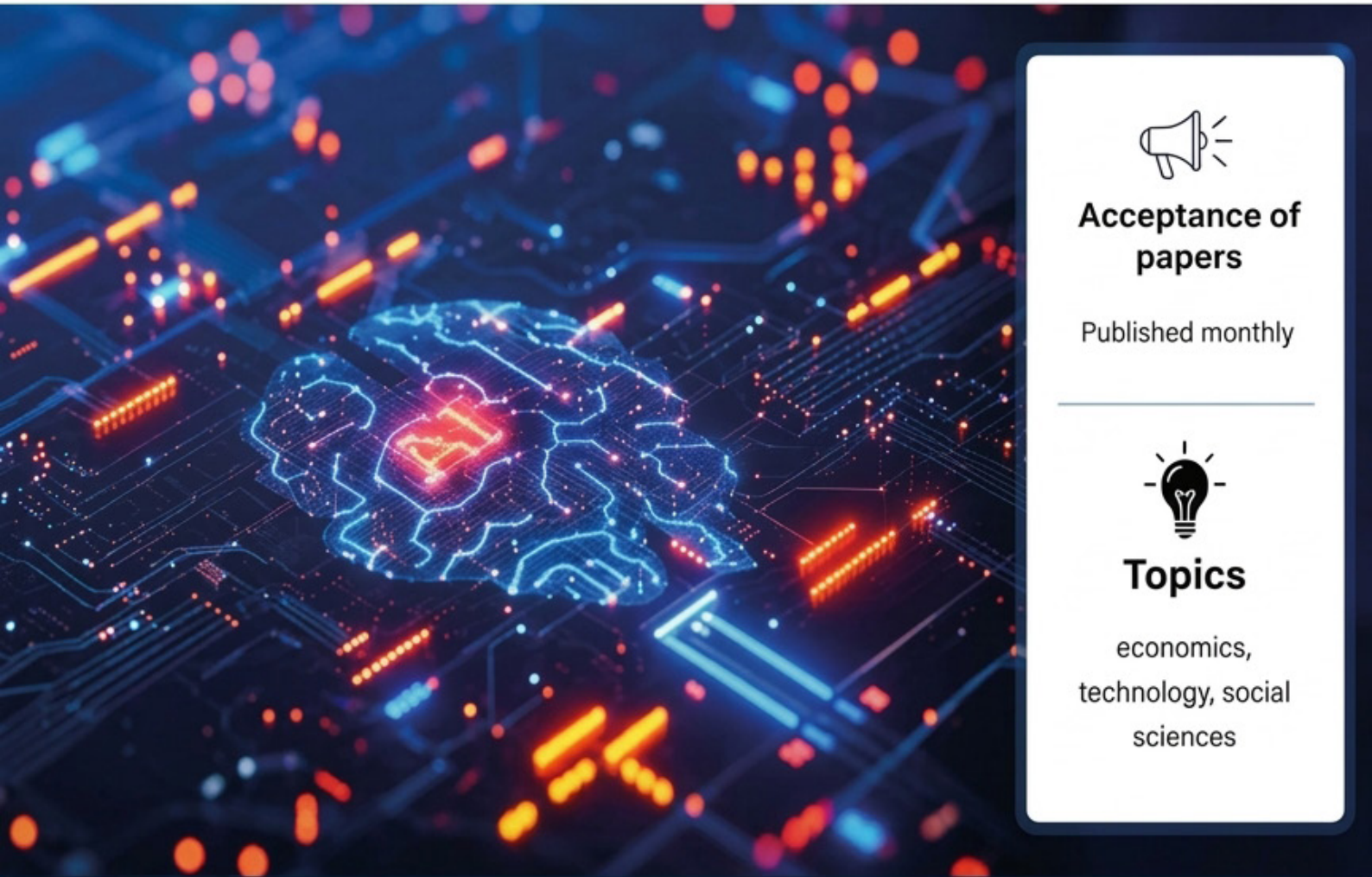
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CONTACTS

Phone: **+998 50 737 87 88**

Website: https://ist-journal.uz

Email: innovationist2025@gmail.com

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A PROVISION MATRIX METHODOLOGY FOR EXPECTED CREDIT LOSSES ON TRADE RECEIVABLES IN ICT JOINT-STOCK COMPANIES

Shanasirova Nodira Abdullayevna
Associate Professor, Tashkent State University of Economics
Doctor of Philosophy (PhD) in Economics
E-mail: n.shanasirova@tsue.uz
ORCID: 0000-0003-2158-8395

Abstract. This article develops a methodology for measuring expected credit loss (ECL) allowances on trade receivables and contract assets in joint-stock companies operating in the information and communication technology (ICT) sector, based on the simplified approach under IFRS 9. An analysis of the financial reports of JSC Uzbektelecom and JSC Uzbekistan Post for 2021–2025 reveals that trade receivables increased more rapidly than revenue, while financial statements prepared under national accounting standards report zero balances for overdue receivables and do not separately disclose related loss allowances. Meanwhile, ECL amounts recognised under IFRS exhibit substantial year-to-year variations. The proposed eight-stage closed-loop methodology integrates seven portfolio segments, historical loss rates estimated using the roll-rate method, scenario-weighted forward-looking adjustments, an ECL register aligned with National Accounting Standard No. 21 (NAS 21), and cohort-based retrospective backtesting. For an illustrative receivables portfolio of UZS 709.6 billion, the estimated ECL allowance amounts to UZS 89.4 billion, representing 12.6% of the portfolio.

Keywords: expected credit losses, provision matrix, trade receivables, IFRS 9, roll-rate method, retrospective backtesting, NAS 21.

Аннотация. В статье разработана методика оценки резерва под ожидаемые кредитные убытки (ОКУ) по торговой дебиторской задолженности и активам по договорам акционерных обществ сферы информационно-коммуникационных технологий (ИКТ) на основе упрощённого подхода, предусмотренного МСФО (IFRS) 9. Анализ финансовой отчётности АО «Узбектелеком» и АО «Узбекистон почтаси» за 2021–2025 годы показал, что торговая дебиторская задолженность увеличивалась более высокими темпами, чем выручка, при этом в отчётности, составленной по национальным стандартам бухгалтерского учёта, просроченная дебиторская задолженность отражается с нулевыми значениями, а соответствующие резервы отдельно не раскрываются. Вместе с тем суммы ожидаемых кредитных убытков, признанные в соответствии с МСФО, характеризуются существенными межгодовыми колебаниями. Предложенная восьмиэтапная методика с замкнутым циклом объединяет семь сегментов портфеля, исторические коэффициенты кредитных потерь, рассчитанные методом миграции (roll-rate), прогнозные корректировки с учётом вероятностей сценариев, регистр ОКУ, согласованный с Национальным стандартом бухгалтерского учёта № 21 (НСБУ № 21), и ретроспективное тестирование на основе когортного подхода. Для иллюстративного портфеля дебиторской задолженности объёмом 709,6 млрд сумов расчётная величина резерва под ОКУ составляет 89,4 млрд сумов, или 12,6% портфеля.

Ключевые слова: ожидаемые кредитные убытки, матрица резервов, торговая дебиторская задолженность, МСФО (IFRS) 9, метод миграции (roll-rate), ретроспективное тестирование, НСБУ № 21.

INTRODUCTION

Under IFRS 9, loss allowances for trade receivables and contract assets that do not contain a significant financing component are measured at lifetime expected credit losses (ECL). A provision matrix may be used as a practical expedient for estimating these losses [10, paras. 5.5.15 and B5.5.35]. The International Accounting Standards Board (IASB) concluded that the impairment requirements of IFRS 9 are generally operating as intended and that no fundamental deficiencies have been identified in the simplified approach. At the same time, the IASB included targeted improvements to the credit risk disclosure requirements of IFRS 7 in its research pipeline [11, pp. 4, 30, 36].

In Uzbekistan, joint-stock companies were required to prepare financial statements in accordance with International Financial Reporting Standards (IFRS) beginning with the 2021 reporting year [2]. Following the

entry into force of the revised regulatory framework on 17 December 2025, IFRS reporting requirements were also linked to the classification and registration of public interest entities, subject to the prescribed implementation periods [3]. However, under National Accounting Standard No. 21 (NAS 21), credit loss allowances are recorded in account 4910, *Allowance for Doubtful Debts*, while a specific methodology for measuring expected credit losses is not prescribed [4]. Furthermore, Articles 313 and 315 of the Tax Code establish distinct rules for bad debt expenses and reserve fund contributions. The provisions concerning reserve funds apply to financial institutions, including banks and insurance companies, whereas non-bank entities generally recognise deductible bad debt expenses upon the write-off of qualifying receivables [1, Arts. 313 and 315]. Consequently, the same receivables portfolio may be subject to different measurement and recognition treatments under international and national accounting frameworks.

The objective of this study is to develop and substantiate an auditable methodology for measuring ECL allowances on trade receivables in joint-stock companies operating in the information and communication technology (ICT) sector, with explicit integration into the accounting framework established by NAS 21.

LITERATURE REVIEW

The transition to the expected credit loss model has primarily been examined in the banking sector. Novotny-Farkas [13] demonstrated that IFRS 9 leads to earlier recognition and higher levels of credit loss allowances, while the use of point-in-time information may increase volatility in the regulatory capital of certain banks.

Research addressing non-financial entities remains relatively limited. Gomaa et al. [8] provided experimental evidence that removing the probability threshold associated with the incurred loss model and incorporating forward-looking information can increase both the amount and adequacy of recognised loss allowances. Remenarić et al. [19] investigated the applicability of a binomial model to measuring expected credit losses on trade receivables. Christensen et al. [6] demonstrated that uncertainty associated with model-based estimates may exceed audit materiality by several multiples. Accordingly, ISA 540 (Revised) requires auditors to review the outcomes of previous accounting estimates and, when evaluating how management has developed an estimate, to test the methods, significant assumptions and data used [12, paras. 14 and 22–25].

Within the national literature, Abduvaxidov [5] examined the accounting treatment and improvement of allowances for asset-related losses, while Djumanov and Soatov [7] investigated the implementation of international financial reporting standards and their implications for financial performance in commercial banks. However, the literature reviewed does not identify an integrated methodology specifically designed for non-bank ICT enterprises that combines segmentation of the ECL provision matrix, alignment with the national chart of accounts, and retrospective calibration.

RESEARCH METHODOLOGY

The study employs content analysis of regulatory documents, horizontal and ratio analysis of financial statements, and financial modelling. The empirical data are drawn from the annual reports and IFRS financial statements of JSC Uzbektelecom and JSC Uzbekistan Post, published through Uzbekistan's Unified Corporate Information Portal [14–18].

Because internal data on receivables ageing and write-offs are not publicly available, the parameters of the proposed provision matrix are illustrative rather than empirically calibrated. They are determined using the author's assumptions and benchmark ratios derived from disclosures in Vodafone Group's financial statements as at 31 March 2025. These ratios are calculated as the loss allowance divided by the gross carrying amount of the corresponding receivables [20, p. 174].

ANALYSIS AND RESULTS

As shown in Table 1, trade receivables at the selected companies have increased more rapidly than revenue. However, the financial statements prepared under national accounting standards do not separately disclose the underlying ageing of receivables or the related loss allowances, limiting the assessment of associated credit risk.

Table 1. Trade Receivables Indicators (Under National Accounting Standards, UZS Billion)

Indicator	JSC Uzbektelecom			JSC Uzbekistan Post		
	2021	2025	Change	2021	2025	Change
Net revenue (Line 010)	5 406,4	10 512,8	×1,94	274,4	797,7	×2,91
Trade receivables (Line 220)[1]	229,0	709,6	×3,10	49,1	288,6	×5,87
Receivables collection period, days[2]	15,5	24,6	+9,2	65,3	132,1	+66,7
Overdue receivables (Line 211)	0	0	–	0	0	–

Source: Author's calculations based on the annual reports of JSC Uzbektelecom [16, 18] and JSC Uzbekistan Post [14, 15]. [1] Account group 4000 less account group 4900. [2] Receivables ÷ net revenue × 365. **Notes:** × indicates the growth multiple; + indicates the change in days.

For both companies, Line 211 reports a zero balance in all periods examined, while the allowance for doubtful debts (account group 4900) is not disclosed separately. Under IFRS reporting, however, JSC Uzbektelecom recognised an ECL expense of UZS 191.2 billion in 2022 (approximately 3% of revenue) and an ECL reversal of UZS 5.6 billion in 2023 [17]. Without adequate disclosure of the provision matrix parameters, such fluctuations are difficult for both financial statement users and auditors to interpret and assess.

The proposed methodology comprises an eight-stage closed-loop process: (1) segmentation; (2) estimation of historical loss rates; (3) forward-looking adjustments; (4) construction of the provision matrix; (5) maintenance of the ECL register; (6) accounting entries under NAS 21; (7) disclosures under IFRS 7; and (8) retrospective backtesting, the results of which feed into the annual recalibration of the provision matrix. Based on the grouping criteria set out in IFRS 9 [10, para. B5.5.35], seven segments are identified according to customer and contract type (Table 2). For public-sector customers, the illustrative methodology defines default as payment delinquency of 180 days or non-allocation of budgetary funds, subject to supporting evidence from collection statistics. Rebuttal of the 90-day presumption of default under IFRS 9 [10, para. B5.5.37] must be supported by collection statistics. Large and disputed receivables are assessed individually.

Historical loss rates are estimated using the roll-rate (migration) method, where m_k represents the transition rate from ageing bucket k to the subsequent bucket, estimated using observations covering at least 24 months:

$$LR_b = \prod_{k=b}^{n} m_k, \quad b = 0, 1, \ldots, n \qquad (1)$$

where n denotes the final ageing bucket before write-off, and m_n represents the proportion of receivables written off, net of recoveries. The loss rates are adjusted to reflect current conditions and forward-looking information [10, paras. B5.5.51–B5.5.52]:

$$LR_b^{\mathrm{FL}} = \min\left\{1; \sum_s w_s \cdot LR_b \cdot \left(1 + \sum_j \beta_j \cdot \Delta x_{j,s}\right)\right\}, \quad \sum_s w_s = 1 \qquad (2)$$

where w_s denotes the probability of scenario s; β_j represents the elasticity with respect to macroeconomic factor j (real income, inflation, the central bank's policy rate, budget execution, and the Uzbek soum exchange rate); and $\Delta x_{j,s}$ denotes the deviation of the corresponding factor from its mean under scenario s. The loss allowance is calculated based on the gross carrying amount (GCA) across segments and ageing buckets:

$$ECL = \sum_{seg} \sum_b GCA_{seg,b} \cdot LR_{seg,b}^{\mathrm{FL}} \qquad (3)$$

Table 2 presents an illustrative provision matrix constructed using JSC Uzbektelecom as a case study. The reported trade receivables balance of UZS 709.6 billion (Line 220), which is presented net of the loss allowance, is used as a proxy for the gross carrying amount for illustrative purposes. The loss rates for the household customer segments are set close to the benchmark ratios disclosed by Vodafone Group (2.6–79.2%) [20, p. 174]. The scenario adjustment factors of 1.00, 1.25, and 0.90, assigned probability weights of 50%, 30%, and 20%, respectively, yield a weighted adjustment factor of 1.055.

Based on historical loss rates, the estimated allowance amounts to UZS 84.7 billion (11.9% of the portfolio), increasing to UZS 89.4 billion (12.6%) after incorporating forward-looking adjustments. Of the adjusted allowance, 49.5% is attributable to segment S1.1 and 25.5% to segment S2.1. The lower overall loss rate compared with the Vodafone benchmark reflects the assumed composition of the receivables portfolio. Sensitivity analysis indicates

that a 20% increase in the loss rates for segment S1.1 would raise the allowance by UZS 7.0 billion, while increasing the weight assigned to the adverse scenario from 30% to 50%, relative to the baseline assumptions, would increase the allowance by UZS 4.2 billion.

Table 2. Illustrative ECL Provision Matrix for Trade Receivables of JSC Uzbektelecom (31 December 2025)

Segment	Illustrative gross carrying amount (proxy)	**Not past due**	**1–30 days**	**31–60 days**	**61–180 days**	**Over 180 days**	**ECL**	**Average loss rate**
S1.1 Households – postpaid	198.6	109.2 / 3%	29.8 / 15%	15.9 / 25%	19.9 / 50%	23.8 / 85%	41.9	21.1%
S1.2 Households – instalment payments	49.7	34.8 / 2%	5.9 / 10%	3.0 / 20%	3.0 / 45%	3.0 / 80%	5.6	11.3%
S2.1 Small and medium-sized enterprises	141.9	85.2 / 2%	21.3 / 12%	11.4 / 22%	12.6 / 45%	11.4 / 80%	21.6	15.2%
S2.2 Large corporate clients	85.2	63.9 / 1%	10.2 / 5%	5.1 / 12%	3.4 / 30%	2.6 / 70%	4.6	5.4%
S2.3 Operators	56.8	39.7 / 1%	8.7 / 4%	4.5 / 10%	2.8 / 25%	1.1 / 60%	2.6	4.5%
S3 Public-sector customers	141.9	56.8 / 0.5%	28.4 / 2%	21.2 / 4%	21.3 / 10%	14.2 / 30%	8.1	5.7%
S4 Intragroup receivables	35.5	35.5 / 1%	–	–	–	–	0.4	1.0%
Total (historical loss rates)	709.6	425.1	104.3	61.1	63.0	56.1	84.7	11.9%
Total (forward-looking adjustment × 1.055)	709.6	–					89.4	12.6%

Note: Each cell presents the outstanding balance (UZS billion) / loss rate. Totals may differ from the sum of displayed figures due to rounding.

Source: *Author's calculations. The UZS 709.6 billion balance is taken from Line 220 of JSC Uzbektelecom's 2025 balance sheet [18]. Segment shares, ageing bucket distributions, and loss rates are based on illustrative assumptions, using Vodafone Group Plc [20, p. 174] as a benchmark.*

The ECL register consists of six sections: (1) portfolio classification (segment × ageing bucket); (2) model parameters; (3) ECL calculations; (4) movements in the loss allowance; (5) accounting entries and tax differences; and (6) retrospective backtesting. The reconciliation of changes in the loss allowance, disaggregated by contributing factors, supports the disclosure requirements of IFRS 7, paragraph 35H, while the provision matrix provides a basis for credit risk exposure disclosures under paragraphs 35M–35N [9]. Under the national accounting framework, the balances of segment-specific subaccounts within account 4910 are reconciled to the calculated ECL allowance. The corresponding accounting entries are as follows: upon recognition of the allowance, Dr 9430 / Cr 4910; upon reversal of the allowance, Dr 4910 / Cr 9390; and upon write-off of uncollectible receivables, Dr 4910 / Cr 4010, accompanied by recognition in off-balance-sheet account 007 [4].

Retrospective backtesting is conducted on a cohort basis and provides a basis for auditors to review the outcomes of previous accounting estimates in accordance with paragraph 14 of ISA 540 (Revised) [12]:

$$D_{g,t-1} = \frac{ECL_{g,t-1} - L_{g,t-1 \to t+h}}{GCA_{g,t-1}} \qquad (4)$$

where g denotes a cohort defined by the combination of segment and ageing bucket; L represents net write-offs attributable to that cohort over the subsequent h periods; $D > 0$ indicates an excess allowance, whereas $D < 0$ indicates an insufficient allowance. If $|D|$ is below 1 percentage point, the loss rate is retained; for deviations of 1–3 percentage points, the underlying causes are documented; and for deviations exceeding 3 percentage points, the provision matrix is recalibrated. The cohort-based approach addresses the measurement mismatch between ECL, which represents a stock measure, and write-offs, which represent a flow measure.

CONCLUSIONS AND RECOMMENDATIONS

Between 2021 and 2025, trade receivables increased approximately 3.1-fold at JSC Uzbektelecom and 5.9-fold at JSC Uzbekistan Post. However, overdue receivables are reported as zero in the national financial statements, while related loss allowances are not separately disclosed, while ECL expenses reported under IFRS have exhibited substantial fluctuations. These findings indicate a methodological gap between the two accounting frameworks.

The principal methodological contribution of this study is the development of an eight-stage closed-loop methodology that integrates an ECL provision matrix with seven ICT-specific portfolio segments, scenario-weighted forward-looking adjustments, an ECL register aligned with NAS 21, and cohort-based retrospective backtesting.

The study proposes the following recommendations: the Ministry of Economy and Finance of the Republic of Uzbekistan should establish a methodology for measuring expected credit loss allowances on receivables under NAS 21 [4]; joint-stock companies should formalise provision matrix parameters in their accounting policies and obtain audit committee approval for annual recalibration; and auditors should incorporate retrospective backtesting results into their audit working papers in accordance with ISA 540 (Revised) [12]. Future research should focus on empirical calibration of the proposed methodology and the tax treatment of ECL allowances.

REFERENCES

1. Republic of Uzbekistan. (2019). *O‘zbekiston Respublikasining Soliq kodeksi* [Tax Code of the Republic of Uzbekistan] (Law No. O‘RQ-599, December 30, 2019). National Database of Legislation. https://lex.uz/docs/4674902
2. President of the Republic of Uzbekistan. (2020). *Moliyaviy hisobotning xalqaro standartlariga o‘tish bo‘yicha qo‘shimcha chora-tadbirlar to‘g‘risida* [On additional measures for the transition to International Financial Reporting Standards] (Resolution No. PQ-4611, February 24, 2020). National Database of Legislation. https://lex.uz/docs/4746047
3. President of the Republic of Uzbekistan. (2025). *Moliyaviy hisob tizimini xalqaro talab va standartlarga muvofiq takomillashtirish chora-tadbirlari to‘g‘risida* [On measures to improve the financial accounting system in accordance with international requirements and standards] (Resolution No. PQ-282, September 15, 2025). National Database of Legislation. https://lex.uz/docs/7728924
4. Ministry of Economy and Finance of the Republic of Uzbekistan. (2024). *Buxgalteriya hisobining milliy standarti (21-sonli BHMS) «Xo‘jalik yurituvchi subyektlarda buxgalteriya hisobining hisobvaraqlar rejasi va uni qo‘llash bo‘yicha yo‘riqnoma»* [National Accounting Standard No. 21: Chart of accounts for business entities and instructions for its application] (Order No. 191, November 14, 2024; registered under No. 3593 on December 27, 2024; as amended in 2025 and 2026). National Database of Legislation. https://lex.uz/docs/7282737
5. Abduvaxidov, F. T. (2024). Aktivlar bo‘yicha zahiralarni shakllantirish hisobi va uni takomillashtirish [Accounting for the formation of provisions for assets and its improvement]. *Iqtisodiyot va innovatsion texnologiyalar, 12*(3), 21–28. https://doi.org/10.55439/EIT/vol12_iss3/i3
6. Christensen, B. E., Glover, S. M., & Wood, D. A. (2012). Extreme estimation uncertainty in fair value estimates: Implications for audit assurance. *Auditing: A Journal of Practice & Theory, 31*(1), 127–146. https://doi.org/10.2308/ajpt-10191
7. Djumanov, S. A., & Soatov, F. K. (2023). Moliyaviy hisobotning xalqaro standartini amaliyotga joriy etish va uning moliyaviy natijaga ta’siri [Implementation of international financial reporting standards and their impact on financial performance]. *Xalqaro moliya va hisob*, (1). https://interfinance.tsue.uz/wp-content/uploads/2023/03/14S.Djumanov.pdf
8. Gomaa, M., Kanagaretnam, K., Mestelman, S., & Shehata, M. (2019). Testing the efficacy of replacing the incurred credit loss model with the expected credit loss model. *European Accounting Review, 28*(2), 309–334. https://doi.org/10.1080/09638180.2018.1449660
9. International Accounting Standards Board. (2005). *IFRS 7 Financial Instruments: Disclosures* (as amended by IFRS 9, 2014). IFRS Foundation. https://www.ifrs.org/issued-standards/list-of-standards/ifrs-7-financial-instruments-disclosures/
10. International Accounting Standards Board. (2014). *IFRS 9 Financial Instruments*. IFRS Foundation. https://www.ifrs.org/issued-standards/list-of-standards/ifrs-9-financial-instruments/
11. International Accounting Standards Board. (2024). *Post-implementation review of IFRS 9 Financial Instruments—Impairment: Project summary and feedback statement*. IFRS Foundation. https://www.ifrs.org/content/dam/ifrs/project/pir-9-impairment/pir-ifrs9-projectsummary-feedbackstatement.pdf
12. International Auditing and Assurance Standards Board. (2018). *International Standard on Auditing 540 (Revised): Auditing Accounting Estimates and Related Disclosures*. International Federation of Accountants. https://www.iaasb.org/publications/isa-540-revised-auditing-accounting-estimates-and-related-disclosures-9
13. Novotny-Farkas, Z. (2016). The interaction of the IFRS 9 expected loss approach with supervisory rules and implications for financial stability. *Accounting in Europe, 13*(2), 197–227. https://doi.org/10.1080/17449480.2016.1210180
14. O‘zbekiston pochtasi JSC. (2022). *Emitentning 2021-yil uchun yillik hisoboti* [Issuer’s annual report for 2021]. Corporate Information Disclosure Portal of Uzbekistan. https://new.openinfo.uz/ru/reports/jsc/annual/4110
15. O‘zbekiston pochtasi JSC. (2026). *Emitentning 2025-yil uchun yillik hisoboti* [Issuer’s annual report for 2025]. Corporate Information Disclosure Portal of Uzbekistan. https://openinfo.uz/ru/reports/jsc/annual/6024
16. O‘zbektelekom JSC. (2022). *Emitentning 2021-yil uchun yillik hisoboti* [Issuer’s annual report for 2021]. Corporate Information Disclosure Portal of Uzbekistan. https://new.openinfo.uz/ru/reports/jsc/annual/4063

17. O‘zbektelekom JSC. (2024). *Консолидированный отчет о прибылях и убытках и прочем совокупном доходе* [Consolidated statement of profit or loss and other comprehensive income for 2023, prepared under IFRS]. https://openinfo.uz/media/int_report/Income_Statement_2023.pdf
18. O‘zbektelekom JSC. (2026). *Emitentning 2025-yil uchun yillik hisoboti* [Issuer’s annual report for 2025]. Corporate Information Disclosure Portal of Uzbekistan. https://openinfo.uz/ru/reports/jsc/annual/6116
19. Remenarić, B., Čevizović, I., & Kenfelja, I. (2018). Binomial model for measuring expected credit losses from trade receivables in non-financial sector entities. *Ekonomski vjesnik: Review of Contemporary Entrepreneurship, Business, and Economic Issues, 31*(1), 125–135. https://hrcak.srce.hr/201995
20. Vodafone Group Plc. (2025). *Annual report 2025*. https://reports.investors.vodafone.com/view/897876789/176/

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