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EVALUATION OF THE CONTINUITY OF EDUCATIONAL AND SCIENTIFIC ACTIVITIES OF STUDENTS USING THE METHOD OF DYNAMIC NORM

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Abstract: The article considers methodological issues of conducting analytical procedures in order to assess the assumption of continuity of students' scientific activity during audit reporting. The author's understanding of the advisability of using the dynamic standard method in order to obtain sufficient appropriate evidence on which the auditor's professional judgment is based is presented and substantiated. It is shown that the use of the dynamic standard characterizes a systematic approach to conducting analytical procedures. The results of the analysis make it possible to evaluate not only changes in the indicators characterizing the scientific and technical results of students' activities, but also to assess the general trend, as well as the influence of factors that determine certain proportions of indicators. The stages are defined and the content of the methodology is disclosed, recommendations are given for interpreting the findings for the purpose of preparing the auditor's report. The use of the dynamic standard allows improving the quality of evidence obtained from the results of analytical procedures.

Keywords: dynamic norm, education, evaluation, activities of students

1. Introduction

One of the problems of audit development is related to the need to satisfy the information needs of financial reporting users. In order to make economic decisions, it is necessary to assess not only the retrospective processes presented in the reporting, but also the ability of the organization to continue its activities in the near future. The auditing standards contain requirements for conducting such an assessment. One of the fundamental principles of preparing reports is the assumption of the continuity of activities of students. According to this principle, it is assumed that students will continue to carry out their scientific and technical activities for 12 months of the year. Liabilities are taken into account on the basis that students will be able to fulfill their obligations and realize their gift in the course of their scientific and educational activities. In audit practice, the main tool used to obtain evidence when assessing the continuity of activities are analytical procedures. As a rule, an analysis of the state is carried out according to reporting data using a system of special coefficients, as well as an analysis of the dynamics of performance indicators for several reporting periods. This approach generally complies with the requirements of auditing standards. The auditor has the right to use his professional judgment when assessing the going concern assumption, and the results of the analysis allow identifying negative factors and trends that are sufficient appropriate evidence of the validity of the auditor's opinion. The disadvantages of this approach can also be noted. In this case, assessments of the going concern assumption are carried out on the basis of a retrospective analysis and on the reporting date. The assessment of future events and their impact is limited in nature and is associated with the analysis of the consequences of the impact of events after the reporting date until the date of preparation of the auditor's report. The article proposes a methodology for conducting analytical procedures to assess the continuity of students' activities using the dynamic standard method.

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2. Problem formulation

The objectives of the audit in terms of assessing the continuity of activities involve obtaining evidence on several aspects:

• the assessment of the continuity of activities has been carried out by the management of the organization and the conclusions based on the results of the assessment are appropriate;

• the factors that cause significant doubt about the ability to continue as a going concern have been considered;

• information about factors affecting the going concern (if any) has been properly disclosed to users in the reports;

• the assumptions used by management in preparing the reports are appropriate.

Doubt about the applicability of the going concern assumption may arise both as a result of the analysis and when performing other procedures.

Testing when performing control procedures is aimed at obtaining answers to the following questions:

• are there any events or conditions that create significant doubt about the audited entity's ability to continue as a going concern?

• is there evidence of factors that create significant doubt about the audited entity's ability to continue as a going concern?

• do they affect the auditor's assessment of audit risk components?

• has management assessed the applicability of the going concern assumption?

• has the management of the audited organization identified any factors related to the going concern assumption, and what measures are they planning?

• what procedures and information are used by the management of the audited organization in the assessment?

• what factors have been identified, including during the audit procedures related to events that occurred after the reporting date?

If factors related to the going concern assumption are identified, additional procedures are developed. These include: analysis of plans for future activities; consideration of possible mitigating circumstances; assessment of the conditions of uncertainty of activities, etc.

Let us consider the features of the methodology for conducting analytical procedures for assessing the going concern assumption related to the comparative characteristics of the actual results of activities with the dynamic standard.

3. Solution of the Problem

The idea of a dynamic standard was first developed by the Russian scientist I.M. Syroezhina [3] and was developed in the works of [4–6], as well as in the studies of other scientists.

A dynamic standard is a ranked series of growth rates of indicators, reflecting the optimal combination of the characteristics of economic activity. A dynamic standard, which is also called

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a reference series, will be a truly useful analytical tool if the sequence of growth rates of indicators is economically justified and methodically competently constructed. A dynamic standard refers to diagnostic analysis and can be used to solve various economic problems, including assessing the continuity of students' activities.

The process of assessing the results of educational activity based on the application of a dynamic standard includes several stages.

Level 1. Selecting indicators characterizing the state of students' competence-educational activity. To develop a dynamic standard, a systems approach is used, with the help of which all indicators are divided into initial, intermediate and final (in the interpretation of I.M. Syroezhina: initial, intermediate and closing). Initial (input) indicators express the resources entering the process of educational activity, intermediate (process) ones provide information on the volume of educational activity, final (output) indicators characterize the results of competence. Such a division of indicators forms an idea of their value: the value of final indicators is higher than the value of intermediate indicators and, in turn, higher than the value of initial indicators.

Level 2. Construction of a dynamic standard

(reference series of the ratio of growth rates of indicators). The following requirements for ranking growth rates can be formulated:

1. The growth rates of final indicators (Tfi) should outpace the growth rates of intermediate indicators (Timi) and the growth rates of initial indicators (Tii), i.e. the ratio is fair.

$$T_{fi} > T_{imi} > T_{ii} > 100\% \quad (1)$$

2. The dynamic standard should include unidirectional indicators aimed at increasing their values.

3. Among the final indicators, a standard series can be created.

$$T_{ni} > T_{iic} > T_{aic} > T_{lic} > T_g > 100\% \quad (2)$$

which takes into account the value of the growth rates of profit indicators in descending order: net indicator (Tni) — initial indicator of competence (Tiic) — average indicator of competence (Taic) — last indicator of competence (Tlic). The dynamic standard is completed by the growth rate of revenue (Tg) as an indicator for calculating growth.

It is advisable to arrange the growth rates of intermediate indicators by significance, having first performed an ABC analysis. Then the growth rates of category A (TgA) will outpace the growth rates of category B (TgB), and the latter will outpace the growth rates of competence of category C (TgC):

$$T_{gA} > T_{gB} > T_{gC} > 100\% \quad (3)$$

4. The dynamic standard of initial indicators reflects the growth rate of students' competence, taking into account the liquidity criterion.

5. A dynamic standard cannot simultaneously contain growth rates of absolute and relative indicators. That is, a dynamic standard can consist only of absolute or only of relative indicators.

6. A dynamic standard can contain cost and physical indicators.

Level 3. Calculation of actual growth rates of indicators and construction of an actual series of ratios of growth rates of indicators. At this stage, the actual indicators included in the reference series are collected and the growth rates are calculated in order to rank the indicators of the actual series (Table 1). Rank 1 is assigned to the indicator with the highest growth rate, and then in descending order of values. Thus, an actual series of growth rates of indicators is obtained:

$$T_{nl} > T_g > T_{gA} > T_{gB} > T_{ch} > T_{os} > T_{aic} > T_r > 100\% \quad (4)$$

The actual series of growth rates differs significantly from the reference series.

Level 4. Comparison of the reference series of the ratio of growth rates of indicators with the actual series based on rank correlation coefficients. For the diagnostic assessment of the level of development of the organization, rank correlation tools are used, in particular, the rank

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correlation coefficients are calculated by deviations (Spearman coefficient) and by inversions (Kendall coefficient) [3].

Spearman's rank correlation coefficient is calculated using the formula

$$p=1-\frac{6\sum d^2}{n(n^2-1)} \quad (5)$$

where d is the difference in ranks of each pair of values x and y;

n is the number of observations.

The calculation of the Kendall rank coefficient is carried out according to the formula

$$\tau=1-\frac{4S}{n(n-1)} \quad (6)$$

where S is the total number of observations following the current observations with a lower rank value x (equal ranks are not taken into account). The obtained values of the Spearman and Kendall coefficients allow us to calculate the development coefficient:

$$K_g=\frac{(1+p)*(1+\tau)}{4} \quad (10)$$

The development coefficient (as well as the rank correlation coefficients) varies between 0 and 1. A development coefficient of less than 0.3 characterizes a decline in students' academic performance. The rank correlation coefficient for complete correspondence between the reference and actual series is +1, which means complete positive correlation. For a negative relationship, i.e. if the indicators in one series are arranged in reverse order compared to the other, the coefficient is –1, which means negative correlation. For other cases, the coefficient occupies a position between the limiting values (from –1 to +1). An increase in the coefficient to +1 characterizes an increase in the correspondence between the two sequences. Thus, when analyzing, one should pay attention not only to the sign and value of the rank correlation coefficient, but also to its range.

Calculation of the rank correlation coefficients and the development coefficient showed the following

results:

1. Spearman coefficient — p = 0.5;
2. Kendall coefficient — τ = 0.45;
3. development coefficient — Kg = 0.54.

The development coefficient expresses the average relationship between the reference and actual series of growth rates of indicators, which allows the auditor to make judgments about the government's continuity of activity.

Rank correlation coefficients are aggregated characteristics of students' academic results, allowing one to track the general trend of their change as a result of development. However, this does not take into account the factors that determine certain proportions of indicators.

Therefore, when assessing business continuity, the auditor must determine how to assess the level and proportions of students' activities based on these factors. To do this, it is necessary to consider the dynamics of the rank correlation coefficients, expressing the development coefficient graphically (Table 1).

Table 1: Ranks of growth rates of indicators by year

Indicator	Reference series	Year		
		1st	2nd	3rd
Knowledge of international languages	1	7	3	4

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Knowledge within the field of science	2	5	5	5
Ownership of a patent or certificate	3	1	4	2
Published developments	4	2	6	8
Participation in the project	5	3	7	1

The rank correlation and development coefficients are calculated, and the data are entered into Table 2. The figure shows the graphical trajectory of the development coefficient and the forecast for the next year (year 4).

Table 2: Values of rank correlation coefficients and development

Indicator	Year		
	1st	2nd	3rd
Spearman coefficient	0.12	-0.3604	0.26
Kendall coefficient	0.14	0.07	0.21
Development coefficient	0.32	0.26	0.38

Level 5. Economic interpretation of the results. The figure shows that until the 2nd year, the students' activities were in the minimum zone, but subsequently, a certain progress in development was outlined, which allows us to give a positive forecast for the 4th year and assume the continuity of students' activities in the foreseeable future. Thus, using the development coefficient to assess the assumption of continuity of the organization's activities allows us to improve the quality of evidence obtained as a result of analytical procedures. This is due to a comprehensive assessment of changes in indicators characterizing the educational results of students' activities, an assessment of the general trend of their change, as well as the influence of factors that determine certain proportions of indicators.

4. Results and Discussion

When forming conclusions on the reliability of the reporting and preparing the auditor's report, two aspects of the assessment results are taken into account: compliance with the assumption, and if the assumption is not met, the disclosure of information in the reporting in an appropriate manner. The auditor's opinion on the reliability of the reporting and individual aspects of the

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audit is based on his professional judgment [8]. The subjectivity of professional judgment should be reduced. This is possible if it is based on sufficient appropriate evidence, and the proposed methodology ensures the possibility of obtaining such evidence when assessing the assumption of going concern.

An analysis of the requirements of auditing standards allows us to identify the following situations that affect the auditor's opinion, the form of the auditor's report, depending on the assessment of business continuity:

1. There are no doubts regarding the continuity of students' activities. The auditor has the right to prepare an unmodified audit report.

This corresponds to the position of the 2nd and 4th years, the development coefficient is greater than 0.3 and positive dynamics of the indicator are noted.

2. There are some doubts or uncertainty in the assessment of the assumption of business continuity. The auditor has the right to prepare an unmodified audit report, including information that draws the attention of users to these circumstances.

This corresponds to the position of the 1st year, the development factor is greater than 0.3 and there is a negative trend in the indicator.

3. There are factors indicating non-compliance with the assumption of going concern, management estimates are made correctly, information on the factors is adequately disclosed in the financial statements. The auditor has the right to prepare a modified audit report, expressing an opinion with a reservation if the influence of the factors is limited. It is also advisable to include information drawing the attention of users to these circumstances. This corresponds to the position of the 2nd year, the development factor is less than 0.3 and there is a negative trend in the indicator.

4. There are factors indicating non-compliance with the assumption of going concern, management estimates are made incorrectly, information on the factors is not properly disclosed in the financial statements. The auditor has the right to prepare a modified audit report, expressing an adverse opinion. This is also possible for the 2nd year.

5. Conclusion

It may be noted that the auditor cannot provide a guarantee in assessing the ability of the organization to continue its activities continuously. The absence in the auditor's report of an indication of a serious doubt in the applicability of the assumption of going concern cannot and should not be interpreted by interested users as its guarantee. At the same time, in order to confirm professional reputation, it is important that the assessments of the assumption of going concern are correct and allow to avoid a situation of loss of confidence in the auditor's opinion. Analysis and discussion with the management of the organization of forecasts for future periods allow to provide estimates exceeding 12 months from the reporting date, established as minimum requirements. These circumstances are important in relation to the tasks of strategic audit as one of the new areas of audit activity.

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