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A Study on Financial Inclusion, Digital Payment Adoption and Business Sustainability Among Street Vendors in Karur City

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***Abstract*—Digital payments are changing everyday trade in Indian cities, yet it is unclear whether the gains are reaching the smallest traders. This study examines how financial inclusion, digital payment adoption and business sustainability are related among street vendors in Karur City, Tamil Nadu. Primary data were gathered through a structured questionnaire from 95 vendors selected by convenience sampling and were analysed using percentage analysis, the chi-square test of independence and Pearson's correlation. Although 90.5% of the vendors held a bank account, only 49.5% saved regularly with a bank and 45.3% still borrowed from moneylenders. Two in three vendors (66.3%) used at least one digital payment mode, mostly UPI. Adoption was significantly associated with age, $\chi^2(2, N = 95) = 15.26$, $p < .001$, $V = .40$, and education, $\chi^2(2, N = 95) = 8.25$, $p = .016$, $V = .29$, but not with gender. Adopters were far more likely than non-adopters to report high business sustainability (46.0% vs. 12.5%), $\chi^2(2, N = 95) = 18.88$, $p < .001$, $V = .45$. The three constructs were positively and significantly correlated ($r = .52$ to $.66$). The results suggest that owning a bank account is necessary but not sufficient, and that practical digital-literacy support for older and less-educated vendors could strengthen the financial footing of street trade.**

***Index Terms*—financial inclusion, digital payment adoption, business sustainability, street vendors, UPI, Karur**

I. INTRODUCTION

Walk through any Indian town at dusk and you will see the same scene: a vendor arranging fruit under a lamp, a snack cart steaming beside a bus stop, a woman spreading flowers on a plastic sheet. Street vending is one of the most visible forms of urban work, and one of the least protected. It absorbs people who have limited schooling and little capital, and it supplies low-cost goods and services to the rest of the city (Bhowmik, 2005). In the language of labour economics, street vendors belong to the informal economy, where work is real and constant but contracts, social

security and formal credit are not (Chen, 2012). The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act of 2014 gave the sector legal recognition in India for the first time (Government of India, 2014), but recognition on paper has not automatically translated into financial security on the street.

Karur makes an interesting setting for asking these questions. The city is well known for its home-textile and bus-body building industries, and a large floating population of workers, traders and commuters keeps the pavements around its bus stand and market areas busy through the day. Vendors here serve a steady customer base, yet they run their businesses largely on cash, daily turnover and personal trust.

Over the last decade, national policy has tried to change that. The Pradhan Mantri Jan Dhan Yojana pushed basic bank accounts into millions of households, and the Unified Payments Interface (UPI) made it possible to receive a payment by scanning a printed QR code. The World Bank's Global Findex data show that account ownership in India rose sharply over this period, but they also show that many accounts remained dormant (Demirgüç-Kunt et al., 2018, 2022). Having an account, in other words, is not the same as using it. For a vendor, the real test is whether banking helps to smooth a bad week, to build savings, to access fair credit and, ultimately, to keep the business running.

Most existing work looks at financial inclusion across countries or households. Far less is known about how banking access, digital payment uses and business sustainability fit together at the level of the individual vendor, particularly in an industrial town rather than a metropolis. This article addresses that gap with a survey of 95 street vendors in Karur City. The sections that follow review related literature, state the objectives and methods, present the analysis, and close with findings, suggestions and conclusions.

II. REVIEW OF LITERATURE

Financial Inclusion and the Urban Informal Economy

Financial inclusion is usually understood as access to, and effective use of, affordable financial services by people who have traditionally been left out. Sarma and Pais (2011) built a cross-country index and found that higher financial inclusion went hand in hand with human development, and that income, literacy and infrastructure were important correlates. Beck et al. (2007) showed that financial development benefits the poorest households disproportionately, narrowing inequality rather than widening it. The implication for informal workers is straightforward: when the poor can save, borrow and insure on reasonable terms, they are better able to invest in their work and to withstand shocks. The Global Findex reports, however, repeatedly stress that opening an account is only the first step and that active use is where the benefits lie (Demirgüç-Kunt et al., 2018, 2022).

Digital Payments and Small Businesses

Digital finance has been described as a route to inclusion that skips the branch altogether. Ozili (2018) reviewed the evidence and concluded that digital finance can widen access and improve

stability, while also warning about fraud, privacy and the exclusion of people with low digital skills. The most cited evidence comes from Kenya. Jack and Suri (2014) found that households using mobile money were better able to absorb income shocks because they could receive funds quickly and cheaply from their networks, and Suri and Jack (2016) later reported that access to mobile money was linked to a measurable reduction in poverty, particularly among female-headed households. Although the Indian context differs, the underlying mechanism is similar: lower transaction costs, safer handling of cash and a growing record of transactions that lenders can see.

Adoption Barriers and Business Sustainability

Why do some traders adopt new payment technologies while others, in the same market, do not? Davis (1989) argued that people adopt technology when it seems useful and easy to use. Venkatesh et al. (2012) extended this idea to consumer settings by adding social influence, facilitating conditions, price value and habit. For a street vendor, "facilitating conditions" may be as ordinary as a reliable network signal, and "ease of use" may depend on reading a screen in a second language. Sustainability, meanwhile, is often framed through the triple bottom line of economic, social and environmental performance (Elkington, 1997). For a one-person business the economic dimension comes first: steady sales, the ability to save and repay, a loyal customer base and the confidence that the business will still be there next year. This study uses that practical view of sustainability.

III. RESEARCH GAP

The literature establishes that financial inclusion and digital payments matter, but it says little about how these two forces connect to the day-to-day sustainability of street vendors in mid-sized Indian cities. The present study treats that connection as an empirical question.

IV. OBJECTIVES OF THE STUDY

The study was guided by the following objectives:

- To describe the socio-economic profile of street vendors in Karur City.
- To assess the extent of financial inclusion and the pattern of digital payment adoption among the vendors.
- To examine whether age, education and gender are associated with digital payment adoption.
- To test the association of digital payment adoption and monthly income with the level of business sustainability.
- To analyse the relationships among financial inclusion, digital payment adoption and business sustainability.

To meet these objectives, six null hypotheses were tested:

H_o1: There is no significant association between education and digital payment adoption.

H_o2: There is no significant association between age and digital payment adoption.

H_o3: There is no significant association between gender and digital payment adoption.
H_o4: There is no significant association between digital payment adoption and the level of business sustainability.
H_o5: There is no significant association between monthly income and the level of business sustainability.
H_o6: There is no significant correlation among financial inclusion, digital payment adoption and business sustainability.

V. RESEARCH METHODOLOGY

Research Design

The study follows a descriptive and analytical cross-sectional design. It describes the current position of street vendors and tests relationships among key variables at a single point in time.

Sampling and Data Collection

Street vendors form an informal population with no complete or reliable sampling frame, so a non-probability convenience sample of 95 vendors was drawn from the main vending clusters in Karur City, including the areas around the central bus stand and the principal markets. Vendors who were at least 18 years old and had been trading for a minimum of one year were included. The questionnaire was administered face to face and explained in Tamil. Participation was voluntary, consent was obtained orally, and no names or identifying details were recorded.

Instrument and Measures

The questionnaire had four parts. The first collected demographic and business details. The second measured financial inclusion through five statements on account use, saving, credit and insurance, together with yes/no indicators of specific services. The third measured digital payment adoption through five statements on frequency, confidence and convenience of use; a vendor was classified as an adopter when he or she regularly used at least one digital payment mode. The fourth measured business sustainability through five statements on stable daily sales, profit growth, ability to save and repay, retention of customers and confidence in continuing the business. All statements used a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Cronbach's alpha indicated good internal consistency for all three scales (financial inclusion $\alpha = .85$, digital payment adoption $\alpha = .85$, business sustainability $\alpha = .88$), above the usual .70 benchmark (Cronbach, 1951). Each scale score is the mean of its five items. For the chi-square analysis, sustainability was grouped into low (below 3.00), moderate (3.00–3.79) and high (3.80 and above).

Tools of Analysis

Data were coded and analysed in IBM SPSS Statistics. Percentage analysis described the sample, the chi-square test of independence examined associations between categorical variables, and

Pearson's correlation measured the strength of relationships among the three scale scores. The significance level was set at .05.

Data Analysis and Interpretation

This section presents the results in three stages. Percentage analysis describes the sample and the pattern of financial inclusion and digital payment use. The chi-square test then examines associations between categorical variables, and correlation analysis tests the relationships among the three scale scores.

Percentage Analysis

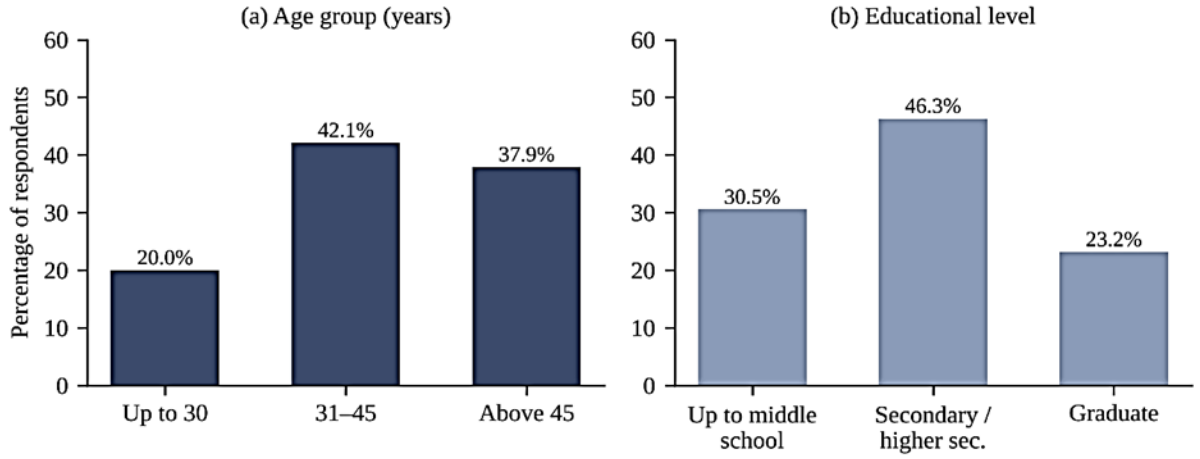
Table 1 and Figure 1 show who the respondents were. Men outnumbered women (60.0% vs. 40.0%), and the sample leaned towards the middle and later stages of working life: 42.1% were aged 31–45 years and 37.9% were above 45, whereas only one in five (20.0%) was 30 or younger. Formal schooling was modest. Nearly a third (30.5%) had studied only up to middle school, 46.3% had completed secondary or higher secondary education, and 23.2% were graduates. Earnings were low and tightly bunched, with 49.5% making ₹10,000–20,000 a month and 29.5% making less than ₹10,000. Experience, on the other hand, ran deep. 76.8% of the vendors had been trading for five years or more, a reminder that these are established livelihoods and not stop-gap jobs.

Table 1 Socio-Economic Profile of the Respondents

Characteristic	f	%
Gender		
Male	57	60.0
Female	38	40.0
Monthly income		
Below ₹10,000	28	29.5
₹10,000–20,000	47	49.5
Above ₹20,000	20	21.1
Experience in vending		
Below 5 years	22	23.2
5–10 years	36	37.9
Above 10 years	37	38.9
Type of goods sold		
Fruits and vegetables	31	32.6
Food and snacks	27	28.4
Clothing and accessories	21	22.1
Flowers and household items	16	16.8

Note. N = 95. Age and education are shown in Figure 1.

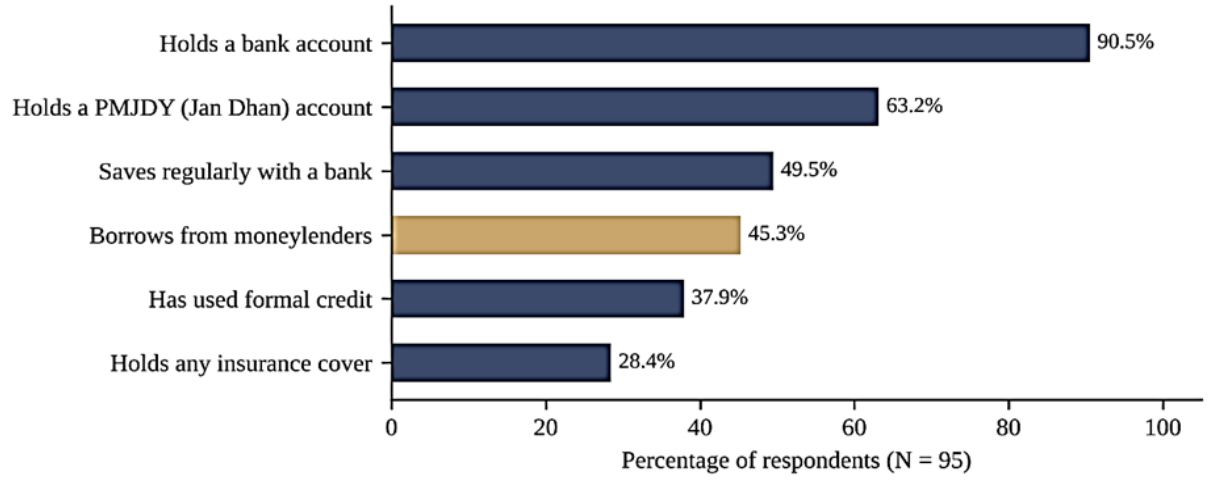
Figure 1 Age and Educational Level of the Respondents



Note. N = 95. Percentages are calculated on the total sample.

On paper, access to banking was almost universal (Figure 2). 90.5% of the vendors held a bank account and 63.2% held a Jan Dhan account. Use, however, told a less comfortable story. Fewer than half (49.5%) saved with a bank on a regular basis, 37.9% had ever used formal credit, and just 28.4% had any insurance cover. At the same time, 45.3% still turned to moneylenders when they needed cash, which is expensive and, for someone living on daily turnover, risky. In many cases the account has been opened, but the services that sit behind it have not yet been reached.

Figure 2 Indicators of Financial Inclusion Among Street Vendors

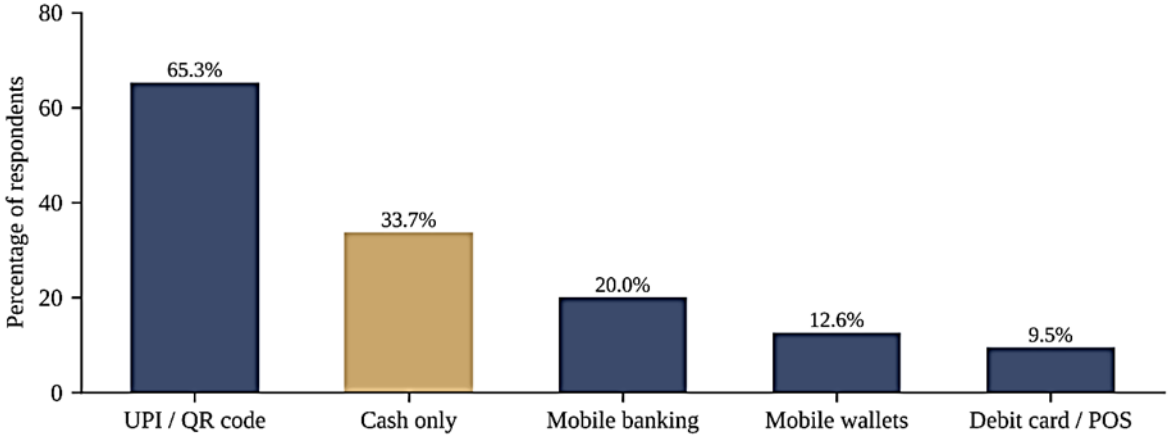


Note. N = 95. The darker bars show services held or used; the lighter bar shows reliance on moneylenders.

Digital payments had gained a firm foothold. Two-thirds of the vendors (66.3%, n = 63) used at least one digital mode, and for most of them that meant UPI. A QR code, usually displayed next to the cash box, was in use among 65.3% of all respondents. Mobile banking (20.0%), mobile

wallets (12.6%) and debit cards or POS machines (9.5%) trailed far behind, and the remaining 33.7% worked on cash alone (Figure 3).

Figure 3 Payment Modes Used by Street Vendors



Note. N = 95. Adopters could report more than one mode, so percentages do not sum to 100.

Chi-Square Test

The chi-square test of independence was used to find out whether selected characteristics were associated with digital payment adoption and with the level of business sustainability. All expected cell counts were above 5 (the smallest was 5.89), so the test's assumption was met (Field, 2018). Effect sizes are reported as Cramér's V and were read against Cohen's (1988) benchmarks, which for tables with two degrees of freedom are about .07 (small), .21 (medium) and .35 (large). Table 2 gives the results.

Table 2 Chi-Square Tests of Association

Association tested	χ^2	df	p	Cramér's V	Decision
Education × digital payment adoption	8.25	2	.016	.29	$H_0$1 rejected
Age × digital payment adoption	15.26	2	< .001	.40	$H_0$2 rejected
Gender × digital payment adoption	0.02	1	.894	.01	$H_0$3 retained
Digital payment adoption × sustainability level	18.88	2	< .001	.45	$H_0$4 rejected
Monthly income × sustainability level	3.90	4	.420	.14	$H_0$5 retained

Note. N = 95. Yates' continuity correction was applied to the 2 × 2 table. Significant at $p < .05$ where the null hypothesis is rejected.

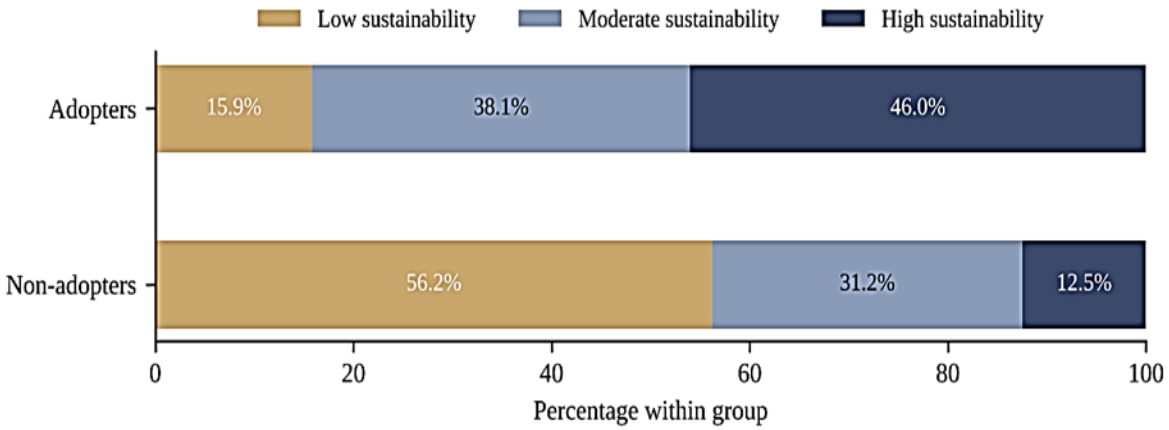
Education. Adoption rose steadily with schooling, from 48.3% among vendors with up to middle school, to 68.2% at the secondary level and 86.4% among graduates, $\chi^2(2, N = 95) = 8.25$, $p = .016$, $V = .29$. $H_0$1 is therefore rejected, and the effect is medium.

Age. The age gradient was sharper. 94.7% of vendors aged 30 or younger had adopted digital payments, against 72.5% of those aged 31–45 and only 44.4% of those above 45, $\chi^2(2, N = 95) = 15.26$, $p < .001$, $V = .40$. H_o2 is rejected, with a large effect.

Gender. Men and women adopted at almost the same rate (64.9% vs. 68.4%), $\chi^2(1, N = 95) = 0.02$, $p = .894$, $V = .01$, so H_o3 is retained. Within this sample, age and education, not gender, seem to decide who gets onto digital rails.

Adoption and sustainability. Digital payment adoption and sustainability were strongly associated, $\chi^2(2, N = 95) = 18.88$, $p < .001$, $V = .45$, and H_o4 is rejected. 46.0% of adopters reported high sustainability, compared with 12.5% of non-adopters, while 56.3% of non-adopters fell in the low group against 15.9% of adopters (Figure 4).

Figure 4 Business Sustainability Level by Digital Payment Adoption



Note. Adopters, n = 63; non-adopters, n = 32. Bars show percentages within each group.

Income and sustainability. Interestingly, monthly income was not significantly related to sustainability level, $\chi^2(4, N = 95) = 3.90$, $p = .420$, $V = .14$, so H_o5 is retained. How a vendor's business is organised and financed appears to matter more than how much the vendor takes home in a typical month, although the modest sample limits the confidence one can place in a null result.

Correlation Analysis

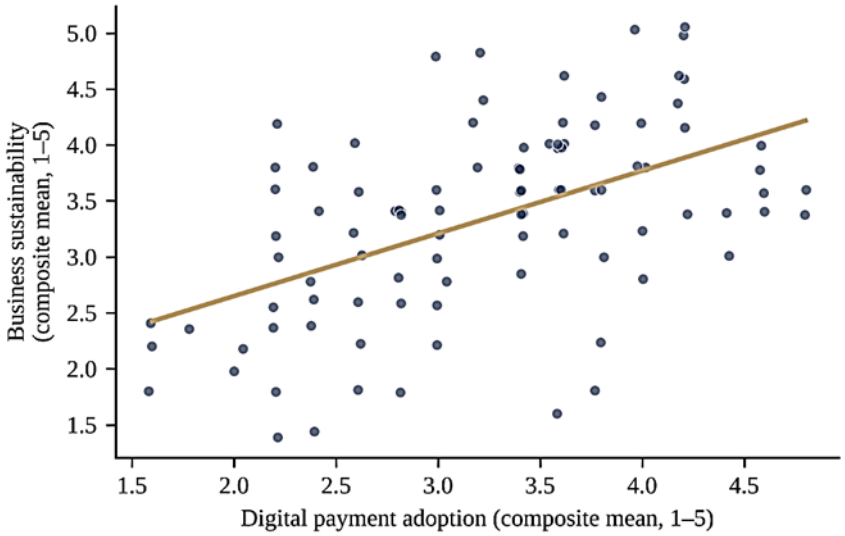
Pearson's correlation was calculated on the three scale scores (Table 3). Skewness for each score did not exceed 0.27 in absolute value and the scatterplot in Figure 5 showed a roughly linear pattern, so the use of Pearson's r was reasonable. All three correlations were positive, statistically significant and, by Cohen's (1988) guidelines, large. Financial inclusion was most strongly related to business sustainability, $r(93) = .66$, 95% CI [.53, .76], $p < .001$, meaning the two shares roughly 44% of their variance. Digital payment adoption was also related to sustainability, $r(93) = .52$, 95% CI [.36, .65], $p < .001$, and to financial inclusion, $r(93) = .52$, 95% CI [.36, .65], $p < .001$. H_o6 is rejected.

Table 3 Descriptive Statistics, Reliability and Pearson Correlations Among the Study Variables

Variable	M	SD	α	1	2
1. Financial inclusion	3.32	0.79	.85		
2. Digital payment adoption	3.23	0.80	.85	.52**	
3. Business sustainability	3.33	0.86	.88	.66**	.52**

Note. N = 95. Scale scores range from 1 to 5. ** Correlation is significant at p < .01 (two-tailed).

Figure 5 Relationship Between Digital Payment Adoption and Business Sustainability



Note. N = 95. Each point is one vendor (slightly jittered for visibility); the line shows the linear trend.

These are associations, not proof of cause. It is plausible that digital payments strengthen a business by making cash handling safer and building a transaction record. It is equally plausible that vendors who are already doing well are the ones with the confidence and the margin to try something new. In practice, the two probably reinforce each other.

VI. FINDINGS

- The typical respondent was male, aged above 30, educated up to the secondary level, earning ₹10,000–20,000 a month and had been vending for five years or more.
- Bank accounts were nearly universal (90.5%), but deeper services were not: 49.5% saved regularly with a bank, 37.9% had used formal credit and 28.4% held insurance.
- 45.3% of the vendors still borrowed from moneylenders.
- 66.3% of the vendors had adopted digital payments, and UPI (65.3%) was by far the most common mode.
- Digital payment adoption was significantly associated with education and age, and not with gender.
- Adopters were much more likely than non-adopters to report high business sustainability (46.0% vs. 12.5%).

- Monthly income was not significantly associated with sustainability level.
- Financial inclusion, digital payment adoption and business sustainability were significantly and positively correlated, with the strongest link between financial inclusion and sustainability ($r = .66$).

VII. SUGGESTIONS

- Teach by doing. Banks, the local body and nearby colleges could run short, hands-on digital-literacy sessions in Tamil at the vending sites themselves, with special attention to older and less-educated vendors, who are the least likely to have adopted.
- Move from opening accounts to using them. Banks can promote small recurring deposits, and low-premium schemes such as the Pradhan Mantri Jeevan Jyoti Bima Yojana and the Pradhan Mantri Suraksha Bima Yojana, through bank correspondents who visit vendors rather than waiting for them to visit the branch.
- Use the digital record to open the door to credit. Vendors who receive payments by UPI build a transaction history, and lenders can use it to offer small, collateral-free working-capital loans, as schemes such as PM SVANidhi already intend. Facilitation desks would help vendors to apply.
- Fix the basics of the vending zone. Reliable network coverage, clear identification of vending zones and quick resolution of failed or disputed transactions will make digital payment less stressful for a vendor who cannot afford to lose a day's earnings.
- Build trust and fraud awareness. Simple vernacular guidance on safe PIN use, fake payment alerts and refund procedures, along with voice-based payment confirmation devices, can reduce the fear of making mistakes.
- Let vendors teach vendors. Vendor associations could nominate confident adopters as peer "digital champions" to help colleagues in the same market.

VIII. CONCLUSION

This study set out to understand how financial inclusion, digital payment adoption and business sustainability fit together among street vendors in Karur City. The picture that emerges is of a group that has been brought into the banking system but not yet fully into its benefits. Almost every vendor has an account, yet many still save, borrow and insure outside the formal system. Digital payments, led by UPI, have spread quickly, though unevenly: age and education, not gender, separate those who have adopted from those who have not. Vendors who use digital payments, and vendors who are more financially included, tend to report stronger and steadier businesses. For policy-makers, banks and local bodies, the message is practical. Inclusion should be judged by what a vendor can do with an account, not by whether one exists. Closing the digital gap for older and less-educated vendors is likely to be the most direct way to extend the benefits further.

The study has limitations. The sample was small (N = 95), non-random and drawn from a single city, so the findings cannot be generalised to all street vendors. Data were self-reported and cross-sectional, which means that causal direction cannot be established. Future research could use larger, stratified samples, follow vendors over time, and compare several cities or add qualitative interviews to explain why some vendors choose not to go digital.

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