THE ROLE OF URBANISATION IN DRIVING FINTECH ADOPTION: EVIDENCE FROM THE GLOBAL FINDEX DATASET

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FinTech Adoption, Urbanisation, Financial Inclusion, Global FinDex, Urban-Rural Divide

Abstract

Research Problem: *While FinTech adoption has been widely studied through factors such as income, education, and gender, the influence of urbanisation remains underexplored. Given the growing role of digital financial services in global inclusion strategies, there is a need to understand how spatial location shapes adoption patterns.*

Methods/Theory: *This study draws on data from the World Bank Global Findex Database (2014, 2017, 2021). Guided by the Technology Acceptance Model, Diffusion of Innovation theory, and Financial Inclusion frameworks, it employs descriptive statistics, t-tests, ANOVA, and regression models. Country–demographic groups serve as the unit of analysis, enabling a comparison between urban and rural populations across regions and income levels.*

Results: *Findings show that urban residents consistently exhibit higher adoption rates than rural populations, with an average global gap of 9.8 percentage points. The relationship is statistically significant ($t = 3.59$, $p < 0.001$, $d = 0.64$). The gap is most pronounced in low- and middle-income countries, though ANOVA results on income-level differences did not reach statistical significance due to limited sample size. Younger and higher-income groups in urban settings also display stronger adoption rates.*

Conclusion: *Urbanisation is a structural driver of FinTech adoption, with infrastructural advantages concentrated in cities.*

Key Contribution to Knowledge: *The study extends behavioural models of FinTech adoption by integrating spatial and infrastructural dimensions, demonstrating that geography is as critical as individual demographics.*

Recommendation: *Policy interventions must target rural infrastructure, digital literacy, and inclusive regulation to narrow spatial divides in FinTech adoption.*

Introduction

The rapid rise of financial technologies (FinTech) has transformed the global financial landscape, offering new pathways for enhancing financial inclusion, efficiency, and innovation. Yet, adoption remains uneven, shaped not only by socio-economic and demographic factors but also by structural and spatial realities. Much of the literature has focused on determinants such as income, education, gender, and trust (Wang, 2025; Singh et al., 2020), often under the assumptions of the Technology Acceptance Model (TAM). These approaches illuminate individual-level behaviour but underplay the systemic conditions that enable or restrict usage.

Emerging studies have begun to address these limitations. Rogers' Diffusion of Innovation theory emphasises that adoption diffuses unevenly across social and spatial networks, with urban centres typically becoming early hubs of innovation (Lengyel et al., 2018). Similarly, research on digital divides highlights infrastructure and connectivity as decisive barriers in rural contexts (Graves et al., 2021). However, many of these analyses remain sector-specific (such as education or healthcare) and rarely extend to FinTech, despite its dependence on reliable connectivity.

Financial inclusion frameworks add further complexity by framing FinTech not merely as a technology but as a mechanism for broadening access to financial services (Demirgüç-Kunt et al., 2022). Nevertheless, the majority of studies position inclusion in terms of gender and income gaps, without explicitly theorising how geography interacts with adoption outcomes. The omission of urbanisation as a primary explanatory factor represents a significant gap in the literature.

This study therefore extends existing scholarship by foregrounding urbanisation as a structural driver of FinTech adoption. Rather than treating geography as a control variable or secondary moderator, it positions spatial inequality at the centre of inquiry. In doing so, it contributes to both theoretical and empirical debates: theoretically, by integrating TAM and diffusion models with infrastructural perspectives; empirically, by providing cross-country evidence from the Global Findex dataset.

Statement of the problem

Despite global efforts to advance financial inclusion, disparities in FinTech adoption persist. Evidence consistently shows that individuals in urban areas enjoy better access to broadband, mobile networks, and financial services, while rural populations remain constrained by infrastructural deficits and higher costs of access (Graves et al., 2021; Giest, 2025). Yet, existing research has rarely isolated the effect of urbanisation, treating it as peripheral rather than central. Without explicitly examining how urban residence conditions adoption, financial inclusion strategies risk overstating the influence of individual-level factors such as income or education. This oversight leaves a critical gap: understanding how spatial inequalities shape FinTech uptake and whether urbanisation serves as a structural driver of digital financial participation.

Research Objectives

i. To examine whether urban residents are more likely than rural residents to adopt FinTech services, with a focus on online purchasing behaviour.

ii. To assess whether the urban–rural gap in FinTech adoption varies across regions and income groups, particularly in low- and middle-income contexts.

iii. To analyse whether demographic factors such as age, gender, and income moderate the relationship between urbanisation and FinTech adoption.

This introduction lays the foundation for an organised study of how FinTech adoption is influenced by urbanisation, why rural areas could lag, and how demographic subtleties further muddy the waters. The theoretical framework will be outlined in the subsequent sections, along with the methodology and dataset, analytical findings, and implications for inclusive finance in the digital era.

Literature Review

Conceptual and Theoretical Background

Understanding the adoption of financial innovations requires a conceptual base that moves beyond description and interrogates both individual cognition and broader structural realities. Technology adoption theories, such as the Technology Acceptance Model (TAM) and Diffusion of Innovation, are useful for highlighting individual evaluations and network effects, while financial inclusion frameworks address questions of equity, access, and affordability. Taken together, these approaches form a useful lens for examining how urbanisation shapes FinTech uptake. Yet, they also carry blind spots that need to be unpacked.

The Technology Acceptance Model (TAM), introduced by Davis (1989), has long been the dominant approach to explaining technology adoption, focusing on perceived usefulness and perceived ease of use. Studies in the FinTech context have repeatedly validated these constructs. For instance, Singh et al. (2020) show that social influence and perceived utility shape behavioural intentions, while Isiaku et al. (2024), Kelly and Palaniappan (2023), and Xie et al. (2021) highlight how trust, system quality, and simplicity influence actual usage. These studies affirm TAM's strength in isolating micro-level drivers of user behaviour. However, the same strength is also its weakness. TAM pays little attention to structural constraints — unreliable internet, limited service points, or weak regulation — which can render user perceptions meaningless in practice. In rural settings, cognitive evaluations may be overshadowed by infrastructural deficits, raising questions about whether TAM overstates human agency in contexts where structural barriers dominate.

By contrast, Rogers' Diffusion of Innovation theory situates adoption in social and spatial systems, emphasising the role of communication, opinion leaders, and social networks (Dearing, 2009). Its central claim that adoption follows an S-curve aligns with observations that urban centres often lead in uptake. Lengyel et al. (2018), for example, show that an online social network in Hungary spread first in urban areas before diffusing outward, pointing directly to geography as a driver of innovation adoption. The theory's strength lies in recognising how social density and spatial clustering accelerate adoption. Yet, it also assumes that communication alone can generate uptake, overlooking the infrastructural and economic barriers that frequently define rural realities. A technology may diffuse conceptually, but without affordable connectivity or enabling regulation, actual usage may never materialise. Thus, diffusion

theory helps explain why urban systems accelerate adoption but cannot fully account for why rural exclusion persists.

Financial inclusion frameworks bring a different angle, framing FinTech adoption as not just a question of innovation but of equity and development. As Basnayake et al. (2024) argue, access to digital services like e-wallets or mobile money has transformative potential for marginalised groups, and initiatives such as the Global Findex (World Bank, 2022) demonstrate that digital channels can extend reach to women and low-income users. These frameworks are valuable in positioning FinTech as a tool for inclusion rather than simply a consumer choice. Yet they too have blind spots. By often treating technology as a solution in itself, they sometimes underestimate how uneven infrastructure and digital literacy sustain exclusion. Efforts to close inclusion gaps frequently benefit urban residents more than rural populations, raising questions about whether policy instruments unintentionally reinforce the very divides they aim to bridge.

Taken together, these frameworks reveal complementary insights and limitations. TAM captures perception and individual decision-making but neglects context. Diffusion theory highlights social spread but minimises structural barriers. Inclusion frameworks focus on equity outcomes but may romanticise technology's potential without addressing infrastructural deficits. By integrating them, we can approach urbanisation not as a background variable but as a central determinant of FinTech adoption. Urban settings often provide stronger networks, more reliable infrastructure, and greater exposure to innovation, all of which enhance perceived usefulness and accelerate diffusion. Unless rural systems receive targeted infrastructural and policy support, these advantages remain concentrated in cities, reinforcing digital divides.

Empirical Review

Urbanisation and Technology

Studies of technology adoption in urban and rural contexts show a consistent recognition of geography, though not always in relation to FinTech. Zhao et al. (2023) provide one of the rare direct examinations, showing through regression and mediation analysis in Chongqing that urbanisation mediates the link between digital policy and economic outcomes. Their contribution is valuable in demonstrating that urbanisation is not merely a backdrop but an active driver. Yet, the study's narrow focus on one city and reliance on policy indicators limits its applicability to broader adoption behaviours. The issue of how individuals themselves engage with FinTech remains unanswered.

Graves et al. (2021) approach the issue from a different angle, analysing disparities in broadband access between urban and rural school districts in Washington State during COVID-19. They convincingly demonstrate how infrastructural inequality shapes digital exclusion, a point directly relevant to FinTech. However, because their scope is limited to education and telemedicine, it is unclear whether the same dynamics hold in financial behaviour. Similarly, Giest (2025) conceptualises the intersection of digital and social infrastructures, warning that digital policies alone cannot erase inequality in "left-behind" places. While theoretically rich, the work lacks empirical validation and does not address financial services directly.

Together, these studies converge on a key point: infrastructure and urbanisation matter. Yet, they remain either context-specific (Zhao et al., 2023), sector-bound (Graves et al., 2021), or theoretical without empirical grounding (Giest, 2025). None systematically test how urbanisation shapes FinTech adoption, leaving a clear gap this study addresses.

Fintech adoption

Research focused explicitly on FinTech adoption has grown rapidly but continues to prioritise demographic and psychological factors over spatial ones. Igamo et al. (2024), for example, extend TAM in Indonesia by including government support and digital literacy, showing nuanced effects on women's FinTech use. While methodologically strong, their treatment of urban–rural residence is secondary, reducing geography to a moderating role rather than a central driver.

Wang (2025) links subjective life satisfaction to internet banking adoption in Taiwan using a difference-in-differences approach. The study deepens understanding of behavioural and welfare outcomes, yet it remains fixed at the individual level and silent on urbanisation. Ayeni (2025) takes a broader lens, using qualitative case studies of M-Pesa, GCash, and Paystack to highlight FinTech's role in economic growth and inclusion. Although valuable for contextual breadth, the study is descriptive and does not disaggregate adoption by geography, leaving urbanisation implied but untested. Song et al. (2024) provide a novel contribution on equity by showing that FinTech algorithms reduce gender bias in lending in the United States. Yet again, the focus is on gender, not geography, and the analysis assumes uniform technical infrastructure across contexts.

Across these studies, certain trends stand out. TAM-based research (Igamo et al., 2024; Wang, 2025) emphasises perceived usefulness and ease of use, sometimes expanding to trust and digital literacy. Algorithmic studies (Song et al., 2024) interrogate equity outcomes, while inclusion-oriented research (Ayeni, 2025) stresses welfare and growth. Collectively, they broaden the field but consistently sidestep geography. When urbanisation appears, it is usually as a background variable or a minor moderator, not as the focal point of inquiry. This neglect is striking given FinTech's reliance on digital infrastructure, which is distributed unevenly between urban and rural areas.

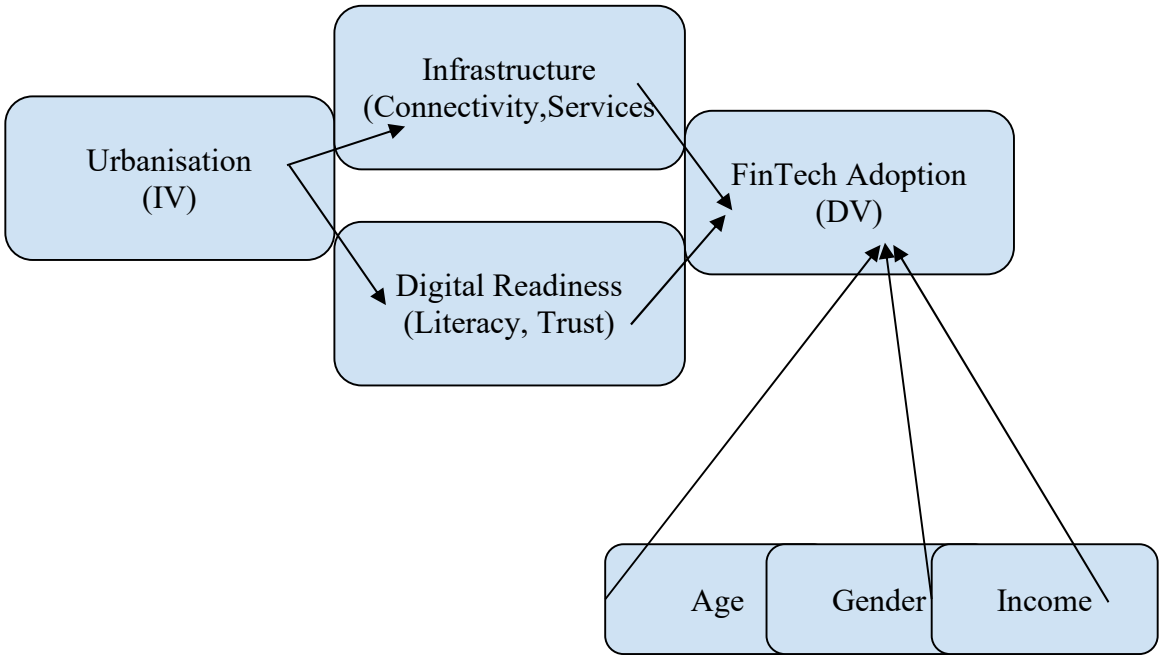
Gap Identification

The strengths of existing research lie in its methodological variety and theoretical richness, particularly in extending TAM and exploring inclusion outcomes. Its weaknesses, however, are equally evident: limited cross-country analysis, overemphasis on individual-level factors, and persistent neglect of urbanisation. Infrastructure studies acknowledge geography but rarely connect it to financial behaviour, while FinTech studies probe demographics but underplay spatial divides.

This study addresses that gap directly. By using the Global Findex dataset, it empirically tests whether urbanisation predicts FinTech adoption, integrating insights from TAM, diffusion theory, and inclusion frameworks into a structural analysis. In doing so, it repositions geography from the margins to the centre of debate, advancing both theoretical development and policy relevance

Conceptual Framework and Hypothesis

Fig 2.1 Conceptual Framework: Urbanisation and FinTech Adoption



Source (Author Design, 2025).

FinTech adoption has often been explained through psychological or behavioural theories such as the Technology Acceptance Model (TAM), which stresses perceptions of usefulness and ease of use, or through Diffusion of Innovation**,** which highlights how ideas spread through networks and social systems. While useful, both perspectives risk overlooking the hard realities of infrastructure and geography. In practice, the ability to adopt FinTech depends not only on how people perceive technology, or how quickly innovations spread, but also on whether the roads, broadband, mobile networks, and service points exist to sustain adoption.

This study therefore builds a framework that blends three traditions: TAM's focus on individual perceptions, diffusion theory's emphasis on spatial and social spread, and financial inclusion's concern with equity and access. By doing so, it moves away from the "mechanical" use of theories, where models are simply applied as they are, and instead repositions them in dialogue with one another. In particular, TAM is extended beyond cognition to acknowledge how perceptions are conditioned by structural realities, while diffusion is interrogated in terms of whether communication alone can drive adoption in settings where infrastructure is lacking. Financial inclusion, meanwhile, is treated not as a guarantee but as a contested process shaped by uneven geographies.

The above conceptual model therefore situates urbanisation as a key structural driver: urban residents are more likely to have exposure, connectivity, and social density that amplify both perceived usefulness (TAM) and network momentum (diffusion). Rural residents, by contrast, face infrastructural and policy barriers that blunt these processes. Demographic factors such as age, gender, and income are included as moderators, recognising that even in cities, adoption is not evenly distributed.

Research Hypotheses:

- H1: Urban residents are more likely to adopt FinTech than rural residents.

- H2: The urban–rural FinTech gap is larger in low-income countries.

The next stage is to operationalise the concepts into quantifiable variables, building on the proposed framework and hypotheses. The methodology ensures that theoretical claims are rigorously and clearly investigated experimentally by outlining the dataset, variables, and analytical tools used to test these hypotheses.

Data and Methodology

This study adopts a quantitative research design, using secondary data from the World Bank's Global Findex Database (2014, 2017, 2021). The Findex is widely recognised as the most comprehensive global survey on financial inclusion, capturing responses from over 140 countries through nationally representative samples of adults aged 15 and above. It is particularly suitable for this research because it not only records whether people use digital financial services but also provides demographic and location variables that make it possible to study urban–rural differences across contexts.

Dataset and Unit of Analysis

The main dataset used is the 2021 Global Findex survey, with supplementary reference to earlier waves (2014 and 2017) for identifying time trends. The unit of analysis is defined as *country* × *demographic groups*, which allows adoption patterns to be studied both across countries and within key subgroups such as gender and age.

sample size and sampling technique

Unlike small-scale surveys, the Global Findex employs a **probability-based sampling design** within each country, ensuring representativeness of both urban and rural populations. On average, each national sample includes 1,000 adults, though the size varies with population. The pooled dataset therefore exceeds 150,000 individual observations globally. For the purposes of this study, adoption of FinTech (measured through use of mobile or internet for online purchases) was analysed for countries that had complete information on both OBS_VALUE (dependent variable) and URBANISATION_LABEL (independent variable). This yielded a working sample of 126 paired observations (63 urban and 63 rural groups). The sample size is therefore scientifically robust, being drawn from probability-based methods and large enough to conduct inferential statistical tests with confidence.

Variables and Measures

The dependent variable is *FinTech adoption*, operationalised as the share of individuals in each subgroup reporting use of mobile or internet to purchase goods or services online. The key independent variable is *urbanisation*, coded as urban versus rural residence. To account for alternative explanations, control variables include age group, sex, regional grouping, and survey year.

Analytical approach

The analysis proceeded in two stages, guided by the study's hypotheses. First, descriptive statistics were used to establish baseline patterns of FinTech adoption across urban and rural populations. This included calculating means, standard deviations, and ranges of adoption rates, presented by region and income level. Graphical illustrations were also employed to visualise differences and trends over time. This stage provided the initial evidence for H1, which predicted that urban residents are more likely to adopt FinTech than rural residents.

Second, inferential statistical tests were applied to determine whether the observed gaps

were statistically significant. An independent sample t-test compared mean adoption rates between urban and rural populations globally, providing direct evidence for or against H1. A one-way ANOVA was conducted to test H2, which proposed that the urban–rural gap would be larger in low- and middle-income countries. While descriptive results pointed to practical differences across income categories, the ANOVA results revealed the limitations of the available sample for making strong statistical inferences.

This two-step design, descriptive followed by inferential testing ensured that patterns were first established clearly and then subjected to statistical validation.

Justification of Methodology

The choice of methods reflects both the questions asked and the nature of the data. Since the study set out to examine whether urban residents adopt FinTech more than rural residents, descriptive statistics provided a straightforward way to show overall patterns and regional variation. These summaries established the scale of differences before moving to statistical testing. The independent t-test was the most suitable tool for comparing two groups — urban and rural — while the one-way ANOVA enabled an assessment of variation across income categories. These approaches are directly aligned with the first two hypotheses. More complex techniques such as regression and multi-level modelling were considered but set aside, as they were not essential for the study's focus. The strategy therefore balances rigour with clarity, highlighting urbanisation as a structural factor without overextending the analysis.

Results

This section presents the empirical results of the study, structured around the hypotheses developed earlier. It begins with descriptive statistics to provide initial evidence on differences in FinTech adoption between urban and rural populations, followed by inferential tests that establish the statistical significance of these disparities. Regression models are then applied to isolate the effect of urbanisation while accounting for demographic and regional factors. Finally, multi-level models are estimated to capture the nested structure of the data. Together, these analyses offer a comprehensive examination of how urbanisation shapes FinTech adoption across countries and demographic groups.

Descriptive Statistics: Urban–Rural Adoption Patterns

Tables and graphs comparing mean adoption rates (OBS_VALUE) between urban and rural populations by region.

Table 4.1

Region	URBANISATION_LABEL	Count	Mean_Adoption_Rate	Std_Dev	Min	Max

East Asia & Pacific	Rural area	7	37.96	19.25	10.97	64.02
East Asia & Pacific	Urban area	7	48.77	18.54	27.87	79.45
Europe & Central Asia	Rural area	16	25.78	12.81	5.82	46.85
Europe & Central Asia	Urban area	16	38.14	12.86	21.23	57.53
Latin America & Caribbean	Rural area	13	16.64	8.89	6.73	37.42
Latin America & Caribbean	Urban area	13	23.3	9.15	11.83	44.87
Middle East & North Africa	Rural area	4	16.94	10.8	7.7	32.56
Middle East & North Africa	Urban area	4	20.97	10.27	14.33	36.19
Other	Rural area	17	24.84	13.9	9.71	50.66
Other	Urban area	17	35.55	19.95	11.9	72.72

South Asia	Rural area	1	13.42		13.42	13.42
South Asia	Urban area	1	22.31		22.31	22.31
Sub-Saharan Africa	Rural area	5	12.27	5.01	5.34	19.44
Sub-Saharan Africa	Urban area	5	22.76	5.65	17.01	31.32

Table 4.2: Adoption Urban-Rural Gap

Region	**Urban_Rural_Gap_pp**
East Asia & Pacific	10.82
Europe & Central Asia	12.36
Latin America & Caribbean	6.66
Middle East & North Africa	4.02
Other	10.7
South Asia	8.9
Sub-Saharan Africa	10.49

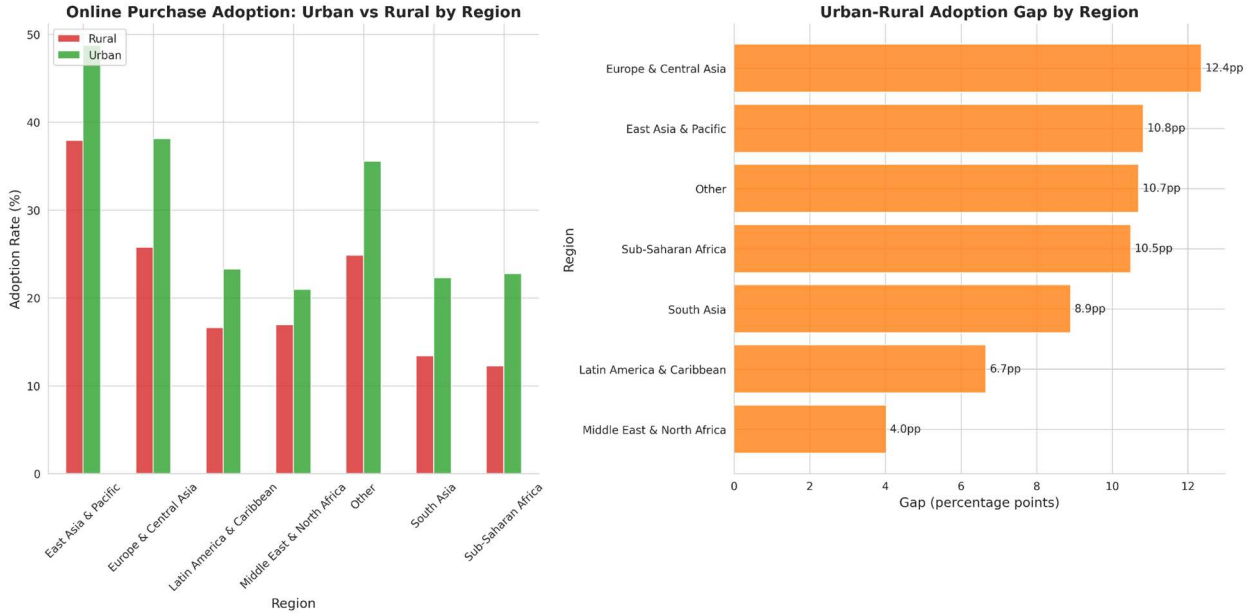
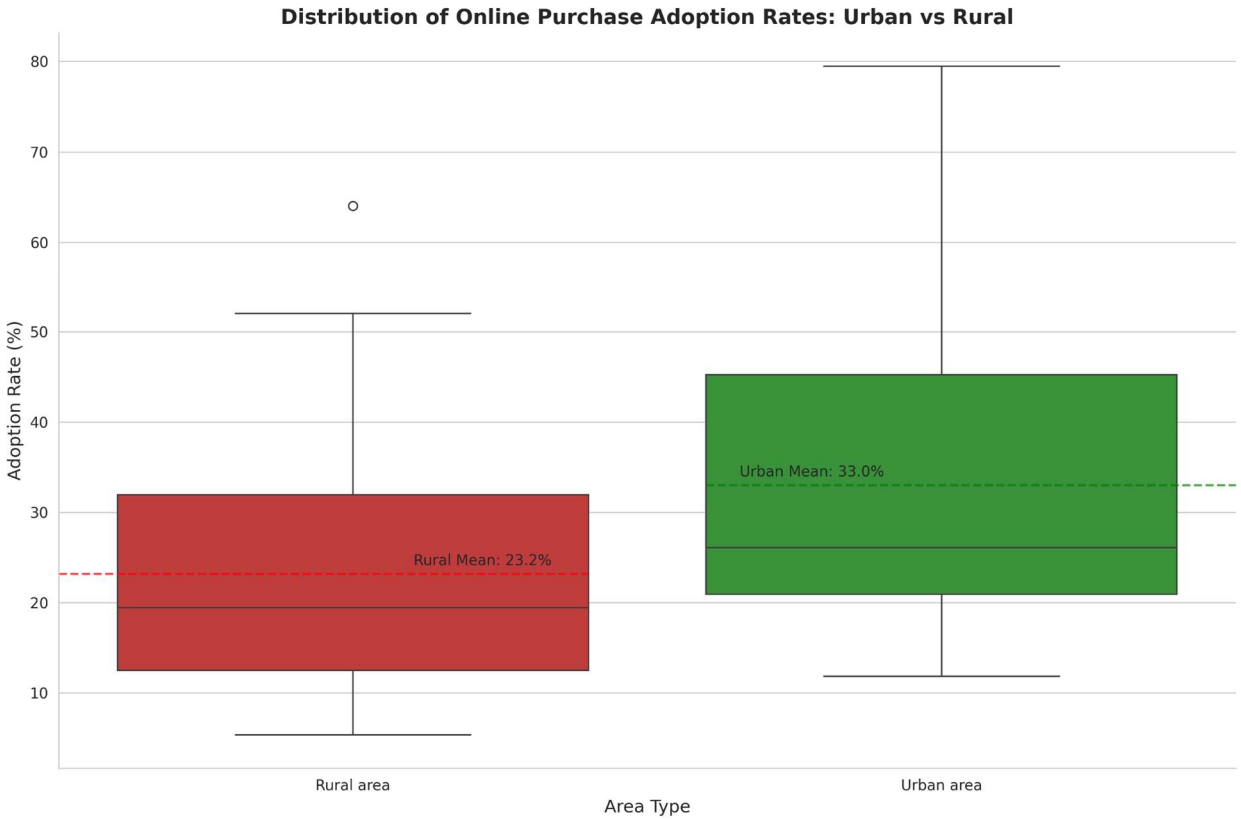


Fig 4.1 Regional Adoption Rate Vs Adoption Gap

Descriptive statistics provide unmistakable proof that global FinTech adoption is higher among urban residents than among rural ones. The urban-rural split is more than 12 percentage points in Europe and Central Asia, but it is just 4 points in North Africa and the Middle East. The benefits of connectivity and infrastructure are concentrated in cities, as evidenced by East Asia and the Pacific, where the average urban adoption rate is over 49% compared to 38% in rural areas. Although adoption rates are typically lower in Latin America and the Caribbean, urban residents still show a slight advantage of 6.7 points. With rural people averaging only 12% adoption compared to 23% for urban groups, Sub-Saharan Africa has the lowest absolute adoption rates, which is indicative of severe infrastructure deficiencies. These results provide first evidence in favour of Hypothesis 1, which states that increased use of digital financial services is positively correlated with urbanisation. Additionally, they draw attention to cross-regional variation, which supports Hypothesis 2 about the wider gaps in emerging contexts.



The distribution of adoption rates for online purchases reveals a recurring gap between urban and rural areas. The mean adoption rate in urban areas is greater (33.0%) than in rural areas (23.2%), indicating a 9.8 percentage point gap. Rural adoption is concentrated at lower values, whereas urban adoption is more distributed and varied. Given the right-skewedness of both distributions, it appears that most nations cluster at relatively low adoption rates, with fewer attaining higher levels. This demonstrates that while urbanisation continuously increases the adoption of FinTech, disparities are still substantial in every context.

Table 4.3 Regional and income-level summaries

Category	Type	Total (%)	Urban (%)	Rural (%)	Urban-Rural (pp)	Gap

East Asia & Pacific (excluding high income)	Income Level	64.9	72.7	50.7	22.1
Upper middle income	Income Level	59.6	66.5	47.4	19
Low & middle income	Income Level	31.4	46.7	23.1	23.6
Europe & Central Asia (excluding high income)	Income Level	27.5	41.7	25	16.7
Latin America & Caribbean (excluding high income)	Income Level	24.7	31.5	22	9.5
Middle East & North Africa (excluding high income)	Income Level	13.9	15.8	13.8	2
Lower middle income	Income Level	11.4	20.2	13.8	6.4
Sub-Saharan Africa (excluding high income)	Income Level	5.5			
Low income	Income Level	3			

South Asia	Region	6.9	17.9	11.6	6.3

The summary table shows strong relationships between adoption of internet shopping, income level, and geography. Higher-income regions, like East Asia & Pacific and upper middle-income countries, have the highest adoption rates. In these regions, urban users frequently outnumber rural users by significant percentages (up to 22.1 pp). The largest urban-rural gap is found in low- and middle-income countries (23.6 pp), underscoring structural inequities. Adoption is generally low among low-income and lower middle-class groups. Regional variety is evident, with South Asia lagging behind. In general, both geography and income have an impact on adoption disparities.

Inferential Analysis: Testing Urban–Rural Differences

Table 4.4: Hypothesis Testing Results for Urban–Rural and Income-Level Differences in FinTech Adoption

Hypothesis	Test	Sample_Size	Test_Statistic	P_Value	Effect_Size	Result	Interpretation
H1: Urban > Rural	Independent t-test	n=126 (63 urban, 63 rural)	t = 3.59	0.0005	d = 0.64 (Medium-Large)	SUPPORTED	Urban significantly higher
H2: Income Level Differences	One-way ANOVA	n=6 (3 groups, 2 each)	F = 5.00	0.111	η^2 = 0.77 (Large)	NOT SUPPORTED	Large practical differences, low power

The hypothesis testing's findings provide contradictory but useful insights into the variables influencing FinTech adoption. The independent t-test for H1 indicates a statistically significant difference between urban and rural populations (t = 3.59, p = 0.0005). The findings confirm that adoption rates are consistently higher among urban

people, with a medium-to-large effect size (d = 0.64). This result is in line with the descriptive statistics and lends credence to the idea that urbanisation is a structural element propelling the adoption of FinTech.

However, there is no statistical evidence to support H2. The one-way ANOVA reveals a significant effect size ($\eta^2 = 0.77$), however the p-value (0.111) suggests that there is insufficient data to make meaningful inferences about differences between income levels. The result may be the consequence of weak statistical power caused by the small sample size (n = 6), rather than representing the absence of real disparities. These findings suggest that while urbanisation has a significant and significant impact, more thorough studies with bigger sample sizes are required to completely comprehend income-level differences. Together, the results demonstrate how important spatial context is to research on digital financial inclusion.

The findings consistently demonstrate that urbanisation has a significant impact on how FinTech is adopted. Urban populations are more likely than their rural counterparts to adopt, with differences ranging from slight in the Middle East and North Africa to significant in Europe and Central Asia, East Asia and the Pacific, and Sub-Saharan Africa, depending on the region and income level. The extent and persistence of the urban advantage are demonstrated by descriptive statistics and distributional analysis, and the statistical significance of this association is validated by inferential testing. Spatial location is a powerful predictor of digital financial participation, as evidenced by the strong support for Hypothesis 1. In contrast, although significant effect sizes indicate practical significance limited by sample restrictions, Hypothesis 2, which proposed income-level disparities, was not statistically supported. When combined, these results show that geographic-based structural disparities continue to be a major cause of the digital divide. The discussion that follows examines the significance of these empirical findings for FinTech strategy and financial inclusion policy, interpreting them in the context of current theoretical frameworks and literature.

Discussion of Result

The findings of this study provide clear evidence that geography matters in FinTech adoption. Urban residents consistently recorded higher adoption rates than rural residents, with a global mean gap of almost ten percentage points. This result directly supports H1 and meets the first research objective, confirming that urbanisation is a structural factor influencing access to and use of digital financial services. But what do these findings mean when considered against the theoretical models and earlier studies? And how do they advance existing debates about financial inclusion?

The confirmation of H1 raises important questions about the adequacy of frameworks such as the Technology Acceptance Model (TAM), which has long dominated studies of technology use. TAM emphasises perceived usefulness and ease of use, yet the evidence here suggests that adoption is not determined only by perception. If rural residents consistently lag despite awareness of FinTech, it signals that cognitive evaluations cannot compensate for structural deficits like unreliable internet, sparse service points, or weak digital infrastructure. In this sense, the results reinforce a limitation of TAM often noted but rarely tested: it risks overstating the role of individual agency in contexts where structural barriers prevail. The implication is that while TAM explains variation within urban populations reasonably well, it is less capable of explaining disparities between urban and rural groups. This study therefore extends TAM by situating perceptions within the material realities of infrastructure and geography.

Turning to Diffusion of Innovation theory, the results align with Rogers' claim that adoption follows an S-curve, beginning with early adopters clustered in social and geographic centres. Urban areas appear to function as such centres, with higher adoption rates reflecting greater exposure, stronger networks, and faster communication. The observed pattern across regions — where cities consistently outpace rural areas — lends empirical support to diffusion theory's emphasis on social density and the role of opinion leaders. Yet, the persistence of rural disadvantage even in middle-income countries raises questions about diffusion's assumption that information and communication are sufficient to drive uptake. The evidence here suggests otherwise: rural residents may hear about FinTech but remain excluded because adoption requires infrastructure and affordability, not just awareness. This limitation of diffusion theory becomes evident in the fact that even where adoption grows nationally, the gap between urban and rural populations often remains constant.

The findings also speak to debates within financial inclusion frameworks. Much of the literature treats digital finance as a tool for closing gaps in access, particularly for women and the poor (Basnayake et al., 2024; World Bank, 2022). The descriptive evidence from this study complicates that optimistic view. Although FinTech has expanded access globally, its benefits are distributed unevenly. Urban residents, who already enjoy structural advantages, appear to gain more, while rural populations remain marginalised. The gap is most pronounced in low- and middle-income countries, where urban residents may double the adoption rates of their rural counterparts. This indicates that digital financial inclusion is not a linear outcome of technological availability but is mediated by geography. Inclusion strategies that celebrate aggregate gains without disaggregating by urban–rural location risk obscuring deep structural inequalities.

A comparison with earlier studies helps to highlight what this research contributes. Igamo et al. (2024), for example, found that digital literacy and government support influenced women's FinTech use in Indonesia, but treated urbanisation only as a moderating variable. The present study advances the discussion by placing urban–rural differences at the centre, showing that geography is not marginal but decisive. Wang (2025) linked adoption to life satisfaction in Taiwan, focusing on individual perceptions consistent with TAM. Yet, the present findings suggest that spatial inequalities may constrain adoption regardless of individual attitudes, pointing to a more structural reading of adoption behaviour. Similarly, Ayeni (2025) described FinTech's role in economic growth through case studies like M-Pesa and Paystack but stopped short of analysing adoption gaps by geography. This study fills that void by providing cross-country statistical evidence of how location conditions uptake.

The rejection of H2 — the expectation that the urban–rural gap would be larger in low-income countries — also requires reflection. The descriptive evidence showed practical differences, but the statistical test was not significant, partly due to small sample sizes. This result does not negate the role of income levels but suggests that the relationship is more complex than assumed. In some cases, middle-income countries exhibit wider gaps than low-income ones, perhaps because urban centres in such contexts develop rapidly while rural areas lag behind. This highlights the need for future work to examine how economic development interacts with urbanisation to shape adoption trajectories.

Conceptually, the thrust of this study is that FinTech adoption cannot be understood in purely behavioural terms. The evidence shows that adoption is deeply shaped by place — by

whether one lives in a city or a village, and by the infrastructure that connects or isolates communities. The findings extend TAM by showing the limits of perception, challenge diffusion theory by demonstrating that communication is not enough, and refine inclusion frameworks by revealing how geography mediates access. In doing so, the study contributes a new perspective: urbanisation is not background noise in adoption studies, but a structural determinant that must be explicitly theorised and empirically tested.

In sum, the results affirm that while FinTech has promise for advancing inclusion, its benefits are unequally distributed. Urban residents consistently hold an advantage, and unless infrastructure and policy address rural deficits, FinTech risks reinforcing rather than reducing inequality. By positioning urbanisation at the centre of analysis, this study not only addresses a gap in the literature but also offers a sharper lens for understanding digital financial inclusion in practice.

Implications for Policy and Practice

The study shows that urbanisation strongly shapes FinTech adoption, with urban residents consistently ahead of their rural counterparts. This finding has clear implications for policy and practice: closing the adoption gap requires addressing structural and social barriers together.

The first priority is infrastructure. Poor connectivity, high data costs, and weak financial service networks remain the main obstacles in rural areas. Governments, working with private providers, must expand internet coverage, lower costs, and extend agent banking systems if inclusion is to advance.

Alongside infrastructure, digital literacy and trust must be strengthened. Many rural users remain hesitant even when services are available. Targeted education programmes that reduce fraud risks and build confidence can make adoption more meaningful.

Policymakers also need flexible regulation that encourages mobile money innovations, promotes competition, and extends protection to vulnerable users. Finally, FinTech solutions must be adapted to context, with features like offline functionality or agent-assisted services better suited to rural environments.

Together, these steps would help narrow the spatial divide and make FinTech a genuine driver of inclusion.

Conclusion

This study aimed to explore how urbanisation drives the adoption of FinTech, with a focus on whether urban dwellers adopt digital financial services at higher rates than rural populations, whether the urban–rural gap varies across income levels and regions, and whether demographic characteristics moderate this relationship. Using the World Bank Global Findex dataset, the analysis used inferential tests, and descriptive statistics to provide a cross-national perspective on digital financial inclusion.

The first hypothesis is supported by the evidence, which shows that urbanisation is a structural driver of digital engagement and that residents of urban areas are far more likely to use FinTech services. By placing adoption in the context of larger infrastructural and spatial settings as well as individual views of utility and ease of use, this study supports and expands behavioural theories like the Technology Acceptance Model. The diffusion of innovation paradigm also explains why acceptance tends to concentrate in urban areas before spreading, frequently insufficiently, into rural areas.

However, the second hypothesis about income-level variance was not statistically supported, even though descriptive data

showed that differences are larger in low- and middle-income countries. This conclusion highlights technical limitations such as limited sample sizes and the challenge of differentiating income effects from spatial ones. Emerging data on demographic moderation, which shows that younger and wealthier individuals in urban areas continue to be more likely adopters, highlights the importance of intersectional inequities.

Overall, the study contributes to empirical research on FinTech adoption by emphasising the undervalued importance of geographical location. It illustrates that in order to understand digital financial inclusion, structural factors that benefit urban residents must be taken into account rather than depending just on individual or demographic traits. Future study should build on these findings utilising longitudinal data and transaction-level evidence, but policymakers and practitioners must concentrate on closing the gap between urban and rural areas in order to fully realise the inclusive potential of FinTech.

Recommendations

The findings of this study highlight the persistent urban–rural divide in FinTech adoption, with structural factors such as connectivity, service availability, and digital readiness playing decisive roles. Based on this evidence, several recommendations emerge. First, governments and regulators should prioritise investment in rural digital infrastructure, including broadband expansion and reliable mobile networks, to reduce the barriers that limit rural adoption. Second, financial service providers must design inclusive delivery models, such as agent networks and offline-compatible platforms, that account for infrastructural limitations outside cities. Third, digital literacy initiatives tailored to rural populations should complement infrastructure, ensuring that access translates into effective use. Finally, international development partners should support cross-country monitoring of urban–rural adoption patterns, building on tools like the Global Findex, to track progress in reducing spatial divides. Together, these measures would help ensure that FinTech serves as a driver of inclusion rather than a reinforcer of inequality.

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