

A Comprehensive Literature Review on the Acceptance of Cashless Payment Methods in Higher Education: From the Technology Acceptance Model (TAM) to Institutional Realities

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ABSTRACT

The shift toward a cashless society has been significantly advanced through improvements in both financial technology and digital infrastructure. Also important was the rapid increase in the number of digital payment platforms available. Therefore, this literature review will integrate current research examining student adoption and the transition from behavioral intention to Actual System Use (ASU) of cashless payment systems in higher education. Using the Technology Acceptance Model (TAM) this literature review is specifically interested in how perceived usefulness, perceived ease of use, perceived trust, and perceived risk contribute to students' decision to utilize cashless payments. Although there appears to be some empirical support for TAM's theoretical constructs they appear to have varying levels of predictive ability when applied across different technological, demographic, and contextual domains. Specifically, recent studies suggest that as digital payment technologies continue to become widely used and more socially accepted; conventional TAM-based factors (e.g., perceived usefulness, perceived ease of use) will likely diminish in importance relative to other variables (e.g., habit, social norms, facilitating conditions, context) when attempting to explain usage behavior for digitally-experienced users. These findings highlight the potential necessity for researchers to revisit the application of established acceptance models within mature digital-payment environments. The literature also provides an opportunity for researchers to investigate additional factors that can enhance or inhibit acceptance including habits, social influences, facilitation conditions, and contextual characteristics. Overall, the literature review identifies changing trends in the study of cashless payment adoption and provides opportunities to develop/refine existing TAMs for increasingly normalized digital financial technologies. Finally, implications for theory, higher education practices, and digital-payment policies are provided along with suggestions for future research.

Keyword: Cashless Payment Adoption; Digital Payment; Technology Acceptance Model; Student Adoption Behaviour; FinTech

INTRODUCTION

The Evolution of Cashless Payments

Cashless Payment Systems provide the foundation upon which today's digital financial environment is built. These systems enable the completion of all types of financial transactions digitally without utilizing physical currency. Therefore, they do not require physical currency in order to complete financial transactions. They exist via smartphone apps, debit/credit cards and other forms of electronic funds transfer. The evolution of cashless payment systems began in the 1950's with the development of the first credit card issued by Diners Club. Although the use of the Diners Club Card was limited to a small segment of the population, it provided consumers with a new way to make purchases. It also removed the requirement for consumers to have immediate access to cash when making a purchase. It allowed consumers to delay paying for a product or service until after the item had been purchased, thus creating a new type of buying method that would

eventually lead to what we now know as the digital transaction era. The proliferation of the Internet in the 1990's led to the ability for banks to create online banking platforms that enabled consumers to remotely view their account information and conduct financial transactions electronically. Online banking platforms also created secure environments where consumers could store their personal financial information and then use that information to make electronic purchases. Since that time, digital payment ecosystems including credit/debit networks, mobile payments, and electronic wallets (also known as e-wallets), etc., have evolved significantly providing consumers with unprecedented ease-of-use, reducing the amount of friction involved in completing a transaction, and ultimately being accepted world-wide.

Global and Regional Drivers of Adoption

The current trend toward transitioning the entire globe to cashless systems has dramatically increased over recent years due to rapid advances in technology, changing consumer preferences and pressures from the macro-economy. As reported by Capgemini in its 2023 World Payments Report, total volumes of non-cash transactions continued to show strong resiliency, increasing to nearly 1.3 trillion transactions worldwide in 2023. Additionally, it is forecasted that non-cash transaction volumes will increase at a CAGR (Compound Annual Growth Rate) of 15%, from 2022 through 2027, primarily due to continued growth in the digital payment infrastructure and the emergence of new payment products.

Malaysia is currently leading the charge toward becoming a cashless society in the Southeast Asia region due to the implementation of a number of state-led initiatives that are intended to increase the country's level of digital inclusiveness. A significant factor contributing to this behavioral change has been the strategic fiscal measures implemented by the Malaysian Government to promote economic development and encourage cashless transactions. One example of such an intervention was the launch in November 2023 of the eMADANI program. Under this program, the Malaysian Government established a one-time RM100 e-wallet credit to 10 million eligible adult citizens who were included in a database that identified them as having earned an annual income of less than RM100,000. The eMADANI program specifically targeted those citizens who were either receiving STR benefits or had previously received such benefits. The objective behind implementing such programs is based on research evidence demonstrating that inducing people initially to adopt a habit results in future long term usage of that same habit.

As a result of this government sponsored initiative, there has been a significant increase in national adoption statistics. In fact, according to various sources, total digital wallet transaction amounts in Malaysia totaled MYR 106.7 billion in 2023, representing almost double the total transaction amount compared to prior year totals. Additionally, data published by Statista Research Department (2023) revealed that in Malaysia 35% of respondents relied on online banking and/or debit cards for their majority of digital purchases while 26% used e-wallets. These two cashless alternatives have become the dominant cashless options among consumers in Malaysia because they both possess characteristics that include low-friction user experiences as well as seamless integration into consumers' daily commerce activities.

The Impact of the COVID-19 Pandemic

The rapid spread of the COVID-19 pandemic served as a powerful exogenous event that rapidly transformed consumer behavior and use of cashless payment systems on a global scale. As the public became increasingly concerned with contracting the virus from contact with physical objects during this time, they quickly adopted a strong aversion to handling paper money. In response, contactless transactions and cashless payments surged dramatically. At the same time, governments were forced to impose significant, mandatory limits on people's movements and implement extended lockdowns which severely limited consumers' ability to make purchases at brick-and-mortar stores or pay bills in person. These travel restrictions created an urgent need for individuals to utilize electronic funds transfer and remote online banking services in order to continue participating in their local economies. The pandemic had a profound impact on Malaysia's digital financial environment. According to Ho et. Al., (2024), the unique conditions created by the pandemic fundamentally altered the trajectory of the country's domestic e-wallet market and led to rapid growth in consumers' knowledge of digital financial products due to necessity as opposed to just being convenient.

Adoption Dynamics in Higher Education

Higher education institutions are among the most important demographics through which cashless payment ecosystems will proliferate, mainly due to the fact that student cohorts tend to represent some of the most digitally savvy, "early-adopter" consumers of contemporary financial technologies. In academic environments, like Universiti Teknologi MARA (UiTM) Shah Alam, digital payment architectures have become deeply integrated within the core infrastructure of each institution. For example, many university administrative policies now require all tuition and administrative disbursements to be made exclusively via online financial gateways. Further, the increasing digitization of campus micro-economies encompassing automated vending services and localized food and beverage merchants creates an environment of forced adoption; students who do not accept these payment modalities will encounter significant transactional friction and limited access to essential campus amenities.

Despite the widespread structural integration of these technologies and the digital nativity of the student demographic, recent literature suggests that measuring technology acceptance amongst younger cohorts is increasingly inadequate. While it has been observed that younger cohorts exhibit profound smartphone dependency and a high propensity towards technological assimilation, differences in adoption rates remain tangible. Evidence from research studies attributes this reluctance to entrenched psychological barriers and perceived risks specifically, concerns surrounding data privacy breaches, systemic security vulnerabilities, and unauthorized transactions. Therefore, decoding the multidimensional factors that govern students' behavioral intention to adopt and continuously utilize such systems emerges as a critical imperative. A detailed understanding of these cognitive and environmental determinants is indispensable for institutional policymakers and FinTech administrators seeking to mitigate adoption barriers, alleviate security concerns, and create a frictionless digital financial ecosystem.

THEORETICAL FRAMEWORK: THE TECHNOLOGY ACCEPTANCE MODEL (TAM)

The Technology Acceptance Model (TAM), originally developed by Davis in 1989, remains one of the most robust and widely applied theoretical frameworks for exploring user acceptance of new technologies and electronic services. The TAM framework posits that a user's decision to adopt a new technology is primarily determined by their behavioral intention to use it. Behavioral intention, in turn, is influenced by two core cognitive beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Davis (1989) concluded that perceived ease of use indirectly affects technology acceptance by enhancing perceived usefulness, thereby shaping user attitudes and intentions toward adoption. The model has been validated across multiple disciplines, including education, psychology, and consumer behavior, establishing it as a major theory for explaining why users accept or reject technological innovations.

Recent literature reviews, such as the state-of-the-art review by Lee et al. (2025), emphasize that TAM remains highly adaptable. However, a major weakness of traditional TAM-focused reviews in digital finance is the over-simplification of the framework and a failure to address the Intention vs. Actual Use gap. The framework relies heavily on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). For Generation Z and modern university students who are digital natives, "ease of use" is rarely a significant barrier, meaning these standard metrics often add little analytical value. Modern studies must extend the model aggressively by highlighting newer paradigm shifts such as the Unified Theory of Acceptance and Use of Technology (UTAUT2), Web3 integrations, and advanced biometric authentication. For example, studies by Kei & Chaici (2021) and Alsyouf et al. (2023) successfully integrated trust, privacy, and security into TAM to evaluate online purchase intentions. More importantly, contemporary extensions must account for how often behavioral intentions do not translate into real-world transactions due to sudden network failures or transaction errors, thereby shifting the measurement focus toward Actual System Use (ASU).

METHODOLOGY

The purpose of this study is to conduct an integrative literature review. Therefore, the principal objective of the study is to collect all existing literature from academia that focuses on the way university students will utilize Cashless Payment Systems and how they can be adopted through the Technology Acceptance Model (TAM)

approach.

Literature Search

All of the data collected during this literature review process utilized Google Scholar exclusively. This choice was made because Google Scholar allows users to have access to a vast amount of peer-reviewed journals. All articles found through the Google Scholar search engine included the following search terms: "Cashless Payment", "Digital Payment", "Actual System Use," "Forced Adoption," "UTAUT2," , "IT Infrastructure", "System Reliability", "Technology Acceptance Model", "TAM", and "Higher Education".

Selection Criteria

In order to ensure that only credible sources were reviewed during this literature review process, several selection criteria were established. Specifically, the following criteria were applied to all of the search results obtained from Google Scholar:

Included: Peer-reviewed journal articles, Articles utilizing the TAM model, Studies conducted at universities, Demographics of younger people.

Excluded: Websites without verification, Personal blogs, Technical documentation about programming software and its usage by technology developers instead of end-users.

Time Frame: Articles selected and reviewed during this literature review process had to meet two time-based requirements. First, all articles had to have been empirically researched; second, articles needed to have been published after 2017 in order to include contemporary views of digital payment methods. In addition, seminal work related to TAM theory (Davis, 1989), which has provided much of the foundational background for TAM theories, also needed to be included.

Data Synthesis

After identifying all applicable articles, key findings from each study were identified and categorized into thematic groupings by way of the four TAM factors (perceived utility, perceived ease of use, perceived trust and perceived risk). Ultimately, the synthesis process illustrated how the concept of "technology normalization" emerged and how traditional TAM factors lose predictive power as students become increasingly digitally savvy.

FINDINGS AND THEMATIC ANALYSIS

Perceived Usefulness (PU)

Perceived usefulness is defined as the degree to which an individual believes that utilizing a specific system will enhance their job or daily performance. In the context of digital finance, this refers to how students feel that accepting cashless systems will improve their efficiency in managing financial transactions. Cashless payment systems serve as highly effective financial management tools, often featuring transaction histories, budgeting tools, and spending trackers.

Ma et al. (2022) highlighted that students can leverage these built-in tools to monitor their spending, manage tight budgets, and make sound financial decisions. Furthermore, the widespread acceptance of cashless payments across retail and service industries significantly amplifies their perceived usefulness. As more merchants adopt digital methods, the practicality of these systems increases, making students more likely to utilize them regularly. Abdul Malik (2021) found that perceived usefulness significantly influences e-wallet usage intention and e-payment adoption, indicating that when users perceive practical benefits, they are more likely to adopt the technology.

However, conflicting literature exists regarding the enduring impact of PU. Bakar et al. (2022) reported that perceived usefulness was not a significant predictor of usage behavior in digital payment adoption among certain Malaysian demographics. Similarly, Amira et al. (2023) observed that once users become highly

familiar with cashless systems, usefulness tends to have a diminished impact on continued usage, particularly among highly educated and technology-experienced groups. More critically, recent structural analyses indicate that a student's perception of usefulness is frequently neutralized by institutional hardware failures. Robust financial tracking tools and fast transaction speeds provide no practical utility to students if canteen POS terminals are offline or if centralized university servers experience downtime during peak hours.

Perceived Ease of Use (PEU)

Perceived ease of use refers to an individual's belief that using a specific system will be entirely free of effort. For university students managing demanding academic and personal schedules, the simplicity with which transactions can be executed is a critical adoption factor. Kamis et al. (2022) found that users are inherently more likely to accept cashless payment methods that feature user-friendly interfaces, clear instructions, and intuitive navigation. The integration of Quick Response (QR) code scanning and Duitnow functionalities enables students to complete transactions with unprecedented ease. Zamiri and Esmaeili (2024) emphasized that technical support such as immediate customer service, detailed FAQs, and step-by-step tutorials—is an important factor in establishing perceived ease of use. Knowing that assistance is readily available alleviates user anxiety and encourages the continuous use of digital payment options. Furthermore, seamless integration into other platforms (e.g., linking e-wallets directly to transportation services or university portals) reduces the need to switch between applications, thereby minimizing complexity.

Despite its theoretical importance, some empirical studies challenge the ongoing relevance of PEU in mature digital landscapes. Bakar et al. (2022) demonstrated that perceived ease of use lacked a significant relationship with online banking adoption, noting that privacy factors were far more influential. This suggests that for demographics already highly proficient in digital navigation, ease of use is viewed as a basic, expected standard rather than a primary motivator for continuous usage. Furthermore, an intuitive interface (PEU) cannot overcome the friction of physical infrastructure limitations. Students attempting to process payments in campus Wi-Fi dead zones or during network timeouts experience high transaction friction regardless of an application's internal design simplicity, rendering PEU an inadequate metric for evaluating actual adoption success.

Perceived Trust

Perceived trust occurs when an individual has absolute confidence in the reliability and integrity of a technology platform. Trust is frequently cited in the literature as a foundational requirement for financial technology adoption. Trust in cashless payment systems is primarily established through robust security measures, including encryption, two-factor authentication, and biometric verification such as facial or fingerprint recognition. Previous study argued that when users believe their personal and financial data is thoroughly protected against illegal access, they are substantially more likely to trust and utilize the system (Mezoh & Zhou, 2024; Samad et al., 2023). The reputation of the service provider also heavily influences trust; established financial institutions are generally perceived as more trustworthy than newer, lesser-known entities. Zamiri and Esmaeili (2024) noted that trust shares a strong relationship with transparency, as users demand to know how their transactions are processed and require guarantees against hidden charges. Kei and Chaichi (2021) demonstrated that trust significantly strengthens acceptance behavior in online transactions, acting as a crucial buffer during uncertain situations such as the COVID-19 pandemic. Peer influence also heavily impacts trust; recommendations and positive online reviews from relatives and associates drastically increase user confidence in a specific platform.

Conversely, Abdul-Halim et al. (2022) reported that perceived trust did not significantly influence the continuance use of e-wallet services in Malaysia. The authors hypothesized that trust may be viewed as a mandatory baseline requirement for market entry; therefore, once a system is established, trust no longer acts as an active differentiator driving the frequency of daily usage.

Perceived Risk

Perceived risk represents a user's worry regarding the potential negative circumstances such as financial loss or data breaches that could arise from using a technology. Samad et al., (2023) highlighted that the fear of losing

a mobile phone or falling victim to identity theft frequently acts as a major barrier to the initial adoption of cashless payments. Saeed et al. (2023) added that concerns about privacy are often exacerbated by the involvement of multiple third parties in mobile payment processing, including telecom companies, banks, and retailers, leading to fears of unauthorized data exploitation. Ong et al., (2023) emphasized that while cashless transactions offer immense social and economic benefits, they simultaneously pose severe issues regarding data security risks, cybercrime, and the exclusion of the unbanked population. To mitigate these risks, users often rely on brand loyalty, store identity, or word-of-mouth recommendations to validate their choices and reduce uncertainty.

Contrasting this, studies by Bakar et al. (2022) indicated that perceived risk was not a significant factor influencing the continued use of digital payment systems when users believe that sufficient security measures (e.g., OTP verification, bank-linked protection) are already active. Putra (2019) posited that many students simply circumvent perceived risks because the efficiency and convenience of cashless services vastly outweigh the potential negatives.

Actual System Use (ASU) and Infrastructure Realities

A significant structural gap identified in traditional TAM-based reviews is the over-reliance on measuring behavioral intention rather than Actual System Use (ASU). In higher education contexts characterized by forced compliance where tuition portals, automated vending services, and campus vendors operate exclusively via digital payment architectures student intention becomes a secondary metric to infrastructural reliability. Literature addressing modern campus micro-economies emphasizes that the physical and IT limitations of an institution dictate ASU more heavily than individual user psychology. Systemic friction, such as unreliable local servers, inadequate maintenance of point-of-sale (POS) hardware, and inconsistent internet connectivity, directly inhibits ASU even when a student's behavioral intention to pay digitally is high. Consequently, evaluating cashless adoption through the lens of ASU and hardware uptime provides a much more accurate reflection of a university's digital transformation success than merely surveying user attitudes.

Technology Normalization: A Paradigm Shift in Higher Education

Building upon the realities of ASU and forced institutional infrastructure, a critical theme emerging from recent empirical literature focusing on students is the phenomenon of technology normalization. Extensive research assessing the acceptance of cashless payments revealed that perceived usefulness, perceived ease of use, perceived trust, and perceived risk exhibited absolutely no statistically significant correlation with cashless payment usage behavior. This presents a profound theoretical shift regarding the applicability of traditional TAM constructs in highly digitized environments.

The lack of statistical significance suggests that cashless payments have transcended the phase of "new technology adoption" and have become a deeply embedded routine within the daily lives of higher education students. Students may utilize cashless payments out of sheer necessity, convenience, or institutional mandates (such as mandatory online university fee payments), rather than active cognitive evaluations of the system's usefulness or risk. As cashless payment systems are no longer considered novel innovations, constructs like trust and ease of use are treated as baseline expectations. Consequently, when a technology reaches maturity and wide societal endorsement, conventional acceptance factors fail to consistently elucidate user behavior.

This normalization is further supported by Abdul Rais et al. (2022), whose research indicated that campus facilities and institutional readiness actively force the practice of cashless transactions, making exposure and environment stronger drivers than personal perception. Therefore, students utilize digital payments because the campus ecosystem dictates it, rendering personal risk and usefulness assessments statistically insignificant in determining frequency of use.

DISCUSSION AND FUTURE RESEARCH DIRECTIONS

Although a critical review of the current literature especially that which is based upon very recent empirical research conducted in older, established cashless payment markets has identified numerous gaps in our

understanding of cashless payment behaviors, it is critical that we address these voids so that we can advance both the theoretical discourse and the practical implementation of financial technologies' (FinTech) adoption.

Transcending the Traditional TAM Framework and Exploring Contextual Drivers

One of the major shortcomings of continuing to rely on the traditional technology acceptance model (TAM) is the fact that although foundational perceptual variables (perceived usefulness, perceived ease of use, trust, and perceived risk) explain behavioral intentions among less technically sophisticated individuals, they do not adequately explain the Actual System Use (ASU) of digitally native groups. Thus, researchers need to develop new theories or move beyond TAM to explore how sudden network failures or transaction errors prevent intent from translating into execution. Future research must shift from measuring mere user willingness to tracking ASU and evaluating its direct impact on internal operational controls and financial transparency within university administrative offices. Moreover, studies should build upon broader financial framework evaluations, such as the Evolution of Digital Payment Methods in India, to observe how external incentives, national data protection policies, and macro-level social influence accelerate campus-wide digital transitions. By contextualizing local university adoption metrics within these broader international frameworks, future studies can better isolate the relationship between institutional trust, facilitating conditions, and sustained cashless payment behavior.

Effectiveness of promotional incentives for encouraging cashless usage

In addition to this general deficiency in research design related to tam, we also observe a conspicuous absence of systematic and thorough empirical examinations into the effects of incentive programs. Specifically, since cashback offers, reward schemes and vendor-specific discount schemes have become increasingly prevalent as marketing tools for promoting consumer adoption of various e-wallet services, there exists an unaddressed area for future research that investigates the extent to which these types of external financial stimuli motivate consumers to continue using their preferred cashless services.

Comparative analyses across different socio-demographic categories

An additional significant gap in previous research relates to the relatively small number of socio-demographically diverse samples included in most previous studies examining fintech adoption. We believe that future research needs to expand its sample composition to include comparisons among a wider variety of socio-demographic categories. These may include, but are not limited to: comparing student subpopulations (i.e., graduate vs. Undergraduate); identifying differences across various university departments/faculties; investigating differences due to varying levels of income/socioeconomic status; etc. It is crucial to understand how differing levels of financial security and lifestyle choices affect consumer preferences for cashless transactions.

Empirical methodologies

Additionally, one of the largest methodological deficiencies in the current fintech adoption literature is the over-reliance on cross-sectional survey data with no controls and simple bivariate correlations (e.g. Pearson correlation coefficients). These methodologies suffer from obvious limitations in terms of establishing temporal and causal relationships between predictors and outcomes. As such, future research should incorporate more advanced methodologies (including longitudinal data collection and controlled experiments) to confirm the long-term directional impact(s) of specific contextual influences on the propensity for consumers to adopt/use fintech products.

Implications

Theoretical Implications

This Literature Review contributes to our overall knowledge about how people adopt new technology, specifically by demonstrating the shortcomings of the traditional Technology Adoption Model (TAM) when applied to modern-day settings where technologies, such as mobile payment systems, have become widely

accepted and incorporated into society. In addition to the fact that once a technology becomes widely used and accepted into the fabric of everyday life the two main TAM constructs-Perceived Usefulness and Perceived Ease of Use-will lose much of its explanatory power; therefore future models of technology adoption will need to take into consideration both individual factors and social trends associated with technology diffusion at various stages of technological development. For example, future behavioral models may need to include concepts related to habit formation and environmental facilitators to appropriately reflect the complexities involved in using a technology repeatedly in environments that are already fully developed digitally.

Managerial Implications

The results of this study offer key strategic directions for financial technology (Fintech) developers and university administrators. System usage, over time, is no longer dependent on continually educating users about the fundamental benefits and ease of use of a particular application. Management teams for Fintech companies and university administrators must shift their focus from user psychology to institutional hardware reliability. Specifically, this requires maximizing system availability during peak hours and aggressively minimizing downtime by addressing campus Wi-Fi dead zones, upgrading internal server reliability, and ensuring rapid maintenance for canteen point-of-sale (POS) terminals. University administrators need to develop partnerships with service contractors to ensure universal, uninterrupted access to cashless payment systems in high-traffic areas such as cafeterias and libraries. According to Zainol et al. (2023), service providers must supply adequate information and timely responses to technical problems to maintain customer satisfaction. Student willingness to adopt is irrelevant if the institutional IT backend fails; therefore, tangible hardware reliability and value-based incentives must become the primary operational focus over basic system usability.

Policy & Societal Implications

At a macro level, the extensive incorporation of cashless payments into students' lives demonstrates the success of Malaysia's national effort to implement a nation-wide plan for digitalization. While studies have shown that perceived risk does not play a significant role in discouraging usage of digital payment systems, it would be premature for policymakers to ignore or dismiss concerns regarding cybersecurity. Governments and financial institutions need to work cooperatively to create strong consumer protections through legislation and through aggressive public awareness campaigns designed to promote safe practices in the use of digital payments. Educational Institutions should also collaborate with banks to teach students about best practices in managing personal data, identifying phishing scams and avoiding common pitfalls associated with online fraud. Stronger legal remedies for combating cybercrime will be required to protect consumers' personal data and build trust in the digital economy over the long term as recommended by Ong et al., (2023).

CONCLUSION

A move away from cash-based transactions towards electronic/digital/online payment options is an important example of how global financial behaviors are changing; it also impacts the way higher education institutions operate. This review has assessed the original four dimensions of the Technology Adoption Model (TAM) namely, Perceived Usefulness, Perceived Ease of Use, Perceived Trust, and Perceived Risk and whether they have been relevant historically for predicting technology adoption. A critical evaluation of existing literature shows that as electronic/digital/online payment systems become normalized in modern societies, the TAM constructs have lost predictive power concerning usage frequency in populations with high exposure to such technologies. The student using cashless payment systems at universities which require (or strongly prefer) online transactional services, do so largely due to habitual, convenience, and institutional necessity as opposed to rational assessments of risks or utilities. To contribute to future developments in Financial Technology Research (FTR), researchers will need to abandon current TAM type frameworks to assess other related (contextual, behavioral, promotional etc.) variables. At the same time, FTR-related practitioners and policy makers should consider shifting their focus from developing new, reliable and secure payment systems to ensuring the long-term sustainable, safe and effective use of them in an entirely digital society through improving system reliability, security infrastructure, and educating consumers about the importance of digital literacy.

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