Innovation Hubs and Urban Poverty: Rethinking Pathways for Inclusive Development

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ABSTRACT

Innovation hubs have emerged as transformative tools for addressing urban poverty, particularly in marginalized slum communities. This study investigated their role in poverty alleviation in Abuja, Nigeria, using a convergent parallel mixed-methods design. Data were collected through two focus group discussions with 16 participants (10 in the first and 6 in the second) and a structured survey of 100 residents, of which 82 valid responses were retrieved. The study examined the influence of economic and non-economic factors on hub adoption. Qualitative findings revealed that low income, limited market access, social trust, and cultural norms are major barriers to participation, while leadership and community engagement are perceived as critical enablers. However, regression analysis showed that neither economic ($B = -0.028$, $p = 0.266$) nor non-economic factors ($B = -0.003$, $p = 0.889$) significantly predicted hub usage, with the model explaining only 1.6% of the variance ($R^2 = 0.016$, $F = 0.664$, $p = 0.517$). The study concludes that while statistical evidence downplays the independent effect of economic and social variables, their interaction with infrastructural and cultural conditions remains critical. To maximize their poverty reduction potential, innovation hubs must adopt affordable service models, embed cultural sensitivity, strengthen local leadership involvement, and adapt global lessons to slum-specific contexts. These findings provide actionable insights for inclusive urban development policies in Nigeria and beyond.

Keywords: Innovation hubs, urban poverty, slums communities, digital inclusion, capacity building

INTRODUCTION

Innovation hubs have become increasingly recognised as critical infrastructures for stimulating economic growth, advancing digital inclusion, and fostering social transformation in contemporary urban settings. These hubs provide platforms that nurture creativity, entrepreneurship, and collaboration by connecting individuals with digital tools and entrepreneurial resources (Lepore, Testi, & Pasher, 2023). Their promise is especially relevant in low- and middle-income countries, where rapid urbanisation has created both opportunities and challenges for sustainable development. In theory, innovation hubs hold potential to reduce inequality and enhance livelihoods by generating jobs, developing digital skills, and expanding market opportunities. However, questions remain about whether these benefits extend to marginalised urban populations. For many slum residents, systemic barriers related to affordability, infrastructure, and social exclusion restrict meaningful engagement with these hubs (Ogbo-Gebhardt, 2025). These dynamics raise urgent questions about inclusivity and the capacity of innovation hubs to act as genuine levers for poverty alleviation (Buyannemekh, 2024).

The African continent provides a compelling context for examining these questions. With more than 1,000 hubs spread across 49 countries, innovation hubs have become increasingly central to strategies for digital entrepreneurship and socio-economic transformation (Züfle & Bickenbach, 2025). Yet, significant digital and economic divides persist. Residents of informal settlements - despite living near thriving innovation ecosystems, often remain excluded from their benefits due to limited access to the internet, digital skills, and financial resources (Mangqalaza, 2020). At the same time, these communities demonstrate remarkable resilience and ingenuity. Slum dwellers have long adopted technologies such as mobile banking, e-commerce, and social networking platforms to meet daily needs and generate income, even in the absence of formal structures

(Jauhiainen & Mugabe, 2024). This paradox, where slum communities demonstrate innovative capacity but remain disconnected from formal hubs, underscores the importance of understanding how innovation hubs might be adapted to the unique realities of marginalised urban populations.

Nigeria, with its rapidly expanding urban population, exemplifies these challenges. Over 40 percent of the population now resides in cities, and informal settlements have grown alongside formal urban development (Essien & Jesse, 2024). Slum residents often rely on cybercafes and informal digital networks to gain internet access, which act as de facto micro-hubs connecting them to wider economies (Sumaila et al., 2025). However, these grassroots platforms lack the structured support, training, and scaling opportunities that formal innovation hubs provide. Meanwhile, government initiatives to expand digital access, such as community technology centres, have struggled with sustainability and uneven reach (PDF Nigeria, 2020). This context highlights both the challenges and the opportunities of leveraging innovation hubs for inclusive urban development. While slum communities in Nigeria possess latent entrepreneurial energy and adaptability, the absence of systematic support limits their potential to benefit fully from digital economies.

Against this backdrop, the role of innovation hubs in addressing urban poverty emerges as a critical research concern. Existing literature has largely focused on the contributions of hubs to urban entrepreneurship and technological ecosystems at large, but less attention has been paid to their specific impact on slum communities. This oversight is significant because slums are simultaneously spaces of deprivation and innovation, where informal networks, cultural norms, and community trust play critical roles in shaping economic participation. Despite lacking formal infrastructure, these environments foster adaptive strategies and entrepreneurial activity through social capital and localized knowledge systems (Mahabir et al. (2016). Residents often cope with economic exclusion by relying on ingenuity, communal ties, and informal institutions in place of absent formal systems. Exploring how innovation hubs interact with these slum dynamics creates opportunities for interventions that are both technologically sound and socially inclusive. It also highlights how economic and social factors shape residents' engagement, offering insights into how hubs can be restructured to better serve marginalized communities.

This study therefore seeks to explore the relationship between innovation hubs and urban poverty by focusing on the dynamics of slum communities. Specifically, it investigates how economic factors such as income levels and market access influence the establishment and accessibility of innovation hubs, and how non-economic factors such as social trust and cultural norms shape the adoption of these hubs by slum households. This provides a framework for understanding both the structural barriers that limit participation and the social dynamics that enable or constrain integration into digital economies. By situating the analysis within the broader discourse on urban inequality, digital inclusion, and sustainable development, the study contributes to debates on how innovation hubs can be harnessed as tools for inclusive urban transformation.

LITERATURE REVIEW

Empirical Review

Empirical studies have increasingly examined the role of innovation hubs in shaping socio-economic outcomes across developing regions. In Africa, hubs have been studied both as engines of digital entrepreneurship and as platforms for inclusive development. For example, Züfle and Bickenbach (2025) demonstrated that hubs across the continent contributed to entrepreneurial activity and digital innovation, but participation was often skewed toward educated youth, leaving low-income groups underrepresented. Similarly, Jauhiainen and Mugabe (2024) showed that informal entrepreneurs in Ghana and Kenya engaged digital platforms to enhance livelihoods, yet lacked structured support from hubs, limiting their capacity to scale. These findings highlight that hubs often amplify existing inequalities rather than resolve them.

Nigeria's experience with innovation hubs has also attracted scholarly attention. De Beer et al. (2017) examined the proliferation of hubs across the country, noting that while they facilitated digital start-ups in cities like Lagos and Abuja, their outreach to marginalised communities was minimal. Mangqalaza (2020) provided evidence from South African informal settlements, where cybercafes and grassroots networks acted as informal hubs by offering affordable internet services. Yet, her study underscored that without systematic training, financing, and

partnerships, such informal centres could not generate large-scale poverty reduction. Essien and Jesse (2024) further highlighted that Nigerian slum residents, despite resource constraints, adopted mobile money and small-scale online trading to improve household income, suggesting a latent potential that formal hubs could support.

More broadly, empirical literature underscores the persistence of the digital divide. Buyannemekh (2024) emphasised that despite Africa's growing digital infrastructure, slum households faced affordability challenges, low digital literacy, and unreliable access, which constrained hub engagement. This aligns with Adebanjo's (2021) study showing that income levels strongly determine household adoption of digital platforms in Nigerian cities. Together, these studies point to a pattern: hubs generate opportunities but struggle to include the urban poor, creating a pressing need for more inclusive models.

Theoretical Framework

This study is anchored on two complementary theories: Agglomeration Theory and Inclusive Innovation Theory.Agglomeration Theory explains how geographic clustering of economic activities generates knowledge spillovers, labour pooling, and shared infrastructure that enhance productivity and innovation (Marshall, 1890; Krugman, 1991). Innovation hubs exemplify this logic, concentrating entrepreneurs, digital tools, and mentors in urban centres. By fostering collaboration and reducing transaction costs, hubs can create synergies that stimulate start-ups and expand markets. However, traditional agglomeration perspectives often assume universal accessibility, overlooking the structural barriers faced by marginalised populations. In contexts such as slums, proximity to hubs does not guarantee participation, as residents are constrained by affordability, skills, and social exclusion. Thus, while agglomeration theory explains the clustering benefits of hubs, it requires adaptation to account for uneven access within urban economies.

Inclusive Innovation Theory provides this complementary lens. Emerging from development studies, it emphasises innovations that deliberately target and integrate marginalised populations into innovation systems (Heeks et al., 2013). Inclusive innovation extends beyond technology development to include the processes of design, adoption, and distribution, ensuring that low-income groups benefit from and contribute to innovation ecosystems. Applying this framework to slums highlights how hubs must adapt services, such as affordable internet, tailored training, and culturally sensitive programs, to address the unique constraints of poor households. This theoretical perspective is particularly relevant for exploring how non-economic factors, such as social trust and cultural norms, shape household adoption of hubs. In combining both theories, the study situates innovation hubs within the broader urban ecosystem while foregrounding the specific needs of marginalised communities.

Literature Gap

Despite the expanding literature on innovation hubs, significant gaps remain. Much of the empirical work has concentrated on formal hubs in urban centres, with limited exploration of slum contexts where grassroots innovation is already evident. Studies often highlight macro-level outcomes, such as start-up creation and digital infrastructure, but less attention is paid to household-level dynamics, particularly how income, trust, and cultural norms influence hub adoption. In Nigeria, while evidence exists on informal innovation practices such as cybercafes and mobile money usage, few studies systematically examine how formal hubs can be designed to engage slum residents. Furthermore, research on Abuja, despite being a rapidly urbanising city and a hub of digital policy initiatives, remains sparse. This study therefore addresses these gaps by investigating how innovation hubs interact with the realities of slum households, focusing on both economic and non-economic factors that shape accessibility and adoption.

METHODOLOGY

This study employed a convergent parallel mixed-methods design, combining qualitative and quantitative approaches to capture both depth and breadth on the role of innovation hubs in alleviating urban poverty. The study site was Tudunwada slum in Abuja, where residents face limited access to services yet exhibit significant entrepreneurial activity. Data were collected through two Focus Group Discussions (FGDs), involving 16 purposively selected participants representing diverse ages, genders, occupations, and levels of digital

familiarity, alongside a structured survey administered to 100 residents, of which 82 valid responses were retrieved. The dual approach allowed for triangulation, ensuring that rich qualitative narratives complemented and contextualized quantitative patterns.

The qualitative strand explored themes such as affordability, cultural attitudes, trust, and capacity-building through FGDs, which encouraged interactive reflection and shared experiences. Discussions were audio-recorded, transcribed, and subjected to thematic analysis following Braun and Clarke's six-step framework, enabling systematic coding, theme generation, and interpretation. The quantitative strand employed a structured questionnaire with six sections covering demographics, economic and non-economic factors shaping hub adoption, awareness of international models, training participation, and community engagement. Responses were measured using closed-ended and Likert-scale questions, and the data were analyzed through descriptive statistics, including frequencies and cross-tabulations, to highlight trends in accessibility and perceptions across socio-demographic groups.

Findings from both strands were analyzed separately and then integrated during interpretation to identify points of convergence and divergence. This approach ensured that statistically observed patterns were grounded in lived realities, while community voices were supported by measurable evidence. Ethical approval was secured, and all participants provided informed consent, with confidentiality and cultural sensitivity strictly maintained throughout. By combining descriptive and thematic analyses, the study generated a holistic understanding of how innovation hubs intersect with the economic and social realities of slum households, offering evidence relevant for inclusive policy and practice..

RESULTS

Demographic Profile of Participants

Figure 1 presents the demographic characteristics of the focus group participants, ensuring diverse representation across gender, age, education, employment, and income levels. The FGDs included 8 males and 8 females, with age distribution spanning 18-25 years (5), 26-35 years (6), 36-45 years (3), and 46-60 years (2). Educational backgrounds varied, with 4 participants having primary education, 6 with secondary education, and 6 with tertiary education. Employment status reflected community realities, with 5 unemployed, 7 self-employed, and 4 in formal employment. Income levels showed most participants earning below ₦50,000 monthly, with 7 in the low-income group, 7 in the medium-income group, and 2 in the higher-income category. Household sizes ranged from 1 to 3 people (5), 4 to 6 people (7), and 7 or more people (4). Access to digital resources was limited for 10 participants, while 6 had regular internet subscriptions. Regarding community roles, three were community leaders, seven were local business owners, and six were youth who were not yet fully engaged in economic activities.

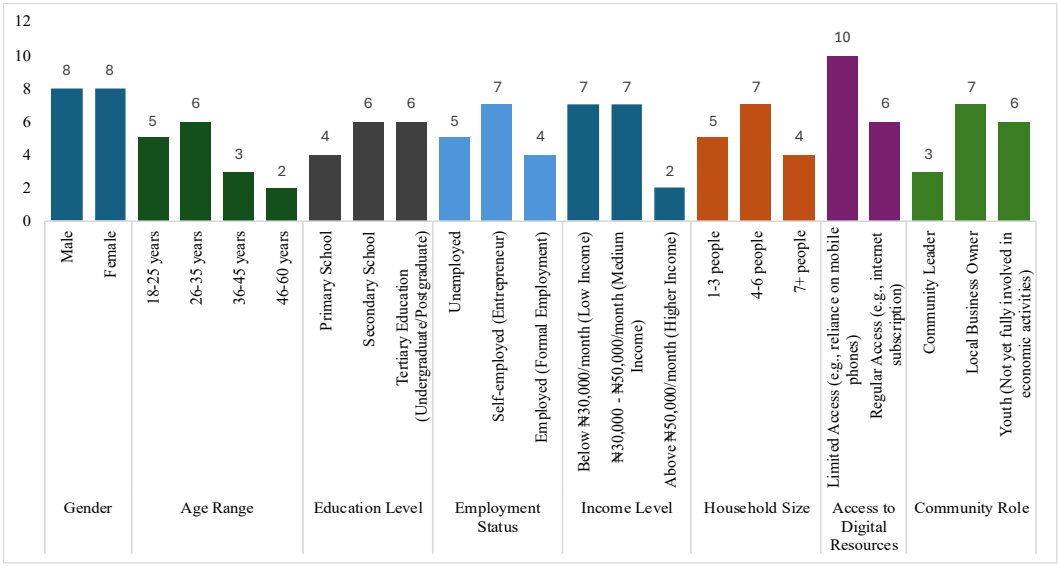

Figure 1: Demographics of FGD Participants

Figure 2 presents the demographic characteristics of the survey respondents, highlighting diversity in gender, age, education, employment status, income levels, and innovation hub usage. The sample included 26 males, 25 females, and 32 respondents who preferred not to disclose their gender, ensuring a broad representation. The age distribution was fairly balanced, with the majority (23) aged 18-25, followed by those in the 26-35 (17) and 36-45 (18) age brackets, and then 46-60 (16) and above 60 (9) age brackets. Educational backgrounds varied, with 22 respondents having no formal education, 15 completing primary school, 14 reaching secondary school, and 16 each having tertiary or vocational training. Employment status reflected the economic conditions of the slum community, with 24 unemployed, 17 self-employed, 19 in formal employment, and 23 engaged in informal work. Income levels revealed that a significant proportion of individuals earned below ₦50,000 per month, indicating financial constraints that could impact digital inclusion. Finally, innovation hub usage was nearly evenly split, with 40 respondents reporting usage and 43 having no prior engagement, providing a balanced perspective on accessibility and participation in digital innovation spaces.

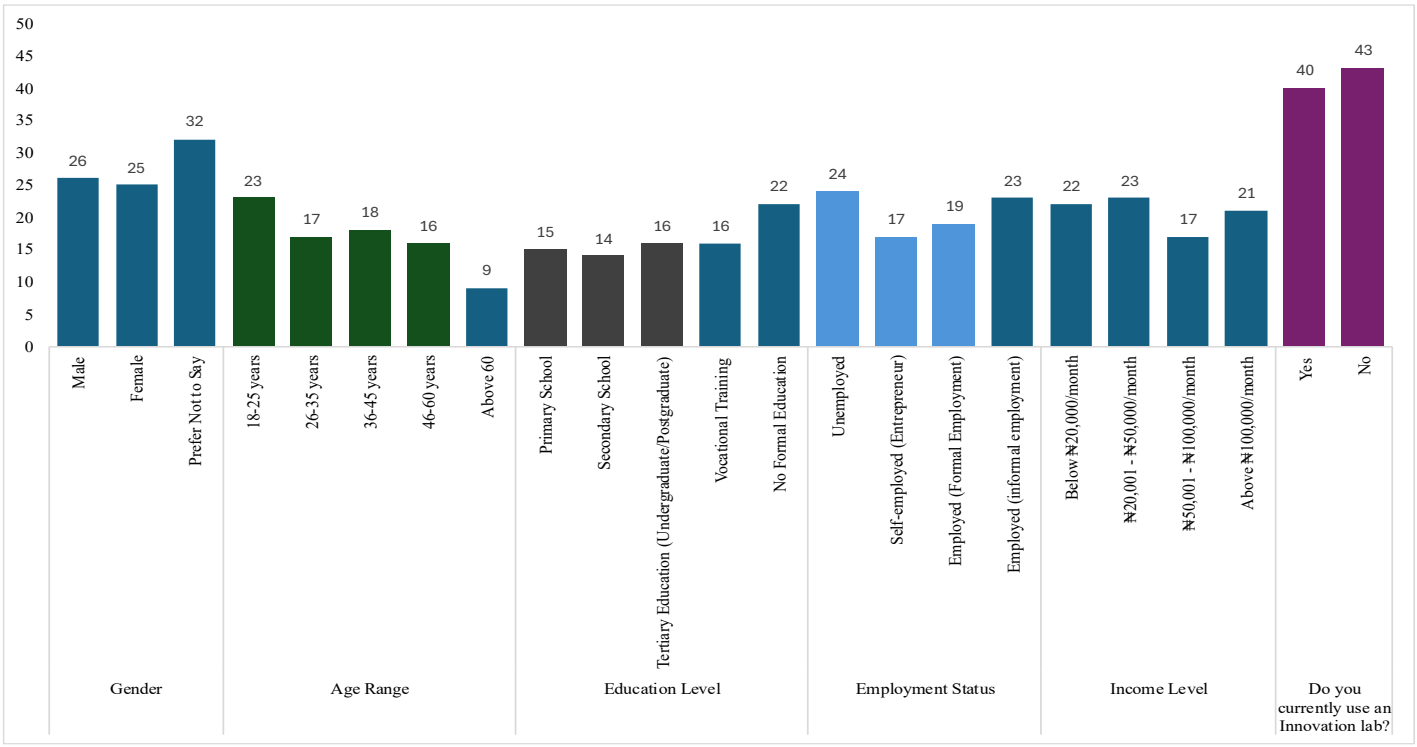

Figure 2: Demographics of Quantitative Survey Participants

Influence of economic factors on the establishment and accessibility of innovation hubs

The first objective of this study explores the relationship between economic factors (income levels and market access) and the establishment of innovation hubs in slum communities, particularly in Abuja. Participants from both focus group discussions (FGDs) provided insights into how economic constraints impact the creation, accessibility, and effectiveness of innovation hubs. The discussions revealed a complex interplay between local economic conditions and the potential for innovation hubs to foster economic growth. The key themes that emerged include economic barriers to establishing innovation hubs, market access and its impact on innovation hub utility, and the role of income levels in determining participation in innovation hubs.

Theme 1: Economic Barriers to the Establishment of Innovation Hubs

A recurring theme in both FGDs was the significant role of economic barriers in establishing and sustaining innovation hubs within slum communities. Most participants emphasized that the high cost of setting up such infrastructure in economically disadvantaged areas made it difficult for public and private stakeholders to invest in these hubs. One male participant in the 26–35 age group from the second FGD remarked:

"The biggest issue is money. Most of us barely have enough to feed our families, so paying for internet, transport, or even a small membership fee at an innovation hub is difficult."

This aligns with concerns raised in the first FGD, where a male participant noted:

"The economy here doesn't support these kinds of developments. Even if someone wants to build a hub here, they'll need a lot of money to cover the internet, electricity, and security costs - it's just not affordable for this area."

These statements highlight the financial challenges that potential investors or stakeholders encounter when establishing innovation hubs in slum areas. While the demand for such hubs is apparent, economic conditions, particularly low income and limited market access, create significant barriers to investment.

Participants suggested that government subsidies or partnerships with the private sector could reduce these economic barriers and help establish affordable hubs. Some participants also pointed to the need for affordable leasing models and incentives to encourage private firms to invest in innovation hubs in slum areas. A male participant from the second FGD (46–60 years) suggested:

"They could introduce a system where you pay gradually, maybe in small amounts over time, instead of a one-time payment. That way, more people can afford it."

Theme 2: Market Access and Innovation Hub Utility

Another key theme in the analysis was the impact of market access on the accessibility and effectiveness of innovation hubs. Participants discussed how the lack of access to local markets—due to poor infrastructure or limited transportation options—hinders the full potential of innovation hubs in these communities. A female participant in the 26–35 age group from the first FGD reflected:

"Even if the hub provides all the services and training, it won't help much if we can't get to the market or find customers for what we are learning. We need to be able to take our skills and ideas to the people who can buy from us."

Similarly, in the second FGD, a female participant (36–45 years) noted:

"Even if there's an innovation hub nearby, the cost of data or transport makes it hard for many of us to go there regularly. Some of us have business ideas, but where will we get capital? Even training programs cost money."

These insights point to a crucial consideration in the design and implementation of innovation hubs. While digital resources and skills development are essential, the ability to translate these opportunities into tangible economic outcomes depends heavily on access to markets and networks. Without sufficient market linkages, slum residents may struggle to turn their newly acquired skills into viable businesses or services.

Participants expressed that for innovation hubs to be effective, they must be integrated into the broader economic ecosystem of the community. This could include collaborations with local businesses, government initiatives to improve market access, and logistical support to facilitate access to potential customers.

Theme 3: Income Levels and Participation in Innovation Hubs

A third significant theme was the influence of income levels on participation in innovation hubs. Many participants noted that, despite the potential benefits, lower-income households may face difficulties accessing or utilizing innovation hubs due to the costs associated with transportation, internet usage, and other operational expenses. A male participant in the 46–60 age group from the first FGD shared:

"It's not just about having access to the hub; it's about how much it costs to use it. If we have to pay for Wi-Fi, pay for transportation, or even pay for training sessions, then it defeats the purpose. People in this area can't afford it."

This was echoed by a male participant (18–25 years) from the second FGD, who noted:

"Sometimes they offer free training, but you still need to pay for certain things like printing documents or accessing some tools. We don't have extra money for that."

These statements highlight the concern that while innovation hubs may offer valuable resources, the financial constraints of slum residents can significantly limit their ability to engage with these opportunities fully. Even when hubs are physically accessible, the economic realities of low-income households create an additional layer of exclusion.

Several participants emphasized the need for low-cost or free access models, including government funding or philanthropic initiatives, to make innovation hubs accessible to slum dwellers. Without such financial support, the transformative potential of innovation hubs in alleviating urban poverty may not reach those most in need. A female participant (18–25 years) from the second FGD suggested:

"Some hubs in other places offer scholarships for women or youth. They should do that here too."

Theme 4: Potential for Economic Empowerment through Innovation Hubs

Despite the economic challenges, participants expressed a palpable sense of optimism about the potential for innovation hubs to empower slum residents economically. Many participants pointed out that innovation hubs, if accessible and affordable, could play a crucial role in addressing the income disparities and economic challenges faced by residents of slum communities. A female participant in the 36–45 age group from the first FGD said:

"If we can get access to these hubs and learn something useful, it could change everything. I've heard about people who started small businesses after training in tech, and they are doing well now. That's what we need."

Similarly, a female participant (26–35 years) from the second FGD expressed:

"If they provide free access or at least reduce costs for low-income people, more of us would come. Maybe if they partner with NGOs or get funding, they can help more people."

This statement reflects the broader sentiment that innovation hubs can provide the knowledge, resources, and networking opportunities necessary to shift residents from low-income, informal work to more stable, income-generating activities.

While economic factors, such as income levels and market access, influence the establishment and effectiveness of innovation hubs, many participants expressed that with proper infrastructure and financial support, these hubs could significantly alleviate urban poverty.

Table 1: Summary of Responses for Economics Factors

Theme	Key Insights
Economic Barriers to Establishment	High setup costs and financial constraints hinder the establishment of innovation hubs in slum areas.
Market Access and Innovation Hub Utility	Limited market access makes it difficult for residents to translate innovation hub training into income-generating activities.
Income Levels and Participation	Low-income levels prevent many slum residents from accessing or fully utilising innovation hubs due to associated costs.
Potential for Economic Empowerment	Despite economic barriers, innovation hubs offer significant potential for economic empowerment through skill-building and business opportunities.

Influence of Non-Economic Factors on the Establishment and Accessibility of Innovation Hubs

The second objective of this study explores the role of non-economic factors, such as social trust and cultural norms, in shaping the adoption of innovation hubs by slum households and their influence on urban poverty alleviation. While economic factors such as income levels and market access are essential, the adoption of innovation hubs is also influenced by social dynamics, trust within the community, and cultural attitudes toward technology and innovation. The focus group discussions (FGDs) revealed multiple insights into how these non-economic factors shape attitudes toward innovation hubs and their potential for addressing urban poverty.

The key themes from the FGDs related to this objective include social trust and community cohesion, cultural norms and perceptions toward technology, and the role of community leadership and influence in adoption processes. These factors are particularly relevant in slum communities where social networks and trust are central to survival and where cultural norms can either facilitate or hinder the acceptance of new ideas and practices.

Theme 1: Social Trust and Community Cohesion

One of the most prominent themes discussed by participants was the role of social trust and community cohesion in determining how slum households perceive and adopt innovation hubs. In slum communities, where survival often depends on local support networks, the willingness to engage with unfamiliar institutions such as innovation hubs is highly influenced by the degree of trust within the community. A male participant in the 36-45 age group explained:

"In our area, we only trust people we know. If the people running the hub aren't from here or they're from outside, it's hard for us to believe in what they're offering. We need to see someone we trust saying it's good before we join in."

Similarly, insights from the second FGD echoed this perspective, with a male participant in the 36-45 age group stating:

"Most people don't know what happens inside an innovation hub. If you don't understand technology, you might feel like it's not for you."

This reflects the broader sentiment that trust is a significant determinant of innovation hub engagement. Many participants emphasized that for innovation hubs to thrive, there needs to be a sense of ownership or local involvement in the management and operations of these spaces. Without trust, residents remain skeptical, which prevents the broad adoption of these initiatives.

Theme 2: Cultural Norms and Perceptions Toward Technology

Another significant theme that emerged was the role of cultural norms and local attitudes toward technology in shaping the adoption of innovation hubs. In many slum communities, traditional forms of livelihood are strongly preferred, with concerns that new technologies may disrupt existing ways of life. This was echoed by several participants, particularly older community members, who expressed concern that the rapid pace of technological change could lead to the erosion of cultural practices. A female participant in the 36-45 age group commented:

"We've always done things a certain way. Technology is fine, but I worry it will change everything—how we live and work. Having new skills is good, but we don't want to lose our culture."

The second FGD reinforced this concern, with a female participant in the 46-60 age group stating:

"Some families don't allow women to go to such places. They think technology is for men or young people, not for mothers or older women."

This highlights a key challenge faced by innovation hubs in slum communities: the resistance to technology due to concerns about cultural preservation and gender norms. To address these concerns, some participants

suggested that innovation hubs integrate local cultural practices and values into their programming.

Theme 3: Community Leadership and Influence

Local community leadership and influence also played a significant role in shaping participants' perceptions of innovation hubs. A recurring theme was that influential community leaders, such as religious leaders, local politicians, or elders, could act as key drivers of adoption by endorsing innovation hubs and encouraging participation. A male participant in the 26-35 age group noted:

"If the leaders in the community speak positively about these hubs, then people will follow. But if they think it's a waste of time, they'll tell us not to bother. The leaders here have a lot of influence."

The second FGD supported this view, with a male participant in the 26-35 age group stating:

"If people we respect—like religious leaders or community elders—encourage us, more of us would feel comfortable going."

This underscores the importance of local leaders as advocates for innovation hubs. Their endorsement provides legitimacy, encouraging reluctant community members to engage with these hubs. Additionally, these leaders can serve as intermediaries, helping to translate the objectives of innovation hubs into culturally relevant narratives that make them more accessible and acceptable to residents.

Theme 4: Fear of Exclusion and Unequal Access

Participants also expressed concerns about the potential for innovation hubs to worsen existing inequalities within the slum community. Many feared that, without proper outreach and inclusivity, only certain groups—those with higher levels of education or access to resources—would benefit from these hubs, further deepening social divides. A female participant in the 18-25 age group explained:

"I worry that not everyone will get to use these hubs. The educated ones will know about them and get access, but those who don't know much about tech might be left behind."

The second FGD highlighted similar concerns, with a female participant in the 18-25 age group stating:

"Some people just don't trust these kinds of places. They think it's only for students or rich people. If you don't have a formal education, you might feel out of place."

This highlights the need for innovation hubs to adopt inclusive strategies that reach all community members, not just those with formal education or technical skills. Participants expressed a desire for hubs to be more accessible and to provide opportunities for people of all backgrounds, emphasising the importance of outreach and awareness programs.

Table 2: Summary of Responses for Non-economic factors

Theme	Key Insights
Social Trust and Community Cohesion	Local trust and community cohesion are essential for the adoption of innovation hubs. Participants prefer hubs led or endorsed by trusted local figures.
Cultural Norms and Perceptions Toward Technology	Cultural concerns and resistance to change can hinder the adoption of technology. Integrating technology with local customs could alleviate these concerns.

Community Leadership and Influence	Local leaders play a critical role in influencing community acceptance of innovation hubs. Their endorsement is key to broader participation.
Fear of Exclusion and Unequal Access	There are concerns that innovation hubs might only benefit a select few, worsening existing inequalities. Outreach and inclusivity are crucial.

Test of Hypotheses

This section presents the results of hypothesis testing based on the multiple linear regression analysis. The model examined the relationship between economic factors, non-economic factors, and the dependent variable: innovation hub usage.

The regression model tested the influence of economic and non-economic factors on the likelihood of residents currently using an innovation hub. The model produced an R^2 value of 0.016, indicating that only 1.6% of the variance in hub usage is explained by these two factors. The adjusted R^2 (-0.008) suggests that the model does not improve predictive power beyond chance.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.128[a]	.016	-.008	.505

Predictors: (Constant), non-economic factors, economic factors

Source: Author (2025), using SPSS

The ANOVA results show that the overall regression model is not statistically significant (F = 0.664, p = 0.517), meaning the combined effect of economic and non-economic factors does not significantly predict hub usage in the sample.

Table 4: ANOVA Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.339	2	.169	.664	.517[b]
	Residual	20.384	80	.255		
	Total	20.723	82			

a. Dependent Variable: Innovation hub usage

b. Predictors: (Constant), non-economic factors, economic factors

Source: Author (2025) using SPSS

Examining the coefficients, neither economic factors (B = -0.028, p = 0.266) nor non-economic factors (B = -0.003, p = 0.889) were statistically significant predictors of hub use. The negative but insignificant coefficients suggest that higher economic or non-economic barriers may be weakly associated with reduced hub adoption, but the relationships are not strong enough to be meaningful in this dataset.

Table 5: Coefficients of Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.826	.326		5.601	.000

	Economic factors	-.028	.025	-.125	-1.121	.266
	Non-economic factors	-.003	.023	-.016	-.140	.889

Dependent Variable: Innovation hub usage

Source: Author (2025) using SPSS

Overall, the regression analysis indicates that current hub usage among Tudunwada residents is not significantly explained by the measured economic or non-economic factors. This implies that other unmeasured variables, such as infrastructural access, awareness, institutional support, or policy-related constraints, may play a more decisive role in influencing adoption.

DISCUSSION

Economic conditions, particularly household income and market access, remain central to discussions of innovation hub accessibility in slum communities. The focus group discussions (FGDs) consistently emphasised that affordability is a major barrier, with residents noting that limited disposable income often prioritises survival needs such as food and rent over internet access or hub services. Participants also highlighted the importance of market linkages, stressing that without access to broader markets, entrepreneurial efforts within the slum remain constrained. These findings align with empirical studies showing that low income and restricted market access undermine the effectiveness of innovation hubs in low-income areas (Meredith & MacDonald, 2016; Shrivastava & Agrawal, 2024).

However, the statistical analysis tells a more nuanced story. Results from the regression model indicated that economic factors had an unstandardized coefficient ($B = -0.028$, $p = 0.266$), which was not statistically significant at the 0.05 level. The overall model explained only 1.6% of the variance in hub usage ($R^2 = 0.016$), and the regression was not significant ($F = 0.664$, $p = 0.517$). These findings suggest that economic variables, while important in perception, do not independently predict hub participation in this sample.

This divergence between qualitative and quantitative findings highlights the complexity of innovation hub accessibility. While residents perceive affordability and market access as critical barriers, the absence of statistical significance suggests that other dynamics, such as social trust, cultural attitudes, or community engagement, may play equally or more decisive roles. Prior research supports this interpretation, noting that economic barriers rarely operate in isolation but intersect with social and infrastructural challenges.

In summary, while economic factors remain a vital part of the narrative surrounding innovation hubs in slum contexts, the statistical evidence indicates that they do not alone determine participation. This underscores the need for a multidimensional approach: hubs must address affordability and market linkages, but they must also integrate strategies that build trust, strengthen social networks, and enhance community ownership. Only by recognising this interplay can innovation hubs fulfil their potential as inclusive tools for poverty reduction.

Table 6: Summary of Findings for Economic Factors

Theme	Description	Supporting Quote	Implications
Income Levels and Affordability	Income levels were identified as a key barrier to accessing innovation hubs. Many participants noted that financial constraints prevent them from using innovation hubs.	"Most of us are struggling to make ends meet. Even basic expenses like food and rent take most of our money, so accessing a computer or internet at a hub is not a priority."	Innovation hubs must offer affordable or subsidised services to be accessible to low-income residents in slum communities.

Market Access and Economic Opportunities	Limited market access hinders the growth of local entrepreneurs. Participants expressed a desire for hubs to facilitate connections with broader markets.	"We may have the skills or ideas, but the market is far away, and it's hard to reach people interested in what we offer."	Innovation hubs can enhance economic opportunities by providing local entrepreneurs with access to markets and business networks.
Role of Innovation Hubs in Economic Empowerment	Innovation hubs can serve as catalysts for economic growth if they provide tools for entrepreneurship, digital access, and market linkages.	"If there were better access to local or regional markets through the hub, we could sell more goods and services. It would also help if they could offer training to reach customers online or via mobile."	Effective innovation hubs must incorporate business development and market access training to empower entrepreneurs from slums.
Financial Barriers to Digital Inclusion	The high costs associated with digital services in innovation hubs were seen as a significant barrier to access, preventing equitable participation.	"If there were affordable membership options or even free services for people in this area, more of us could come and learn new skills or use the internet for business."	Pricing models should reflect the income disparities within slum communities to ensure equitable access to innovation hubs.
Economic Constraints and Hub Sustainability	Limited financial resources make sustaining the operation of innovation hubs in slum areas challenging, as income disparities affect demand.	*"The pricing is too high for most of us here. Innovation hubs might work in other places, but for us, it's difficult to afford them regularly."*	Sustainable innovation hubs should strike a balance between economic factors and service delivery, ensuring both affordability and demand-driven sustainability.

The findings further highlight the role of non-economic factors, particularly social trust, cultural norms, and community leadership, in shaping the adoption of innovation hubs in slum contexts. FGDs revealed that trust is foundational: residents are more inclined to engage with hubs endorsed by familiar or respected community members. One participant explained, *"In our area, we only trust people we know,"* underscoring the reliance on established networks for legitimacy. This resonates with Zhang et al. (2023), who found that psychological safety and collectivism, key components of trust and social cohesion, significantly influence innovation performance in low-resource environments. Without local representation or visible community ownership, hubs risk being perceived as external and detached, thereby limiting adoption. Participants also stressed the importance of cultural sensitivity, particularly as older residents expressed concerns that technology might disrupt traditional practices, while younger residents were more open to digital engagement. These perspectives align with Guillén and Deckert (2021), who demonstrated that cultural dimensions such as trust, leadership, and communication styles directly affect national and community-level innovativeness.

Community leadership emerged as another influential determinant. Participants consistently noted that the involvement of local leaders significantly shapes attitudes toward innovation hubs, echoing Renando's (2020) findings that local actors play a pivotal role in legitimising innovation spaces and aligning them with community values. Leaders can translate hub objectives into culturally relevant terms, provide a *"stamp of approval,"* and ensure that information flows effectively (Arshad, Yu, & Qadir, 2023). However, participants also voiced concerns that hubs could inadvertently deepen inequalities if they primarily benefit residents who are already

better educated or more resource-endowed—a risk underscored by Lobo et al. (2025), who argue that innovation ecosystems may reinforce existing socio-economic divides unless inclusive strategies are intentionally embedded. To avoid such exclusionary outcomes, hubs must deliberately design outreach strategies targeting vulnerable groups and foster inclusivity in both participation and benefits.

The regression results, however, suggest a different picture. Non-economic factors yielded an unstandardized coefficient (B = -0.003, p = 0.889), with the model failing to reach statistical significance. This indicates that, when considered in isolation, social trust and cultural norms do not significantly predict hub usage within the sample. The contrast between the statistical insignificance and strong qualitative emphasis suggests that these factors may operate indirectly or in combination with economic and infrastructural constraints, rather than functioning as standalone predictors. This finding echoes Heeks' (2009) argument that adoption in low-income settings reflects complex intersections of social, cultural, and material conditions.

In summary, while non-economic factors did not emerge as statistically significant predictors of innovation hub usage, they remain highly relevant in shaping perceptions and community acceptance. Trust, cultural alignment, and leadership legitimacy influence whether hubs are seen as credible and inclusive, even if these dynamics do not translate into measurable usage patterns in regression models. For innovation hubs to achieve their poverty alleviation potential, they must therefore prioritize strategies that integrate community leaders, respect cultural norms, and foster broad-based trust, alongside addressing economic and infrastructural barriers.

Table 7: Summary of Findings for Non-economic Factors

Theme	Description	Supporting Quote	Implications
Social Trust and Community Cohesion	Trust within the community and local involvement significantly influence engagement with innovation hubs.	"We need to see someone we trust saying it's good before we join in."	Building trust through local leadership involvement and community-based management is essential for successful adoption.
Cultural Norms and Technology Perception	Cultural norms influence attitudes toward technology, with older members often being wary of disruptive changes to their traditional livelihoods.	"It's good to have new skills, but we don't want to lose our culture."	Innovation hubs should integrate traditional practices with technology, ensuring cultural sensitivity while promoting modernisation.
Community Leadership and Influence	Local leaders play a crucial role in influencing adoption by legitimising innovation hubs and fostering trust within the community.	"If the leaders in the community speak positively about these hubs, then people will follow."	Engaging leaders as advocates ensures alignment with community values, enhances trust, and fosters participation.
Fear of Exclusion and Unequal Access	Concerns exist about unequal access, where more educated or resourceful individuals may disproportionately benefit, potentially excluding vulnerable groups.	"The educated ones will know about them and get access, but those of us who don't know much about tech might be left behind."	Outreach and inclusivity programs are essential to ensure equitable access and mitigate the risk of further deepening social inequality.

CONCLUSION

This study concludes that innovation hubs hold considerable potential as instruments for poverty reduction in urban slum communities. By fostering entrepreneurship, enhancing digital access, and creating market linkages, these hubs can help integrate marginalised populations into the digital economy. However, the findings show that economic barriers such as low income and limited market access remain critical constraints, while non-economic factors like cultural norms, social trust, and community leadership strongly shape perceptions of hub relevance. Although regression results indicated that neither economic nor non-economic factors alone significantly predicted hub usage, the qualitative evidence suggests that these elements remain central to adoption when considered within broader social and infrastructural contexts.

The study further highlights that international best practices offer valuable lessons, but successful application requires tailoring models to local realities. Locally driven capacity-building initiatives and community engagement emerged as pivotal for sustainability, even if their direct statistical influence was limited. Overall, the transformative promise of innovation hubs lies not in technology alone but in their ability to combine affordability, cultural sensitivity, and community ownership. Addressing these interlinked barriers will be essential for ensuring that hubs evolve into inclusive platforms that genuinely contribute to poverty alleviation in slum communities.

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