

RESEARCH

Digital Financial Services and Financial Inclusion: The effect of e-levy on the Adoption of Mobile Money in a Sustainable Economy

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ABSTRACT

PURPOSE: This study analyses the impact of mobile money taxes on financial inclusion, focusing on actual usage and behavioural intentions.

DESIGN/METHODOLOGY/APPROACH: Data from 364 users were analysed using PLS-SEM. The study evaluates key Unified Theory of Acceptance and Use of Technology (UTAUT) constructs in conjunction with the influence of digital levies.

FINDINGS: Performance expectancy, effort expectancy, social influence, and facilitating conditions significantly shape behavioural intentions, which strongly drive mobile money adoption. However, mobile money taxes negatively affect actual usage, undermining financial inclusion.

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ORIGINALITY/VALUE: Grounded in the (UTAUT), it explores mobile money adoption in Odisha, India.

RESEARCH LIMITATIONS: This study is limited by its focus on Odisha, India, and a sample that may not represent broader mobile money users.

PRACTICAL IMPLICATIONS: Policymakers should reconsider taxation, while providers must enhance usability and support infrastructure to expand inclusive adoption.

KEYWORDS: *Mobile Money Technology; Financial Inclusion; Digital Inclusion; Mobile Money Taxation; e-Levy.*

INTRODUCTION

Fintech, or Financial Technology, is utilising technology to improve financial services. It has shown an enormous amount of growth in terms of investments, which has increased from \$105 million in 2020 to \$210 billion recently. In developing countries like Africa, mobile currency is an important part of the banking industry. Moreover, mobile currency allows unbanked consumers to gain access to banking services using mobile devices. It is predicted that by 2025, 7.5 billion users will be clearly influenced by FinTech due to the intensifying result of collaboration between Information Technology (IT) and banking sectors. The country of India has also witnessed the rapid development of its digital economy due to programs like UPI and Jan Dhan Yojna.

Mobile currency adoption in India encompasses a wide array of interactions among the different parties, starting from users to regulators. Mobile network operators provide convenient cash services and facilitate transfers between individuals and businesses, smoothing transactions, according to Maurer (2012). The services offered through mobile money in India include person-to-person transfers, bill payments, micro-savings, and digital credit. It is seen that there is a significant difference in the level and patterns of its adoption across geographical regions and demographics of the users. Digital credit and QR code-based Quick Response code payments remain popular among urban youth, while cash-in/cash-out services remain the mainstream for rural populations. But with these advances come risks, such as cyber threats, fraud affecting nearly a quarter of online deals, and a lack of adequate digital literacy, especially in rural areas, affecting about 37% of the population.

While many examine adoption through the lenses of intention and tech use, few scrutinise taxation's role in shaping usage regarding the electronic levy. Previous work shows how banking behaviour shaped fintech trends, yet the levy's impact remains underexplored. Taxation linked to digital finance warrants closer inspection, considering policies around this levy and its effects on digital dealings.

Governments charge transaction costs when a financial transaction takes place to sustain public service delivery. On the other hand, taxation of mobile transactions affects the financial inclusion of low-income sections. Addressing it, there are exemptions to small transactions that might ease the pain. Although the formulation appears uncertain, it could slow the flow of funds in marginalised sections. When understood in the Indian context, the digital financial landscape is aided by bodies such as the Reserve Bank of India (RBI) and the Ministry of Electronics and Information Technology. These bodies ensure the growth of the mobile financial sector through initiatives like the Digital India Campaign, Jan Dhan Yojana Scheme, and the Aadhaar-enabled payment systems. Against the backdrop of other developing nations like Kenya or Ghana, which created such a huge market with a simulated model through the support of the telco operator, such that M-Pesa has a high reach among the population. The Indian regulatory setup favours interoperability, and the development of digital financial services led by the banking sector. It is in relation to the world-class digital infrastructure setup, like BHIM UPI. Even then, the scenario is not very different in the distant District Industries Centres (DIC) regions.

The literature reviewed shows that high digital taxes are a deterrent to using mobile money. Therefore, it is important to analyse the e-levy in India as its ramifications extend further. Tax policies in such cases will either enhance access to or hinder access to financial services in developing economies. Drawing on data from users in India, this paper examines how fees influence the adoption of digital finance, particularly among low-income users. Performance and effort expectancies are espoused as predictors of mobile money use in earlier models, but the role of taxation remains relatively unexplored. This work incorporates the aspect of tax policy into the Unified Theory of Acceptance and Use of Technology (UTAUT) model in the form of regulatory factors that influence actual use. It looks forward to: i) evaluating India's mobile money e-levy uptake in Odisha, ii) investigating how perceived usefulness, performance expectancy, social influence, and facilitating conditions influence user behaviour, and finally, iii) assessing the wider implications of taxation for financial inclusion, providing policy recommendations for growth in digital finance.

LITERATURE REVIEW

It is not entirely fair to compare traditional banking and long accessible services for account holders with the emerging blockchain paradigm, which is still nascent. FinTech has enabled non-traditional players to offer financial services innovatively, improving accessibility for underserved segments (Elia *et al.*, 2023). Senyo and Osabutey (2020) highlight that mobile users can now manage money through agents, merchants, and linked banks. Tax incentives can boost mobile money adoption, showing that duty exemptions for digital financial services reduce barriers to inclusion (Bongomin *et al.*, 2019).

In May 2022, the country of India imposed an e-levy of up to 1.5% on electronic transfers to increase revenues from the growing digital finance space. Transfers that occur between wallets

include charges, while topping up is not taxed. While mobile money is convenient and relatively inexpensive, the new e-levy could prevent some people from adopting this service. Previous works on the diffusion of mobile money, such as Senyo and Osabutey (2020), focused on behaviour and technology and did not investigate any fiscal implications of the innovation. On their part, Amoah *et al.* (2020) and Glavee-Geo *et al.* (2020) identified demographic and infrastructural factors that influence uptake but did little to adequately discuss the taxation aspect. Given this background, the present study makes an important contribution by analysing how levies affect the adoption of mobile money and financial inclusion.

Timeline of e-levy Implementation in India

India introduced the e-levy through the Finance Bill in February 2022, effective from July 1, 2022. It levied a charge of up to 1.5% on specific digital transfers targeted at increasing public revenue. Its hurried implementation and limited exclusions led to Digital Transaction Costs concerns. Preliminary reactions show a reduction in low-value transfers, indicating that the levy affected end-user behaviour and, therefore, could impair financial inclusion. Building on these theoretical insights, the following section outlines the methodological approach adopted to empirically test the extended UTAUT model in the Indian context.

Framework for IT Adoption

The current research is based on the UTAUT model, which hypothesises that technology acceptance is best predicted by Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). These constructs are essential; however, this research has expanded the model to include an economic moderating factor of the e-levy. It reflects changes in regulatory policies of digital finance adoption in India and adds a critical cost aspect that impacts behavioural intention and actual use. This conceptual adjustment allows for a more policy-relevant analysis of mobile money adoption. The extended model posits the place of e-levy between behavioural intention and actual use, where financial inclusion may be influenced by external fiscal factors, as indicated in Figure 1.

Adding the e-levy as a moderating factor to the UTAUT framework extends the model to include an economic policy variable. This enriches the model by capturing how behavioural intention and actual use are externally impacted by regulatory changes. However, the wider applicability of this model within different socioeconomic and regulatory contexts has not been addressed. The hypotheses are based on the constructs of UTAUT, whereby performance expectancy and effort expectancy of users lead to behavioural intention, which is then moderated by the e-levy to study its economic impact.

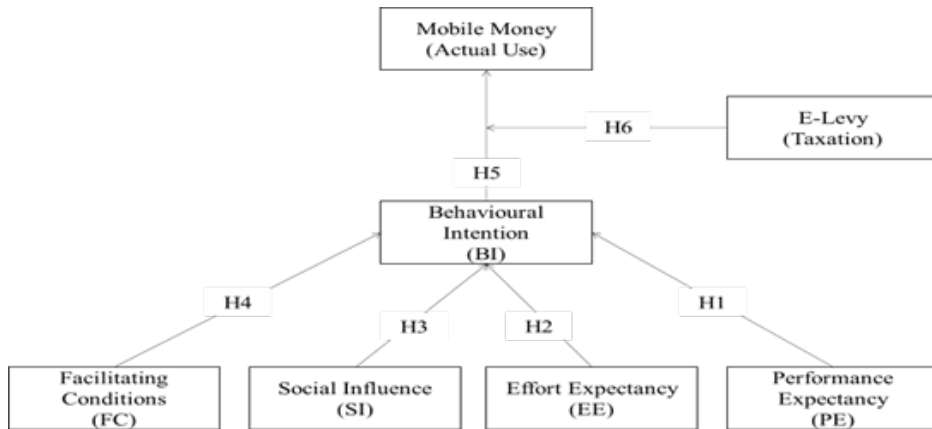


Figure 1: Conceptual Research Framework

Source: Constructed by authors

Behavioural Intention and Performance Expectancy (PE)

The extent to which an individual believes that using a system will help them to attain gains in job performance is termed as Performance Expectancy (PE) (Venkatesh *et al.*, 2003). PE assesses whether users adopt mobile money services due to perceived benefits.

H1: The higher the PE, the stronger the behavioural intention to adopt the innovation of mobile money.

Effort Expectation (EE) and Behavioural Intention

The ease of use of using the innovation is termed as Effort Expectation (EE) (Venkatesh *et al.* 2003), which influences technology adoption. EE assesses usability and the cognitive effort required.

H2: EE positively affects behavioural intention to adopt the innovation of mobile money.

Behavioural Intention and Social Influence (SI)

Social influence (SI) is defined as how one thinks significant others try to convince them to accept a system (Venkatesh *et al.*, 2003). Adoption behaviour is changed by SI (Adov *et al.*, 2020), where approaches of peer networks are steps for mobile money adoption.

H3: The adoption of mobile money innovations is significantly influenced by social factors, shaping users' behavioural intentions.

Behavioural Intention and Facilitating Conditions (FC)

Facilitating conditions (FC) refer to the presence of infrastructure upon innovation use (Venkatesh *et al.* 2003). Prior studies affirm FC as a predictor of adoption (Khechine *et al.*, 2020). Mobile money services require carrier subscriptions and IT proficiency (GSMA, 2018). FC positively influences e-banking (Mohapatra *et al.*, 2024; Sahu *et al.*, 2023) and mobile payment services (Oliveira *et al.*, 2016).

H4: User behavioural intention towards mobile money innovation is dependent on facilitating conditions.

Behavioural Intention (BI) and Behaviour Force

Behavioural intention (BI) reflects the subjective likelihood of an individual using mobile money. BI strongly predicts technology adoption (Hossain *et al.*, 2019), with research affirming a direct association between BI and mobile money usage.

H5: Mobile money innovation usage is significantly associated with BI and behavioural force.

E-levy (Taxation) and Its Mitigation

The higher taxes are likely to affect inflation and lower market equilibrium, while influencing adoption rates. Tax-free mobile money services tend to increase financial inclusion (GSMA, 2016). A reduction in transaction costs, through tax cuts, enhances financial performance. Mobile money adoption might be deterred by digital transaction taxes. There is still an argument for imposing a levy on mobile money transactions, citing accrued revenue to fund public welfare. This paper, therefore, postulates that taxation is also a moderator of the BI-Usage relationship.

H6: E-levy moderates the relationship between behavioural intention and mobile money innovation usage.

Given the conceptual grounding in UTAUT and taxation dynamics, the next section describes the empirical methodology employed to assess their combined effects on mobile money adoption.

RESEARCH METHODOLOGY

A purposive sampling plan was implemented in this inquiry, potentially introducing selection prejudice by exclusively examining participants who utilised mobile money, restricting generalisability to non-users. Previous investigations have employed this methodology (Wahab *et al.*, 2022; Purohit *et al.*, 2022). Individuals involved were grown-ups aged 18 and above who had applied for mobile money services. Information was gathered from dynamic mobile money clients in Odisha through an online 26-item poll between January and August 2024. The examination comprised Segment A captured demographic details (Table 1) and Segment B examined proposed relationships. This was a quasi-experimental of multiple sequential investigations. The poll was

audited by three professors, particularly in bookkeeping and funding, alongside three specialists in data frameworks. Because of limitations on the number of items, just 11 key questionnaires were incorporated, even though future research could extend the survey to incorporate open-ended inquiries or extra constructs like perceived security and trust. The ethical approval was acquired to guarantee informed consent and secrecy per the General Data Protection Regulation] (GDPR) principles.

Table 1: Descriptive Statistics

<i>Variable</i>	<i>Percentages (%)</i>	<i>Frequency (n)</i>
Gender		
Male	61.54	224
Female	34.07	124
Undisclosed	4.40	16
Age		
55 years +	3.85	14
45–54 yrs	6.04	22
36–44 yrs	25.27	92
25–35 yrs	51.65	188
18–24 yrs	13.19	48
Educational attainment		
Ph.D.	13.46	49
Postgraduate	21.15	77
Bachelor degree	14.29	52
Intermediate	51.10	186
Employment status		
Retired	3.30	12
Student	19.78	72
Unemployed	11.81	43
Employed	65.11	237
Service provider (Mobile Money)		
Reliance Jio	65.11	237
BSNL	10.71	39
Airtel	24.18	88
Service provider (Duration in years)		
More than five years	67.86	247
Between 4 and 5 years	12.91	47
Between 1 and 3 years	16.76	61
Less than one year	2.47	9

Source: Compiled by the authors

The surveys from 364 willing participants who provided complete and valid responses were studied. Incomplete surveys were eliminated by adopting a rigorous method to preserve data quality. Sample size calculation was done by using the Krejcie and Morgan (1970) formula to ensure appropriateness for populations exceeding 100,000 people at a confidence level of 95% accuracy. India was specifically targeted as it was known to have a culture of innovation and adoption of mobile money transfer services (Kumar and Banerjee, 2025). Mobile money transfer adoption was measured with a five-point Likert scale adapted from Venkatesh *et al.* (2003), adding the critical constructs of the UTAUT. These factors included effort expectancy, performance expectancy, social influence, facilitating conditions, and attitudes towards the electronic levy and behavioural intention. For data analysis, factor-based partial least squares structural equation modelling was applied to allow for complex relationships (e.g., moderation and mediation), small sample sizes, and data distribution that are non-normally distributed (Hair, 2014).

Following are the full forms of the abbreviations used in this study:

- NFI – Normed Fit Index
- GFI – Goodness of Fit Index
- CMIN/DF – Chi-Square Minimum/Degrees of Freedom
- CFI – Comparative Fit Index
- RMSEA – Root Mean Square Error of Approximation
- PLS-SEM – Partial Least Squares Structural Equation Modelling
- CR – Composite Reliability
- p – Probability (p-value)
- AU – Actual Use
- Q² – Stone–Geisser Predictive Relevance
- R² – Coefficient of Determination

RESULTS

Model Valuation and Measurement

As put forward by Henseler *et al.* (2015), model validation consisted of a multi-step process, including assessment of reliability (Cronbach's alpha), convergent validity (AVE), and discriminant validity (HTMT ratios). Therein, all standardised factor loadings in the research were demonstrated to be above the lower limit of 0.70. Cronbach's alpha values ranging from 0.768 to 0.899 for all constructs were relatively well accepted as presented in Table 2 (Hair, 2014).

Table 2: Reliability Test and Factor Loadings

Code	Constructs	Loadings	Cronbach's alpha	CR	AVE
TX1	Taxation (TX) (e-levy)	0.834	0.768	0.823	0.702
TX2		0.742			
TX3		0.879			
MMU1	Mobile money use (MMU)	0.792	0.81	0.888	0.638
MMU2		0.854			
MMU3		0.815			
BI1	Behavioural Intention (BI)	0.844	0.854	0.893	0.718
BI2		0.789			
BI3		0.827			
SI1	Social Influence (SI)	0.858	0.765	0.715	0.59
SI2		0.732			
SI3		0.821			
SI4		0.724			
PE1	Performance Expectancy (PE)	0.881	0.899	0.862	0.65
PE2		0.815			
PE3		0.741			
PE4		0.834			
FC1	Facilitating Conditions (FC)	0.891	0.825	0.875	0.738
FC2		0.874			
FC3		0.813			
FC4		0.826			
EE1	Effort Expectancy (EE)	0.863	0.852	0.902	0.685
EE2		0.871			
EE3		0.857			
EE4		0.819			

Source: Compiled by authors

Cronbach's alpha values (ranging from 0.768 to 0.899) were calculated, and confirmatory factor analysis (CFA) demonstrated factor loadings exceeding the 0.70 threshold (Hair, 2014). A satisfactory model fit and reliable interpretation are achieved when the average variance extracted (AVE) exceeds 0.5 for all constructs, as proposed by Hair (2014). Using this threshold, the model efficiently analyses the underlying dimensions of the constructs, ensuring sound analysis. The analysis of the discriminant validity of the measurement model indicated that acceptable values occur where the Heterograft-Monotrait Ratio (HTMT) values do not exceed 0.85, as recommended by Henseler *et al.* (2015) (see Table 3).

Table 3: HTMT (Discriminant Validity)

Constructs	SD	Mean	1	2	3	4	5	6
1. PE	1.1	3.39						
2. EE	1.13	2.52	0.491					
3. SI	0.98	3.49	0.489	0.45				
4. FC	0.365	3.71	0.51	0.396	0.634			
5. BI	1.01	3.82	0.52	0.428	0.652	0.472		
6. AU	0.48	3.5	0.577	0.314	0.416	0.419	0.421	
7. Tax (e-Levy)	1.28	3.36	0.478	0.577	0.409	0.453	0.528	0.461

Source: Compiled by authors

Estimation of the Structural Model

The proposed model has high predictive power, explaining about 58% of actual use variance and 42% of behavioural intention variance. The model's validity is supported by higher values in the Stone-Geisser Q-squared (predictive value: 0.412 for FC, SI, EE, and PE, on on BI and actual use). This model is consistent with the data regarding supported relationships. According to the study's results, performance expectancy positively impacted behavioural intention (H1). The positive connection between behavioural intention and effort expectancy was likewise confirmed (H2). However, our findings supported the social influence on behavioural intention (H3), which has a positive impact and showed statistical significance in the association between behavioural intent and facilitating conditions H4; hence, these supports are consistent. As expected, (H5), behavioural intention was considerably associated with actual use of mobile money services.

Moderating Effect

To evaluate the model's fit, we assessed various fit indices and presented them in Table 4, which provides the relevant fit indices, demonstrating that the model meets the criteria established by Hoyle (1995), as detailed in Table 4.

Table 4: Test to Measure the Fitness of the Model

Goodness of fit	Threshold (Recommended)	Value (SEM)	Views
NFI	≥ 0.90	0.917	Fitting Good
GFI	≥ 0.90	0.981	
CMIN/DF	≤ 3.0	2.58	
CFI	≥ 0.90	0.918	
RMSEA	≤ 0.10	0.079	

Source: Compiled by authors

Table 5 presents the moderating effect of a third factor between the adoption of mobile money and behavioural intention. The current analysis now examines the moderating effect of the e-levy within the established relationship between actual mobile money use and behavioural intention. Hypothesis H6 explicitly states that the e-levy impacts this relationship. Having introduced the transaction tax as a moderating variable in the base model, its effect was assessed through SmartPLS. According to the results, the e-levy significantly reduces the relationship between the intention to use mobile money and its actual use.

Table 5: Result Summary

<i>Hypothesised Path</i>	<i>H1: PE → BI</i>	<i>H2: EE → BI</i>	<i>H3: SI → BI</i>	<i>H4: FC → BI</i>	<i>H5: BI → AU</i>	<i>H5: BI*Taxation*AU→ AU</i>
Standardised Estimate	0.267*	0.432*	0.219*	0.248*	0.283*	-0.208*
R ²	0.471					0.541
Q ²	0.412					0.462

Source: Compiled by authors

* (p < 0.001)

DISCUSSION

Access to sustainable finance for all is a prerequisite for achieving sustainable development. Digital finance has the potential to pave the way for more inclusive financial systems. The introduction of the electronic levy presents a case study of citizens' behavioural intention to use mobile money and is used in this study to investigate the moderating effect. Economically, when put forth, taxation tends to cause distortions in demand and supply, which help consumers alter their choices towards a new market equilibrium (Haque *et al.*, 2025).

In India, the e-levy bill of May 2022 received mixed responses. The bill eventually passed despite strong opposition, and this study analyses consumer responses to the e-levy. The study then tests the antecedents of mobile money adoption, H1-H5, before testing the interaction of the e-levy (H6).

The survey's results help validate H1, which shows that performance expectancy influences users' adoption of mobile money and behavioural intention. This indicates that consumers decide to use mobile money when they understand its advantages, which Senyo and Osabutey (2020) and Venkatesh *et al.* (2003) support. Furthermore, H2, indicating a positive relationship between effort expectancy and behavioural intention, is also supported in this study (H2: $\beta = 0.384$, $p < 0.001$). The results are consistent with previous research by Dewi *et al.* (2020), which indicates that users are more likely to accept mobile money when it is easy to integrate into daily activities.

Lepoutre and Oguntoye (2018) and Adov *et al.* (2020) stress that mobile money adoption is considerably influenced by social networks like family and friends, which supports H3.

Facilitating conditions are positively connected with behavioural intention; however, H4 (Chawla and Joshi, 2023) is not supported. Based on such an assumption, Khechine *et al.* (2020) highlight that mobile money adoption requires the proper support and the right means.

In this respect, the findings of this study support H5, where a positive attitude towards mobile money enhances its diffusion; thus, it supports Hossain *et al.* (2019). Finally, H6 highlights that the e-levy has a deterring impact on both behavioural intention and mobile money adoption. The result is supported and consistent with the work of Bongomin *et al.* (2019), which states that the imposition of a tax on mobile money transactions inhibits financial inclusion and goes against the expectations of a cashless economy. Even the GSMA report of 2015 supports it, elaborating that removing the levies imposed on mobile money could make access easier for the disadvantaged people.

The study also contributes to the discourse of sustainability by relating mobile money usage to SDG targets, particularly SDG 1 (No Poverty) and SDG 8 (Decent Work and Economic Growth). When seen in the context of Odisha, financial access through digital platforms addresses structural inequality and supports inclusive growth, reiterating the value of FinTech innovations in development planning.

IMPLICATIONS OF THE STUDY

Managerial

High transaction tariffs can jeopardise the sustainability of digital marketplaces, which is a lesson developing countries must learn. Taxing mobile money transactions would discourage use and restrict access to promising financial technologies. Most industry costs also contribute towards enterprise value; thus, if the state wants to grow the economy, governments can easily adjust taxation and industry development. During the process of the removal of these costs, it can enhance adoption by 30% in underbanked regions. This further allows citizens to take part in the economic activities. Electronic transaction taxes need to be imposed with caution as pay disparity continues. Good global tax practices should guide telecommunication and encourage innovations in mobile money, serving the low-income groups.

Practical

The mobile money fee influences the cost of accessibility and cost, posing a risk in relation to the incorporation of an existing account. While fiscal administration taxes generate revenue for the economy, it is important to observe the social and economic effects associated with it from the perspective of the policy-formulator. In certain cases, these taxes might pose a threat, as they target the most vulnerable sector of the economy. They might result in the promotion of exemptions in small charges, as well as a focus on the educational and digital literacy of customers. It becomes imperative in terms of building trust and ensuring adoption in rural areas with low technological awareness.

Theoretical

This reflection contributes to the conversation of FinTech writing, particularly mobile money evaluation. E-payment charges that are less researched also hinder fintech growth. The impact of taxation on mobile money should also be considered with reference to peer-to-peer lending, BNPL, and digital loans. Additionally, digital literacy and behavioural habits, especially in rural India, remain critical barriers to inclusion, thus requiring focused education and an ecosystem-wide regulatory alignment.

The research confirms that mobile money adoption is shaped by user perception, while taxation dampens the actual use. The study also outlines pragmatic steps for policy actors and service providers as a necessary intervention to balance revenue goals with financial inclusion.

CONCLUSIONS

In conclusion, the focus is on how taxation weakens mobile money uptake despite high user intent. It recommends clearer, more inclusive tax policy and user support mechanisms. Scrutinising the topic in depth is relevant because it helps to show how legislation around digital financial service taxation, such as the e-levy used in India, can affect mobile money and financial inclusion in practice. It is in relation to the predictions from the UTAUT framework, the results from the pre-levy survey indicate that effort expectancy, performance expectancy, social influence, and facilitating conditions all have significant influences on individuals' intentions to use mobile money. However, when the e-levy comes into action, this becomes a disincentive that weakens the relationship between intended behaviour and use, along with falling adoption rates.

Policy-wise, these findings imply that some governments may need to introduce increasing tiers of taxation rates or exempt transactional marginal values to lessen tax-induced barriers to financial inclusion. Also, customer education or awareness campaigns should be conducted to make users aware of both the pros and cons of M-Pesa services for making better and informed decisions in the future for the organisation as well. Mobile operators must be able to improve this experience for users by providing them with a simple interface and effective support systems.

In sum, this study illustrates how digital levies serve the dual purposes of revenue generation and behavioural deterrence, especially for a developing nation like India. The findings therefore echo earlier works that caution against high transaction costs as inhibitors to digital financial inclusion. Furthermore, the introduction of taxation into UTAUT has provided a new lens through which the adoption of technologies can be studied in regulatory environments. This is instructive not only for researchers of digital finance but also for policymakers who juggle fiscal and inclusion imperatives. Since financial inclusion is part of the broader Sustainable Development Goals, SDG 1 and SDG 8, it becomes important to nurture trust-based and affordable mobile ecosystems. Future tax policies should henceforth be progressive, context-sensitive, and designed in consultation with the underserved communities towards equitable access.

Availability of the Data

The data used in the current study were kept confidential. The questionnaire used in the study can be accessed on the given link.

https://docs.google.com/document/d/1k9O1CBUm1Zr706xef9ZnwQ2AmibJ55xM/edit?usp=drive_link&oid=118359942623561885778&rtpof=true&sd=true

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Conflict of Interest

Authors declare no conflict of interest.

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