The Impact of Digital Payments on Financial Decision-making: From the Perspective of Behavioral Economics

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Abstract. With the rapid development of financial technology, the popularization of digital payments has changed the financial decision-making patterns of individuals and enterprises. From the perspective of behavioral economics, this framework effectively reveals the cognitive biases and psychological mechanisms associated with digital payments. This article is based on the theoretical framework of behavioral economics and systematically reviews the impact mechanism and behavioral effects of digital payments on financial decision-making. Firstly, it alleviates payment pain by weakening the sense of loss in psychological accounts. Secondly, due to the current bias, users are more inclined toward immediate satisfaction rather than long-term benefits. Finally, payment page design and personalized services deprive users of autonomy and distort their consumption preferences. Furthermore, this article delves into the complex interplay between digital payments and finance. Currently, financial behavior can be improved through measures such as "boosting", "cooling off period system", and "transparency requirements". In the future, it is necessary to combine behavioral economics to balance the convenience and rational decision-making of digital payments.

1 Introduction

With the rapid development of financial technology, digital consumption has penetrated every aspect of our lives, and the global expansion of digital payment platforms is also changing the operation of the global financial system, having a profound impact on the financial decisions of individuals and businesses.

From the perspective of behavioral economics, cashless payment methods, with their advantages of high efficiency and convenience, influence users' financial decisions such as consumption, investment, and borrowing, thereby reducing their payment pain and causing deviations in their psychological accounts. In addition, financial theory shows that although digital payments reduce transaction costs and increase liquidity, they can alter market stability. However, due to the continuous development of information technology and the

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existence of a technological gap, some groups may make incorrect judgments when making financial decisions.

This article aims to systematically sort out the behavioral mechanism of how digital payments affect financial decision-making, reshape people's consumption, savings, investment, and lending behaviors from psychological accounts to hyperbolic discount effects, reveal how digital payments reconstruct personal and corporate financial decision-making models, and provide theoretical basis and ideas for the design of financial technology products and policymaking in the digital finance era.

2 Theoretical basis: concepts of behavioral economics

2.1 Psychological account theory and payment pain reduction effects

Thaler proposed that people divide funds into different psychological accounts, such as daily consumption, savings, entertainment, etc., and make different financial decisions based on different account classifications [1]. However, the emergence of digital payments has blurred the boundaries of psychological accounts. Digital payments have significantly changed payment cognition through the process of "dematerialization", leading to changes in people's perception and interaction with currency. This means that the tactile and visual feedback of physical currency is eliminated when making payments, and funds exist in a unified digital form. Consumers find it difficult to associate expenditures with specific psychological accounts, blurring account boundaries and weakening the perception of "loss", thus changing consumer behavior. Ariely and Prelce proposed the concept of "payment pain," a term describing consumption and psychology that has been significantly weakened in the digital payment environment [2]. John Gourville and Dilip Soman found through their research that people are more likely to remember the price of a product when paying in cash than when paying with a credit card, as electronic and cash payments differ in how they perceive money loss [3]. In past cash transactions, people used cash, tangible consumption, counting money, and receiving change to make buyers truly feel the loss of cash. Each step strengthened the authenticity of consumption, creating "payment pain" and making them feel enormous consumption pressure, thereby reducing their desire to consume and suppressing excessive consumption. However, as financial technology has developed and digital payment methods like credit cards, mobile payments, and electronic payments have emerged, the transaction process now only shows balance changes or simple notifications. This lack of visual feedback weakens people's ability to grasp the significance of their expenses, diminishes their perception of money, removes tactile elements from transactions, increases operational flexibility, significantly reduces their awareness of consumption, raises the frequency of purchases, and ultimately stimulates impulsive buying behavior. The desire to purchase makes people more impulsive in their consumption rather than being rational [4].

John Gourville and Dilip Soman surveyed the Chicago Museum of Science and found that payment immediacy is crucial for the consumption of paid products. For example, in our daily lives, wander through various apps, and annual, semi-annual, quarterly, and monthly memberships have become the norm. The automatic renewal mode requires users to operate during the first payment actively, but subsequent automatic deductions will only be notified through SMS. When the automatic renewal amount is small, consumers often overlook the deduction information due to attention bias. Therefore, compared to the pain caused by monthly active payment through cash payment, the pain of payment behavior being "backstage" decreases with increasing repetition.

2.2 Framework effect

Amos Tversky and Daniel Kahneman first proposed the framework effect theory, stating that the same problem in different ways can affect people's decisions, proving that the way information is presented to us greatly influences our decision-making methods [5]. In digital payments, the design of the payment interface flexibly utilizes the framework effect. The payment interface is designed with "default options" and utilizes "status quo bias" to be subconsciously interpreted by consumers as "official advice". Rational evaluation of demand is suppressed, such as automatically selecting "small nonconfidential payment" and default subscription services of "continuous monthly, quarterly, and yearly". Such an approach may seem to reduce decision-making friction during payment and save payment time, but it will make consumers underestimate actual expenses. After long-term accumulation, consumers will find that their current expenses exceed their expected values. Secondly, in the cash payment scenario, users need to calculate and compare the discount amount themselves, while digital payment utilizes a "revenue framework" to transform payment behavior into "gaining revenue". It will display how much money you have saved in the payment instead of how much money you have paid. Then, add elements such as animation, flower scattering, and sound effects to the interface after successful payment, creating an illusion for consumers rather than a financial loss. Finally, some third-party payment platforms utilize herd mentality by displaying other consumers' transaction information in real-time, which suggests urgency to potential buyers compared to offline transactions.

2.3 Hyperbolic discount effect

David Laibson proposed the hyperbolic discount model, which explores the behavioral patterns and economic principles of consumers when facing future consumption choices and explains why the convenience of digital payments increases short-term preferences [6]. O'Donoghue and Rabin, M. referred to this tendency as the "present bias" - when weighing two future moments, people typically tend to lean towards the moment when time is close. In digital payments, users usually tend to choose short-term benefits rather than long-term benefits. Huabei, on the other hand, takes advantage of users' delayed psychology and adopts a "consume first, pay later" model to change time preferences, exacerbate current biases, and cause consumers to borrow excessively. At this point, the pleasure of excessive consumption by consumers who do not need to pay the full amount is overestimated, while the pain and pressure of future repayments are underestimated. In daily life, even if people develop long-term savings plans, they may experience short-term impulses due to the pleasure of digital payments, leading to a greater emphasis on immediate consumption and a disregard for future savings needs.

3 The impact mechanism of digital payments on financial decision-making

3.1 Changes in consumer behavior

Traditional financial theory holds that cash serves individual demand transactions, but the popularity of digital payments has reduced the public's demand for cash. For example, the popularity of mobile payments in China has reduced the cash GDP ratio from 13% in 2010 to 6% in 2020. The rise of instant transfer and QR code payment has eliminated the problem of delays in traditional bank transfers. Traditional cash transactions carry risks of change, counterfeit currency, and time costs, while digital payments reduce payment pressure by allowing buyers to receive payments. In addition, the cost of a single scan code payment has become lower, even approaching zero, because a transaction can be completed without the need for a POS machine, which has also led to more small transactions and more flexible resource allocation. In the traditional cash era, consumers may give up small transactions because they don't have change, but scanning codes makes small transactions ordinary and frequent. However, in terms of personal emergency savings, digital payments make it difficult for consumers to distinguish between "consumption" and "savings" accounts, and their willingness to save is suppressed by consumption impulses. In the era of traditional cash payments, people tend to reserve "emergency cash", while digital payments rely on credit cards, blurring security boundaries and changing the management of traditional budgets, leading to increased risks in the face of sudden funding issues.

3.2 Savings and investment behavior

The development of digital payment has promoted the rise of small-change financing. The Alipay platform launched "Yu'e Bao" investment products, which can automatically transfer idle funds to financial accounts. This type of low-threshold investment channel offers high liquidity and convenience while generating returns, and it appeals to a wide audience, making it easier for retail investors to participate in the market and improve the overall savings rate. Similarly, transferring the bank's current deposits into it changes the structure of current deposits, weakens dependence on M1, and thus alters the M1/M2 structure. However, because of the "framework effect" and how fintech products are designed, these products offer "daily returns" instead of focusing on long-term gains, which makes users prefer short-term, high-risk assets and limits their ability to make their own financial choices. Users are more willing to choose platform recommendations rather than diversified investments.

4 Advantages and disadvantages of digital payments and regulatory recommendations

4.1 Digital payment is a double-edged sword

Digital payment optimizes the efficiency of the payment system, improves the security and convenience of payment, and makes it easier for users to participate in the market by using third-party payment platforms such as Alipay and WeChat, making money electronic, making financial services more popular, and generating more entrepreneurial opportunities such as e-commerce and O2O. The impact of digital payments has also improved the inclusiveness of finance. M-Pesa in Kenya has reduced the number of unbanked people by 58%, with an increase in the proportion of rural and low-income populations, significantly increasing household income and promoting the development of small and medium-sized enterprises. Bagnall found that the convenience of digital payments has weakened psychological barriers to expenditure, resulting in improved economic efficiency. For example, Sweden's cashless policy has increased GDP transaction efficiency, reduced cash management costs, and minimized the risk of counterfeit currency. In Brazil, the use of the Pix system has significantly improved cash flow turnover efficiency, shortened settlement cycles, reduced transaction risks, and enhanced market participants' confidence [7,8].

The transition from electronic payment to cash settlement has weakened the sense of psychological loss and payment pain, inducing impulsive consumption through the time difference between consumption and pain. The rapid rise of buy-before-pay and lower interest rates than credit cards has made users dependent on high-cost credit, increasing debt risk, such as the average debt burden of BNPL users intensifying and default rates increasing

[9]. The development of financial technology has driven the full coverage of digital payments, but at the same time, sensitive information such as consumption habits, geographical location, and personal information contained in digital payment records has become potential negative risk, and platforms may use big data for precise advertising push. In 2020, Ant Group shared data with financial institutions, which implemented personalized pricing through transaction data. Digital payments depend on the Internet and electronic systems, which will face network crimes and payment fraud, and may also cause financial losses due to hacker attacks or system failures. Technological barriers exclude some older adults and users in remote areas from the digital payment system, thereby exacerbating social inequality.

To achieve a "balance of advantages and disadvantages" in digital payments, the first step is to optimize consumer experience and establish new marketing strategies that utilize psychological mechanisms, business strategies, and technological design to mitigate the drawbacks of digital payment systems. Secondly, transforming digital payments into the form of new intelligent wealth management products generates new value. Finally, it is transformed into a direction beneficial to society through user education, open algorithm principles, and policy regulation

4.2 Behavior correction measures

Thaler and Sunstein proposed the academic definition of facilitation, which refers to guiding people's initial decisions without restricting their freedom. Its key characteristics are non-mandatory, low-cost, easy to implement, and cognitive bias [10]. In digital payments, "one-click payment" and "automatic password-free" are typical behavioral economics boosting strategies. Although reducing payment churn improves conversion rates and optimizes consumer experience, it guides users to make purchases by simplifying decision-making processes and reducing psychological barriers. One-click payment "utilizes the" default effect "to make users tend to accept default options, reducing decision-making friction, while" automatic password exemption "uses" status quo preferences "and" payment desensitization "to weaken the vigilance of expenditures. To this end, third-party platforms adopt the principles of revocability and transparency in payment interface design, ensuring that users have alternative options to choose from, which can be set as non-default options.

Brazil has a vast digital credit ecosystem, and in 2021, the Brazilian central bank required credit platforms to force a 24-hour delay after approving loans, reducing impulsive reception. Through intervention, the BNPL platform provides default expenditure locking options, allowing users to set their credit limit limits and increase usage rates while reducing excessive borrowing rates.

5 Conclusion

As a key part of financial technology, digital payments greatly impact how people and businesses make financial choices through behavioral economics, influencing spending, saving, investing, borrowing, and more in four ways: psychological accounts, payment pain, framing effects, and hyperbolic discount effects. Firstly, psychological accounts reshape the way users save by blurring the boundary between consumption and savings. Secondly, by weakening the pain of payment, can reduce the perception of currency in cash payments and stimulate consumption. Then, the framework effect guides users to choose by designing a payment interface. Finally, the hyperbolic discount effect highlights the immediacy of digital payments and exacerbates the debt trap by comparing it with the traditional bank's latency. While digital payments can improve financial inclusiveness and transaction rates, they can also cause issues such as privacy breaches, price inequality, and debt risks. By implementing a cooling-off period system and transparency requirements, the probability of risk occurrences can be effectively suppressed and reduced.

The current research reveals several key behavioral mechanisms in digital payments, providing important ideas for the design of financial technology products. Future research on digital payments and behavioral economics requires further improvement. Firstly, with the development and promotion of CBDC, its behavior correction measures need to be studied in new directions to provide new policy intervention models. Secondly, artificial intelligence has become a hot topic in society, and the use of algorithms is potentially manipulating personalized services. Establishing corresponding ethical frameworks would enhance user autonomy. Finally, future research can combine experimental economics methods to analyze at a deeper level how the "nudging" mechanism affects individuals' irrational decision-making.

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