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IMPROVING THE METHODOLOGY OF AUDITING INTANGIBLE ASSETS IN THE ICT SECTOR

Ishankulov Izzatilla Nurillaevich

Independent PhD Researcher,
Tashkent State University of Economics (TSUE)
E-mail: i.ishankulov@digital.uz

Annotatsiya. Maqolada axborot-kommunikatsiya texnologiyalari (AKT) sohasida nomoddiy aktivlar audit metodologiyasini takomillashtirishning mualliflik yechimlari bayon etiladi. Nomoddiy aktivlarning o'ziga xosligi — jismoniy shaklga ega emasligi, baholashning subyektivligi va raqamli tabiati — ularning auditini murakkablashtirishi va an'anaviy yondashuv soha xususiyatlarini to'liq qamrab olmasligi asoslanadi. Tadqiqot metodologiyasi sifatida tizimli yondashuv, modellashirish va qiyosiy tahlil usullari qo'llanilgan. Natijada to'rt o'zaro bog'langan metodik yechim ishlab chiqildi: xatarga yo'naltirilgan rejalashtirish (xatar matritsasi, uch bosqichli dastur), dalillar to'plash va analitik muolajalar (triangulyatsiya, o'nta ko'rsatkich), hisob baholari audit (ISA 540, olti bosqichli qadrsizlanish modeli) hamda uzluksiz (raqamli) audit (yetti qatlamli arxitektura). Ilmiy yangilik ushbu yechimlarni yaxlit metodik zanjirga birlashtirishda va ularni III bobdagi hisob metodologiyasi bilan bog'lashda namoyon bo'ladi.

Kalit so'zlar: nomoddiy aktiv, audit metodologiyasi, audit xatari, analitik muolajalar, triangulyatsiya, hisob baholari, ISA 540, uzluksiz audit, AKT sohasi, audit.

Аннотация. В статье излагаются авторские решения по совершенствованию методологии аудита нематериальных активов в сфере информационно-коммуникационных технологий (ИКТ). Обосновывается, что специфика нематериальных активов — отсутствие физической формы, субъективность оценки и цифровая природа — усложняет их аудит, а традиционный подход не в полной мере охватывает отраслевые особенности. В качестве методологии использованы системный подход, моделирование и сравнительный анализ. Разработаны четыре взаимосвязанных методических решения: риск-ориентированное планирование, сбор доказательств и аналитические процедуры, аудит бухгалтерских оценок (ISA 540) и непрерывный (цифровой) аудит.

Ключевые слова: нематериальный актив, методология аудита, аудиторский риск, аналитические процедуры, триангуляция, бухгалтерские оценки, ISA 540, непрерывный аудит, сфера ИКТ, аудит.

Abstract. The article presents the author's solutions for improving the methodology of auditing intangible assets in the information and communication technology (ICT) sector. It is substantiated that the specific features of intangible assets — the absence of physical form, the subjectivity of valuation, and their digital nature — complicate their audit, while the traditional approach does not fully capture the sector-specific features. A systems approach, modelling, and comparative analysis are used as the methodology. Four interconnected methodological solutions are developed: risk-based planning, evidence gathering and analytical procedures, the audit of accounting estimates (ISA 540), and continuous (digital) audit. The novelty lies in integrating these solutions into a coherent methodological chain and linking them with the accounting methodology of the third chapter.

Keywords: intangible asset, audit methodology, audit risk, analytical procedures, triangulation, accounting estimates, ISA 540, continuous audit, ICT sector, audit.

INTRODUCTION

The improvement of the accounting methodology for intangible assets should be complemented by an audit methodology that independently verifies their proper recognition and accounting. Given the high proportion of intangible assets in the information and communication technology (ICT) sector, their audit is of critical importance for the reliability of financial reporting. However, the specific nature of these assets — their lack of physical form, the subjectivity of their valuation, and their digital nature — makes their audit more complex than that of traditional tangible assets.

The analysis conducted in Chapter II identified a number of problems in audit practice, including insufficient

specialized knowledge of the ICT sector among auditors, an underdeveloped methodology for examining valuation uncertainty, and limited use of digital audit tools. These problems are interrelated and require an integrated methodological solution: a consistent chain is needed that begins with audit planning and extends to evidence gathering, the examination of accounting estimates, and continuous monitoring. Importantly, such an audit methodology should be designed to verify the proper application of the accounting methodology developed in Chapter III.

The purpose of this article is to develop an integrated system for improving the methodology of auditing intangible assets in the ICT sector. The article presents four interconnected methodological solutions in sequence: risk-based planning; evidence gathering and analytical procedures; the audit of accounting estimates; and continuous (digital) audit. The research object is the practice of auditing intangible assets at large enterprises operating in Uzbekistan's ICT sector.

LITERATURE REVIEW

Risk-based audit methodology is firmly established within the system of International Standards on Auditing (ISAs). Audit risk is divided into three components, encouraging auditors to allocate resources to areas with the highest levels of risk (IAASB, 2024). The revised standard on the audit of accounting estimates (ISA 540) emphasizes the importance of managing estimation uncertainty, which is particularly relevant to intangible assets. Recent studies on the audit of fair value measurements and estimation uncertainty highlight the need for independent audit evidence and sensitivity analysis (Alharasis, Alkhwalidi and Hussainey, 2024).

The impairment of goodwill and intangible assets has also been examined as a frequently reported key audit matter (Gonçalves, Morais and Pinto, 2023). In the field of continuous auditing, the early work of M. Vasarhelyi and F. Halper (Vasarhelyi and Halper, 1991), subsequent conceptual developments (Alles, Kogan and Vasarhelyi, 2008), and the concept of "Audit 4.0" (Dai and Vasarhelyi, 2016) laid the theoretical foundation for further development. Robotic process automation is also being increasingly applied in auditing (Eulerich et al., 2022). National literature has addressed the reliability of financial reporting and audit-related issues (Khajimuratov, 2024); however, there is still insufficient research that integrates the four components of intangible asset auditing in the ICT sector into a coherent methodological chain. This article aims to address this research gap.

RESEARCH METHODOLOGY

The study is based on a qualitative research approach and a methodological design framework. Using a systems approach, the intangible asset audit process was divided into interconnected stages — planning, evidence gathering, examination of accounting estimates, and continuous monitoring — which were designed as an integrated chain. Through modelling, a risk matrix, a five-stage evidence model, a six-stage impairment audit model, and a seven-layer continuous audit architecture were developed. A comparative analysis was conducted to assess the proposed solutions against the International Standards on Auditing (ISA 315, ISA 500, ISA 520, ISA 540, and ISA 620).

Particular attention was given to the principles of methodological integrity and the interrelationship between accounting and auditing. Each audit solution uses the results of the preceding stage: the risk matrix developed during the planning stage determines the scope of evidence gathering; risk signals identified through analytical procedures guide the audit of accounting estimates; and both methodologies form the analytical modules of the continuous audit core. At the same time, the entire audit methodology is designed to verify the accounting solutions presented in Chapter III. For example, the recognition audit examines whether the "technical feasibility point" criterion has been properly applied, while the impairment audit verifies whether indicators of technological obsolescence have been appropriately considered. This ensures consistency between the accounting and auditing methodologies.

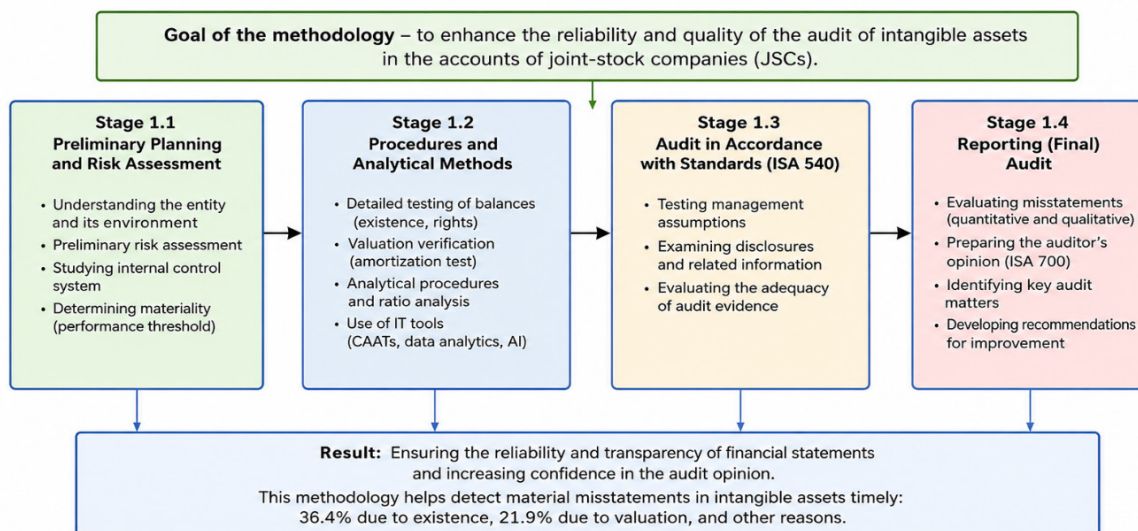
The conceptual basis of the methodology is the risk-based audit paradigm. To maintain audit risk at an acceptably low level, the auditor manages detection risk: when inherent and control risks are high, more extensive and in-depth audit procedures are applied. The audit methodology is closely linked to the accounting solutions presented in Chapter III and specifically examines the proper recognition of internally generated assets, their subsequent measurement, and the accounting treatment of digital assets. The information base of the study consisted of International Standards on Auditing and publicly available audit reports of enterprises operating in the sector; only publicly available data were used.

ANALYSIS AND RESULTS

The proposed methodology consists of four interconnected solutions and covers the entire audit process

for intangible assets. The first solution is risk-based planning. It identifies four inherent risk factors specific to assets in the ICT sector: high valuation uncertainty, internally generated assets, rapid technological obsolescence, and dependence on information systems. These factors are consolidated into an audit risk matrix by assertion. Based on the matrix, a three-stage audit program is developed, comprising planning, risk response, and completion. A key innovation is the designation of the assessment of information technology general controls (ITGCs) as a mandatory prerequisite for reliance on automated audit evidence (Figure 1).

Figure 1. Methodological Framework for Auditing Intangible Assets in the Accounts of JSC



Source: developed by the author.

Figure 1. Integrated Chain of the Methodology for Auditing Intangible Assets in the ICT Sector

The second solution is a methodology for evidence gathering and analytical procedures. It establishes a five-level hierarchy of the reliability of audit evidence specific to the ICT sector, in which independent external sources (such as confirmation from a state registry) are ranked above the entity's internal documents. The five-stage evidence-gathering model is based on the principle of triangulation: each high-risk assertion must be supported by at least two independent sources. A system comprising ten sector-specific indicators is proposed for analytical procedures, linking deviations to indicators of potential errors. The practical value of the system is demonstrated through a hypothetical example: expectation–deviation analysis identified deviations exceeding the established thresholds for four indicators and revealed signs of unjustified capitalization amounting to UZS 38.4 billion. All procedures are documented using a standardized working paper (AM-IA form).

The value of analytical procedures lies in their ability to examine relationships among indicators rather than individual transactions, thereby providing a “holistic view” of the financial statements. In accordance with ISA 520, four conditions should be satisfied when applying substantive analytical procedures: the appropriateness of the procedure for the relevant assertion, the reliability of the data to be used, the formulation of an expectation with sufficient precision, and the establishment of an acceptable threshold for deviations. An advantage of the ICT sector is the regular generation of reliable non-financial indicators, such as the number of subscribers, traffic volume, active users, and the number of projects and developers. When used together with financial indicators, these measures enable more precise expectations to be formulated. Importantly, the indicators should not be interpreted separately but in relation to one another. For example, if an increase in the renewal ratio is accompanied by an increase in the amount of capitalization, this may indicate the need to examine whether the capitalization threshold has been properly applied.

The third solution is a methodology for auditing accounting estimates related to intangible assets (ISA 540). It classifies estimates according to their inherent risk factors and proposes an algorithm for selecting among the three response approaches under ISA 540: subsequent events, management's process, and the auditor's point estimate. The core of the methodology is a six-stage model for auditing impairment testing, covering the analysis of impairment indicators, the determination of cash-generating unit boundaries, the components of the discounted cash flow model, sensitivity analysis, the evaluation of the expert's work (ISA 620), and the review of disclosures. Through sensitivity analysis, the auditor's point estimate in the hypothetical example identified unrecognized impairment of at least UZS 21.9 billion.

The fourth solution is a model for the continuous (digital) audit of intangible assets in the digital economy.

It consists of a seven-layer architecture that connects data sources through an integration layer and a version-controlled repository to a four-module analytical core comprising deterministic T1–T12 tests, analytical expectations, estimate indicators, and machine learning. The upper layers incorporate the results into working papers. The model is designed as a tool for the independent auditor and is implemented progressively through a four-stage maturity model. Its effectiveness was assessed through a hypothetical pilot calculation (Figure 2).

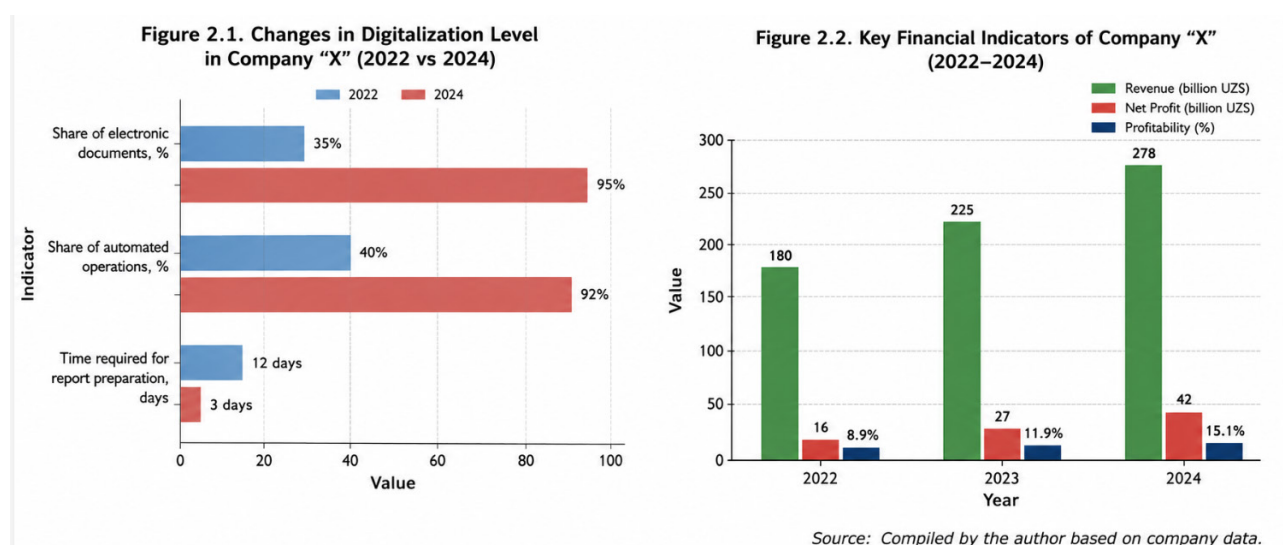


Figure 2. Practical Results of the Audit Methodology (Hypothetical Examples)

The four solutions operate as an integrated system and complement one another: risk-based planning directs audit attention to the areas of highest risk; evidence gathering and analytical procedures provide risk signals; the accounting estimates methodology independently examines subjective estimates; and continuous auditing shifts the entire process toward a near-real-time mode. Importantly, each subsequent audit solution uses the results of the preceding one: the analytical indicator system (Section 4.2) is used to identify impairment indicators during the audit of accounting estimates (Section 4.3), while both methodologies form the analytical modules of the continuous audit core (Section 4.4). Thus, the audit methodology is not merely a collection of individual procedures but constitutes an integrated system with internal consistency.

The practical results of the audit methodology are quantified through hypothetical examples (Figure 2): the analytical indicator system identified unjustified capitalization amounting to UZS 38.4 billion, while the accounting estimates methodology identified unrecognized impairment of at least UZS 21.9 billion. The continuous audit model increased audit coverage from 18% to 100%, reduced labor requirements by approximately 40%, and shortened the delay in error detection from nine months to three to five days. The proposed methodology is applied to the research entities as follows: at Uzbektelecom and UNICON.UZ, internally developed software systems are audited using a risk-based approach, valuation and impairment are audited in accordance with ISA 540, and continuous monitoring is performed through T1–T12 tests.

CONCLUSIONS AND RECOMMENDATIONS

As a result of the study, an integrated system for improving the methodology of auditing intangible assets in the ICT sector was developed. First, a risk-based planning model was developed, comprising sector-specific inherent risk factors, an audit risk matrix by assertion, a three-stage audit program, and a mandatory requirement for assessing ITGCs. Second, a methodology for evidence gathering and analytical procedures was developed, including a five-level evidence hierarchy, a five-stage model based on triangulation, and a system of ten sector-specific analytical indicators (AM-IA form).

Third, a methodology for auditing accounting estimates in accordance with ISA 540 was developed, including the classification of estimates, an algorithm for selecting among the three response approaches, and a six-stage model for auditing impairment testing. Fourth, a continuous (digital) audit model was developed, comprising a seven-layer architecture, a library of T1–T12 automated tests, and a four-stage maturity model. The scientific novelty of the proposed methodology lies in integrating these four solutions into a coherent methodological chain and establishing their direct linkage with the accounting methodology presented in Chapter III, whereby the audit independently verifies the proper application of the accounting solutions.

The practical significance of the methodology lies in directing audit resources toward the areas of highest

risk, establishing a systematic basis for examining subjective estimates, increasing audit coverage and timeliness, and ensuring the reliability of financial reporting. From a regulatory perspective, it is recommended that these solutions be incorporated into national auditing standards and methodological guidelines, while the implementation of digital audit tools should also be appropriately regulated. The developed audit methodology, together with the accounting methodology presented in Chapter III, forms an integrated ICT-sector-specific system for the accounting and auditing of intangible assets and is consistent with the policy of digitalizing public-sector auditing.

Thus, the study develops a comprehensive methodological system for the accounting and auditing of intangible assets, progressing from the theoretical foundations presented in Chapter I, through the analysis of the current situation in Chapter II, to the methodological solutions presented in Chapters III–IV. The principal strength of this system lies in its internal consistency: each component — from classification to continuous auditing — is closely interconnected with the others and, collectively, contributes to more complete recognition, reliable measurement, effective auditing, and transparent disclosure of intangible assets in ICT-sector enterprises.

REFERENCES

1. Alharasis, E.E., Alkhwalid, A.F. and Hussainey, K. (2024) 'Fair value disclosures and audit issues', *International Journal of Law and Management*, 66(4), pp. 417–446.
2. Alles, M., Kogan, A. and Vasarhelyi, M.A. (2008) 'Putting continuous auditing theory into practice', *Journal of Information Systems*, 22(2), pp. 195–214.
3. Dai, J. and Vasarhelyi, M.A. (2016) 'Imagineering Audit 4.0', *Journal of Emerging Technologies in Accounting*, 13(1), pp. 1–15.
4. Eulerich, M., Pawlowski, J., Waddoups, N.J. and Wood, D.A. (2022) 'A framework for using robotic process automation for audit tasks', *Contemporary Accounting Research*, 39(1), pp. 691–720.
5. Gonçalves, R., Morais, A.I. and Pinto, I. (2023) 'Goodwill impairment and key audit matters', *Cogent Business & Management*, 10(2), Article 2207877.
6. IAASB (2018) ISA 540 (Revised): Auditing Accounting Estimates and Related Disclosures. New York: IFAC.
7. IAASB (2019) ISA 315 (Revised): Identifying and Assessing the Risks of Material Misstatement. New York: IFAC.
8. IAASB (2024) Handbook of International Quality Management, Auditing, Review, Other Assurance, and Related Services Pronouncements. New York: IFAC.
9. Republic of Uzbekistan (2021) Law No. ZRU-677 'On Auditing Activities' of 25 February 2021. Tashkent. Available at: <https://lex.uz/docs/5311424> (Accessed: 4 July 2026).
10. Vasarhelyi, M.A. and Halper, F.B. (1991) 'The continuous audit of online systems', *Auditing: A Journal of Practice & Theory*, 10(1), pp. 110–125.
11. Xajimuratov, N.Sh. (2024) 'Moliyaviy hisobotning ishonchliligini ta'minlash yo'nalishlari', *Iqtisodiy taraqqiyot va tahlil*, 2(4), pp. 15–22.

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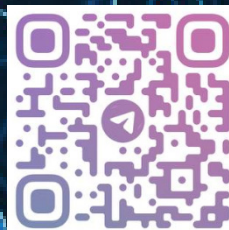
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