



Archives available at journals.mriindia.com

**International Journal on Research and Development - A
Management Review**

ISSN: 2319 - 5479

Volume 15 Issue 01, 2026

Digital Payment Adoption among Agricultural Produce Street Vendors: An Empirical Study in Kalaburagi District, Karnataka

¹Sharan Kumar, ²Prof. Tumkunte Devidas

¹Research Scholar, Department of Studies & research in Economics, Gulbarga University, Kalaburgi, Karnataka.

²Professor & Research guide (Gulbarga University), Department of Economics, Residential Government First Grade College, Ghodampalli, Bidar, Karnataka.

Email: ¹sharansk07@gmail.com, ²dr.tumkuntevidas@gmail.com

Peer Review Information	Abstract
<p>Submission: 11 Jan 2026</p> <p>Revision: 22 Jan 2026</p> <p>Acceptance: 10 Feb 2026</p> <p>Keywords</p> <p>Digital payments, Agricultural vendors, Agricultural marketing, Financial inclusion, Perishable goods, Post-harvest losses, Kalaburagi</p>	<p>Purpose: This study investigates digital payment adoption patterns, determinants, and impacts on agricultural produce street vendors in Kalaburagi district, Karnataka, examining the intersection of agricultural marketing and financial technology. Design/Methodology/Approach: Primary data were collected from 200 agricultural produce vendors through structured questionnaires using stratified random sampling. Descriptive statistics, chi-square tests, Pearson correlation, and multiple regression analysis were employed. Findings: Results reveal 58% adoption rate among agricultural vendors, significantly lower than general merchandise vendors. Fresh produce vendors (41.5%) showed substantially lower adoption than processed agricultural products (71.4%). Perishability concerns (67.8%) and seasonal income fluctuations ($\beta=-0.412$, $p<0.01$) emerged as unique barriers. However, 54.3% of adopters reported reduced post-harvest losses through faster transactions. Educational qualification ($\chi^2=28.34$, $p<0.01$) and cold storage access (OR=2.87, $p<0.05$) significantly influenced adoption. Research Limitations: Geographic specificity and cross-sectional design limit generalizability and causal inferences. Practical Implications: Findings inform agricultural marketing policies emphasizing value chain-specific digital solutions, cold chain infrastructure integration, and seasonal pricing models for agricultural vendors. Originality/Value: This research uniquely examines digital financial inclusion at the agriculture-urban retail interface, addressing gaps in agricultural marketing and technology adoption literature.</p>

Introduction

India's agricultural sector contributes 18.8% to GDP and employs 42.3% of the workforce (Economic Survey 2023-24), yet faces persistent challenges in market linkages and value realization. Street vendors specializing in agricultural produce represent critical direct farm-to-consumer channels, bypassing traditional mandis and reducing intermediation costs.

The digital payment revolution, accelerated post-demonetization (2016) and through UPI infrastructure expansion, has transformed urban retail transactions. According to RBI data, UPI usage expanded dramatically — rising from under one billion transactions in 2017-18 to more than 83 billion by 2022-23 (RBI, 2023). However, agricultural produce vending presents unique challenges distinct from general merchandise—perishability necessitating rapid

sales, seasonal income patterns, weather dependency, and predominantly rural-origin vendors with potentially lower digital literacy.

Kalaburagi district, located in Karnataka's northern agro-climatic zone, represents a semi-arid region with significant agricultural activity. Principal crops include jowar, bajra, pulses, oilseeds, and horticultural crops. The district comprises 2.56 million population with 71.3% rural residents (Census 2011). Agricultural produce vendors create vital farm-urban linkages, sourcing directly from surrounding rural areas.

Despite agricultural produce constituting 34-45% of street vending (Ministry of Housing and Urban Affairs, 2020), research on digital payment adoption remains sparse for this category. Agricultural vendors face distinctive challenges including perishable commodity handling, seasonal income volatility, rural sourcing with limited infrastructure, and often maintaining simultaneous farming activities.

Research Objectives:

1. To assess digital payment adoption levels among agricultural produce street vendors
2. To identify agriculture-specific determinants including seasonality and perishability
3. To evaluate impact on agricultural marketing efficiency and post-harvest losses
4. To examine unique challenges compared to general merchandise vendors
5. To provide recommendations for integrating agricultural value chains with digital financial systems

Research Hypotheses:

- **H₁:** Digital payment adoption positively correlates with reduced post-harvest losses and expanded market reach
- **H₂:** Vendors dealing in processed/semi-perishable products demonstrate higher adoption than fresh produce vendors
- **H₃:** Seasonal income fluctuations negatively impact sustained digital payment usage
- **H₄:** Cold storage access moderates the relationship between adoption and business performance
- **H₅:** Educational qualification and farming background jointly influence digital payment acceptance

Literature Review

1. Theoretical Framework: Porter's (1985) value chain framework emphasizes activities

adding value from production to consumption. In agricultural marketing, efficiency is achieved when vendors can limit spoilage, cut unnecessary transaction expenses, and secure fair prices for their produce. (Kaplinsky & Morris, 2001). Digital payments potentially enhance efficiency by reducing transaction time, enabling non-cash transactions, and facilitating record-keeping.

According to The Technology Acceptance Model (TAM) proposed by Davis (1989), individuals are more likely to adopt a technology when they believe it will improve their work outcomes and when they find it straightforward to operate. Agricultural technology adoption literature emphasizes additional factors: risk aversion, seasonal cash flows, and information access constraints (Feder et al., 1985). Rogers' (2003) Diffusion of Innovation theory identifies "relative advantage, compatibility, complexity, trialability, and observability as critical factors, particularly relevant for resource-constrained agricultural entrepreneurs."

2. Agricultural Marketing in India: Agricultural marketing operates through multiple channels: APMCs, private mandis, contract farming, and direct consumer sales through retail outlets and street vendors. The Agricultural Produce and Livestock Marketing Act (2017) and e-NAM initiative aimed to modernize agricultural marketing, yet informal channels persist due to flexibility and accessibility.

Street vendors specializing in agricultural produce serve critical functions: providing affordable produce to urban consumers, offering market access to small farmers unable to meet bulk requirements, and creating employment for rural migrants. However, Street vendors frequently remain outside formal banking structures, which restricts their ability to expand operations or access credit. (Bhowmik & Saha, 2012).

3. Digital Payments and Agricultural Value Chains: The e-NAM platform enables electronic payments in mandis, recording ₹1.74 lakh crore transactions by 2023 (Ministry of Agriculture, 2023). However, integration remains limited at the retail-consumer interface. Research on farmers' markets in Kerala by Thomas and Nair (2021) found 47% adoption among farmers for direct consumer sales, with younger educated farmers showing higher propensity.

Studies examining farmer-level adoption reveal mixed outcomes. Raghunathan et al. (2020) reported 23% reduction in post-harvest losses through faster transactions in Madhya Pradesh vegetable markets. Conversely, Singh and Bhatt (2019) found transaction charges (1.5-2%) significantly deterred Punjab farmers given thin profit margins.

4. Perishability and Payment Systems:

Perishable commodities present unique challenges. Time criticality prioritizes transaction speed, potentially conflicting with digital payment processing requirements. Blackburn and Scudder (2009) emphasized that “every hour of delay increases losses for perishable goods.” Iyer and Jadhav (2017) found that perishability concerns created cash preference among Pune vegetable vendors despite digital payment availability. However, processed agricultural products showed higher acceptance (64% vs. 38% for fresh vegetables).

5. Seasonality and Agricultural Vendors:

Agricultural income seasonality significantly impacts financial behavior. Paxson (1992) demonstrated that Farm households often try to balance their spending across seasons by relying on savings or borrowing, a behavior shaped by the cyclical nature of agricultural income. Deshpande and Sharma (2020) revealed that Maharashtra vendors reduced digital payment usage during lean agricultural seasons despite adoption, citing transaction charge concerns when earnings declined.

6. Technology Adoption Studies: Metropolitan studies report 65-76% adoption among urban vendors (Gowda & Shilpa, 2022; Patil et al., 2020). However, tier-II city studies show lower rates (48-55%), attributing differences to infrastructure deficits and customer demand variations (Rathore, 2020; Singh & Kumar, 2021). Karnataka-specific research remains limited beyond Bangalore.

Literature identifies multiple determinants: age, education, technology exposure (Tounekti et al., 2020); perceived usefulness and ease of use (Oliveira et al., 2016); transaction costs (Sivathanu, 2019); and infrastructure availability (Singh et al., 2020). However, agriculture-specific factors including perishability, seasonality, and cold storage access remain understudied.

7. Research Gaps: Significant gaps persist: limited research on agricultural produce vendors specifically; insufficient attention to perishability impacts; inadequate understanding of seasonal income patterns' influence; limited investigation of rural-urban agricultural value chain integration with digital systems; and sparse Karnataka-specific research beyond Bangalore. This study addresses these gaps.

Research Methodology

1. Research Design and Study Area: This study employed a descriptive cross-sectional design utilizing quantitative methods. Kalaburagi district, exhibiting semi-arid agro-climatic characteristics with diverse agricultural production (cereals, pulses, oilseeds,

horticulture), was selected. Study locations included Kalaburagi city, Afzalpur, Chincholi, Chittapur towns, and major agricultural market areas.

2. Sampling Framework

Target Population: Street vendors deriving $\geq 60\%$ sales from agricultural products (vegetables, fruits, food grains, pulses, spices, eggs, dairy). Estimated population: 1,800 vendors across the district.

Sampling Technique: Stratified random sampling across: **Product categories:** Fresh vegetables/fruits (40%), food grains/pulses (30%), dairy/eggs/poultry (15%), spices/processed items (15%). **Geographic location:** Urban core (50%), peripheral urban (30%), semi-urban (20%). **Source:** Own production (20%), farmer purchases (35%), wholesale market (45%)

Sample Size: Calculated using $n = Z^2 pq / e^2$ (95% confidence, 7% margin): 196 vendors. Final sample: 200.

3. Data Collection and Instrument: Primary data collection occurred January-June 2024 through face-to-face interviews using structured questionnaires in Kannada and Hindi. The instrument comprised seven sections: demographics and agricultural background (10 items), business profile (12 items), digital payment adoption (10 items), agriculture-specific factors (15 items), business impact (12 items), challenges (8 items), and training needs (8 items). **Validation:** Content validity through three agricultural economics experts and two financial inclusion researchers. Pilot testing with 30 vendors from Yadgir district. Reliability: Cronbach's $\alpha = 0.834$.

4. Variables and Analysis: Dependent

variables: Adoption status (binary), usage intensity (percentage), post-harvest loss reduction (ordinal), market reach expansion (ordinal). **Independent variables:**

Demographics (age, gender, education, farming background), business characteristics (product type, perishability level, duration, turnover), agricultural factors (seasonality intensity, cold storage access, sourcing pattern, distance), technology perceptions (usefulness, ease of use), external factors (infrastructure, government awareness, agricultural extension contact, training). Statistical analysis employed SPSS 26.0: descriptive statistics, chi-square tests, independent t-tests, Pearson correlation, and multiple regression (logistic for binary outcomes, linear for continuous). Significance level: $p < 0.05$.

Results And Discussion

1. Demographic and Agricultural Profile:

Sample comprised 79% male, 21% female vendors; mean age 42.6 years (SD=10.8). Educational profile: 19% illiterate, 39% primary, 32% secondary, 10% higher secondary+. Notably, 74.5% possessed farming connections (23.5% active farmers, 51% from farming families), validating agricultural value chain linkage. Rural-origin vendors constituted 64%, suggesting circular migration patterns. Primary products: fresh vegetables/fruits (41%), food

grains/pulses (29%), dairy/eggs/poultry (14%), spices/processed items (16%). Perishability: highly perishable <24hrs (38%), moderately perishable 2-7 days (27%), semi/non-perishable (35%). High seasonal variation affected 47%, moderate 34%, low 19%. Only 21.5% accessed cold storage. Mean daily earnings: ₹672 (SD=₹394), lower than general merchandise vendors (₹847), reflecting agricultural marketing margins and perishability constraints.

2. Digital Payment Adoption Status

Table 1: Adoption Status by Product Category

Product Category	Adopters	Non-Adopters	Adoption Rate
Fresh vegetables/fruits (n=82)	34	48	41.5%
Food grains/pulses (n=58)	42	16	72.4%
Dairy/eggs/poultry (n=28)	13	15	46.4%
Spices/processed items (n=32)	27	5	84.4%
Total (N=200)	116	84	58.0%

Overall adoption rate (58%) significantly lower than general merchandise vendors (68%, $p < 0.05$). Chi-square analysis revealed significant association between perishability and adoption ($\chi^2 = 31.26$, $p < 0.001$), supporting H₂. Spices/processed items (84.4%) and food grains (72.4%) demonstrated substantially higher adoption than fresh produce (41.5%), validating perishability as major constraint. Infrastructure: Smartphone ownership 76%, internet access 67%, adoption 58%. Lower than general vendors

(83.5%, 76.5%, 63% respectively), reflecting rural origin and economic constraints.

Platform Usage (n=116): Google Pay 81%, PhonePe 75.9%, Paytm 61.2%, BHIM UPI 19%, WhatsApp Pay 15.5%. Average platforms per adopter: 2.4 (lower than general vendors' 2.9). Among adopters, digital transactions constituted only 19.8% (SD=10.2) of total transactions, significantly lower than general merchandise vendors (27.1%, $t = 4.32$, $p < 0.01$), suggesting adoption-usage gap due to agricultural constraints.

3. Adoption Determinants

Table 2: Agriculture-Specific Motivators and Barriers

Motivators (Adopters, n=116)	Mean*	SD
Customer demand	4.18	0.82
Expand customer base	3.94	0.89
Faster transaction completion	3.76	0.91
Reduce end-of-day losses	3.42	1.04
Barriers (Non-adopters, n=84)	Mean*	SD
Perishability urgency	4.21	0.76
Seasonal income fluctuations	3.87	0.94
Transaction charges concern	3.95	0.88
Technical knowledge gap	3.72	1.02

*5-point Likert scale (1=Not important to 5=Extremely important)

"Reducing end-of-day losses" emerged as unique agricultural motivator (mean=3.42). Perishability urgency topped barriers (mean=4.21), reflecting time-critical nature of fresh produce sales.

Seasonality Impact: Regression analysis examining usage patterns:

$$\text{Usage Intensity} = 32.4 - 8.2(\text{Seasonal Variation}) + 6.7(\text{Cold Storage}) + 4.3(\text{Education})$$

($R^2 = 0.387$, $F = 24.12$, $p < 0.001$)

Seasonal income variation exhibited significant negative impact ($\beta = -0.412$, $p < 0.01$), validating

H₃. Vendors with high seasonality reduced digital usage by 8.2 percentage points per unit increase, likely due to transaction cost sensitivity during lean periods.

Educational Association: Chi-square test showed significant association ($\chi^2 = 28.34$, $p < 0.01$). Adoption rates: illiterate 28.6%, primary 45.2%, secondary 74.3%, higher

secondary+ 83.3%, demonstrating clear educational gradient. However, farming background per se showed no independent effect when controlling for education, partially supporting H₅. Education remained primary determinant, while farming experience provided neither advantage nor disadvantage.

Cold Storage Moderation: Moderation analysis revealed cold storage significantly moderated adoption-performance relationship (interaction term: $\beta=0.298$, $p<0.05$), supporting H₄. Vendors

with cold storage showed stronger correlation between adoption and loss reduction ($r=0.642$) vs. without storage ($r=0.384$). Cold storage enables inventory holding during digital payment processing delays without immediate deterioration.

Location Influence: Urban core 72.7% adoption, peripheral 58.2%, semi-urban 45.7% ($\chi^2=18.34$, $p<0.01$), reflecting infrastructure and customer demand variations.

4. Business Impact Assessment

Table 3: Performance Impact Among Adopters (n=116)

Impact Indicator	Improved	No Change	Declined	Net Positive
Post-harvest loss reduction	63 (54.3%)	45 (38.8%)	8 (6.9%)	+47.4%
Customer base expansion	71 (61.2%)	40 (34.5%)	5 (4.3%)	+56.9%
Daily transaction volume	68 (58.6%)	42 (36.2%)	6 (5.2%)	+53.4%
Income stability	49 (42.2%)	52 (44.8%)	15 (12.9%)	+29.3%
Profit margins	41 (35.3%)	58 (50.0%)	17 (14.7%)	+20.6%

Post-harvest loss reduction emerged as most significant benefit (54.3%), unique to agricultural vendors. Mechanisms identified through qualitative responses:

1. Faster transactions enabling more customers during peak freshness hours
2. Customer base expansion including non-cash-carrying consumers, reducing unsold stock
3. Advance orders through digital platforms with prepayment

4. Better inventory planning through digital transaction records

Pearson correlation showed usage intensity positively correlated with loss reduction ($r=0.518$, $p<0.01$) and market reach ($r=0.487$, $p<0.01$), supporting H₁.

However, profit margin improvement remained limited (35.3%), with 14.7% declining. Transaction charges (1.5-2.5%) combined with thin agricultural margins (8-12%) created economic pressures.

Income Stability Analysis: Coefficient of variation comparison:

Season	Adopters CV	Non-adopters CV	Significance
Peak season	0.23	0.21	Not significant
Lean season	0.41	0.58	$p<0.05$
Overall year	0.52	0.67	$p<0.01$

Adopters exhibited significantly lower income variability during lean seasons (CV=0.41 vs. 0.58, $t=2.87$, $p<0.05$), suggesting digital payments provided partial buffer through expanded customer access.

5. Agriculture-Specific Challenges

Table 4: Major Challenges (N=200)

Challenge	Frequency	Percentage
Perishability creates urgency—digital slower than cash	136	67.8%
Seasonal income makes charges burdensome	118	59.0%
Rural sourcing areas have poor connectivity	102	51.0%
Cold storage absence increases transaction delay risk	124	62.0%
Return to village during farming season	68	34.0%
Illiteracy/low education hinders app usage	87	43.5%

Perishability urgency (67.8%) and seasonal income burden (59.0%) emerged as agriculture-specific barriers. Cold storage absence (62.0%) intensified risk perception regarding transaction processing time.

Among rural-origin vendors (n=128), 53.1% reported returning to villages during agricultural

peak seasons, creating discontinuous usage. Seasonal migration correlated negatively with sustained usage ($r=-0.341$, $p<0.01$).

6. Training and Extension Integration: Only 14% received digital payment training vs. 17% for general vendors. Among trained, 85.7% found

it beneficial. Agricultural vendors expressed desire for integrated training combining payments with agricultural marketing and financial planning (78.6%).

Agricultural extension contact showed patterns: regular contact (monthly+) 72% adoption, occasional 58.4%, no contact 53.5% ($\chi^2=3.78$, $p=0.15$), suggesting potential for leveraging extension networks despite not reaching statistical significance. Government scheme awareness (64.5%) lower than general vendors (71%), with benefit realization more limited (18% vs. 23.5%), reflecting information access challenges for rural-origin vendors.

Discussion

1. Key Findings Interpretation: The 58% adoption rate, significantly lower than general merchandise vendors (68%), validates unique agricultural marketing challenges. The stark contrast between fresh produce (41.5%) and processed products (84.4%) confirms perishability as critical determinant, supporting H₂. This extends technology adoption literature by demonstrating product characteristics—not just user attributes—significantly shape adoption.

Seasonal income fluctuations' significant negative impact ($\beta=-0.412$, $p<0.01$) validates H₃, highlighting gaps in digital payment ecosystem design for seasonally vulnerable populations. Transaction charges appearing negligible during peak seasons become prohibitive during lean periods, creating adoption-usage gaps.

Cold storage access as significant moderator (H₄ supported) demonstrates infrastructure complementarity's importance. Vendors with storage showed 65% stronger correlation between adoption and loss reduction, emphasizing need for integrated value chain development rather than isolated technology interventions.

Post-harvest loss reduction (54.3% of adopters) represents unique contribution. By expanding customer base and enabling faster transactions during optimal freshness, digital payments address critical value chain inefficiencies, contributing to food security and vendor income simultaneously.

Educational qualification remained strongest predictor ($\chi^2=28.34$, $p<0.01$), supporting H₅ partially. However, farming background showed no independent effect when controlling for education, challenging assumptions that domain expertise facilitates related technology adoption. Rural-urban circular migration (34% of vendors) represents understudied phenomenon. Seasonal village returns for agricultural activities create

discontinuous technology usage, impacting skill retention and platform familiarity.

2. Theoretical Contributions: This research extends TAM and agricultural technology adoption literature by demonstrating perceived usefulness and ease of use operate conditionally based on commodity characteristics. The perishability-adoption relationship reveals technology attributes (processing time) interact with product attributes (deterioration rate), requiring TAM extensions incorporating product-technology compatibility constructs.

The study contributes to financial inclusion theory by highlighting that inclusion extends beyond access provision. Agricultural vendors possess infrastructure (smartphones 76%, internet 67%) yet exhibit adoption gaps, suggesting contextual constraints—seasonality, perishability, income volatility—create barriers even when facilitating conditions exist.

The research demonstrates agricultural value chain efficiency and financial inclusion are interlinked objectives requiring integrated policy approaches, suggesting synergies between currently siloed financial inclusion and agricultural development policies.

3. Practical Implications

For Agricultural Marketing Policymakers: Integrate digital payment infrastructure with agricultural market infrastructure, including e-NAM integration for street vendor sourcing. Develop cold storage subsidy schemes for retail vendors enabling perishability management complementing digital adoption. Create seasonal credit facilities smoothing income fluctuations and reducing transaction cost sensitivity. Establish direct farmer-vendor linkages through digital platforms enabling advance ordering

For Financial Service Providers: Design agricultural vendor-specific payment solutions with seasonal pricing, transaction bundling, or volume-based discounts. Develop offline-capable payment modes for vendors sourcing from rural areas with connectivity gaps. Create integrated apps combining payment processing with inventory management and spoilage tracking. Offer working capital credit based on digital transaction histories addressing seasonal liquidity constraints. Provide vernacular language interfaces and voice-based assistance for low-literacy vendors

For Agricultural Extension Services: Expand extension mandate beyond production to include marketing, financial management, and technology adoption. Train extension workers in digital financial literacy to provide integrated advisory services. Leverage extension networks

for digital payment awareness and training delivery. Facilitate vendor-farmer linkages through extension platforms creating value chain integration. Document and disseminate success stories of digitally-enabled agricultural vendors encouraging peer adoption.

For Urban Local Bodies and Vendor Associations: Provide basic cold storage facilities in vending zones through public infrastructure investment. Negotiate collective agreements with payment platforms for reduced transaction charges for registered agricultural vendors. Establish agricultural vendor-specific support centres offering technical assistance and dispute resolution. Create dedicated vending zones with reliable internet connectivity. Link vendor registration with digital payment training and cold storage access as incentive packages.

Conclusions

This empirical investigation reveals complex dynamics at the intersection of agricultural marketing, informal economy livelihoods, and financial technology. The 58% adoption rate indicates moderate penetration with significant growth potential, particularly among fresh produce vendors (41.5%) facing acute perishability constraints.

All five hypotheses received empirical support. Digital payment adoption positively correlates with reduced post-harvest losses and expanded market reach (H_1), with 54.3% reporting loss reduction. Vendors handling processed/semi-perishable products demonstrate significantly higher adoption (84.4%) than fresh produce vendors (41.5%), confirming perishability's effect (H_2). Seasonal income fluctuations significantly negatively impact sustained usage (H_3), with high-seasonality vendors reducing usage by 8.2 percentage points. Cold storage access significantly moderates adoption-performance relationship (H_4), with storage-enabled vendors achieving 65% stronger benefits. Educational qualification strongly influences adoption (H_5), though farming background shows no independent effect.

Limitations: Geographic specificity to Kalaburagi district limits generalizability. Cross-sectional design precludes causal inference and cannot capture seasonal dynamics comprehensively. Self-reported data introduces potential bias. Sample size may not capture full vendor community heterogeneity. Study focuses on vendor perspectives, excluding farmer suppliers and consumer preferences.

Future Research Directions:

1. Longitudinal studies tracking adoption across multiple agricultural seasons
2. Comprehensive value chain analysis examining farmer-vendor-consumer linkages
3. Comparative regional studies across districts with varying agricultural profiles
4. Gender-specific investigations into challenges and opportunities
5. Technology integration studies examining platforms combining payments with inventory management and market information

References

Bhowmik, S.K., & Saha, D. (2012). Financial accessibility of the street vendors in India. *Indian Journal of Labour Economics*, 55(4), 637-652.

Blackburn, J., & Scudder, G. (2009). Supply chain strategies for perishable products. *Production and Operations Management*, 18(2), 129-137.

Census of India. (2011). *District Census Handbook Gulbarga*. New Delhi: Office of the Registrar General.

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance. *MIS Quarterly*, 13(3), 319-340.

Deshpande, R., & Sharma, P. (2020). Seasonal income fluctuations and financial behavior. *Agricultural Economics Research Review*, 33(1), 45-59.

Economic Survey 2023-24. (2024). *Ministry of Finance, Government of India*. New Delhi.

Feder, G., Just, R.E., & Zilberman, D. (1985). Adoption of agricultural innovations in developing countries. *Economic Development and Cultural Change*, 33(2), 255-298.

Gowda, M.V., & Shilpa, M. (2022). Digital payment adoption among urban street vendors. *Indian Journal of Economics and Business*, 21(2), 234-251.

Iyer, S., & Jadhav, R. (2017). Payment preferences among perishable goods vendors. *Journal of Rural Development*, 36(2), 267-284.

Kaplinsky, R., & Morris, M. (2001). *A Handbook for Value Chain Research*. Ottawa: IDRC.

Ministry of Agriculture. (2023). *Annual Report 2022-23*. New Delhi: Government of India.

- Ministry of Housing and Urban Affairs. (2020). *Survey of Street Vendors in Urban Areas*. New Delhi: Government of India.
- NITI Aayog. (2020). *Strengthening Agricultural Markets through Digital Platforms*. New Delhi: Government of India.
- Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment determinants. *Computers in Human Behavior*, 61, 404-414.
- Patil, P.P., Dwivedi, Y.K., & Rana, N.P. (2020). Digital payments adoption among urban vendors. *Information Systems Frontiers*, 22(5), 1265-1281.
- Paxson, C.H. (1992). Using weather variability to estimate savings response. *American Economic Review*, 82(1), 15-33.
- Porter, M.E. (1985). *Competitive Advantage*. New York: Free Press.
- Raghunathan, K., Pandey, S., & Kumar, A. (2020). Digital payments and agricultural efficiency. *Agricultural Systems*, 184, 102905.
- Rathore, H.S. (2020). Digital payment adoption in tier-II cities. *International Journal of Bank Marketing*, 38(7), 1425-1443.
- Reserve Bank of India. (2023). *Annual Report 2022-23*. Mumbai: RBI Publications.
- Rogers, E.M. (2003). *Diffusion of Innovations* (5th ed.). New York: Free Press.
- Singh, N., Sinha, N., & Liébana-Cabanillas, F.J. (2020). Determining factors in mobile wallet adoption. *Journal of Retailing and Consumer Services*, 52, 101918.
- Singh, P., & Bhatt, N. (2019). Transaction costs and farmer adoption of digital payments. *Agricultural Economics Research Review*, 32(2), 189-204.
- Singh, S., & Kumar, R. (2021). Digital payment challenges in semi-urban India. *Journal of Payments Strategy & Systems*, 15(2), 167-180.
- Sivathanu, B. (2019). Adoption of digital payment systems in demonetization era. *Journal of Science and Technology Policy Management*, 10(1), 143-171.
- Thomas, K.J., & Nair, R.M. (2021). Digital payment adoption in farmers' markets. *Journal of Agricultural Economics and Development*, 10(2), 23-38.
- Tounekti, O., Ruiz-Martínez, A., & Gómez-Skarmeta, A.F. (2020). Users' privacy concerns in mobile payment. *Journal of Information Security and Applications*, 53, 102512.