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# THE EVOLUTION OF DIGITAL PAYMENT SYSTEMS AND THEIR IMPACT ON THE FINANCIAL BEHAVIOR OF THE POPULATION

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**Abstract.** This paper examines how the ongoing digitalization of payment systems reshapes both consumption patterns and saving behavior at the household level. Particular attention is given to shifts in financial decision-making driven by the spread of contactless payments, mobile banking applications, and embedded financial services. Drawing on insights from behavioral economics alongside an institutional perspective, the study identifies several key pathways through which digital payment technologies influence intertemporal consumer choices. The findings suggest that lower transaction costs and greater spending transparency do not lead to a single outcome but instead generate mixed effects on the balance between consumption and saving. The paper also highlights how differences in digital engagement contribute to the diversification of financial behavior across households.

**Keywords:** digital payment systems, households, consumer behavior, contactless payments, financial inclusion, behavioral economics, mobile banking, saving strategies.

**Аннотация.** В статье рассматривается, как продолжающаяся цифровизация платёжных систем трансформирует модели потребления и сберегательного поведения домохозяйств. Особое внимание уделяется изменениям в финансовом принятии решений, обусловленным распространением бесконтактных платежей, мобильных банковских приложений и встроенных финансовых сервисов. Опираясь на положения поведенческой экономики и институционального подхода, исследование выявляет ключевые механизмы влияния цифровых платёжных технологий на межвременной выбор потребителей. Результаты показывают, что снижение транзакционных издержек и повышение прозрачности расходов не приводят к однозначному эффекту, а формируют смешанное влияние на соотношение потребления и сбережений. Также подчёркивается, что различия в уровне цифровой вовлечённости способствуют диверсификации финансового поведения домохозяйств.

**Ключевые слова:** цифровые платёжные системы, домохозяйства, потребительское поведение, бесконтактные платежи, финансовая инклюзия, поведенческая экономика, мобильный банкинг, стратегии сбережений.

**Annotatsiya.** Mazkur maqolada to'lov tizimlarining davom etayotgan raqamlashtirilishi uy xo'jaliklari darajasida iste'mol modellari hamda jamg'arish xulq-atvorining qanday o'zgarayotganini tahlil qiladi. Asosiy e'tibor kontaktsiz to'lovlar, mobil bank ilovalari va integratsiyalashgan moliyaviy xizmatlarning kengayishi natijasida yuzaga kelayotgan moliyaviy qaror qabul qilishdagi o'zgarishlarga qaratilgan. Xulq-atvor iqtisodiyoti yondashuvi va institutsional tahlil asosida tadqiqot raqamli to'lov texnologiyalarining iste'molchilarning vaqtlararo tanloviga ta'sir etuvchi asosiy mexanizmlarini aniqlaydi. Natijalar shuni ko'rsatadiki, tranzaksiya xarajatlarning kamayishi va xarajatlar shaffofligining oshishi yagona natijaga olib kelmaydi, balki iste'mol va jamg'arma o'rtasidagi muvozanatga turlicha ta'sir ko'rsatadi. Shuningdek, raqamli faollik darajasidagi farqlar uy xo'jaliklari moliyaviy xulq-atvorining diversifikatsiyasiga olib kelishi ta'kidlanadi.

**Kalit so'zlar:** raqamli to'lov tizimlari, uy xo'jaliklari, iste'mol xulq-atvori, kontaktsiz to'lovlar, moliyaviy inklyuziya, xulq-atvor iqtisodiyoti, mobil bank xizmatlari, jamg'arish strategiyalari.

## INTRODUCTION

The shift toward digital modes of payment has become one of the most visible structural changes in the retail financial sector over the past twenty years. In the early 2000s, non-cash transactions were largely confined to corporate use; however, by the mid-2020s, they had become an everyday reality for ordinary consumers. This transformation is not merely a matter of replacing one technical medium with another; more fundamentally, it reflects a profound reshaping of the institutional environment within which households make

economic decisions.

Traditional economic theory has tended to treat payment instruments as neutral—simply a technical channel through which already determined spending decisions are executed. This perspective, rooted in the neoclassical model of the rational agent, remained dominant until a growing body of empirical evidence began to challenge it. Recent research increasingly demonstrates that the form of payment is far from neutral: it systematically influences how individuals perceive costs, alters the psychological threshold associated with spending, and affects the time horizon of financial planning.

**Relevance of the topic.** The importance of this issue is shaped by several interrelated factors. First, the global volume of cashless transactions continues to expand steadily. According to analytical reports, between 2019–2024, the number of contactless payments worldwide more than tripled, while in a number of countries the share of cash in retail turnover fell below 20 percent. Second, this transformation is uneven: significant disparities persist both across countries and within them in terms of access and usage patterns, leading to increasingly diverse consumer strategies. Third, payment platforms are no longer limited to processing transactions; they are progressively incorporating analytical and personalized features—from automatic spending categorization to budgeting recommendations—thereby turning the payment interface itself into an active factor shaping financial decision-making.

Examining how households interact with payment systems requires the integration of several theoretical perspectives. The neoclassical framework, based on the assumption of utility maximization under conditions of full information, suggests that, all else being equal, the transition toward digital payments reduces transaction costs and consequently shifts the equilibrium level of consumption. However, this conclusion relies on assumptions that have long been questioned within the field of behavioral economics.

## LITERATURE REVIEW

The concept developed by Drazen Prelec and Dan Ariely holds that any act of spending is accompanied by a negative emotional response, the intensity of which depends on the payment method. Cash, being physically tangible and visibly disappearing at the moment of payment, tends to create a stronger sense of loss compared to non-cash instruments. Digital payments, where parting with money is reduced to a simple gesture on a smartphone or a tap of a card, minimize this discomfort. As a result, a “dissolution effect” emerges, with consumers inclined to spend more because the act of paying no longer feels like a real loss [2].

An additional perspective is provided by the concept of mental accounting developed by Richard Thaler. According to this view, individuals do not treat their finances as a single, unified pool; instead, they divide them into separate mental “accounts” for everyday spending, savings, unexpected expenses, and so on. Cash withdrawn from a specific part of one’s wallet tends to signal the use of funds from a particular category. Digital transactions, however, are more neutral in this respect: they do not strongly activate any single mental account, which can blur the perception of budget constraints and weaken self-control over spending [3].

The institutional perspective treats payment infrastructure as a system of rules, norms, and technological protocols that shape economic interaction. From this angle, digitalization is not merely a technical upgrade but a form of institutional change that redistributes information and bargaining power among participants in a transaction. Platforms that collect and process transaction data gain the ability to generate personalized pricing and targeted marketing messages, thereby influencing the structure of household consumption choices [12].

A useful way to integrate these strands is through the concept of a “digital choice architecture.” In this view, the interface of a payment application becomes a distinct decision-making environment, where default settings, data visualization, and the framing of expenses subtly steer users toward certain financial behaviors while making others less likely. This challenges the notion of technological neutrality: the digital payment environment functions not merely as a channel but as an active force shaping consumer behavior itself [4].

## RESEARCH METHODOLOGY

This study is conducted as a theoretical and analytical inquiry, relying on the systematization and comparative review of academic literature. Its methodological foundation integrates insights from behavioral economics, institutional analysis, and the concept of choice architecture. Sources were selected based on their relevance to the research focus, with particular attention given to studies examining how payment instruments shape consumer behavior, as well as research on financial inclusion, digital inequality, and regulatory frameworks governing payment ecosystems.

One limitation of the study lies in its conceptual nature: the conclusions are drawn from a synthesis of existing research rather than from original empirical evidence. This inevitably constrains the ability to verify causal relationships within specific national contexts. At the same time, the framework developed here can

serve as a foundation for future empirical investigations using survey data, transaction records, or panel datasets at the level of individual countries or regions.

## ANALYSIS AND RESULTS

The most evident effect of the digitalization of payments is a sharp reduction in transaction costs. The time required to complete a payment has decreased from several minutes—such as visiting an ATM or counting change—to just a few seconds. Geographic constraints have largely disappeared, as the ability to pay for goods or services from almost any location via a smartphone transforms the very nature of spending decisions. Impulse consumption, which depends on immediacy and convenience, is thus reinforced by this technological environment.

The reduction in transaction costs affects not only how frequently people make payments but also the structure of their purchases. Empirical evidence indicates an increase in the share of small- and medium-sized transactions within the total number of payments, alongside a rise in the average purchase amount. This suggests that the convenience of payment acts as an independent driver of consumption, as some expenses that were previously postponed due to inconvenience are now executed. At the same time, new categories of spending are emerging, including subscription services, micropayments, and voluntary transfers, which would be difficult to sustain without a digital payment infrastructure.

Digital payment systems have fundamentally transformed the accessibility of information about personal spending. In a cash-based environment, budgeting required additional effort and discipline; by contrast, a mobile banking application now provides an automatically structured record of transactions, organized by categories, time periods, and merchants. At first glance, increased financial transparency should encourage more rational planning of expenses.

However, empirical evidence presents a mixed picture. On the one hand, households that actively use budgeting tools within applications tend to exhibit higher saving rates and are less likely to exceed their budget limits [7]. On the other hand, passive access to spending information without meaningful engagement does not lead to substantial behavioral changes. Moreover, studies identify a normalization effect, whereby consumers interpret expenditures within a perceived “normal” range as justification for additional spending, while exceeding a limit results only in temporary self-control without long-term adjustments.

The design of feedback mechanisms plays a significant role. Push notifications about transactions, weekly analytical summaries, and gamified elements in applications—such as progress bars and achievement badges—affect self-control in different ways. Real-time notifications can increase awareness of spending; however, when transactions occur frequently, they quickly become background noise that users tend to ignore.

Financial inclusion, understood as expanded access to formal financial services, has traditionally been associated with positive social outcomes, including the ability to save in secure instruments, manage risks, and obtain credit. Digital payment systems have made a substantial contribution to this process, as mobile money has enabled millions of previously excluded households to become integrated into the formal financial system [9].

At the same time, the process of digitalization gives rise to new forms of exclusion, particularly digital financial inequality. This phenomenon manifests at several levels, including access to devices and connectivity, digital literacy, and behavioral readiness to use new tools. Older households, low-income households, and residents of small settlements consistently find themselves in a less favorable position across each of these dimensions [8]. As commerce, public services, and social transfers increasingly shift into digital formats, this inequality acquires a cumulative character.

The phenomenon of embedded finance deserves particular attention, referring to the integration of credit, insurance, and savings products directly into payment and commercial platforms. Offering credit at the point of sale in the form of “buy now, pay later” or automatically directing residual funds into a savings account are not merely convenient services but mechanisms of choice operating by default.

Embedded lending demonstrates a particularly strong impact on intertemporal preferences. Reduced visibility of borrowing costs—such as the absence of an explicit interest rate in installment plans—systematically increases the tendency toward immediate consumption [1]. At the same time, automatic saving features, including rounding up purchase amounts and transferring the difference to a deposit, as well as scheduled transfers on payday, demonstrate that default design can be equally effective in encouraging saving when the choice architecture is properly structured [10].

The traditional discussion of saving rates has focused on macroeconomic determinants such as interest rates, real incomes, the age structure of the population, and employment uncertainty. Digitalization introduces additional technological and institutional variables into this framework, influencing decisions directly at the micro level.

Research identifies two opposing effects of digital payment technologies on savings. The first is the hyperconsumption effect, which arises from easier impulse spending, reduced psychological discomfort in making payments, and the expansion of accessible marketplaces. The second is the optimization effect, which is associated with greater transparency of expenses, the convenience of automatic saving, and lower costs of managing multiple accounts [11]. Which of these effects becomes dominant for a particular household depends on the interaction between the technological features of the platform, the user's level of financial literacy, and their initial behavioral tendencies.

A separate line of inquiry concerns how digitalization affects household emergency funds. Easier access to short-term credit through embedded financial services can weaken the precautionary motive. If credit is available within a few clicks, the need to maintain a reserve may appear less pressing. While this may seem rational under normal conditions, during periods of systemic stress—when credit limits are tightened for many borrowers simultaneously—such a strategy becomes fragile. In this sense, the digital financial environment can reduce the buffer capacity of individual households and increase their financial vulnerability.

Another important aspect is the category of “invisible expenses,” referring to recurring payments for digital subscriptions, cloud services, and streaming content. Because these charges are processed automatically, they are often not perceived as active spending decisions. As a result, their total amount is frequently underestimated. Digitalization therefore introduces a new layer of expenditures that is difficult to control precisely because no deliberate action is required to initiate the payment.

Aggregate evidence on the effects of digital payment systems tends to conceal substantial variation that becomes visible when data are disaggregated by socio-economic and demographic characteristics of households.

Younger households, typically under the age of 35, demonstrate the highest level of adaptation to digital payment innovations and, at the same time, the greatest exposure to hyperconsumption effects. Having grown up in an environment shaped by smartphones and online shopping, they are more susceptible to impulse spending. At the same time, this group is also the most active in using budgeting applications, which can partially offset these risks.

Households in the middle-age group, roughly between 35 and 55, display the widest range of financial strategies. Some are highly engaged users of digital financial tools and demonstrate strong financial literacy, while others rely on them only selectively or in a fragmented manner. For this category, digital payment habits are closely linked to major life events such as purchasing property, having children, or changes in career status.

Older households, aged 55 and above, remain the most heterogeneous group. Some have adapted successfully to the digital environment and actively use mobile banking, while others face considerable difficulties with new interfaces and continue to rely on cash. For this segment, the digitalization of payment systems brings not only greater convenience but also tangible risks, including fraud, the gradual disappearance of familiar payment infrastructure such as bank branches and ATMs, and an increasing sense of technological exclusion.

Differences in income levels add another layer to this heterogeneity. For high-income households, digital payment tools primarily enhance the convenience of already established financial practices. For lower-income households, however, the same technologies can serve both as a channel of financial inclusion and as a pathway to consumer credit offered on unfavorable terms, which may lead to an increasing debt burden [6].

Understanding how digital payment systems shape household behavior is directly relevant for regulatory policy. If the design of payment interfaces systematically affects financial decisions, then establishing standards for such design becomes not only a technical matter but also a policy issue.

In international practice, several approaches to regulating the digital architecture of choice in the financial sphere are emerging. The first is a form of soft paternalistic regulation, which involves setting requirements for default design. This may include, for example, offering budgeting tools by default when opening an account or enabling automatic saving transfers with the option to opt out. The second approach focuses on a new generation of disclosure standards that emphasize accessibility rather than the sheer volume of information, such as clear visual representations of credit costs or alerts when spending exceeds a typical level within a category. The third approach addresses the regulation of personalized pricing and targeting, placing limits on the use of transaction data to generate differentiated pricing offers.

A key issue remains the balance between efficiency and consumer sovereignty. Any choice architecture aimed at promoting behavior considered socially desirable inevitably rests on normative assumptions about what constitutes appropriate behavior. In a context where household strategies are diverse and individual preferences are uncertain, this raises significant challenges for legitimizing paternalistic forms of intervention.

## CONCLUSIONS AND RECOMMENDATIONS

The digitalization of payment systems represents a multifaceted institutional shift that exerts a consistent influence on household financial behavior. The analysis conducted in this study makes it possible to draw several key conclusions.

First, the form of payment cannot be regarded as neutral. Digital instruments systematically reduce the emotional cost of spending, which, all else being equal, increases the propensity to consume. This effect is particularly pronounced among younger households and in categories associated with impulse purchases.

Second, greater transparency of expenses, enabled by mobile banking, creates the potential for more effective financial planning. However, this potential is realized only under specific behavioral conditions, including active engagement with analytical tools, an adequate level of financial literacy, and a willingness to exercise self-control.

Third, embedded financial services fundamentally reshape the architecture of decision-making by shifting key choices into the realm of default design. Savings and credit products integrated into everyday payment interfaces become powerful mechanisms for shaping financial habits, with potentially significant positive as well as negative consequences for household well-being.

Fourth, the impact of digitalization varies significantly across socio-economic groups. Digital financial inequality overlaps with existing forms of economic inequality, creating risks of marginalization for households with limited digital skills. At the same time, for households that were previously excluded from the financial system, digital payment technologies provide real opportunities for inclusion.

## REFERENCES

1. Dan Ariely, Jeff Kreisler. *Dollars and Sense: How We Misthink Money and How to Spend Smarter*. New York: Harper, 2017. 291 p.
2. Drazen Prelec, Duncan Simester. Always Leave Home Without It: A Further Investigation of the Credit-Card Effect on Willingness to Pay. *Marketing Letters*, 2001, Vol. 12, No. 1, pp. 5–12. <https://doi.org/10.1023/a:1008196717017>
3. Richard H. Thaler. Mental Accounting Matters. *Journal of Behavioral Decision Making*, 1999, Vol. 12, No. 3, pp. 183–206.
4. Cass R. Sunstein, Richard H. Thaler. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. New Haven: Yale University Press, 2008. 293 p.
5. Dilip Soman. Effects of Payment Mechanism on Spending Behavior: The Role of Rehearsal and Immediacy of Payments. *Journal of Consumer Research*, 2001, Vol. 27, No. 4, pp. 460–474.
6. Evgeny F. Avdokushin. Mobil'no-tsifrovye tekhnologii kak faktor formirovaniya novoy ekonomiki. *Voprosy novoy ekonomiki*, 2016, No. 2(38), pp. 4–14.
7. Annamaria Lusardi, Olivia S. Mitchell. The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, 2014, Vol. 52, No. 1, pp. 5–44.
8. T. I. Abduragimova. Tsifrovaya transformatsiya platezhnykh sistem: problemy moshennichestva i perspektivy razvitiya sredstv i metodov obnaruzheniya. *Vestnik Kemerovskogo gosudarstvennogo universiteta. Seriya: Gumanitarnye i obshchestvennye nauki*, 2025, Vol. 9, No. 3(35), pp. 453–461.
9. William Jack, Tavneet Suri. Mobile Money: The Economics of M-PESA. *NBER Working Paper*, 2011, No. 16721.
10. Cäzilia Loibl, Robert L. Scharff. Examining the Effect of Expressing a Quantitative Goal on Consumer Savings. *Journal of Consumer Affairs*, 2010, Vol. 44, No. 1, pp. 124–133.
11. R. M. Nureev, E. V. Slobodyanyuk, D. R. Akhmadeev et al. *Narodnokhozyaystvennaya dinamika potrebleniya v tsifrovuyu epokhu*. Moscow: KnoRus, 2023. 314 p.
12. Shoshana Zuboff. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. New York: PublicAffairs, 2019. 691 p.

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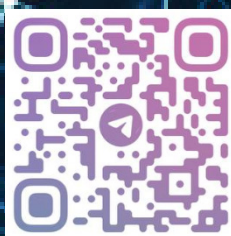
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