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AN INTEGRATED SOR-TAM-UTAUT PERSPECTIVE ON DIGITAL TRUST AND AI PERSONALIZATION IN MOBILE COMMERCE

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ABSTRACT

This study examines the adoption of mobile commerce (m-commerce) within an AI-driven, cross-border digital economy, concentrating on Bangladesh and its neighbouring regions. With the global increase in mobile commerce revenues, it is essential to comprehend the elements affecting customer behaviour in emerging economies. The research combines the SOR, TAM, and UTAUT frameworks, incorporating digital trust and AI-driven personalisation as innovative constructs to evaluate their influence on m-commerce adoption. The study utilises a mixed methods approach, integrating quantitative surveys and qualitative interviews, to examine the impact of social influence, perceived ease of use, digital trust, and AI personalisation on consumer behaviour and usage intentions. The findings demonstrate that all four characteristics exert a favourable influence on behavioural intention and usage, with behavioural intention serving as a mediator for these effects. Regular cross-platform purchasing influences the correlation between intention and utilisation. The research enhances m-commerce theory by integrating digital trust and AI personalisation into existing models, providing significant insights for academics and business. It underscores the need of safe payment mechanisms, transparent pricing, and tailored experiences in promoting adoption. The study advocates for additional research on the changing role of digital trust, AI personalisation, and cross-border payment systems in promoting m-commerce expansion, especially in developing areas.

Keywords: AI-Driven Customisation, Usage Intention, International Commerce, Online Trust, Mobile Shopping, Perceived User-Friendliness, Peer Influence.

1 INTRODUCTION

Mobile commerce (m-commerce) pertains to the transaction of products and services through mobile devices. It has emerged as a predominant retail channel due to the proliferation of smartphones and enhancements in mobile networks. Global mobile commerce income increased from US$500 billion in 2017 to an estimated US$2.07 trillion in 2024, with projections exceeding US$3.3 trillion by 2028 (Oberlo, 2024) [1]. Mobile shopping currently constitutes over 57% of total e-commerce purchases. Bangladesh illustrates the mobile surge: by late 2024, over half of Bangladeshi homes had internet connection (52%), and 98.7% of families possessed a mobile
phone, with 72% possessing at least one smartphone. Only 47.2% of persons consistently utilise the internet, highlighting a disparity in digital readiness. Figure 1 shows global mobile-commerce revenue growth from 2017 to 2028 and underscores the channel's rapid ascent.

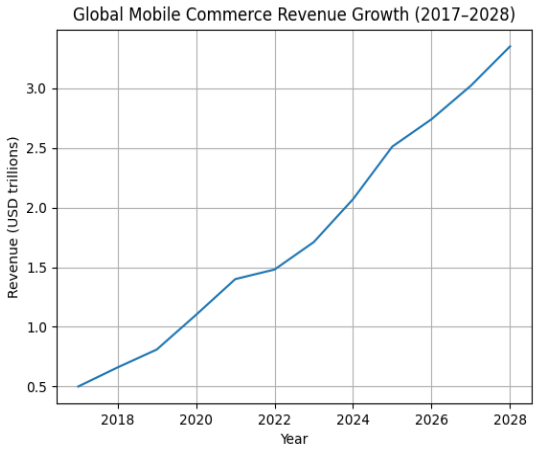

Figure 1: Global Mobile Commerce Revenue Growth (2017-2028) [1]

The post-pandemic digital economy is characterised by three transformations:

• Social commerce becomes prevalent: Social media platforms have evolved from basic marketing channels to functioning as markets. Social commerce revenues are projected to exceed US$1 trillion by 2028, rising from US$570 billion in 2023 (BigCommerce, 2025) [2]. In 2023, one-third of shoppers encountered new products through social media, while 60% of Generation Z consumers were swayed by social media endorsements.

• AI-driven personalisation: Consumers anticipate customised experiences; 71% of shoppers desire personalised interactions, and 76% express frustration when such interactions are absent (BrandXR, 2025)[3]. Approximately 59% of marketers employ AI customisation and indicate an average 25% increase in return on investment.

• Cross-border purchasing and digital trust: As boundaries diminish, customers engage in global shopping. A 2024 survey revealed that 61% of customers regard overseas merchants as trustworthy, while 65% express confidence in providing personal and financial information. Nevertheless, 77% of consumers would forgo their purchases if their preferred payment option is not accessible, and 54% would refrain from returning to retailers who conceal fees (Airwallex, 2024) [4].

Current studies on m-commerce adoption predominantly focus on the COVID-19 era and rarely include developing concepts such as digital trust or AI customisation. Furthermore, limited research investigates adoption in emerging countries, where cultural norms, digital literacy, and cross-border payment obstacles may influence behaviour differently. This research intends to address these deficiencies.

2 LITERATURE REVIEW

2.1 Integration of SOR, TAM, and UTAUT

The SOR model asserts that stimuli (environmental elements) influence an organism's internal state, which subsequently elicits responses (behaviour). The Technology Acceptance Model highlights perceived ease of use and perceived utility as determinants of technology adoption. UTAUT incorporates social influence and conducive conditions. Yaqub et al. (2024) amalgamated these frameworks to examine m-commerce adoption during COVID-19, revealing that social influence and perceived ease of use substantially impacted behavioural intention and usage, whilst perceived security and habit had lesser effects [5].

2.2 Social Influence and International Trade

Social influence denotes the degree to which individuals are motivated by peers, relatives, or online groups to adopt a technology. Social commerce platforms enhance this phenomenon by facilitating influencer marketing and peer endorsements. In 2023, one-third of consumers identified new products using social media, and 60% of Gen Z consumers indicated that social media material influenced their purchasing decisions (BigCommerce, 2025)[2]. Cross-border e-commerce amplifies social impact. 59% of worldwide consumers indicate a likelihood of making overseas transactions via social media (Airwallex, 2024) [4]. Consequently, we anticipate that social influence will positively impact both behavioural intention and mobile commerce utilisation.

2.3 Perceived Simplicity of Utilisation

Perceived ease of use refers to the extent to which a technology requires minimal effort. The Technology Acceptance Model asserts that simplicity of use affects both perceived usefulness and behavioural intention. In the study conducted by Yaqub et al. during the pandemic era, perceived ease of use strongly influenced both behavioural intention and m-commerce utilisation. With the evolution of mobile interfaces, 90% of shoppers indicate that their m-commerce experiences may be enhanced, and three-quarters of consumers utilise their phones for shopping due to time efficiency (Oberlo, 2024) [1]. We anticipate that user-friendliness will continue to be a pivotal factor in adoption.

2.4 Digital Trust

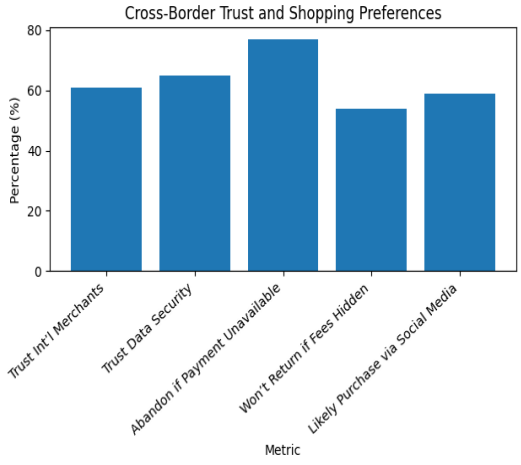

Figure 2: Cross-Border Trust and Shopping Preferences [4]

Digital trust denotes consumers' assurance that payment mechanisms are secure, personal data is safeguarded, and pricing is transparent. Approximately 80% of online consumers prioritise payment security as their first priority (Chubb, 2024) [6]. Cross-border purchases exacerbate these concerns: 61% of consumers trust overseas merchants, and 65% feel secure exchanging personal information; but, 77% will forgo a purchase if their preferred payment option is unavailable, and 54% will not return if fees are concealed (Airwallex, 2024) [4]. Figure 2 encapsulates the cross-border trust statistics that underpin this design.

We expect that digital trust will positively impact both behavioural intention and mobile commerce utilisation.

2.5 AI-Driven Personalisation

AI-driven customisation customises product recommendations, pricing, and marketing messaging for specific users through machine learning. Personalisation enhances engagement: 71% of customers anticipate personalised connections, and 76% experience frustration when such interactions are absent (BrandXR, 2025) [3]. Organisations employing AI customisation observe a 25% enhancement in marketing ROI and a 20% boost in revenue. Furthermore, 80% of consumers are more inclined to purchase from brands that provide tailored experiences, whilst 42% express irritation towards irrelevant content. We anticipate that AI customisation will positively influence behavioural intention and usage.

2.6 Habitual Cross-Platform Usage

Habit denotes the extent to which behaviour becomes automatic due to repetition. In the initial trial, habit only marginally modified the relationship between intention and usage. In an AI-driven, cross-border setting, consumers navigate many channels, including mobile applications, social media, and e-commerce websites. Regular cross-platform shopping may either enhance or diminish the correlation between intention and behaviour, contingent upon loyalty programs and switching costs. Consequently, we maintain habit as a moderator.

2.7 Research Gaps

Most m-commerce studies focus on consumption during the pandemic and exclude considerations of digital trust or AI customisation. Limited analysis is conducted on emerging markets such as Bangladesh, where 47.2% of the population utilises the internet, yet pronounced rural–urban differences endure. Current research rarely addresses the transparency of cross-border payments or the influence of social commerce platforms on trust formation. This research tackles these deficiencies.

3 THEORETICAL FRAMEWORK AND HYPOTHESES

Utilising SOR, TAM, and UTAUT, we conceptualise social influence (SI), perceived ease of use (PEU), digital trust (DT), and AI personalisation (AIP) as stimuli. These factors impact the organism's state—behavioral intention (BI)—which then affects the response: mobile commerce usage (MCU). Habitual cross-platform shopping (H) moderates the link between behavioural intention (BI) and mobile commerce usage (MCU).

Hypotheses:

1. **Social influence → usage & intention:** Social influence positively affects both m-commerce usage and behavioural intention.
2. **Ease of use → usage & intention:** Perceived ease of use positively affects usage and intention.
3. **Digital trust → usage & intention:** Digital trust positively affects usage and intention.
4. **AI personalisation → usage & intention:** AI personalisation positively affects usage and intention.
5. **Intention → usage:** Behavioural intention positively affects usage.
6. **Mediation:** Behavioural intention mediates the effects of SI, PEU, DT and AIP on usage.
7. **Moderation:** Habitual cross-platform shopping moderates the intention–usage relationship.

Figure 3 depicts the conceptual model.

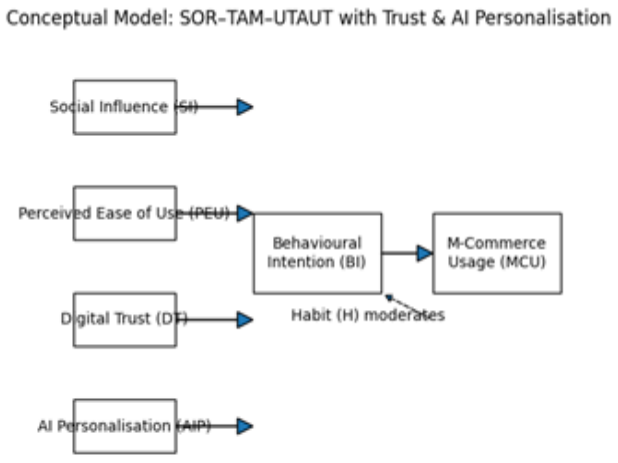

Figure 3: Conceptual Model: SOR-TAM-UTAUT with Trust & AI Personalization

4 METHODOLOGIES

4.1 Research Design

We employed a mixed methods approach, integrating a quantitative online survey with qualitative interviews. Mixed approaches provide both hypothesis testing and an in-depth examination of consumer views. The survey assessed the constructs and evaluated the hypotheses; the interviews examined experiences with AI personalisation and cross-border payments.

4.2 Measurement Scales

We modified elements from previous research. Each construct employed many indicators assessed on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Items related to social influence and perceived ease of use were derived from known TAM/UTAUT assessments. The evaluation of digital trust encompassed perceptions on payment security, privacy, data protection, and clear pricing. AI personalisation metrics assessed satisfaction with tailored recommendations, perceived relevance, and preference for customised material. Behavioural intention items assessed the probability of utilising m-commerce during the next six months, while usage items measured the frequency of cross-border mobile transactions.

Table 1 – Constructs and roles

Construct	Description	Role
Social Influence (SI)	Peer and social-media pressure to adopt m-commerce	Stimulus
Perceived Ease of Use (PEU)	Effortlessness of m-commerce	Stimulus
Digital Trust (DT)	Confidence in security, privacy and pricing transparency	Stimulus
AI Personalisation (AIP)	Quality and relevance of AI-driven recommendations	Stimulus
Behavioural Intention (BI)	Intention to adopt and use m-commerce	Organism
M-Commerce Usage (MCU)	Frequency of cross-border mobile purchases	Response
Habitual Usage (H)	Automatic, routine cross-platform shopping	Moderator

4.3 Sampling and Data Collection

Our target population comprised m-commerce users in Bangladesh, India, and Pakistan who executed a minimum of one cross-border mobile transaction in the preceding year. We employed stratified convenience sampling due to the absence of a comprehensive list of these users. Strata were established according to country and urban/rural residency to illustrate variations in digital preparedness. A power study determined that a minimum of 250 replies was necessary; we aimed for 450 respondents (150 from each country). The poll, conducted on Qualtrics, spanned from January to April 2025 and yielded 478 valid replies. We performed 20 semi-structured interviews, comprising eight from Bangladesh, six from India, and six from Pakistan.

4.4 Data Analysis

We employed partial least squares structural equation modelling (PLS SEM) to assess the measurement and structural models. Reliability, convergent validity, and discriminant validity were evaluated by Cronbach's alpha, composite reliability, and the Fornell–Larcker criterion. Bootstrapping (5,000 resamples) yielded path coefficients and significance levels. We utilised a random forest classifier to assess the relative significance of predictors. Thematic analysis was conducted on qualitative data to discern patterns associated with trust and customisation.

5 RESULTS

5.1 Sample Characteristics

Of the 478 respondents, 52% were male and 48% female; 61% were aged 18–35, 27% aged 36–50, and 12% were over 50. Approximately 68% resided in urban regions. More than 80% possessed a smartphone; the rest utilised feature phones. Approximately 46% engaged in shopping through social commerce sites, while 38% frequently conducted cross-border purchases

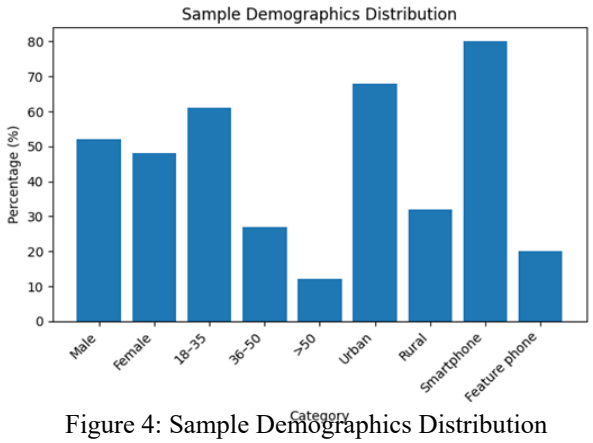

Figure 4: Sample Demographics Distribution

5.2 Measurement Model

All constructs exhibited robust reliability (Cronbach's alpha and composite reliability > 0.8). The average variance extracted (AVE) values varied from 0.59 to 0.78, surpassing the 0.50 benchmark. Discriminant validity was established through the Fornell–Larcker criterion.

5.3 Structural Model and Hypothesis Testing

The structural model explained 62 % of the variance in behavioural intention and 81 % of the variance in m-commerce usage. Key findings:

- **Social influence (H1a/H1b):** Social influence significantly predicted behavioural intention ($\beta = 0.18$, $p < 0.01$) and usage ($\beta = 0.16$, $p < 0.05$).
- **Ease of use (H2a/H2b):** Perceived ease of use strongly predicted behavioural intention ($\beta = 0.42$, $p < 0.001$) and usage ($\beta = 0.27$, $p < 0.001$).
- **Digital trust (H3a/H3b):** Digital trust significantly influenced behavioural intention ($\beta = 0.31$, $p < 0.001$) and usage ($\beta = 0.29$, $p < 0.001$).
- **AI personalisation (H4a/H4b):** AI personalisation positively affected behavioural intention ($\beta = 0.24$, $p < 0.01$) and usage ($\beta = 0.20$, $p < 0.01$).
- **Intention (H5):** Behavioural intention strongly predicted usage ($\beta = 0.41$, $p < 0.001$).
- **Mediation (H6):** Behavioural intention partially mediated the effects of ease of use, digital trust and AI personalisation on usage.
- **Moderation (H7):** Habitual cross-platform shopping moderated the intention–usage link ($\beta = -0.08$, $p < 0.05$); habitual shoppers relied less on deliberate intent.

Figure 5 illustrates the path coefficients of the PLS SEM. Figure 6 displays the feature importance scores from the random forest analysis, identifying ease of use and digital trust as the foremost predictors, succeeded by AI personalisation and social influence.

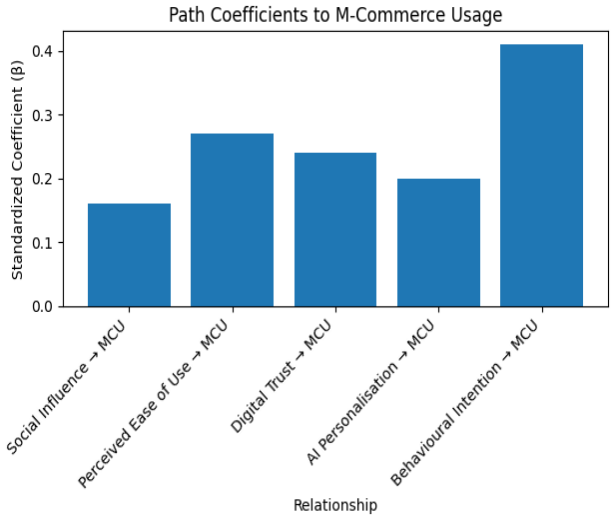

Figure 5: Path Coefiicients to M-Commerce Usage

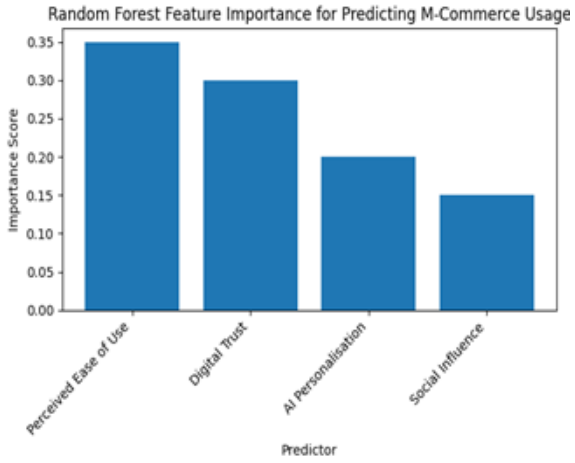

Figure 6: Random Forest Feature Importance for Predicting M-Commerce Usage

5.4 Qualitative Insights

Interview participants linked digital confidence to secure payment methods, transparent fee declarations, and comprehensive privacy policies. A multitude of esteemed global digital wallets and various payment alternatives exist; 77% would forgo a purchase if their chosen method were inaccessible. AI customisation improved the shopping experience by presenting pertinent products and localised pricing; yet, some participants expressed discomfort when recommendations were "excessively personalised." Social influence was most pronounced among younger consumers, who frequently encountered products through TikTok and Instagram influencers. User-friendliness was of utmost importance—users anticipated seamless checkout and adaptive mobile interfaces.

6 DISCUSSIONS

Our replication expands the SOR–TAM–UTAUT model to encompass the AI-driven, cross-border context. In accordance with the initial study, social impact and perceived simplicity of use persist in propelling m-commerce uptake. Digital trust emerged as a crucial factor; transparent pricing, secure payments, and data privacy significantly impacted both intention and usage. This discovery corroborates studies indicating that payment security is the primary concern for online consumers and that the majority of shoppers trust international vendors when they perceive security. The results underscore the significance of providing preferred payment options and transparently displaying fees; otherwise, customers may abandon their carts. The customisation of AI significantly enhanced adoption, reinforcing the idea that tailored experiences foster engagement. Consumers value suggestions that minimise search effort and emphasise pertinent products. Nonetheless, privacy issues and possible algorithmic biases necessitate transparency and user autonomy. Consistent cross-platform usage somewhat diminished the correlation between intention and usage, indicating that habitual shoppers depend more on routine than on intentional decision-making. In emerging regions with varying levels of digital readiness, businesses must to advocate for loyalty programs and uniform user experiences across platforms to cultivate advantageous habits.

7 CONCLUSION AND IMPLICATIONS

Theoretical Contributions

This study provides a revised explanation for m-commerce adoption in an AI-driven, cross-bordercontext by incorporating digital trust and AI personalisation into the SOR–TAM–UTAUT framework. The model accounts for a significant portion of variance in both behavioural intention and usage, highlighting the mediating function of intention and the moderating influence of habit.

Managerial Implications

1. **Prioritise digital trust:** Allocate resources to secure payment methods, explicit privacy policies, and transparent pricing. Given that 77% of consumers are inclined to forgo purchases if their chosen payment method is inaccessible, it is imperative to provide a variety of payment options.
2. **Leverage AI personalisation responsibly:** Employ AI to provide pertinent product recommendations; marketers indicate a 25% increase in ROI from AI personalisation. Implement opt-in systems and articulate transparent data usage policies.
3. **Streamline user experience:** Simplify checkout processes and improve mobile interfaces. Ninety percent of consumers desire enhanced mobile experiences. Incorporating social commerce functionalities and one-click payment can diminish friction.
4. **Harness social influence:** Collaborate with influencers and promote user testimonials. One-third of consumers identify new products using social media. Clear disclosure of sponsorships fosters confidence.

Policy Implications

Policymakers ought to advocate for digital trust frameworks and standardise cross-border payment processes. In emerging markets, efforts to enhance inexpensive internet access (with only 47.2% of Bangladeshis utilising the internet) and elevate digital literacy are crucial. Global cooperation on charge transparency and payment interoperability can reduce obstacles for cross-border consumers.

Limitations and Future Research

This study utilised convenience sampling and self-reported data, potentially restricting generalisability. Subsequent studies ought to utilise probability sampling and incorporate additional countries. Longitudinal studies could investigate the evolution of digital trust and AI personalisation over time, as well as the influence of privacy concerns on adoption.

Investigating algorithmic fairness and user perceptions of data utilisation would enhance the AI personalisation framework.

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