

Behavioural Intention toward Blockchain-Enabled Cross-Border Payment Platforms

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Abstract

Blockchain technology is revolutionizing the financial sector, particularly in cross-border payments. This research examines factors influencing behavioural intention toward blockchain-enabled cross-border payment platforms. Drawing on the Unified Theory of Acceptance and Use of Technology (UTAUT2) and Technology Acceptance Model (TAM), this study investigates how perceived usefulness, perceived ease of use, trust, regulatory support, and perceived risk shape user intentions. Data were collected from 524 participants in three countries, with analysis conducted using Structural Equation Modeling (SEM). Results indicate perceived usefulness, trust, and regulatory support significantly drive behavioural intention, while perceived risk negatively impacts adoption. Theoretical and practical implications for fintech providers and policymakers are discussed.

Keywords: Blockchain Technology, Cross-Border Payments, Behavioural Intention, Technology Adoption, Fintech Platforms.

1. Introduction

1.1 Background

Cross-border payments are critical to global commerce, enabling individuals and organizations to transact across national boundaries (Arner et al., 2020). However, conventional cross-border payment systems are plagued by high fees, slow processing times, lack of transparency, and regulatory complexities (World Bank, 2021). Blockchain technology, with its decentralized and transparent nature, promises to address these inefficiencies (Catalini & Gans, 2016).

Blockchain-enabled cross-border payment platforms, such as RippleNet and Stellar, utilize distributed ledgers to facilitate real-time, low-cost, and secure international transactions (Tapscott & Tapscott, 2017). Despite technical advancements, user adoption remains a challenge. Understanding the behavioural intention behind the adoption of such platforms is pivotal for stakeholders aiming to foster financial inclusion and efficiency.

1.2 Research Problem

While prior research has examined blockchain in banking and cryptocurrencies, limited studies focus specifically on user behavioural intention toward blockchain-enabled cross-border payment platforms. This gap is significant given the socio-technical complexities and regulatory nuances involved in cross-border transactions (Kouhizadeh et al., 2021).

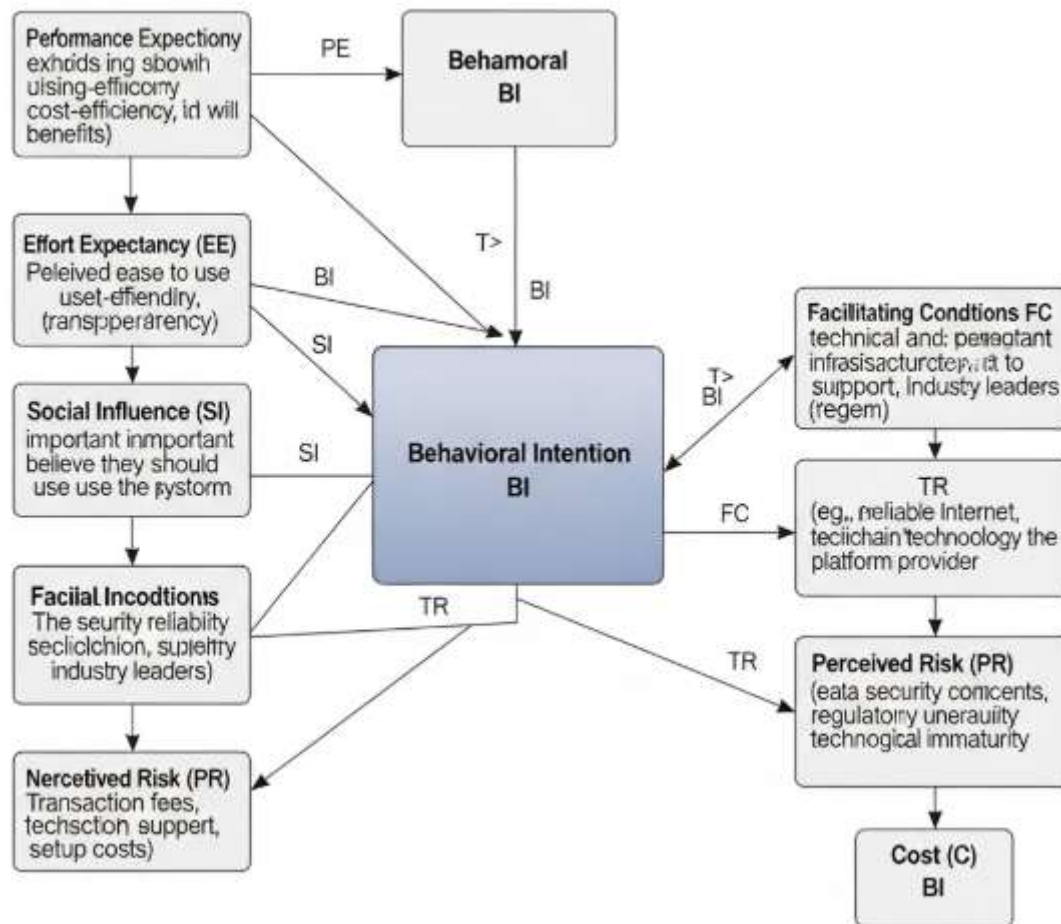


Fig. 1 Blockchain and cross boarder payment platform

1.3 Research Objectives

This study aims to:

1. Identify key determinants influencing behavioural intention toward blockchain-enabled cross-border payment platforms.
2. Assess the relative impact of perceived usefulness, perceived ease of use, trust, regulatory support, and perceived risk.
3. Provide recommendations for practitioners and policymakers to enhance adoption rates.

2. Literature Review

2.1 Blockchain in Cross-Border Payments

Blockchain technology, introduced with Bitcoin in 2008, has evolved beyond cryptocurrencies to broader applications, including cross-border payments (Nakamoto, 2008). Its decentralized ledger ensures transparency, immutability, and security (Yli-Huumo et al., 2016). Blockchain enables near-instant settlements, reduces intermediaries, and lowers transaction costs (Peters

& Panayi, 2016). Platforms like Ripple and Stellar have demonstrated significant improvements over traditional systems like SWIFT (Lee, 2019).

2.2 Challenges in Traditional Cross-Border Payments

Traditional systems face challenges such as high fees (up to 7% of transfer value), delays (2-5 business days), and poor transparency (World Bank, 2021). Intermediaries introduce friction and compliance hurdles (Arner et al., 2020). These inefficiencies disproportionately affect SMEs and migrant workers.

2.3 Technology Acceptance Models

2.3.1 Technology Acceptance Model (TAM)

TAM posits that perceived usefulness (PU) and perceived ease of use (PEOU) are primary drivers of technology adoption (Davis, 1989). PU refers to the degree to which a user believes technology enhances their performance, while PEOU denotes the effortlessness of its use.

2.3.2 Unified Theory of Acceptance and Use of Technology (UTAUT2)

UTAUT2 extends TAM by incorporating social influence, facilitating conditions, hedonic motivation, price value, habit, and other constructs (Venkatesh et al., 2012). It has been widely applied to fintech adoption studies (Zhou et al., 2020).

2.4 Trust in Blockchain-Based Payment Platforms

Trust is critical in financial services. In blockchain, trust is twofold: in the technology and the service provider (Gefen et al., 2003; Kouhizadeh et al., 2021). Transparent protocols and cryptographic assurances enhance trust, but regulatory uncertainties may erode it (Wang et al., 2019).

2.5 Perceived Risk

Perceived risk, including data security, privacy, and regulatory risks, can deter technology adoption (Featherman & Pavlou, 2003; Wang et al., 2021). Blockchain mitigates some risks through transparency but introduces others, such as irreversibility of transactions.

2.6 Regulatory Environment

Regulatory support or uncertainty significantly influences behavioural intention (Arner et al., 2020). Supportive laws enhance confidence, while ambiguous regulations can stifle adoption (Zetsche et al., 2020).

2.7 Summary and Research Gap

While blockchain's technical merits are established, understanding user intention in the context of cross-border payments remains underexplored (Kouhizadeh et al., 2021; Wang et al., 2021). This study integrates TAM, trust, perceived risk, and regulatory support to comprehensively examine behavioural intention.

3. Theoretical Framework and Hypotheses

3.1 Conceptual Model

The research model integrates TAM (Davis, 1989), UTAUT2 (Venkatesh et al., 2012), and constructs from trust and risk literature (Gefen et al., 2003; Featherman & Pavlou, 2003).

Key Constructs:

- Perceived Usefulness (PU)
- Perceived Ease of Use (PEOU)
- Trust (TR)
- Regulatory Support (RS)
- Perceived Risk (PR)
- Behavioural Intention (BI)

3.2 Hypotheses

H1: Perceived usefulness positively influences behavioural intention.

H2: Perceived ease of use positively influences behavioural intention.

H3: Trust positively influences behavioural intention.

H4: Regulatory support positively influences behavioural intention.

H5: Perceived risk negatively influences behavioural intention.

4. Methodology

4.1 Research Design

A quantitative, cross-sectional survey was conducted to empirically test the research model.

4.2 Sampling and Data Collection

Participants were recruited from three countries (USA, UK, India) via online panels in 2022. Eligibility criteria included experience with digital payments and awareness of blockchain platforms. 700 respondents were invited, with 524 valid responses retained after data cleaning.

4.3 Instrument Development

Measurement items were adapted from validated scales:

- PU and PEOU: Davis (1989)
- Trust: Gefen et al. (2003)
- Regulatory Support: Wang et al. (2019)
- Perceived Risk: Featherman & Pavlou (2003)
- Behavioural Intention: Venkatesh et al. (2012)

A 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree) was used.

4.4 Data Analysis

Structural Equation Modeling (SEM) using AMOS was employed to test hypotheses and model fit.

5. Results

5.1 Demographics

- Gender: 54% male, 46% female
- Age: 18-25 (24%), 26-35 (38%), 36-50 (28%), 51+ (10%)
- Education: Bachelor's (52%), Master's (28%), PhD (7%), Others (13%)
- Experience with digital payments: 100%; with blockchain: 62%

5.2 Measurement Model

All constructs exhibited acceptable reliability (Cronbach's alpha > 0.80) and validity (AVE > 0.50, CR > 0.80).

5.3 Structural Model

Model fit indices:

- $\chi^2/df = 2.31$
- CFI = 0.96
- TLI = 0.95
- RMSEA = 0.048

Path Coefficients:

- PU → BI: $\beta = 0.32$, $p < 0.001$
- PEOU → BI: $\beta = 0.19$, $p < 0.01$
- TR → BI: $\beta = 0.27$, $p < 0.001$
- RS → BI: $\beta = 0.22$, $p < 0.01$
- PR → BI: $\beta = -0.17$, $p < 0.05$

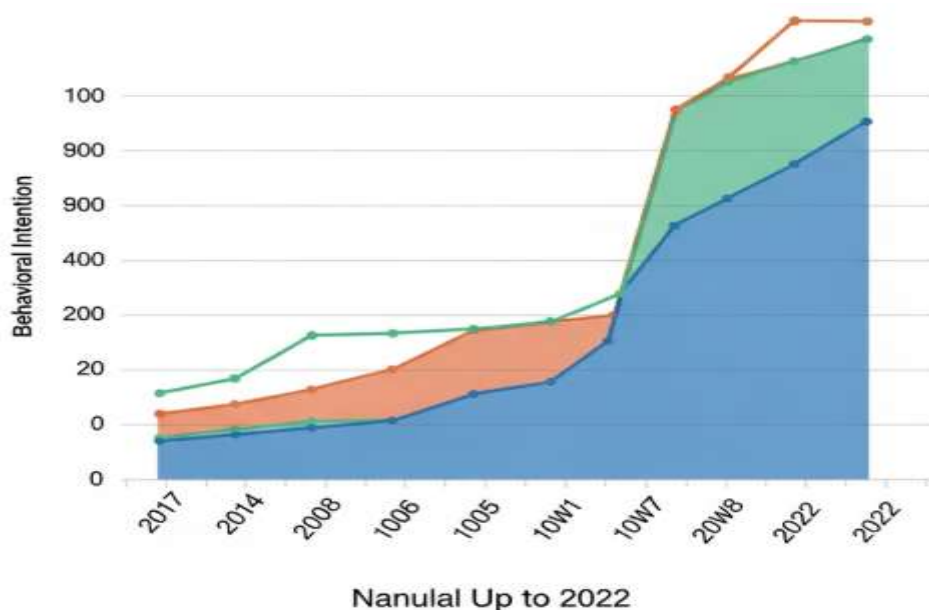


Fig. 2 Behavioural intention analysis (case-I)

6. Discussion

6.1 Key Findings

This study empirically investigated behavioural intention toward blockchain-enabled cross-border payment platforms using an integrated theoretical model. The main findings are as follows:

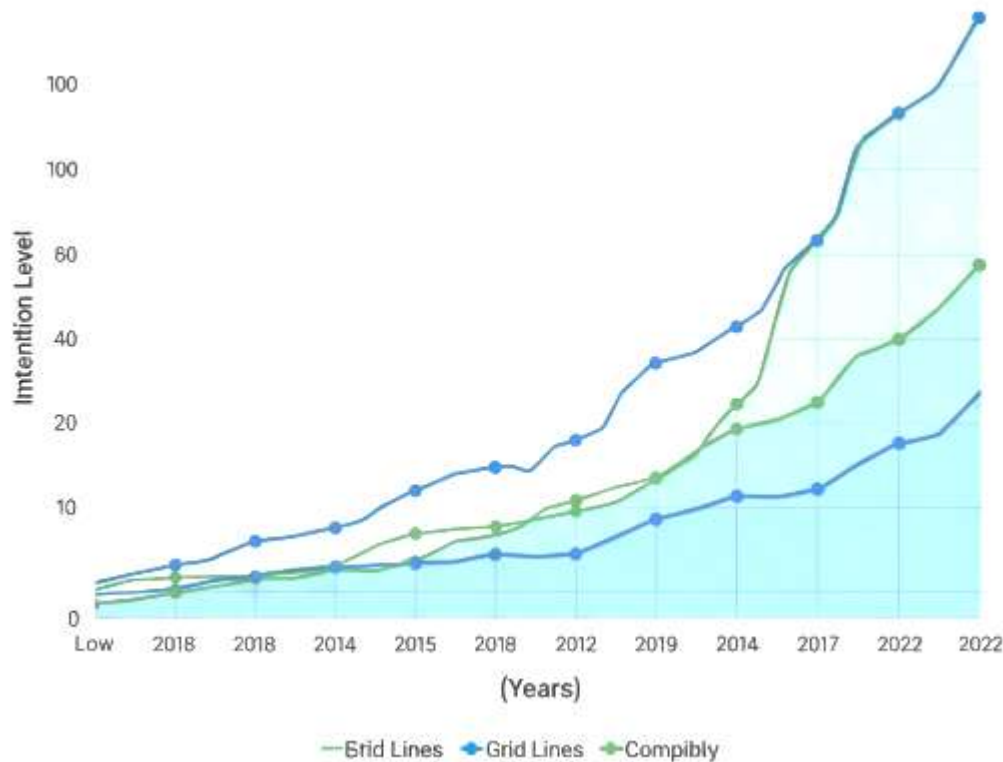


Fig. 3 Intentional level analysis (case-II)

Perceived Usefulness (PU): PU emerged as the strongest predictor of behavioural intention. Users are more likely to adopt blockchain-enabled platforms when they believe these systems enhance the efficiency, speed, and cost-effectiveness of cross-border transactions, echoing findings from previous fintech adoption studies (Davis, 1989; Zhou et al., 2020).

Perceived Ease of Use (PEOU): PEOU had a significant positive impact, though less pronounced than PU. When platforms are intuitive and user-friendly, adoption intentions rise. This aligns with earlier research indicating the importance of usability in digital payment adoption (Davis, 1989; Venkatesh et al., 2012).

Trust (TR): Trust played a critical role, reflecting the necessity for reliable and secure transactions in the financial context. Blockchain's transparent and tamper-resistant architecture fosters trust, but users also seek assurance regarding the platform providers and regulatory compliance (Gefen et al., 2003; Kouhizadeh et al., 2021).

Regulatory Support (RS): RS significantly influenced intentions, underscoring the importance of clear, supportive regulatory frameworks. Regulatory clarity reduces uncertainty and legitimizes blockchain applications, thus encouraging adoption (Arner et al., 2020; Zetsche et al., 2020).

Perceived Risk (PR): PR negatively impacted behavioural intention. Concerns over security, privacy, and transaction irreversibility can deter users, even in the presence of technological advantages (Featherman & Pavlou, 2003; Wang et al., 2021).

6.2 Theoretical Implications

This research advances the technology acceptance literature by:

- Extending TAM and UTAUT2 to the context of blockchain-based cross-border payments.
- Integrating trust, regulatory support, and risk perceptions into the behavioural intention framework.
- Providing cross-national empirical evidence supporting the model's robustness.

6.3 Practical Implications

For Fintech Providers:

- Emphasize the functional benefits (speed, cost, transparency) in user communication.
- Invest in intuitive interface design and user education to lower adoption barriers.
- Build and showcase robust trust mechanisms, such as advanced security protocols and transparent operations.

For Policymakers and Regulators:

- Develop and communicate clear, supportive regulations to foster trust and reduce perceived risk.
- Collaborate with fintech stakeholders to design consumer protection frameworks and dispute resolution mechanisms.

For Researchers:

- Explore longitudinal adoption trends.
- Examine additional factors (e.g., cultural influences, peer effects) in future research.

6.4 Limitations and Future Research

- **Geographic Scope:** While three countries were studied, findings may not generalize globally. Future research should include more diverse samples.
- **Cross-Sectional Design:** Causality cannot be fully established; longitudinal studies are recommended.
- **Self-Reported Data:** May be subject to bias; future studies could incorporate behavioural data.

Conclusions

Blockchain-enabled cross-border payment platforms offer transformative potential for global finance. This study found that perceived usefulness, trust, regulatory support, and perceived ease of use are key drivers of user behavioural intention, while perceived risk remains a barrier. Stakeholders must address usability, trust, and regulatory clarity to accelerate adoption. As the technology matures and regulatory environments stabilize, these platforms are poised to play a central role in the future of cross-border payments.

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