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Article

Financial Efficiency of Bank Payment and Settlement Services: Implications for Adaptive Pricing in Uzbekistan

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Abstract: This study examines the financial performance of payment and settlement services in five commercial banks in Uzbekistan during 2021–2025 and develops implications for adaptive pricing. The analysis combines 25 annual bank-level observations of the net monetisation margin with detailed revenue and expense data for Xalq Bank and Turonbank. Comparative analysis and accounting decomposition identify substantial differences across banks. The margin declined from 89.18% to 26.89% at Mikrokreditbank, from 57.29% to 21.70% at Kapitalbank, and from 60.65% to 38.51% at Turonbank. Xalq Bank recorded an increase from 86.46% to 91.18%, while the Business Development Bank retained a comparatively high margin. At Turonbank, nominal service revenue increased by 63.00%, whereas associated expenses rose by 154.73%; consequently, the service contribution increased by only 3.48%. These findings motivate a proposed pricing mechanism combining service costs, stable account balances and transaction activity, subject to a cost recovery floor. The evidence supports the need for bank-specific pricing diagnostics; it does not establish a causal effect of adaptive pricing on profitability.

Keywords: commercial banks; payment services; settlement services; net monetisation margin; service costs; adaptive pricing; Uzbekistan.

1. Introduction

Digital payments are expanding rapidly, but higher transaction activity does not automatically produce stronger financial returns for banks. The International Monetary Fund's 2025 Financial Access Survey release reports an increase in digital transactions from 55 per adult in 2017 to 251 in 2024; its accompanying data brief identifies emerging market and developing economies as a major setting for this expansion [1]. As payment activity grows, banks need to assess how much service income remains after the associated expenses. A larger customer base or higher nominal fee revenue can coexist with a declining margin if service expenses increase more quickly.

The economics of payment services also involves network effects, infrastructure costs and interactions between customer groups. The Bank for International Settlements emphasises competition, interoperability and the cost and quality of payment services in its analysis of digital payments [2]. These considerations are relevant to pricing: a bank must recover the cost of providing services while offering terms that retain active customers and economically valuable account relationships. A tariff based solely on transaction value may overlook differences in transaction intensity, servicing requirements and the stability of customer balances.

Rochet and Tirole's theory of two-sided markets explains why the allocation of charges across participants can matter alongside the overall price level [3]. Their model

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provides a theoretical reason to examine payment pricing at the level of the wider customer relationship. It does not directly determine an optimal bank tariff. Stiroh's research on noninterest income further shows that expansion into fee-generating activities does not necessarily provide straightforward diversification benefits [4]. Although his evidence concerns broader bank income categories, it supports evaluating the financial characteristics of fee income rather than assuming that its growth is sufficient evidence of improved performance.

Within the Uzbek literature, Mamadiyarov and Akhmedova discuss the emergence of digital banks, the significance of digitalisation and the challenges of banking transformation [5]. Their analysis provides a national context for examining how technological change translates into financial outcomes. The present study concentrates on an accounting question within that broader transformation: how the relationship between payment and settlement revenue and associated expenses changed across selected banks during 2021–2025.

2. Materials and Methods

The purpose of the study is to assess differences in service margins and derive implications for adaptive pricing. It addresses two questions. First, how did net monetisation margins vary across banks and over time? Second, how can the observed revenue–expense relationships inform a pricing mechanism that recognises both servicing costs and customer relationship value? The contribution is a comparative diagnostic and a proposed pricing framework grounded in the research dataset. Estimating the causal impact of pricing changes is outside the scope of the analysis.

The study uses a descriptive comparative design covering Xalq Bank, Turonbank, Kapitalbank, Mikrokreditbank and the Business Development Bank, referred to as BRB. The research dataset contains five annual margin observations for each bank, giving 25 bank-year observations for 2021–2025. It also contains detailed annual settlement service revenue and associated expenses for Xalq Bank and Turonbank, which permit direct examination of the accounting components of the margin. The financial disclosure collections underlying the dataset are listed in references [6]. BRB is used as a common analytical label across the observation period.

The banks form a purposive sample determined by the available service-level information. The results therefore describe the selected institutions rather than the entire Uzbek banking system. Monetary amounts are expressed in millions of Uzbek soums and remain in nominal terms. The annual ratios permit comparison of expense absorption within each bank, while differences in service composition and accounting allocation must be considered when comparing institutions. Transaction volumes and individual customer records are unavailable, so the study does not estimate unit processing costs or client-specific tariffs.

The net monetisation margin, abbreviated NMM, measures the share of service revenue remaining after the associated expenses recorded in the dataset. It corresponds to the HMM indicator used in the underlying calculations:

$$NMM_{b,t} = \frac{R_{b,t} - C_{b,t}}{R_{b,t}} \times 100\% \quad (1)$$

Here, R is annual payment and settlement service revenue, C is the associated expense measure, b identifies the bank and t identifies the year. The difference between revenue and expenses is termed the service contribution. The complementary expense-to-revenue ratio is 100% minus NMM. Changes in either ratio are reported in percentage points, whereas changes in monetary amounts are reported as percentages or absolute sums.[7]

NMM is an accounting margin for the defined service category. It is not a frontier measure of technical efficiency or a measure of bank-wide net profitability. Unless all relevant overheads, capital costs and taxes have been allocated to the expense category,

the service contribution cannot be interpreted as net profit. The term financial efficiency in this study therefore refers to the relationship between the recorded service revenue and associated expenses.

3. Results and Discussion

The Table 1. analysis proceeds through comparison of annual margins, calculation of changes between 2021 and 2025, and examination of revenue and expense dynamics in the two detailed cases. A historical margin comparison is used only as an accounting sensitivity illustration for Turonbank. No regression or causal identification strategy is applied. The adaptive pricing rule is developed as a managerial implication and is not estimated from the annual observations.[8]

Table 1. Net monetisation margins of selected banks in 2021–2025

Year	Xalq Bank	Turonbank	Kapitalbank	Mikrokreditbank	BRB
2021	86.46	60.65	57.29	89.18	83.27
2022	69.84	68.53	38.10	86.01	79.71
2023	74.67	57.27	50.20	79.16	77.15
2024	83.58	32.39	23.10	62.13	73.27
2025	91.18	38.51	21.70	26.89	78.89

Table 1 shows a substantial divergence across the selected banks. Mikrokreditbank recorded the largest decline, with NMM falling by 62.29 percentage points. Kapitalbank's margin decreased by 35.59 percentage points and Turonbank's by 22.14 percentage points. These changes indicate that associated expenses absorbed a larger share of service revenue by the end of the observation period. The annual series alone cannot determine whether this reflected changes in tariffs, transaction mix, processing arrangements or cost allocation.

Xalq Bank followed a different trajectory. After falling to 69.84% in 2022, its margin increased in each subsequent year and reached 91.18% in 2025. BRB's margin remained comparatively high throughout the period, although its final value of 78.89% was 4.38 percentage points below the 2021 level. Its recovery between 2024 and 2025 also distinguishes it from the continuing decline recorded at Kapitalbank and Mikrokreditbank.

The Table 2. unweighted mean of the five reported margins decreased from 75.37% in 2021 to 51.43% in 2025. This is a descriptive sample statistic, not a revenue-weighted banking-system margin. The dispersion also widened: the difference between the highest and lowest margins increased from 31.89 percentage points in 2021 to 69.48 percentage points in 2025. A uniform pricing response would therefore overlook important differences in the observed revenue–expense relationships.

Table 2. Settlement service revenue expenses and contribution[9]

Bank	Year	Revenue	Expenses	Contribution	NMM %
Xalq Bank	2021	179,102	24,255	154,847	86.46
Xalq Bank	2022	132,644	40,012	92,632	69.84
Xalq Bank	2023	212,992	53,957	159,035	74.67
Xalq Bank	2024	166,751	27,384	139,367	83.58
Xalq Bank	2025	221,304	19,529	201,775	91.18
Turonbank	2021	44,639	17,565	27,074	60.65
Turonbank	2022	53,303	16,772	36,531	68.53
Turonbank	2023	47,749	20,405	27,344	57.27
Turonbank	2024	58,840	39,783	19,057	32.39
Turonbank	2025	72,761	44,744	28,017	38.51

At Xalq Bank, annual settlement service revenue increased from UZS 179,102 million in 2021 to UZS 221,304 million in 2025, equivalent to growth of 23.56%. Associated expenses declined from UZS 24,255 million to UZS 19,529 million, or by 19.48%. Together, these movements increased the service contribution from UZS 154,847 million to UZS 201,775 million. The contribution therefore grew by 30.31%, exceeding revenue growth over the same period.

The annual pattern remains important. Xalq Bank's revenue fell in 2022 while expenses increased, producing the lowest margin in its five-year series. In 2023, higher revenue outweighed the increase in expenses, while the 2024 and 2025 improvements involved lower recorded expenses. The final margin thus reflects the combined movement of both accounting components, rather than revenue expansion alone.[10]

Turonbank illustrates how nominal revenue growth can coexist with sustained margin pressure. Revenue rose from UZS 44,639 million to UZS 72,761 million, an increase of 63.00%. Associated expenses rose from UZS 17,565 million to UZS 44,744 million, or by 154.73%. Consequently, the service contribution increased from UZS 27,074 million to UZS 28,017 million, equivalent to only 3.48%. Most of the additional revenue was absorbed by higher recorded expenses.

The Table 3. strongest deterioration occurred in 2024, when Turonbank's contribution fell to UZS 19,057 million and NMM reached 32.39%. In 2025, revenue growth of 23.66% exceeded expense growth of 12.47%, allowing the margin to recover to 38.51%. Nevertheless, this partial recovery left the margin 22.14 percentage points below its 2021 level. The results establish the accounting source of the deterioration, but they do not identify which operational or technological factors generated the expense increase.

Table 3. Changes in expense absorption between 2021 and 2025[11]

Bank	Expense ratio 2021 %	Expense ratio 2025 %	Change pp
Xalq Bank	13.54	8.82	-4.72
Turonbank	39.35	61.49	+22.14
Kapitalbank	42.71	78.30	+35.59
Mikrokreditbank	10.82	73.11	+62.29
BRB	16.73	21.11	+4.38

Source: calculations from the margins in Table 1 using expense ratio = 100% − NMM. Changes are percentage points (pp).

Table 3 expresses the same margin changes through their expense component. In 2025, recorded expenses absorbed 78.30% of service revenue at Kapitalbank, 73.11% at Mikrokreditbank and 61.49% at Turonbank. The corresponding figures were 21.11% at BRB and 8.82% at Xalq Bank. These ratios support different priorities for further investigation: service and customer costing is particularly relevant where expense absorption increased sharply, while institutions with high margins should examine whether all relevant costs are consistently attributed to the service category.

A historical comparison illustrates the scale of Turonbank's margin gap without predicting a pricing outcome. The median of its reported margins for 2022–2024 is 57.27%. Applying that percentage to its actual 2025 revenue would produce a service contribution of approximately UZS 41,670 million, compared with the actual UZS 28,017 million. The difference is approximately UZS 13,653 million, or UZS 13.65 billion. This is a mechanical sensitivity calculation holding revenue constant. It is not an estimate of achievable savings, an optimal margin or a demonstrated benefit from adaptive pricing.[12]

The results show that payment and settlement service revenue should be interpreted together with associated expenses. Turonbank's 63.00% revenue growth and 3.48% contribution growth provide a clear example of the difference between expanding activity and retaining financial value. The five-bank comparison also indicates that the pressure

was not uniform across the sample. A general recommendation to increase fees would not follow from these data: the same observed margin can arise from different combinations of prices, volumes, service mix and costs.

The findings are consistent with the broader argument that fee income requires its own financial assessment. Stiroh's analysis concerns diversification and risk rather than settlement service costs, so it cannot establish the mechanism behind the present results [[13]]. Likewise, the network economics discussed by Rochet and Tirole and the BIS provides a conceptual basis for examining pricing relationships, but it does not explain the bank-level margin changes without further data [2, 3]. The empirical contribution here is the identification of specific accounting patterns that a subsequent operational investigation should explain.

For the banks with declining margins, the first step is to distinguish recurring processing expenses, customer service requirements and any allocated infrastructure costs. Higher costs may reflect investment, a change in service composition or a deterioration in operating performance. The annual ratios cannot distinguish these possibilities. Cost allocation should therefore precede any conclusion that tariffs are insufficient or that particular customer groups are unprofitable.

The proposed mechanism applies primarily to corporate clients and individual entrepreneurs using transaction accounts. It links a periodic service tariff to the cost of servicing the client, the stability of account balances and transaction activity. Stable balances represent a potential funding contribution to the bank, while activity measures the intensity of service use. These components require customer-level data from core banking and management accounting systems.

Stable account balances can be measured using the tenth percentile of daily balances over a rolling window of 90 or 180 days:

$$S_i = Q_{0.10}(B_{i,1}, B_{i,2}, \dots, B_{i,D}) \quad (2)$$

Here, S is the stable balance measure, B denotes the client's daily account balance and D is the number of days in the observation window. The lower quantile reduces the influence of occasional large balances. It remains a historical proxy: it does not guarantee that the same funds will remain available in future periods.

The proposed periodic tariff can be expressed as follows:

$$P_i = max\{P_{min,i}, C_i(1 + \mu)[1 - \lambda_B N(S_i) - \lambda_A N(A_i)]\} \quad (3)$$

In this expression, P is the client's tariff for a specified service period, C is the cost of providing that service or package over the same period, and μ is the bank's baseline markup on cost. The minimum tariff provides a client-specific cost recovery floor and should be set at or above the consistently measured cost for that service period. N(S) and N(A) are normalised measures of stable balances and transaction activity within a comparable customer segment. The coefficients λB and λA determine the scale of the pricing incentives. The markup μ is distinct from NMM, which measures a contribution as a proportion of revenue.[14]

The formula adapts the tariff mechanism to a common periodic charging basis. Its variables must use consistent units, and normalisation should place the customer measures on a common scale. Nonnegative incentive coefficients with a sum no greater than one keep the discount factor bounded; the minimum tariff prevents the resulting charge from falling below the specified floor. The values of these parameters are management choices to be calibrated using customer data, not coefficients estimated by the present study.

Transaction activity should qualify for a discount only where the bank can demonstrate an economic basis, such as lower unit servicing costs or a positive relationship contribution. More transactions can also generate additional expenses. Similarly, a stable balance should support a discount only after its funding value has been assessed. A historical balance proxy alone does not justify a fee reduction. The mechanism therefore

combines customer incentives with explicit cost recovery rather than applying an automatic volume discount.

Implementation would require a pilot using daily balances, transaction records, actual fee collections and consistently allocated servicing costs. Outcomes should include the service contribution and its margin, alongside customer retention and balance stability. A phased comparison with similar customers outside the pilot could help evaluate the effect of the new tariff. The present aggregate evidence establishes why such an evaluation is relevant; it cannot substitute for it.[15]

4. Conclusion

The analysis covers five banks over five years, and detailed revenue and expense components are available for only two institutions in the research dataset. Differences in accounting classifications and service composition limit direct interpretations of the rankings. Nominal growth figures do not measure inflation-adjusted improvements, and the absence of transaction volumes prevents assessment of unit costs. The observed margins do not isolate the effects of digitalisation, competition or pricing. Finally, no customer-level tariff simulation or causal test of the proposed mechanism has been performed. These limitations define the scope of the findings and identify the information required for further research.

Payment and settlement service margins evolved differently across the five Uzbek banks during 2021–2025. Three institutions recorded substantial declines, Xalq Bank improved its margin, and BRB retained a comparatively high level. Turonbank's experience demonstrates that revenue growth can yield only a modest increase in the service contribution when associated expenses rise more quickly. Banks should therefore monitor revenue, expenses and margins together, supported by consistent service and customer costing. Adaptive pricing based on servicing costs, stable balances and transaction activity offers a framework for further testing. Its financial benefits must be evaluated using customer-level evidence before implementation outcomes can be claimed.

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