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THE IMPACT OF BEHAVIORAL ECONOMICS ON FINANCIAL DECISION-MAKING AND SAVING BEHAVIOR IN THE DIGITAL ECONOMY: EMPIRICAL TRENDS AND POLICY IMPLICATIONS FROM UZBEKISTAN

Hikmatullaev Ahmadjon Habibulla ugli
Student at Tashkent State University of Economics
E-mail: liyamisaferonn@gmail.com
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ABSTRACT. The rapid expansion of digital financial services has transformed how individuals manage income, make payments, save money, and respond to financial incentives. This study examines the relationship between digital financial development and household financial behavior in Uzbekistan through the theoretical framework of behavioral economics. Particular attention is paid to present bias, mental accounting, financial self-control, loss aversion, and choice architecture. The research employs descriptive statistical analysis, comparative assessment, growth-rate calculations, structural ratio analysis, and scenario modeling based on official data published by the Central Bank of Uzbekistan. The findings indicate that funds credited to bank cards increased from UZS 789 trillion in 2023 to UZS 1,496 trillion in 2025, representing cumulative growth of approximately 89.6%. Meanwhile, the ratio of cash withdrawals to funds credited to bank cards declined from approximately 24.0% to 18.6%. Total banking system deposits increased from UZS 308.7 trillion at the beginning of 2025 to UZS 417.3 trillion at the beginning of 2026. These developments demonstrate significant changes in the financial environment in which consumers make payment and saving decisions. However, aggregate financial indicators do not establish whether digital financial services directly improve self-control or household saving behavior. The study develops a behavioral-financial framework and proposes digital interventions including automated saving options, expenditure feedback, financial goal-setting, and transparent choice architecture. The proposed measures aim to strengthen financial resilience and improve the quality of household financial decision-making.

Keywords: Behavioral economics, digital economy, financial decision-making, household savings, present bias, digital payments, financial literacy, mental accounting, Uzbekistan.

INTRODUCTION

Financial decision-making has undergone substantial transformation as digital technologies have become increasingly integrated into banking and payment systems. Mobile banking, electronic wallets, contactless payments, and online financial services allow consumers to conduct transactions with fewer geographical, temporal, and administrative restrictions.

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From the perspective of conventional economic theory, lower transaction costs and improved access to financial information should enhance consumer welfare and financial efficiency. Nevertheless, greater convenience does not automatically lead to better financial decisions.

Digital transactions may reduce the effort required to make payments and create more opportunities for spontaneous consumption. At the same time, digital financial technologies can support systematic saving through automatic transfers, expenditure monitoring, and personalized financial planning.

These competing effects make behavioral economics particularly relevant.

Unlike traditional models based exclusively on rational utility maximization, behavioral economics recognizes that financial choices are influenced by psychological mechanisms, cognitive limitations, emotions, and decision-making environments.

In Uzbekistan, digital financial services have expanded alongside changes in payment infrastructure, financial intermediation, and the banking system.

According to official Central Bank information, payment organizations processed transactions worth UZS 333 trillion in 2024, approximately 1.8 times the amount recorded in 2023. This expansion illustrates the growing economic significance of digital payment services.

The purpose of this research is to analyze the dynamics of digital financial development in Uzbekistan and explain how behavioral mechanisms may influence saving and spending decisions.

The research objectives are:

1. To examine the theoretical relationship between behavioral economics and household financial choices.
2. To analyze official statistical indicators of digital payments, deposits, and cash circulation.
3. To calculate growth rates and changes in the structure of financial transactions.
4. To develop quantitative scenarios for behaviorally informed saving interventions.
5. To propose institutional and technological measures for improving household financial decision-making.

LITERATURE REVIEW

The theoretical origins of behavioral financial decision-making can be traced to the concept of bounded rationality developed by Simon (1955). This approach suggests that individuals frequently make decisions under limited information and cognitive constraints.

Kahneman and Tversky (1979) introduced prospect theory, highlighting the importance of reference points and asymmetric reactions to financial gains and losses.

Thaler (1985) developed the concept of mental accounting, demonstrating that individuals may treat money differently depending on its perceived source or intended purpose.

Laibson (1997) examined hyperbolic discounting and intertemporal choice, showing how preferences for immediate gratification may conflict with long-term financial objectives.

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Thaler and Benartzi (2004) introduced the Save More Tomorrow approach, demonstrating how commitment mechanisms and appropriately designed saving arrangements can help individuals increase retirement savings.

Madrian and Shea (2001) provided influential evidence that default arrangements affect participation in retirement saving plans.

These studies provide a theoretical basis for examining the relationship between financial technology and household behavior.

However, the effectiveness of behavioral interventions depends on institutional conditions, consumer characteristics, financial literacy, and the design of digital services.

Consequently, international behavioral findings should not automatically be treated as estimates of behavioral effects in Uzbekistan.

DATA AND RESEARCH METHODOLOGY

Data Sources

The research relies on publicly available statistical information from the Central Bank of the Republic of Uzbekistan.

The main indicators include:

- Funds credited to bank cards during 2023–2025.
- Cash withdrawn from bank cards during 2023–2025.
- Banking system deposits as of January 1, 2025 and January 1, 2026.
- Deposit structure by maturity.
- Contactless payment activity.
- Payment organization transaction volumes.
- The proportion of cash in the broad money supply.

These indicators are used to evaluate changes in Uzbekistan's financial infrastructure and aggregate payment behavior.

Analytical Methods

The annual growth rate is calculated using:

$$GR = [(X_t - X_{t-1}) / X_{t-1}] \times 100$$

Where X_t represents the indicator in the current year and X_{t-1} represents the previous year's value.

The cumulative growth rate is:

$$CGR = [(X_n / X_0) - 1] \times 100$$

The compound annual growth rate is:

$$CAGR = (X_n / X_0)^{(1/n)} - 1$$

The cash withdrawal ratio is calculated as:

$$CWR = (CW / BC) \times 100$$

Where CW represents cash withdrawn from bank cards and BC represents funds credited to bank cards.

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Deposit maturity shares are estimated using:

$$DS_i = (D_i / TD) \times 100$$

Where D_i is a deposit maturity category and TD is total deposits.

These methods provide a descriptive assessment of aggregate financial developments.

They do not establish causal relationships between digital financial access and individual saving behavior.

RESULTS AND DISCUSSION

Dynamics of Funds Credited to Bank Cards

Table 1 presents the dynamics of funds credited to bank cards in Uzbekistan.

Table 1. Bank Card Funding and Cash Withdrawals in Uzbekistan, 2023–2025

Indicator	2023	2024	2025
Funds credited to bank cards, UZS trillion	789	1,034	1,496
Cash withdrawals, UZS trillion	189	226	279
Cash withdrawal ratio, %	23.95	21.86	18.65
Annual growth in credited funds, %	—	31.05	44.68
Annual growth in withdrawals, %	—	19.58	23.45

Source: Central Bank of Uzbekistan, Cash Circulation Review, February 2026. Ratios and growth rates: author's calculations.

The total volume of funds credited to bank cards increased by UZS 245 trillion between 2023 and 2024.

$$GR_{2024} = (1{,}034 - 789) / 789 \times 100 = 31.05\%$$

Between 2024 and 2025, the increase amounted to UZS 462 trillion.

$$GR_{2025} = (1{,}496 - 1{,}034) / 1{,}034 \times 100 = 44.68\%$$

The cumulative increase over the two-year period was:

$$CGR = (1{,}496 / 789 - 1) \times 100 = 89.61\%$$

The compound annual growth rate was approximately:

$$CAGR = (1{,}496 / 789)^{(1/2)} - 1 = 37.70\%$$

These findings indicate that the nominal value of funds credited to bank cards expanded substantially.

However, this indicator measures flows through bank cards rather than the number of unique users or the value of consumer purchases. It may be influenced by rising household incomes, prices, transfers, and transaction activity.

Therefore, nominal growth should not be interpreted as an equivalent increase in real consumption or financial inclusion.

Analysis of Cash Withdrawal Behavior

Cash withdrawal ratios provide another perspective on financial transaction patterns.

In 2023:

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CWR_{2023} = 189 / 789 × 100 = 23.95%

In 2024:

CWR_{2024} = 226 / 1,034 × 100 = 21.86%

In 2025:

CWR_{2025} = 279 / 1,496 × 100 = 18.65%

The ratio declined by approximately 5.30 percentage points between 2023 and 2025.

Despite increasing nominal cash withdrawals, the amount withdrawn grew more slowly than the volume credited to cards.

This may reflect an expanding role for non-cash financial transactions.

From a behavioral perspective, the increasing availability of digital payments changes the transaction environment by reducing payment friction.

Reduced friction may create two opposing outcomes.

First, it may improve convenience and financial management by enabling regular bill payments, transparent transaction records, and automatic saving.

Second, it may weaken perceived spending constraints, particularly where purchases require minimal effort and immediate payment confirmation.

The aggregate statistics cannot determine which of these behavioral effects predominates.

Changes in the Structure of the Money Supply

The Central Bank reports the following approximate values.

Table 2. Cash and Broad Money in Uzbekistan

Indicator	01.01.2024	01.01.2025	01.01.2026
Cash in circulation, M0, UZS trillion	46	53	68
Broad money, M2, UZS trillion	212	277	379
Published cash share, %	21.5	19.2	18.1

Source: Central Bank of Uzbekistan, Cash Circulation Review, February 2026. Monetary aggregates are rounded as published.

Between the beginning of 2024 and the beginning of 2026, broad money increased by:

(379 - 212) / 212 × 100 = 78.77%

During the same period, cash in circulation increased by:

(68 - 46) / 46 × 100 = 47.83%

Therefore, broad money expanded more rapidly than the cash component.

The published share of cash in broad money declined by 3.4 percentage points, from 21.5% to 18.1%.

This represents a structural change in monetary holdings.

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Nevertheless, the cash-to-money ratio is not equivalent to the proportion of payments made electronically. It reflects the composition of monetary aggregates rather than an exhaustive record of retail payment choices.

Changes in Household and Banking System Deposits

The Central Bank's Financial Stability Report indicates that household deposits reached UZS 122.4 trillion at the end of 2024, representing annual growth of 42%.

The approximate previous-year level implied by these figures can be calculated as:

HD_{2023} = 122.4 / 1.42 = 86.20 trillion UZS

The implied nominal increase is:

122.4 - 86.20 = 36.20 trillion UZS

This is an approximate reconstructed figure based on rounded official data.

The growth in household deposits suggests greater accumulation of bank-held household financial assets.

However, deposits may increase because of higher nominal incomes, interest rates, remittances, portfolio reallocations, or broader access to banking services.

The available aggregate statistics do not allow the independent behavioral contribution to be isolated.

Additional insight can be gained from analyzing all banking system deposits by maturity.

Table 3. Banking System Deposits by Maturity, UZS Billion

Deposit category	Jan. 2025	Jan. 2026	Growth, %
Demand deposits	99,094	125,889	27.04
1–30 days	11,668	13,823	18.47
31–180 days	32,312	57,787	78.84
181–365 days	46,260	63,032	36.26
Over one year	119,359	156,727	31.31
Total deposits	308,692	417,258	35.17

Source: Central Bank of Uzbekistan, Deposit Statistics, January 2026. Growth rates: author's calculations. Minor differences between component sums and reported totals reflect rounding.

Total banking system deposits increased by approximately UZS 108.57 trillion.

Deposit growth = (417,258 - 308,692) / 308,692 × 100 = 35.17%

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The increase in deposits with maturities of 31–180 days was particularly significant.

Growth = (57,787 - 32,312) / 32,312 × 100 = 78.84%

The share of deposits with maturities exceeding one year changed as follows:

2025 share = 119,359 / 308,692 × 100 = 38.67%

2026 share = 156,727 / 417,258 × 100 = 37.56%

The share decreased by approximately 1.11 percentage points even as the nominal amount increased.

This distinction is important: an increase in long-term deposits does not necessarily imply an increase in their relative share.

Furthermore, Table 3 covers deposits from the banking system as a whole, not household deposits alone. Therefore, the maturity distribution must not be interpreted as direct evidence of household saving preferences.

Contactless Payment Development

Official Central Bank information indicates that the value of NFC transactions reached approximately UZS 41.4 trillion in 2024, increasing by roughly 10% compared with 2023.

The estimated value for 2023 implied by the reported growth rate is:

NFC_{2023} = 41.4 / 1.10 = 37.64 trillion UZS

Thus, the implied nominal increase is approximately:

41.4 - 37.64 = 3.76 trillion UZS

This is a reconstructed value using the rounded published growth factor.

The growing role of contactless transactions is relevant to behavioral economics because transaction speed and ease of payment can influence the psychological experience of spending.

For example, cash payments provide a visible exchange of physical money, whereas digital payments can reduce the immediate salience of expenditure.

Nevertheless, digital payment records may also enhance awareness by allowing consumers to monitor spending.

The net effect depends on financial literacy, individual preferences, and digital platform design.

Scenario Analysis: Automated Saving Mechanisms

Behavioral economics suggests that appropriately designed automatic saving tools may help individuals overcome procrastination and strengthen financial discipline.

To illustrate the potential effect, consider a hypothetical population of 100,000 users of a digital banking application.

Assume that each participating user transfers UZS 50,000 per month into a designated savings account.

The following scenarios are illustrative rather than observed outcomes.

Table 4. Hypothetical Automated Saving Scenarios

Participation	Participating users	Monthly savings, UZS billion	Annual savings, UZS

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rate			billion
10%	10,000	0.5	6.0
20%	20,000	1.0	12.0
30%	30,000	1.5	18.0
40%	40,000	2.0	24.0

Source: Author's hypothetical calculations. Assumes constant participation, monthly saving of UZS 50,000 per participant, and no interest or withdrawals.

For the 30% scenario:

Annual savings = 30,000 × 50,000 × 12

Annual savings = UZS 18 billion

The model demonstrates the arithmetic potential of automated saving arrangements.

However, these figures represent transfers into designated savings accounts, not necessarily net new national saving. Users may transfer funds from other accounts or offset the transfers by increasing borrowing or reducing other savings.

Behavioral Mechanisms for Improving Financial Decisions

The research identifies four practical behavioral mechanisms.

Automated saving

A system of voluntary recurring transfers may help overcome present bias and reduce reliance on repeated active decisions.

Mental accounting through digital categories

Digital applications may allow users to allocate money to specific goals, including education, housing, emergency reserves, and long-term investment.

Expenditure feedback

Weekly or monthly spending summaries can make financial decisions more visible and encourage budget management.

Transparent choice architecture

Digital financial services should present interest rates, commissions, risks, and contract conditions in accessible language.

These interventions should remain voluntary and should not rely on hidden fees, misleading defaults, or manipulative design.

POLICY IMPLICATIONS

The empirical analysis suggests several implications for financial institutions and policymakers in Uzbekistan.

First, digital payment expansion should be accompanied by financial education programs that explain borrowing costs, saving decisions, and common behavioral biases.

Second, banks could introduce voluntary automated saving systems linked to clearly defined financial objectives.

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Third, digital applications should provide understandable expenditure statistics that distinguish essential spending, discretionary consumption, and debt repayments.

Fourth, financial institutions could evaluate the effectiveness of behavioral interventions through randomized pilot programs.

Fifth, policymakers should consider digital inclusion, consumer data protection, and the risks of excessive consumer borrowing when promoting new financial technologies.

Finally, the effectiveness of behavioral financial instruments should be evaluated using individual-level data rather than aggregate transaction volumes alone.

CONCLUSION

This study analyzed the relationship between digital financial development and behavioral financial decision-making in Uzbekistan using official Central Bank statistics.

The results demonstrate substantial growth in bank card funding, expanding banking system deposits, and a declining ratio of cash withdrawals to card inflows.

Between 2023 and 2025, funds credited to bank cards increased by approximately 89.6%, while the cash withdrawal ratio decreased from 23.95% to 18.65%.

Total banking system deposits increased by approximately 35.2% between January 2025 and January 2026.

These developments indicate significant changes in the financial environment of Uzbekistan.

However, they do not provide direct evidence that digitalization has caused an improvement in household financial self-control or saving behavior.

The theoretical contribution of the article lies in integrating behavioral economics concepts with descriptive financial statistics and a conceptual model of digital saving interventions.

The practical contribution is the development of recommendations involving automated saving tools, financial feedback, transparent digital interfaces, and evidence-based consumer education.

Future studies should examine individual transaction records, household financial behavior, and experimental responses to behavioral interventions to identify causal effects more precisely.

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