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Investigating Factors Influencing Switching from Third-Party Payment Applications to E-CNY in Shanghai

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Abstract

Background and Aim: As digital payments become more prevalent, users are shifting from third-party payment platforms (WeChat Pay, Alipay) to E-CNY, China's central bank digital currency. However, despite its government backing, E-CNY adoption remains limited. This study aims to examine user switching behavior by applying the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) to identify the key factors influencing adoption.

Materials and Methods: A total of 308 valid respondents with experience using both E-CNY and third-party payment platforms participated in an online survey. The research was conducted in three stages: (1) a pilot study to test measurement reliability, (2) a descriptive analysis of user demographics, and (3) Structural Equation Modeling (SEM) to test the relationships between variables affecting switching behavior.

Results: The findings indicate that government influence and social influence have the strongest positive impact on switching behavior. Network externalities, perceived ease of use, and perceived usefulness also encourage adoption, while privacy concerns negatively affect switching behavior. Interestingly, trust does not significantly influence user decisions, suggesting that convenience and usability matter more than trust in digital payments.

Conclusion: To increase E-CNY adoption, policymakers should enhance usability, address privacy concerns, provide financial incentives, and expand merchant acceptance. Additionally, integrating E-CNY with existing payment platforms and leveraging peer influence will further encourage user switching.

Keywords: User Switching Behavior; E-CNY Adoption; Digital Payments; Privacy Concerns; Government Influence

Introduction

China has established itself as a global leader in digital payments, with Alipay and WeChat Pay dominating the market. Recent estimates indicate that these two platforms account for over 90% of the national mobile payment market (Slotta, 2023). These privately operated platforms facilitate online purchases, utility payments, and in-person transactions by linking users' bank accounts or stored app balances. Additionally, they have played a crucial role in financial inclusion by providing convenient access to digital financial services and contributing to the expansion of the digital economy.

In response to the growing dominance of private payment platforms, the People's Bank of China (PBOC) introduced the Digital Currency Electronic Payment (DCEP)—commonly referred to as E-CNY—as a central bank digital currency designed to function alongside existing commercial platforms (Das et al., 2023). Unlike Alipay and WeChat Pay, which private companies, E-CNY is issued directly by the PBOC, making it legal tender. This issuance model offers several potential advantages, such as government-backed security, improved offline usability, and enhanced currency flow oversight. However, user privacy concerns, regulatory implications, and competition with well-established private platforms may hinder widespread adoption. Although E-CNY remains in the pilot phase, its adoption rate gradually increases due to government incentives and merchant participation in pilot cities (Kharpal, 2023). Government-reported data indicates that as of 2023, over 260 million transactions had been made using E-CNY in pilot cities. However, its overall market share remains relatively small compared to private digital payment services.
Third-party payment applications integrate various financial services, loyalty rewards, and social features, making them attractive to consumers. In contrast, E-CNY follows a more direct, cash-like approach to digital transactions. While third-party platforms may impose transaction fees or usage restrictions, E-CNY, as a state-backed currency, aims to reduce intermediary costs and ensure seamless transactions (Das et al., 2023). Another critical distinction lies in data governance: Alipay and WeChat Pay operate under private commercial structures, whereas E-CNY data is subject to PBOC policy oversight, which may enhance user privacy and security.

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Shanghai was selected as an early pilot city for E-CNY due to its advanced digital infrastructure and a large population of frequent mobile payment users (CNNIC, 2023). Many Shanghai residents have tested both E-CNY and third-party payment platforms, offering a unique opportunity to investigate why some users shift more transactions to E-CNY while others continue relying on private apps. Understanding users' continued adoption of E-CNY is essential for its broader expansion in China. Additionally, Shanghai's findings can offer insights for broader policy decisions in China, given its role as an economic hub with high digital literacy. While Shanghai has a well-established mobile payment culture, other major cities, such as Beijing and Shenzhen, exhibit variations in regulatory policies, business environments, and consumer habits, which may influence digital payment preferences.

Consequently, this study examines the key variables influencing users' continuous intention to use E-CNY, addressing existing knowledge gaps and offering practical recommendations for its future development. Additionally, by reviewing the literature on consumer continuance behavior in digital finance, this study aims to contribute to broader research in behavioral science and technology adoption. The central research question is: What factors influence the continuous use of E-CNY among users who are already familiar with both E-CNY and third-party payment platforms? Furthermore, the study explicitly addresses the behavioral aspects of switching, focusing on perceived usefulness, trust, privacy concerns, and social influence.

Despite the advantages of E-CNY, many consumers still primarily use Alipay or WeChat Pay (Chen & Li, 2017). It remains unclear why some users transition more activity to E-CNY while others do not, especially when they are already familiar with private platforms. Most existing studies focus on users who have not yet adopted E-CNY or intend to use it (Wu et al., 2022). Limited research has examined individuals who have experience with both payment methods. Recent studies on digital payment switching behavior suggest that network effects, perceived reliability, and habit formation play crucial roles (Zhou et al., 2023). However, there is still a lack of comprehensive analysis of how these factors interact within China's unique digital payment ecosystem.

This research integrates concepts from the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Push-Pull-Mooring (PPM) framework. While previous studies have primarily focused on initial E-CNY adoption or prospective intentions, fewer have analyzed actual switching behaviors among individuals already familiar with both payment systems (Bansal et al., 2005; Davis, 1989; Venkatesh et al., 2003). This study examines specific constructs from these models, including perceived usefulness and perceived ease of use (TAM), social influence and facilitating conditions (UTAUT), and push-pull factors (PPM), to develop a comprehensive framework for understanding switching behavior. By adopting this approach, the study aims to enhance the understanding of FinTech adoption and consumer behavior dynamics in digital payment ecosystems.

The findings of this study can help the PBOC and commercial banks refine their strategies for encouraging sustained E-CNY usage. Insights from real user experiences can support the development of more user-friendly systems, targeted educational initiatives, and incentives tailored to consumer needs and preferences. Beyond the financial sector, businesses and merchants could leverage E-CNY to streamline transactions, reduce dependency on intermediaries, and enhance regulatory compliance. Policymakers could also use these insights to develop strategies that balance financial innovation with consumer protection.

This study focuses on Shanghai, where digital literacy is high and E-CNY pilot programs are actively implemented. The sample includes individuals aged 18 to 60 who use both E-CNY and third-party applications. While Shanghai provides a valuable case study due to its advanced digital infrastructure, the findings may not be directly generalizable to other regions in China. However, similar digital payment ecosystems, such as those in Beijing and Shenzhen, may benefit from the study's insights. Additionally, as the study employs a cross-sectional design, long-term changes in user behavior are beyond the scope of this research. Future research could explore longitudinal studies to track shifts in adoption trends and user preferences over time.

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Objectives

The objectives of this research were:

Examine how perceived usefulness, trust, and ease of use influence switching behavior among users who have experience with both E-CNY and third-party payment applications.

Analyze the role of government influence in motivating or discouraging E-CNY adoption among dual users.

Investigate how privacy concerns, network externalities, and social influence impact users' preference for E-CNY over Alipay or WeChat Pay.

Offer recommendations for policymakers to enhance the E-CNY experience for users familiar with multiple payment platforms.

Research Hypotheses

Hypothesis 1: Government influence (GI) positively impacts users' switching behavior (SW) on E-CNY.

Hypothesis 2: Network Externalities (NE) positively impact users' switching behavior (SW) on E-CNY.

Hypothesis 3: Privacy Concerns (PC) negatively impact users' switching behavior (SW) on E-CNY.

Hypothesis 4: Perceived Ease of Use (PEU) positively impacts users' switching behavior (SW) on E-CNY.

Hypothesis 5: Perceived Usefulness (PU) positively impacts users' switching behavior (SW) on E-CNY.

Hypothesis 6: Social Influence (SI) positively impacts users' switching behavior (SW) on E-CNY.

Hypothesis 7: Trust (T) positively impacts users' switching behavior (SW) on E-CNYe.

Literature Review

This study employs three theoretical models to analyze switching behavior in digital payment adoption: the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Push-Pull-Mooring (PPM) framework. These models provide a structured approach to understanding the factors influencing users who have adopted both E-CNY and third-party payment platforms but exhibit varying degrees of continued usage.

1. Applied Theories

In this study, the first model employed is the Technology Acceptance Model (TAM)**.** TAM says Perceived Usefulness (PU) and perceived ease of use (PEOU) affect how people adopt new technology (Davis, 1989). In earlier studies on mobile payments, TAM helps explain whether users see a system as practical and easy to handle (Chen & Li, 2017). This can guide research on why E-CNY might replace or complement existing apps for people who have used both.

The second model employed is the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT adds social influence and facilitates conditions for the ideas in TAM (Venkatesh et al., 2003). This is relevant because many E-CNY initiatives in China involve government support, and social norms can shape behavior (Cao et al., 2022). If close friends, family members, or public figures favor E-CNY, it can sway users who already know how E-CNY and third-party apps compare.

The third model employed is the Push-Pull-Mooring (PPM) Framework. The PPM framework divides factors into push (problems with the current service), pull (benefits of the new option), and mooring (personal or contextual forces that keep users from switching) (Bansal et al., 2005). If users see E-CNY as more secure or cheaper, that can pull them to switch, but habit or data privacy fears might keep them with Alipay or WeChat Pay.

By integrating TAM, UTAUT, and PPM, this study establishes a robust framework for examining E-CNY's role in China's digital payment ecosystem. The combination of perceived benefits, social reinforcement, and external constraints provides a nuanced understanding of why users continue or

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discontinue E-CNY usage after initial adoption. These insights will help policymakers, financial institutions, and businesses design better strategies to facilitate the long-term adoption of E-CNY.

2. Switching behavior

Switching behavior refers to the actual change in usage patterns from third-party payment platforms (such as WeChat Pay and Alipay) to E-CNY, China's central bank digital currency. This behavior is characterized by an increase in the frequency and volume of transactions conducted using E-CNY over other platforms. In the context of this study, switching behavior is not limited to initial adoption but extends to the continuous preference for E-CNY over other payment options. Understanding this behavior helps identify what factors encourage or discourage users from fully integrating E-CNY into their daily financial activities(Padashetty & Kishore, 2013; Wu et al., 2022).

3. Factors Affecting the Switching Behavior

Government Influence (GI) Government influence refers to the direct and indirect impact of government policies, endorsements, and incentives on adopting and using E-CNY. This includes measures such as promotional campaigns, legal frameworks, financial incentives, subsidies, or tax benefits offered to encourage E-CNY use. Government influence can also encompass mandates requiring certain sectors or public services to prioritize E-CNY transactions. However, if the perception of government control becomes excessive, it may create resistance among users who value financial privacy and autonomy (Cao et al., 2022; Kharpal, 2021). When the government provides attractive financial incentives or promotes the benefits of E-CNY through official channels, users are more likely to adopt E-CNY and shift transactions from other platforms.

Network Externalities (NE) Network externalities refer to the increasing value of E-CNY as more users and merchants adopt it. This concept emphasizes that a payment system's utility is determined by its inherent features and the size of its user network. In other words, E-CNY becomes more attractive and convenient when it is widely accepted across various sectors, including retail, hospitality, transportation, and online commerce (Katz & Shapiro, 1985; Qasim & Abu-Shanab, 2016). The greater the acceptance of E-CNY among merchants and the more individuals use it, the more valuable and practical it becomes for users. This drives adoption by enhancing convenience and creating a broader ecosystem of transactions.

Privacy Concerns (PC) Privacy concerns refer to users' fears regarding the potential for surveillance, data collection, or unauthorized access to personal financial information when using E-CNY. These concerns stem from the perception that transactions conducted via E-CNY may be monitored or tracked by government authorities, resulting in a loss of privacy and autonomy. Privacy concerns can include worries about data misuse, transaction history visibility, and the lack of anonymity in financial activities (Sinha et al., 2019; Smith et al., 1996). Higher levels of privacy concerns lead to lower switching behavior, as users who fear government surveillance or data misuse are less likely to prefer E-CNY over other payment platforms.

Perceived Ease of Use (PEU) Perceived ease of use refers to users' belief that using E-CNY is simple, intuitive, and free from effort or complexity. This includes a user-friendly interface, seamless onboarding process, quick transaction capabilities, and ease of accessing key functions. A payment system that is perceived as easy to use is more likely to be adopted, as users seek convenience and minimal learning curves when integrating new technologies into their routines (Andavara et al., 2021; Padashetty & Kishore, 2013). A high perception of ease of use encourages switching behavior, as users are more likely to adopt E-CNY if they do not experience frustration or difficulty when using the app.

Perceived Usefulness (PU) Perceived usefulness refers to users' belief that E-CNY offers significant benefits and enhances their ability to complete financial transactions more effectively. These benefits may include faster transaction speeds, reduced costs, better expense tracking, greater security, and exclusive financial rewards. Users who perceive E-CNY as a helpful tool are more likely to switch from other platforms (Chen & Li, 2017; Davis, 1989). A high perception of usefulness drives switching behavior, as users are more inclined to adopt E-CNY if they believe it offers tangible advantages over existing payment platforms.

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Social Influence (SI) Social influence refers to the impact of friends, family, colleagues, and social networks on a user's decision to adopt E-CNY. People often look to their social circles for cues on behavior, and if others within their network are using E-CNY, they are more likely to follow suit. Social influence also includes the impact of public endorsements by celebrities, influencers, or thought leaders who promote the use of E-CNY (Venkatesh et al., 2003; Cao et al., 2022). Strong social influence drives switching behavior, as users are more likely to adopt E-CNY when they observe or receive encouragement from peers, family members, or influential figures.

Trust is crucial for adopting financial technologies and digital payment systems. It is often defined as users' confidence in the system's reliability, security, and integrity (Model, 2003). When users trust a payment method, they are more likely to adopt and continue using it. However, the relationship between trust and switching behavior is complex, especially concerning E-CNY, where users already trust established third-party payment platforms like WeChat Pay and Alipay. Previous studies indicate that trust is a key determinant of technology adoption (Wu et al., 2022). When users perceive a digital payment system as secure, stable, and well-regulated, they are more willing to incorporate it into their financial routines. Additionally, trust in the institution managing the payment system, such as a central bank or a private company, further enhances the likelihood of adoption (Model, 2003). This influence is powerful when the new payment system is perceived as less familiar or established. For instance, trust is vital for adopting cryptocurrencies or decentralized payment systems, where users may have concerns about fraud, stability, or regulation (Wu et al., 2022).

Methodology

This research first conducted a pilot study with approximately 30 participants to assess the clarity and comprehensibility of the questionnaire items. Initial reliability was evaluated using Cronbach's Alpha, a common measure of internal consistency (Bonett & Wright, 2015). As shown in Table 1, the results indicate that all constructs achieved a Cronbach's Alpha value exceeding 0.7, meeting the threshold for acceptable reliability. However, Cronbach's Alpha alone does not confirm scale validity. To strengthen the assessment, Composite Reliability (CR) and Average Variance Extracted (AVE) were employed to verify convergent validity, while the Fornell-Larcker criterion was applied for discriminant validity (Henseler et al., 2015). The accepted threshold values are CR > 0.7, AVE > 0.5, and the Fornell-Larcker criterion requiring that the square root of AVE exceeds inter-construct correlations.

Data Collection: The final questionnaire was distributed online through the Sojump questionnaire platform, leveraging social media channels (WeChat) and specialized interest groups (QQ) to reach a broad audience. After verifying the reliability of the measurement items, 308 valid responses were collected for further analysis and hypothesis testing.

Data Analysis Procedures: Descriptive Analysis: Summarized user demographics and usage patterns. Reliability and Validity: Composite Reliability (CR), Average Variance Extracted (AVE), and the Fornell-Larcker criterion were used to ensure measurement quality. Structural Equation Modeling (SEM) with Smart PLS: The measurement and structural models were tested by analyzing path coefficients and significance levels. Model Fit Evaluation: The study used Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI) to assess whether the model fit the data appropriately. By ensuring methodological rigor, this study enhances the reliability and validity of its findings, providing a robust foundation for examining the factors influencing the continued adoption of E-CNY.

Table 1 The result of reliability

Variables	Number of Items	Cronbach's Alpha
Switching Behavior (SW)	4	0.946
Perceived Usefulness (PU)	4	0.912
Trust (T)	4	0.801
Perceived Ease of Use (PEU)	4	0.949

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Variables	Number of Items	Cronbach's Alpha
Government Influence (GI)	4	0.931
Privacy Concerns (PC)	4	0.947
Network Externalities (NE)	4	0.944
Social Influence (SI)	4	0.955

Results

The demographic analysis of the study's participants provides insights into the characteristics of E-CNY and third-party payment users in Shanghai. A total of 308 respondents participated in the survey, representing a diverse range of age groups, occupations, income levels, and payment behaviors.

Gender Distribution: The sample had a relatively balanced gender distribution, with 50.6% male and 49.4% female respondents. This indicates that both men and women are equally engaged in digital payments and E-CNY adoption. The balanced gender distribution suggests that gender does not play a significant role in digital payment adoption, reinforcing the idea that digital financial services in China are accessible and widely used by all consumers.

Age Distribution: Most respondents were in the 18-25 age group (38.0%), followed closely by those in the 26-35 age group (36.4%). A smaller proportion belonged to the 36-45 (12.3%), 46-55 (8.8%), and 56-60 (4.5%) age groups. These figures suggest that younger individuals are more active in digital payments, likely due to their familiarity with mobile technologies and higher adaptability to emerging financial innovations. Younger users are also more likely to experiment with new payment systems like E-CNY, especially if they perceive them as more convenient, secure, or incentivized by government policies.

Occupational Status: The largest group of respondents was full-time employees (35.7%), followed by students (24.4%), self-employed individuals (18.5%), and those working part-time (4.5%). Additionally, 6.8% were unemployed, while 10.1% reported other occupations. These results indicate that digital payment adoption is widespread across different employment groups, but professionals and students are the most engaged users. Professionals may prioritize convenience and security, integrating digital payments into their daily financial activities for efficiency. On the other hand, students may be more influenced by social trends and peer recommendations, making them a key demographic for E-CNY expansion. The self-employed group may also have distinct motivations, such as lower transaction fees and business-related incentives, which could influence their openness to E-CNY.

Income Levels: A significant portion of respondents reported a monthly income between 5,000-10,000 RMB (44.2%), followed by those earning 10,001-20,000 RMB (26.6%). 22.1% of respondents earned below 5,000 RMB, and 7.1% had an income above 20,000 RMB. These figures suggest that middle-income earners are the primary users of digital payments, likely due to their higher purchasing power and financial flexibility. While middle-income individuals dominate the digital payment space, income levels may influence payment preferences and risk perceptions. Higher-income users may have greater trust in private financial institutions and be more reluctant to shift to state-backed digital currencies unless they see clear advantages such as enhanced security, tax benefits, or financial incentives. Conversely, lower-income users may be more price-sensitive, responding to government incentives and cost-saving benefits that E-CNY could offer.

Digital Payment Usage Frequency: Most respondents reported using digital payment methods frequently, with 58.8% making transactions more than 14 times per week and 32.5% using them between 7-13 times per week. Only 7.8% used them 4-6 times weekly, while 1.0% reported using them 1-3 times per week. These results confirm that digital payments are deeply integrated into daily financial activities, highlighting a strong preference for cashless transactions. Frequent digital payment users may have higher expectations for transaction speed, ease of use, and system reliability. This directly impacts their switching behavior, as users with high transaction volumes are less likely to switch to a new payment system unless it offers substantial advantages in terms of efficiency or financial benefits.

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Table 2 Mean, standard deviation, N=308

Construct	Mean	Standard Deviation
SW1. I increasingly prefer using E-CNY over third-party apps for my daily transactions.	2.63	1.261
SW2. I plan to reduce my use of Alipay/WeChat Pay now that I have E-CNY.	2.79	1.445
SW3. I recommend E-CNY to my friends/family more than I recommend third-party apps.	2.84*	1.413
SW4. I expect to perform most of my future mobile payments via E-CNY. Adopted from Bansal et al. (2005); and Wu et al. (2022).	2.80	1.387
PU1. E-CNY makes my payment process faster than other apps.	2.71	1.374
PU2. E-CNY helps me track my expenses more effectively.	2.82*	1.365
PU3. Using E-CNY is more beneficial than using other apps.	2.81	1.375
PU4. E-CNY improves my financial transactions overall. Adopted from Davis (1989); and Chen and Li (2017).	2.69	1.447
T1. I trust that E-CNY transactions are well-protected	4.20	0.733
T2. I believe the PBOC keeps my data secure when I use E-CNY	4.23	0.676
T3. I have more confidence in E-CNY than in private payment apps.	4.25	0.711
T4. I feel safe conducting larger transactions via E-CNY. Adopted from Model (2003); Wu et al. (2022).	4.26*	0.712
GI1. Government promotion makes me more inclined to use E-CNY	2.78	1.489
GI2. Official endorsements increase my confidence in E-CNY	2.75	1.453
GI3. Policies (e.g., pilot programs, subsidies) motivate me to keep using E-CNY	2.83*	1.568
GI4. I rely on government guidance to evaluate the credibility of the E-CNY, as adopted by Cao et al. (2022) and Kharpal (2021).	2.77	1.446
PEU1. It is easy to learn how to use E-CNY	2.78	1.180
PEU2. I find it straightforward to navigate E-CNY's interface	2.85*	1.478
PEU3. I have no trouble making payments with E-CNY in my daily life	2.81	1.401
PEU4. Overall, E-CNY is simple to operate. Adopted from Davis (1989); Venkatesh et al. (2003).	2.83	1.409
PC1. I am concerned that E-CNY may allow more government access to my financial data.	2.83	1.283
PC2.I hesitate to use E-CNY for large payments due to data privacy worries	2.87	1.470
PC3.E-CNY might track my spending too closely	2.88	1.515
PC4.Privacy risks make me use third-party apps instead of E-CNY for certain transactions. Adopted from Smith et al. (1996); and Chen & Li (2017).	2.95	1.384
NE1.I would rely on E-CNY if most stores accepted it	2.80	1.349
NE2. The more people around me use E-CNY, the more I benefit from it.	2.81	1.411
NE3.The wide acceptance of E-CNY among my peers makes it more appealing.	2.86*	1.431
NE4.E-CNY's advantage grows when merchants also favor it over other apps. Adopted from Katz and Shapiro (1985); and Padashetty and Kishore (2013).	2.84	1.407
SI1.Friends or family members encourage me to use E-CNY	2.82	1.492
SI2.People whose opinions I value recommend E-CNY	2.73	1.510
SI3.I feel social pressure when people around me switch to E-CNY	2.73	1.445
SI4.I follow my circle's payment preferences, which affects my choice to use E-CNY over other apps. Adopted from Venkatesh et al. (2003); and Cao et al. (2022).	2.80	1.543

Exploratory Factor Analysis:

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Table 3 Kaiser-Meyer-Olkin (KMO) and Barlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	**0.976**
Bartlett's Test of Approx. Chi-square	11247
Sphericity df	496
Sig.	.000

The KMO value of 0.976 is considered 'excellent' and significantly exceeds the minimum threshold of 0.6, indicating that the sample is highly suitable for factor analysis (Kaiser, 1974). The associated p-value was < 0.001, demonstrating that the correlation matrix is not an identity matrix and that the variables are sufficiently interrelated for factor analysis (Bartlett, 1951). The seven extracted factors collectively explained 70.5% of the total variance, surpassing the recommended minimum of 50%. This indicates that the factor model effectively captures the majority of the data's variability (Watkins, 2018).

Confirmatory Factor Analysis:

Table 4 Confirmatory Factor Analysis (CFA)

Variables	**Composite Reliability**	**Average Variance Extracted**
Switching Behavior	0.932	0.823
Perceived Usefulness	0.912	0.721
Trust	0.802	0.504
Perceived Ease of Use	0.958	0.849
Government Influence	0.932	0.773
Privacy Concerns	0.948	0.822
Network Externalities	0.944	0.808
Social Influence	0.956	0.844

All constructs exhibited CR values above 0.7, according to Hair et al. (2019) stated, which indicates high internal consistency and reliability. The AVE scores above 0.5 ensure that the variance explained by each construct exceeds the measurement error, thereby confirming convergent validity (Fornell & Larcker, 1981). The obtained $\chi^2/df = 1.457$, which is below the recommended threshold of 2.0, indicating a good model fit (Schermelleh-Engel et al., 2003). The CFI value was 0.982, exceeding the standard benchmark of 0.90, suggesting an excellent model fit (Hu & Bentler, 1999). The model produced an RMSEA of 0.0385, well below the 0.06 threshold, confirming strong model adequacy (Kline, 2015). According to Hair et al. (2019), the TLI score of 0.980 further supported the robustness of the model, surpassing the accepted threshold of 0.90. The SRMR value of 0.0331 indicates minimal residual error and a good model fit (Hu & Bentler, 1999). These results confirm that the model effectively captures key digital payment adoption and switching behavior determinants. Given the strong model fit, no items were removed to improve reliability. This suggests that the measured constructs appropriately represent the theoretical framework, making the findings applicable to understanding E-CNY adoption trends in the digital payment ecosystem.

Table 5 Discriminant Validity

	GI	**NE**	**PC**	**PEU**	**PU**	**SI**	**SW**	**T**
GI	0.910							
NE	0.836	0.925						
PC	-0.719	-0.689	0.930					
PEU	0.822	0.817	-0.688	0.942				
PU	0.819	0.791	-0.695	0.837	0.890			
SI	0.817	0.823	-0.667	0.830	0.824	0.939		
SW	0.898	0.861	-0.783	0.876	0.861	0.871	0.928	
T	0.118	0.134	-0.051	0.154	0.075	0.133	0.154	0.764

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The diagonal values represent the square root of AVE for each construct. These values are greater than the inter-construct correlations, indicating that each construct is more strongly related to its indicators than to other constructs. The results confirm that each construct is statistically different from the others, supporting discriminant validity (Henseler et al., 2015).

Structural Equation Modeling (SEM) Analysis:

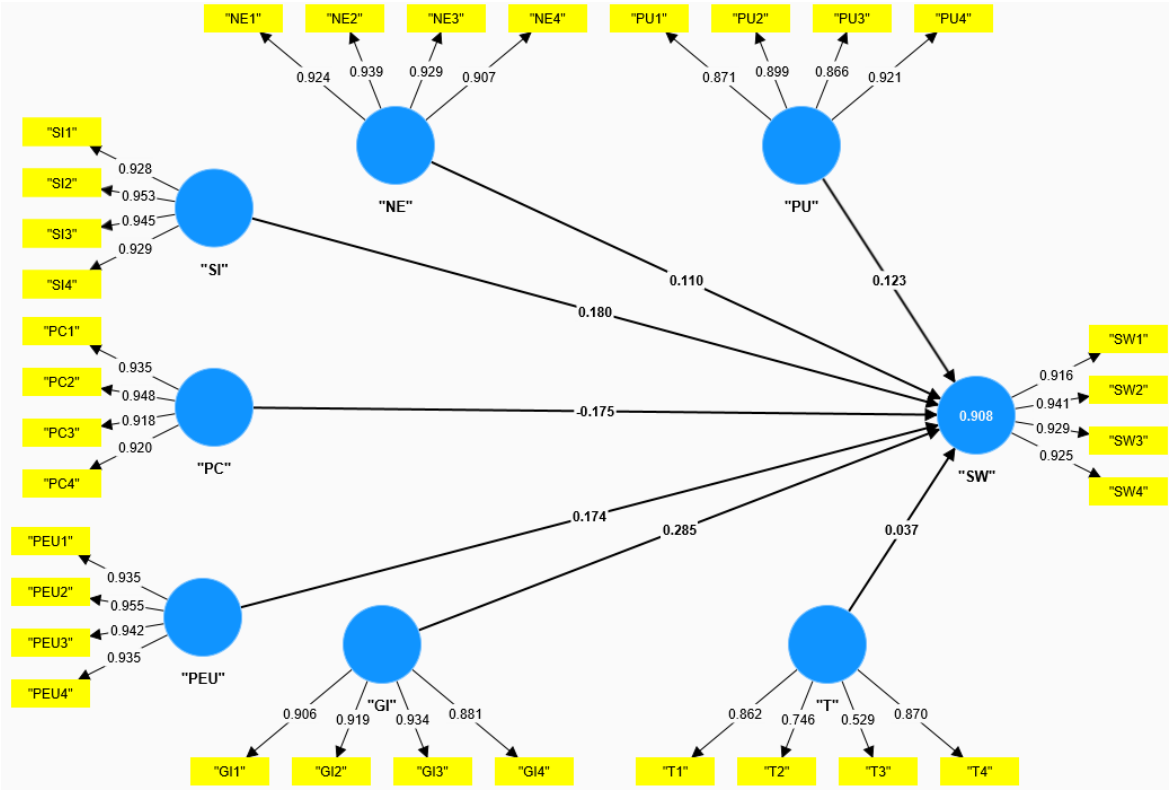

Figure 1 Structural Equation Modeling
Note: Constructed by the author

Structural Equation Modeling (SEM) was applied to test the hypothesized relationships within the structural model. The model demonstrated a good fit to the market data, as indicated by a Standardized Root Mean Square Residual (SRMR) of 0.040 and a Normed Fit Index (NFI) of 0.910. These fit indices meet the commonly accepted thresholds, confirming the adequacy of the model and supporting the validity of further hypothesis testing (Hu & Bentler, 1999).

Hypothesis Test Result:

Table 6 Results of Testing Research Hypothesis

Hypotheses		Estimate (β)	S.E.	t-value	P-value	Result
H1	GI -> SW	0.285	0.056	5.067	<0.001	Support
H2	NE -> SW	0.110	0.048	2.272	0.023	Support
H3	PC -> SW	-0.175	0.031	5.548	<0.001	Support
H4	PEU -> SW	0.174	0.052	3.329	0.001	Support
H5	PU -> SW	0.123	0.042	2.957	0.003	Support
H6	SI -> SW	0.180	0.046	3.919	<0.001	Support
H7	T -> SW	0.037	0.021	1.767	0.077	Not Support

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Discussion

The findings of this study align with previous research on the factors affecting the adoption of China's digital currency, E-CNY.

Government Influence (H1: $\beta = 0.285$, $p < 0.001$) has the strongest effect on switching behavior, confirming that state-driven initiatives, financial incentives, and regulations play a key role in digital currency adoption (Zhou et al., 2025). However, a critical question remains: Will users continue using E-CNY once these government incentives are reduced? While state policies can accelerate adoption, maintaining long-term usage may require additional benefits beyond policy-driven encouragement. Future studies should explore whether habit formation, unique advantages, or regulatory enforcement will sustain E-CNY usage over time. In the PPM framework, government influence functions as a pull factor, attracting users by creating an environment where E-CNY adoption is encouraged through external benefits. However, the long-term sustainability of this influence remains uncertain. While government policies can drive initial adoption, continued use may require intrinsic advantages such as improved convenience, lower costs, or enhanced security.

Network Externalities (H2: $\beta = 0.110$, $p = 0.023$) influence switching behavior, but their effect is weaker than government intervention. This means that the broader acceptance of E-CNY among merchants and users does help adoption, but it is not the primary driving force (Li et al., 2024). Users are more likely to switch when E-CNY is widely accepted in retail and online transactions. However, without additional incentives or seamless integration with existing payment systems, these network effects alone may not be enough to encourage widespread adoption. From a UTAUT perspective, network externalities align with social influence, where individuals are more likely to use a technology if their peers and merchants widely accept it. In the PPM framework, network effects serve as both a push factor (users leaving third-party apps due to limited integration) and a pull factor (being drawn to E-CNY due to its expanding ecosystem). However, without additional incentives or seamless interoperability with existing systems, these network effects alone may not be sufficient to drive widespread adoption.

Privacy Concerns (H3: $\beta = -0.175$, $p < 0.001$) act as a significant barrier to switching, reflecting fears about data security, government monitoring, and a lack of transparency in digital transactions (Tronnier & Qiu, 2024). Many users hesitate to adopt E-CNY due to these concerns. Addressing this issue may require clearer policies on data protection, stronger encryption mechanisms, and better communication about managing user data. If policymakers can enhance privacy protections and increase user confidence, more consumers may be willing to transition to E-CNY. According to TAM, privacy concerns reduce perceived trust and usefulness, discouraging adoption. Under UTAUT, privacy concerns negatively impact effort expectancy and trust, making users less likely to engage with E-CNY. In the PPM framework, privacy concerns function as a mooring factor, preventing users from switching due to fear of surveillance or data misuse. Addressing these issues requires more straightforward data protection policies, stronger encryption mechanisms, and improved transparency in handling transaction data.

Perceived Ease of Use (H4: $\beta = 0.174$, $p = 0.001$) and Perceived Usefulness (H5: $\beta = 0.123$, $p = 0.003$) both contribute to switching behavior, aligning with the Technology Acceptance Model (TAM) (Karina, 2024). From a UTAUT perspective, ease of use relates to effort expectancy, while usefulness aligns with performance expectancy. In the PPM framework, ease of use can be a pull factor, attracting users who find E-CNY convenient. However, their moderate effect sizes suggest that E-CNY does not yet provide a strong advantage over existing third-party platforms like Alipay and WeChat Pay. Users may not see significant improvements in transaction speed, cost savings, or security, leading to a lack of motivation to switch. To enhance adoption, E-CNY needs to offer clear functional benefits that differentiate it from existing platforms.

Social Influence (H6: $\beta = 0.180$, $p < 0.001$) plays a role in E-CNY adoption, meaning that peer recommendations and endorsements from influential figures can encourage users to switch (Song & Wang, 2022). Under UTAUT, social influence strongly affects behavioral intention, as users are more likely to adopt a technology if their peers and role models use it. In the PPM framework, social influence can be

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both a push factor (moving away from third-party apps due to peer encouragement) and a pull factor (drawing users into E-CNY through social validation). However, its effect is smaller than government influence, indicating that top-down strategies, such as policy-driven incentives, are more effective than organic peer-driven adoption. While social influence may contribute to gradual adoption, large-scale transitions will likely require government-led promotions, merchant integration, and consumer incentives.
Trust: A Less Important Factor

Under UTAUT, trust is linked to facilitating conditions where users rely on familiar institutions to ensure secure transactions. In the PPM framework, trust can serve as a mooring factor, preventing users from switching due to concerns about reliability. However, in this study, Trust (H7: $\beta = 0.037$, $p = 0.077$) does not significantly impact switching behavior, which contrasts with previous studies emphasizing the role of trust in digital financial adoption. Interestingly, the mean value of trust-related responses (T1-T4) is high (4.20 – 4.26), indicating that users generally trust digital payments. The standard deviation (SD = 0.67 – 0.73) is relatively low, showing that opinions on trust are consistent. A possible explanation is that users already trust existing third-party payment apps, making trust in E-CNY less of a deciding factor.
Since Alipay and WeChat Pay have been dominant in China's digital payment landscape for years, users may not feel the need to assess E-CNY's reliability separately. This suggests that adoption decisions are based more on functionality, convenience, and incentives than trust alone.

Conclusion

This study examined the factors influencing users to switch from third-party payment applications to E-CNY. The findings highlight that government influence, social influence, network externalities, perceived usefulness, and ease of use positively impact adoption, while privacy concerns negatively affect switching behavior. Interestingly, trust was not a significant factor, suggesting that users already trust digital payments and that other factors, such as government policies and social influence, play a more critical role in their decision-making.

To increase E-CNY adoption, policymakers and financial institutions should enhance usability, address privacy concerns, expand incentives, and encourage social influence. Instead of focusing on trust-building, efforts should be directed toward making E-CNY more convenient, widely accepted, and privacy-friendly. By implementing these strategies, E-CNY can become a stronger alternative to existing digital payment platforms.

Recommendations

Government Influence: Since government policies have the strongest impact on E-CNY adoption, offering tax benefits can encourage both individuals and businesses to switch. The policymaker may introduce tax deductions or rebates for individuals who use E-CNY for essential transactions such as utilities, public transport, and online purchases, as well as lower corporate tax rates or transaction fee exemptions for businesses that integrate E-CNY as a primary payment option.

Social Influence: People are more likely to adopt E-CNY if they see others using it. A strong social influence strategy is needed to drive peer adoption. People are more likely to adopt E-CNY if they see others using it. A strong social influence strategy is required to drive peer adoption. The policymaker may introduce peer-to-peer (P2P) rewards, where users receive cashback or points for sending E-CNY to friends. Collaborate with social media influencers to demonstrate the benefits of using E-CNY for daily transactions. Organize university and workplace adoption programs, where employees and students are encouraged to use E-CNY for purchases and salary disbursements.

Privacy Concerns: Since privacy concerns reduce adoption, providing a privacy-friendly feature can help alleviate user fears. The policymaker may introduce an anonymous transaction mode for small-value payments (e.g., transactions below 500 RMB). Provide users with detailed privacy control settings, allowing them to choose how much transaction information is shared.

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Perceived Ease of Use: To make E-CNY more convenient, it should work seamlessly within the platforms users already use. The policymaker may introduce a one-click E-CNY wallet setup within existing banking and payment apps. Allow auto-conversion of digital yuan within third-party platforms to minimize friction.

Perceived Usefulness: Since users adopt E-CNY when they see its value, offering financial benefits can increase perceived usefulness. The policymaker may provide higher interest rates for users who hold E-CNY deposits in their digital wallets. Launch government-backed investment plans where users can earn incentives by saving in E-CNY instead of traditional bank deposits.

Network Externalities: More businesses need to accept E-CNY as a standard payment option to create a network effect. The policymaker may provide temporary subsidies for small and medium-sized enterprises (SMEs) that integrate E-CNY payment infrastructure. Collaborate with major e-commerce platforms (JD.com, Taobao, Pinduoduo) and supermarkets to offer exclusive discounts for E-CNY transactions.

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