employees of audit firms in the Khmelnytsky region.

According to the "brainstorm" method the groups of factors that have the greatest impact on the risk of the internal control system, the risk of the accounting system and the risk of errors not detected by the auditor were singled out.

The resulting list of factors is systematized in special tables according to types of risks, next to the number of votes for each factor submitted by experts were determined. The list of the main factors that need to be included in the model of the assessment of elements of the overall auditing risk, includes only those factors for which more than half of the experts-auditors voted (Table 1).

Table 1.

Table of estimation of factors influencing RA, CR and DR

№	Factors	Points					Average point	Factor importance
		1 expert	2 expert	...	K expert	Total		
1	X1	a11	a12	...	a1k	b1	B1/k	b1/100×k
2	X2	a21	a22	...	a2k	b2	B2/k	B2/100×k
...
n	Xn	an1	an2	...	ank	bn	Bn/k	bn/100×k
Total		100	100	...	100	100k	100	1

The next stage involves the study and expert evaluation of the importance of the selected factors, which we perform for each factor in points so that the sum of the points of all factors could equal to 100. Then we calculate the average score (in points) and determine the importance factor $K_v(i)$ for each i -factor affecting RA, CR and DR.

Thus, each expert must determine how many points to distribute among the key factors, and how many to leave for secondary ones (for example, 80 and 20, 90 and 10, etc.). According to the results of the study, it was found that the following factors have the greatest influence on the risk of the internal control system: competence of control personnel (21.8%), division of authorities between employees of the internal audit service (13.0%), the correctness of operations display in the accounting (12.85%) (Table 2).

In turn, the risk of accounting system is influenced by the level of computerization of accounting (10.55%), its organizational system (22.7%), level of information systems knowledge (15.9%); (table 2) the risk of not detecting errors by the auditor is affected by the qualification and experience of the internal auditor (30.55%), the auditor's competence regarding the object of inspection (13.9%), the availability of verifiable information (9.08%) (Table 2).

Table 2.

Risk assessment of the internal control system

No	Kinds of risk	Total	Average value	Importance factor	Average actual value V_{av} .	Absolute actual value V_{act} .
	<i>The risk of internal control systems</i>					
2	Competence of control personnel	436,0	21,80	0,218	1	21,80
4	Distribution of authorities and responsibilities of internal audit staff	260,0	13,00	0,130	1	13,00
8	The correctness of displaying transactions in the account	257,0	12,85	0,129	1	12,85
5	Control stuff chain of command	170,5	8,53	0,085	0,5	4,26
9	Frequency of errors detected in the account	169,0	8,45	0,085	0,5	4,23
3	Personnel policy of administration and personnel retraining	159,0	7,95	0,080	0,5	3,98

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6	Use of control procedures	154,5	7,73	0,07 7	0,5	3,86
7	Control over documents and their storage	150,0	7,50	0,07 5	0,5	3,75
1	Methods of administrative control	125,0	6,25	0,06 3	0,5	3,13
10	Availability of special means of control	86,0	4,30	0,04 3	0	0,00
11	Other factors	41,0	2,05	0,02 1	0	0,00
	<i>Actual risk</i>					143,02
Continuation of Table 2						
	<i>The risk of the accounting system</i>					
2	Organizational system of accounting	454,0	22,70	0,22 7	1	22,70
6	Level of accounting personnel's accounting information technologies knowledge	318,0	15,90	0,15 9	1	15,90
3	Level of computerization of accounting	211,0	10,55	0,10 6	1	10,55
10	Presence of measures to restrict unauthorized access to computer systems	196,2	9,81	0,09 8	0,5	4,91
1	Kind of the client activity	188,0	9,40	0,09 4	0,5	4,70
5	Availability and operation of special software control systems	151,0	7,55	0,07 6	0,5	3,78
8	Program crash rate	130,2	6,51	0,06 5	0,5	3,26
9	Forms of accounting information storage	128,2	6,41	0,06 4	0,5	3,21
4	Use of licensed software	106,0	5,30	0,05 3	0	0,00
11	Other factors	68,2	3,41	0,03 4	0	0,00
7	The frequency of electrical supply crash	47,2	2,36	0,02 4	0	0,00
	<i>Actual risk</i>					68,99
	<i>Risk of non-detecting errors</i>					
1	Qualifications and practical experience of the internal auditor	611,0	30,55	0,30 6	1	30,55
4	Competence of the auditor concerning the object of verification	278,0	13,90	0,13 9	1	13,90
8	Availability of verifiable information	185,5	9,28	0,09 3	1	9,28
2	Education of the internal auditor	181,0	9,05	0,09 1	1	9,05
7	Independence of the internal auditor from the administration	177,0	8,85	0,08 9	0,5	4,43

7	Independence of the internal auditor from the administration	177,0	8,85	0,08 9	0,5	4,43
9	Objectivity and reliability of information	173,0	8,65	0,08 7	0,5	4,33
3	Participation of the auditor in scientific conferences, workshops	100,0	5,00	0,05 0	0,5	2,50
10	Use of modern methods for audit conducting	98,5	4,93	0,04 9	0	0,00
6	Auditing period	82,0	4,10	0,04 1	0	0,00
11	Other factors	60,0	3,00	0,03 0	0	0,00
5	Auditing purpose and tasks of	55,0	2,75	0,02 8	0	0,00
	<i>Actual risk</i>					74,03

Having generalized expert assessments of the importance of the factors of influence on RA, CR and DR, it is possible to obtain useful practical results during auditing inspections. To do this, you need to have factual estimates for each factor that affects the data of the risk categories.

To obtain these factual assessments for each factor, it is necessary to create special table-forms in which the risk values according to certain criteria should be divided into three categories: high risk, medium risk and low risk. By these categories, the relative actual estimates of the V av. (i) of each i-factor of influence on the corresponding element of audit risk are determined - AR. The absolute factual estimate of V act. (i) of each i-factor is calculated by multiplying the relative estimation of O av. (i) by the factor of importance of the corresponding factor Im. F. (i), and the actual estimate AE can be calculated by the formula:

$$O\phi = \sum_{i=1}^n Oa(i) = \sum_{i=1}^n O_B(i) \times K_B(i) \quad (2)$$

where n is the number of factors for assessing the relevant element of audit risk (RA, CR and DR).

To calculate the values of AR we choose consecutively three constants: 0.01; 0.05; 0.1 The values of RA and CR indicators are variables that are influenced by various factors.

According to the results of the analysis, calculations showed:

$$DR (AR = 0,01) = 0,014$$

$$DR (AR = 0,05) = 0,068$$

$$DR (AR = 0,1) = 0,137$$

The risk of non-detection should be only 1.4% if the audit risk requirements are very high ($AR = 1\%$). Accordingly, for medium and low audit risk requirements, the risk of non-detection may be 6.8% and 13.7%. The calculated indicator allows you to adjust the sample value and the depth of the research.

At the final stage, the auditor prepares the Protocol for an audit conclusion and report. Based on the Protocol, the auditor makes his conclusions, proposes ways to resolve the identified shortcomings and violations.

The opinion of the internal auditor is slightly different from the conclusion of the independent audit. According to the auditor's report, the following sections are included:

I. The general part. In this section, the auditor indicates the auditing duration, the auditing object, the auditing methods, and the composition of the audit team.

II. Assessment of the organization of a structural unit performance that maintains accounting. This section shows information about:

- organization of work of the structural unit, which ensures the implementation of operations in the direction of verification, its structure;
- availability of job descriptions of employees and their compliance with the functions assigned to the subdivision;
- distribution of duties among employees, their load, which will provide an opportunity to analyze the causes of identified deficiencies;
- level of qualification of the employees of the structural subdivisions subject to audit.

III. Auditor's report concerning accounting and audited financial statements. This is the main section in the auditor's report, in which the auditor will reflect the results concerning:

1) analysis of conducting business transactions and their compliance with the requirements of the current legislation, regulatory documents of accounting;

2) reporting analysis;

3) identification of differences/divergences in the work of the enterprise;

4) analysis of indicators and results of work of the auditing object.

IV. Inspection and evaluation of internal control systems.

This section highlights the results of the analysis of the compliance of

operations with the requirements of internal control systems and includes the study of:

- the decision-making process for the implementation of the operation;
- the direction of the organization of work to reduce the inherent risk operations,
- availability of monitoring of transactions;
- restriction of access to accounting records;
- completeness of the timeliness of the creation of appropriate reserves (depending on specifics of operations);
- conclusion regarding the understanding by the management of the existence of risks in the areas of activity of the auditing object, their classification and determination of the acceptable level.

V. Conclusions and recommendations.

Having described all the shortcomings, the auditor formulates the findings of the audit, which is an assessment of the impact of the findings of violations on the types of activities that were audited. Also, the auditor expresses his opinion on the functioning of the internal control system, the adequacy and compliance of the audited operations with current legislation etc. After the conclusions it is necessary to set out the recommendations in which the auditor offers ways to improve the business unit and fix the identified shortcomings.

The auditor's report is sent to the Internal Audit Department.

The auditor's report is smaller in scope and intended for the head of the company. When forming an audit report, it is appropriate to include the following sections:

I. The purpose of the audit and the audited entity, the period covered by the audit.

II. Scope and audit objectives.

III. An assessment of the work of a structural unit that carries out verified operations (with coverage of both positive and negative sides) and a certain degree of risk inherent in these operations.

IV. Conclusions on the availability and effectiveness of internal control systems and the implementation of measures necessary for their improvement (if applicable).

V. General recommendations on the audit results.

Conclusions. Thus, problems with organizing and conducting computerized auditing can be solved with the development of specific areas of audit automation, namely the development of common

methodological bases for processing and generalization of information in the application of audit computer programs; to define the general basic principles of the formation and use of computer auditing programs; when determining the auditor's risk it is essential to use a factor model.

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Abstracts

BULAT HALYNA. Model organizacji audytu wewnętrznego pod warunkiem korzystania z technologii informatycznych w rachunkowości. Współczesne zmiany w kraju stawiają nowe wymagania co do jakości informacji księgowej, której potrzebuje kierownictwo podmiotu gospodarczego do podejmowania uzasadnionych decyzji zarządczych, które określają zdolność przedsiębiorstwa do „przetrwania” w trudnych warunkach rynkowych. To powoduje potrzebę poprawy organizacyjno-metodologicznego zapewnienia odpowiedniego zakresu rachunkowości i audytu podmiotu gospodarczego jako całości, a także w kontekście poszczególnych obiektów pod warunkiem wykorzystania współczesnych programów komputerowych.

Słowa kluczowe: ryzyko audytorskie, model macierzowy, model czynnikowy, stała, analiza, próbkowanie audytowe.

БУЛАТ ГАЛИНА. Модель організації внутрішнього аудиту за умов використання інформаційних технологій для ведення обліку. Сучасні перетворення в країні ставляють нові вимоги до якості облікової інформації, що необхідна керівництву господарюючого суб'єкта для прийняття обґрунтованих управлінських рішень, від яких залежить здатність підприємства «вижити» в жорсткому ринковому середовищі. Цим зумовлена необхідність удосконалення організаційно-методичного забезпечення обліку й аудиту діяльності господарюючого суб'єкта в цілому та у розрізі окремих об'єктів за умови використання сучасних комп'ютерних програм.

Ключові слова: аудиторський ризик, матрична модель, факторна модель, константи, аналіз, аудиторська вибірка.

БУЛАТ ГАЛИНА. Модель организации внутреннего аудита в условиях использования информационных технологий для ведения учета. Современные преобразования в стране ставят новые требования к качеству учетной информации, необходимой руководству хозяйствующего субъекта для принятия обоснованных управленческих решений, от которых зависит способность предприятия «выживать» в жестком рыночной среде. Этим обусловлена необходимость совершенствования организационно-методического обеспечения учета и аудита деятельности хозяйствующего субъекта в целом и в разрезе отдельных объектов при использовании современных компьютерных программ.

Ключевые слова: аудиторский риск, матричная модель, факторная модель, константы, анализ, аудиторская выборка.

BULAT GALYNA. Model of internal auditing organization with the use of accounting information technologies. Modern transformations in the country place new demands on the quality of accounting information that is necessary for business entity management to make sound managerial decisions, which determine the ability of the enterprise to “survive” in a harsh market environment. Thus there is the need to improve the organizational and methodological provision of accounting and auditing activity of a business entity as a whole and, in the context of individual subjects, to use modern software.

Keywords: auditor’s risk, matrix model, factor model, constants, analysis, audit sample.