



Toward a Conceptual Framework to Explain the Intermittent Discontinuance in Electronic Chinese Yuan (e-CNY) Usage

e-CNY Intermittent Discontinuance Framework

Jung-Chieh Lee^{1,*}, Ziyang Ou^{2,a}, Ziyue Luo^{1,b}

¹Bay Area International Business School, Beijing Normal University at Zhuhai, Zhuhai, China

²Business School, Beijing Normal University, Beijing, China

*jclee@bnu.edu.cn, ^azyou20001@163.com,

^b202311109087@mail.bnu.edu.cn

Abstract. This paper describes the development of a conceptual framework to explain intermittent discontinuance in electronic Chinese yuan (e-CNY) usage, a postadoption behavior characterized by alternating periods of use and temporary withdrawal. Drawing on the stress–strain–outcome (SSO) framework, the model identifies four key stressors—system feature overload, absence of incentives, insufficient usage scenarios, and user inertia—that influence two forms of psychological strain: usage fatigue and neutral satisfaction. These strain variables are proposed as the primary drivers of intermittent discontinuance. As a conceptual study, the paper does not conduct empirical testing; rather, it provides a theoretically grounded foundation for future research. In the next phase, data from experienced e-CNY users will be collected to validate and refine the proposed model using quantitative analysis. This framework advances the understanding of fluctuating central bank digital currencies (CBDCs) postadoption behaviors and offers guidance for future empirical inquiry and practical improvement of e-CNY user engagement.

Keywords: Central bank digital currencies (CBDCs), electronic Chinese yuan (e-CNY), stress–strain–outcome (SSO) framework, intermittent discontinuance

1 Introduction

While the rapid development of digital technology and the expansion of the digital economy have significantly reshaped global payment ecosystems, advances in distributed ledger technology, mobile networks, and cryptographic mechanisms have accelerated the emergence of new forms of digital currency, including central bank digital currencies (CBDCs) [1]. In response to the declining use of physical cash, rising digital payment penetration, and intensified competition from private digital currencies, many national monetary authorities have initiated research and pilot testing of CBDCs.

China's digital currency—electronic Chinese yuan (e-CNY)—is one of the most advanced and large-scale CBDC experiments in the world [1]. Designed and issued by the People's Bank of China (PBOC), the e-CNY serves as a digital form of legal tender with equal value to physical renminbi, supporting functions such as unit of account, medium of exchange, and store of value. With controllable anonymity, offline payment capability, and integration with existing financial infrastructures, the e-CNY aims to provide a secure, efficient, inclusive, and low-cost retail payment alternative. Despite strong governmental support and the steady expansion of pilot zones, real-world e-CNY usage remains limited. According to official data and industry reports, although millions of merchants now accept e-CNY, the frequency of actual user engagement remains low. Many users report that they tried e-CNY only during the initial promotional campaigns—often triggered by government-issued “red packet” incentives—but ceased using it once subsidies ended or when usage scenarios were limited. For example, some users express disappointment that e-CNY cannot be used in many locations, while others find the digital wallet interface complex or perceive the application as overly complicated. As reported in multiple public opinion surveys, more than 15% of users stopped using e-CNY after their first attempt, and more than 40% have never used it despite awareness of its existence.

This usage pattern indicates the presence of intermittent discontinuance—a behavioral phenomenon in which users neither fully adopt nor permanently abandon the technology. Instead, they use e-CNY sporadically, alternating between periods of inactivity and renewed usage when external triggers occur (e.g., financial incentives, specific transactions, social influence). Unlike the continuous usage behavior commonly studied in the technology adoption literature, intermittent discontinuance represents a cyclical and fluctuating behavioral pattern that has been widely observed in information systems and social media contexts but remains underexplored in the domain of digital payments and CBDCs. Existing research on CBDC adoption has focused primarily on adoption intention and continuance usage intention, examining factors such as perceived usefulness and ease of use [2, 3]. However, limited attention has been given to actual postadoption behavioral fluctuations—especially the phenomenon of users temporarily discontinuing use despite having previously adopted the technology. This gap is particularly problematic because the long-term success of e-CNY requires not only initial adoption but also stable, continuous integration into users' daily payment routines.

To address this research gap, this study introduces the concept of intermittent discontinuance into the CBDC research context and empirically examines its antecedents and psychological mechanisms. Intermittent discontinuance is defined as a nonlinear postadoption behavior characterized by alternating phases of use and nonuse driven by external conditions, user emotions, and contextual constraints. This behavior differs fundamentally from permanent discontinuance, in which users switch permanently to alternative payment systems. Understanding intermittent discontinuance is crucial because it reflects early-stage instability in user engagement and reveals barriers that impede the habitual integration of e-CNY into daily life.

Building on insights from information systems research, this study employs the stress–strain–outcome (SSO) framework as its core theoretical model [4]. Originally

proposed in psychology, the SSO framework explains how external stressors trigger psychological strain, which then leads to behavioral responses. In the context of e-CNY usage, this study conceptualizes four key stressors:

System feature overload - users experience a cognitive burden due to excessive or redundant functions in the e-CNY application [5];

Absence of subsidized incentives — diminished usage motivation after promotional benefits or “red packet” subsidies are discontinued [6];

Absence of usage scenarios — insufficient real-life acceptance points or limited integration with merchants and services [7];

User inertia — habitual reliance on familiar payment methods (e.g., WeChat Pay and Alipay), which reduces the motivation to switch [1].

These stressors are theorized to trigger two forms of psychological strain:

Usage fatigue, i.e., emotional exhaustion resulting from overload or friction [8], and

Neutral satisfaction, i.e., a state in which expectations are partially met—neither satisfied nor dissatisfied—but insufficient to drive continued usage [9]. These strains subsequently lead to intermittent discontinuance behavior [9], offering an integrated explanation of why users temporarily withdraw from e-CNY usage despite prior adoption.

This study makes several important contributions to the emerging literature on CBDC user behavior. First, it expands the scope of CBDC research by introducing intermittent discontinuance as a distinct postadoption behavioral construct, moving beyond the traditional focus on adoption intention and continuance intention. Second, it advances the theoretical understanding of e-CNY user psychology by integrating the stress–strain–outcome (SSO) framework, thereby offering a unified lens for explaining fluctuating usage patterns. Third, it identifies and conceptually maps the system-level and contextual stressors that may lead to disengagement—such as feature overload, insufficient incentives, limited usage scenarios, and habitual reliance on existing payment platforms. As a conceptual contribution, the proposed framework has not yet undergone empirical testing, but it establishes a clear foundation for future validation. By theorizing the pathways through which stressors generate psychological strain that ultimately results in intermittent discontinuance, this study deepens the scholarly understanding of postadoption instability in digital currency usage and provides a basis for future empirical research and practical strategies aimed at promoting sustained engagement with e-CNY.

2 Literature Review

2.1 Central Bank Digital Currencies and e-CNY Usage Behavior

Central bank digital currencies (CBDCs) represent a major innovation in global monetary systems [1]. Designed and issued by central banks, CBDCs aim to enhance payment efficiency, strengthen monetary sovereignty, promote financial inclusion, and reduce reliance on private digital platforms. China’s electronic Chinese yuan (e-CNY) is among the most advanced CBDC initiatives and is distinguished by features such as controllable anonymity, offline payment support, and integration with commercial

banking systems [10]. Despite strong institutional support, the mass adoption and habitual usage of e-CNY remain limited. Multiple surveys indicate that although millions of individuals have downloaded e-CNY wallets, only a small percentage use it frequently, and many discontinue usage after initial trials.

Existing research on e-CNY focuses primarily on adoption intention rather than post-adoption usage patterns. More specifically, studies highlight perceived usefulness, trust in institutions, perceived fairness, security, and government support as major determinants of users' willingness to adopt e-CNY [2, 3, 10, 11]. For example, perceived institutional trust and the understanding that e-CNY does not commercialize user transaction data have been shown to increase adoption intention. However, conversion cost—defined as the effort required to shift from WeChat Pay or Alipay to e-CNY—negatively affects adoption and continuance intention. Prior research also indicates that individuals who value privacy protection or distrust commercial banks are more likely to consider CBDCs. However, these studies overlook a crucial phenomenon observed in real-world e-CNY usage, i.e., intermittent discontinuance, where users alternate between usage and nonusage. Although traditional technology acceptance models (TAM and UTAUT) are effective for predicting adoption intention [2, 3, 10, 11, 14], they are limited in explaining postadoption fluctuations. Thus, a broader theoretical framework is needed to capture dynamic and cyclical user behaviors after adoption.

2.2 Intermittent Discontinuance in Information Systems Research

Intermittent discontinuance refers to a behavioral pattern in which users do not permanently abandon a technology but instead cycle between periods of active use and temporary nonuse [9]. This concept originates from information systems and social media research, where discontinuous behavior reflects users' attempts to manage emotional overload, cognitive burden, and external constraints [9].

Shen et al. (2018) conceptualize intermittent discontinuance as neither continuous usage nor complete abandonment. Users may disengage temporarily because of negative experiences—such as fatigue, boredom, or friction—and return later when conditions improve [9]. Other studies emphasize the role of neutral satisfaction, defined as a state of “neither satisfied nor dissatisfied,” which occurs when expectations are only partially met [9]. Users with neutral satisfaction may not be motivated enough to continue usage consistently but do not perceive the product negatively enough to permanently abandon it. Hence, researchers have identified several factors associated with intermittent discontinuance across different platforms, including the following:

- System feature overload increases cognitive load and frustration;
 - Information overload leads to emotional exhaustion;
 - Inadequate incentives reduce user motivation to remain active;
 - Habitual reliance on alternative platforms increases abandonment risk; and
 - Contextual constraints (e.g., lack of applicable scenarios) hinder sustained usage.
- Intermittent discontinuance is typically triggered by strain, such as burnout or dissatisfaction, which results from the misalignment between user expectations and actual experience. Users who intermittently discontinue a service often return later for

short-term needs or because of situational demands, but they do not fully commit to stable usage.

Although the concept is well established in social media and mobile payment research, it has not yet been systematically applied to CBDCs [9]. Considering the unique characteristics of e-CNY—government-issued legal tender, mandatory merchant compliance in certain areas, and the lack of commercial incentives—users' intermittent discontinuance may be driven by mechanisms distinct from those in private payment applications.

2.3 Stress–Strain–Outcome (SSO) Framework

The stress–strain–outcome (SSO) framework is a well-established theoretical structure originally developed in psychology to explain how environmental pressures trigger internal psychological responses and, subsequently, behavioral outcomes [4]. In the SSO sequence, stressors represent external or environmental demands that exert cognitive, emotional, or situational pressure on an individual; strain reflects the internal psychological state that arises from prolonged exposure to these pressures and is typically manifested as fatigue, overload, anxiety, or dissatisfaction [12]. Outcomes represent behavioral consequences [12], which in digital contexts typically include avoidance, disengagement, discontinuance, and reduced frequency of use.

In information systems research, the SSO model has been widely used to explain problematic technology usage and discontinuance behaviors [13]. Accordingly, prior studies have applied SSO to diverse digital contexts, including mobile payment discontinuance, where technology overload and usability barriers lead to withdrawal behavior; social media burnout, where information overload and constant social comparison create emotional exhaustion; resistance to biometric payment systems, where privacy concerns and technological anxiety generate strain; and platform fatigue in sharing economy services, where platform complexity, coordination difficulties, and reputational pressure drive disengagement. Across these domains, common stressors—such as information overload, system feature overload, communication pressure, privacy concerns, and technological complexity—have consistently been shown to induce psychological strain. Such strain often takes the form of emotional exhaustion, cognitive fatigue, anxiety, or dissatisfaction. Once strain reaches a threshold, users begin to reduce their level of engagement, withdraw temporarily, or abandon the technology altogether.

The SSO framework is particularly relevant for understanding technology discontinuance because it acknowledges that disengagement is not always a function of perceived usefulness or ease of use (as posited by TAM or UTAUT). Instead, it recognizes that negative experiences can accumulate over time, gradually increasing strain and prompting disengagement even when users initially accepted the technology [4]. In the context of e-CNY, the SSO framework provides a powerful explanatory lens for understanding intermittent discontinuance, a cyclical behavioral pattern in which users oscillate between usage and nonusage. Traditional adoption-focused theories—such as TAM, UTAUT, and diffusion of innovation theory—primarily address users' adoption intention or intention to continue using a system, but they do not explicitly consider

temporary withdrawal or fluctuating usage after adoption. These models assume a linear progression from adoption to continuance; however, real-world e-CNY usage demonstrates a nonlinear, unstable trajectory for many users [1]. Applying the SSO framework to e-CNY enables researchers to systematically capture the following dynamic process: Stressors, such as system feature overload, insufficient incentives, a lack of usage scenarios, and inertia toward established payment methods, impose pressure on users. These pressures generate strain, manifested as usage fatigue (emotional exhaustion) or neutral satisfaction (minimal engagement without positive reinforcement). This strain leads to the outcome of intermittent discontinuance, where users temporarily disengage until new incentives, situational needs, or contextual triggers re-engage them.

Furthermore, the SSO framework offers conceptual flexibility to incorporate both technical stressors (e.g., complex user interface, function overload) and contextual stressors (e.g., weak ecosystem support, lack of merchant acceptance). The ability to model simultaneous psychological and situational influences makes SSO particularly appropriate for e-CNY research as it involves unique institutional, technological, and social components not present in commercial payment platforms. Thus, the SSO perspective fills a critical theoretical gap by explaining how external friction points and internal emotional responses interact to drive recurring cycles of usage and nonusage. By integrating stressors, strain, and outcomes into a unified model, the SSO framework provides a comprehensive explanation for intermittent discontinuance in e-CNY usage—an emerging behavioral phenomenon that traditional adoption theories cannot adequately capture.

3 Theoretical Model and Hypotheses

This study adopts the SSO framework as the overarching theoretical foundation to explain why e-CNY users engage in intermittent discontinuance—a cyclical behavioral pattern in which users alternate between temporary usage and temporary abandonment rather than consistently adopting or permanently withdrawing from the system. In the SSO framework, stressors represent external pressures encountered during e-CNY usage, strain represents internal psychological responses, and outcomes represent behavioral consequences. This research conceptualizes four stressors—system feature overload, absence of incentives, absence of usage scenarios, and user inertia—that lead to two forms of psychological strain—usage fatigue and neutral satisfaction—which, in turn, influence intermittent discontinuance. The conceptual model developed to explain intermittent discontinuance in e-CNY usage is presented in Figure 1.

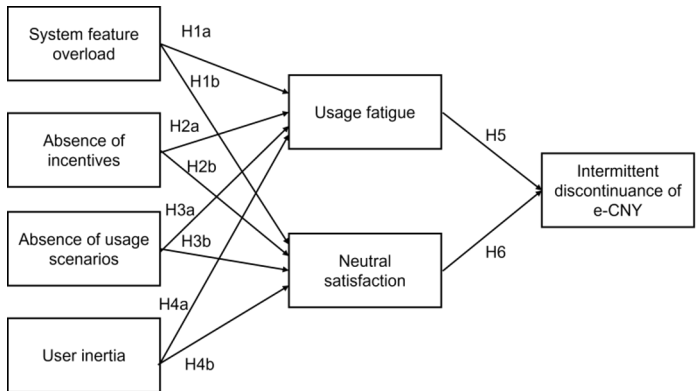


Fig. 1. A conceptual model for intermittent discontinuance in e-CNY usage

3.1 System Feature Overload

System feature overload describes a condition in which the application offers more functions than users require or can comfortably process [5]. This excessive diversification of features increases the cognitive burden, elevates learning costs, and complicates task performance, which results in decreased usability. For e-CNY, users must navigate multiple wallet types (soft/hard wallet), authentication tiers, various payment modes (scan, tap, NFC), and unfamiliar terminologies [15]. Accordingly, users frequently report confusion or frustration with the interface, contributing to emotional exhaustion and reduced satisfaction. Past studies in information systems confirm that feature overload induces fatigue, burnout, and diminished satisfaction. When users perceive that a system’s complexity exceeds its functional benefits, strain accumulates over time. Thus, we propose the following hypotheses:

- H1a: System feature overload positively affects usage fatigue.
- H1b: System feature overload positively affects neutral satisfaction.

3.2 Absence of Incentives

Incentives play a crucial role in motivating the initial adoption of digital payment platforms [6]. During early e-CNY pilots, red envelopes and merchant discounts attracted widespread user participation. However, reliance on incentives may undermine long-term adoption stability. When subsidy programs are reduced or eliminated, users experience a lack of continued motivation, leading to disappointment and decreased engagement. According to expectation – disconfirmation theory, users form expectations on the basis of initial experiences; when subsequent experiences fall short, strain manifests as dissatisfaction or fatigue. In the context of e-CNY, the elimination of subsidies may be interpreted as increased cost or decreased value, thereby generating emotional strain and lowering satisfaction. Thus, we propose the following hypotheses:

- H2a: The absence of incentives positively affects usage fatigue.
- H2b: The absence of incentives positively affects neutral satisfaction.

3.3 Absence of Usage Scenarios

Widespread acceptance and integration into everyday life are critical for forming habitual payment behaviors. Although e-CNY acceptance has expanded, significant gaps persist in real-world usage scenarios. This is because many merchants lack compatible payment terminals and because adoption across industries remains inconsistent. For users, encountering repeated limitations—such as the inability to pay at restaurants and convenience stores or to pay service providers—creates friction and erodes motivation. From a service design perspective, insufficient scenarios reduce perceived usefulness, increase uncertainty, and erode trust in the system's functional reliability [7]. Users facing these constraints may experience frustration or fatigue, which contributes to discontinuous usage patterns. Thus, we propose the following hypotheses:

H3a: The absence of usage scenarios positively affects usage fatigue.

H3b: The absence of usage scenarios positively affects neutral satisfaction.

3.4 User Inertia

User inertia—habitual reliance on established payment methods—is a central barrier to sustained e-CNY usage [1]. In China's mobile payment environment, Alipay and WeChat Pay dominate through deeply embedded ecosystems, extensive merchant acceptance, and seamless user experiences [16]. Even when users adopt e-CNY, habitual patterns may prompt a return to familiar systems, as status quo bias theory posits that users prefer familiar options even when alternatives provide advantages. Moreover, inertia increases resistance to switching and reduces cognitive engagement with new systems. In digital financial services, inertia is directly linked to reduced willingness to experiment, decreased learning motivation, and increased likelihood of temporary abandonment. Thus, we propose the following hypotheses:

H4a: User inertia positively affects usage fatigue.

H4b: User inertia positively affects neutral satisfaction.

3.5 Usage Fatigue and Intermittent Discontinuance

Usage fatigue is conceptualized as emotional exhaustion associated with cognitive overload, friction, or unmet expectations [8]. When users grow weary of navigating complex features, lack incentives, or face poor scenario availability, they are more likely to disengage temporarily. Prior studies on social media, mobile payments, and technology stress indicate that fatigue reliably predicts discontinuance decisions. Hence, users who experience fatigue tend to reduce usage frequency, avoid the system, or bounce between use and nonuse periods. Thus, we propose the following hypothesis:

H5: Usage fatigue positively influences intermittent discontinuance.

3.6 Neutral Satisfaction and Intermittent Discontinuance

Neutral satisfaction represents a psychological state in which expectations are minimally fulfilled—neither positive enough to encourage continuous usage nor negative

enough to justify complete abandonment [9]. Users in this neutral zone often exhibit minimal engagement, low motivation, and sporadic return behavior. In the context of e-CNY, neutral satisfaction reflects weak emotional investment, where users use e-CNY occasionally but default back to preferred payment methods. Thus, we propose the following hypothesis:

H6: Neutral satisfaction positively influences intermittent discontinuance.

4 Conclusion: What is Next?

This paper develops a conceptual framework for understanding intermittent discontinuance. However, as a conceptual study, the current work does not empirically test the proposed relationships. Instead, it offers a theoretically grounded foundation that sets the stage for future empirical validation. The next step in this research program is to collect data from individuals with actual e-CNY usage experience. This sample will allow us to examine real-world behavioral patterns, assess the reliability and validity of the measurement scales, and evaluate the model using appropriate quantitative techniques such as PLS-SEM and CB-SEM. In particular, future empirical work will test the mediating role of usage fatigue and neutral satisfaction and explore whether demographic, contextual, and behavioral factors further moderate the proposed relationships.

By advancing a clear conceptual pathway and identifying specific constructs for operationalization, this study provides a blueprint for future empirical inquiry. The proposed framework not only contributes to theoretical discussions on CBDC postadoption behavior but also offers practical insights that can guide policymakers, platform designers, and financial institutions as they work to enhance the stability and sustainability of e-CNY usage. Accordingly, future empirical research will be essential to validate, refine, and potentially extend the model, ensuring a deeper understanding of the mechanisms driving intermittent discontinuance in real-world digital currency ecosystems.

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