



## A Study on The Role of Digital Payments in Agriculture: Reducing the Effect of Middlemen

Jashwanth M K<sup>1</sup>, Kumudavalli M V<sup>2</sup>, Saraswathi D<sup>3</sup>, Swati Satyendra Baadkar<sup>4</sup>

<sup>1,3,4</sup>PG-Department of Computer Applications, Dayananda Sagar College of Arts Science & Commerce, Bangalore, Karnataka, India.

<sup>2</sup>Professor, Department of Computer Applications, Dayananda Sagar College of Arts Science & Commerce, Bangalore, Karnataka, India.

**Email ID:** [jashwanthgowda45@gmail.com](mailto:jashwanthgowda45@gmail.com)<sup>1</sup>, [kumudamanju@gmail.com](mailto:kumudamanju@gmail.com)<sup>2</sup>, [saraswathid2003@gmail.com](mailto:saraswathid2003@gmail.com)<sup>3</sup>, [swatibaadkar@gmail.com](mailto:swatibaadkar@gmail.com)<sup>4</sup>

### Abstract

*The usage of digital payments has seen enormous growth in recent paths. The role of digital payments and technology-driven initiatives in transforming India's agricultural sector, especially through the government's Digital India program. The initiative was aimed at improving efficiency, transparency, and financial inclusion, thereby empowering farmers by allowing direct transfer of subsidies and other financial benefits. However, the exploitation of middlemen continues to be a significant issue in agricultural supply chains. This research tackles the problems brought forward by digital payment systems and technical problems that arise during DBT's execution. These include farmers' lack of knowledge about why digital payment fails, which are some of the issues that hamper the effective use of the platforms. The research recommends better coordination between these bodies, enhanced transparency regarding payment failures, and the introduction of grievance redress mechanisms.*

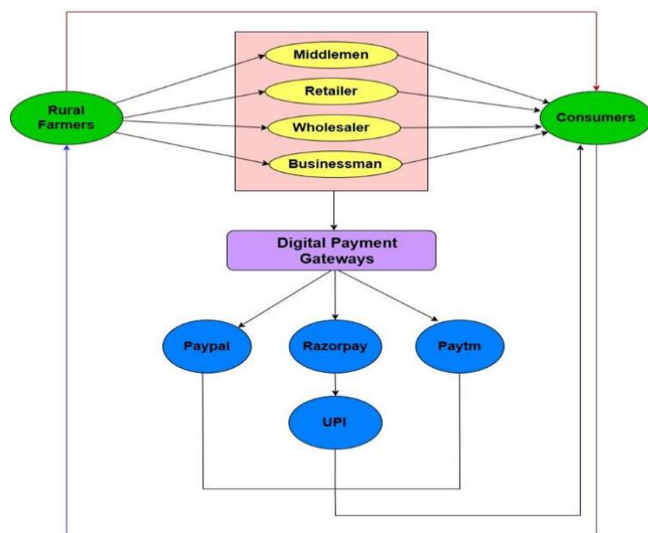
**Keywords:** Digital Payments, Agriculture, Middlemen, DBT, Farmers.

### 1. Introduction

India's agricultural sector has been characterized by cash transactions and significant reliance on intermediaries, or middlemen, for a long time. Though these intermediaries provide essential services such as marketing, transportation, and loans to farmers, their presence often results in inefficiencies and exploitative practices that restrict the bargaining power of farmers and create supply chain imbalances. Digital payment systems have emerged as a transformative solution that provides transparency, efficiency, and empowerment by reducing dependency on intermediaries. The Indian government has introduced digital payment platforms, such as Unified Payments Interface (UPI), Aadhaar Enabled Payment System (AEPS), and mobile banking, as part of the Digital India initiative to streamline financial transactions for farmers. DBT is an initiative of the Centre launched in 2013. Direct subsidies and other forms of monetary benefits have been transferred directly into the farmers' bank accounts, a landmark change that

has augmented financial inclusion among the rural community and ensured timely funds for critical inputs like seeds and fertilizers directly, cutting down exploitative tendencies and better positioning farmers financially. Besides, digital initiatives through Kisan Sarathi and M4 Agri ensure timely advice and support for farmers. With this, they are facilitated with the information required to make apt decisions. Initiatives like PM-KISAN, e-NAM, RKVY, [1][2] and the Soil Health Card Scheme further supplement these efforts by making financial provision, soil health improvement, streamlining trading, and providing crop insurance. However, in many cases, errors in Aadhaar and limited digital literacy prevent optimal delivery of these efforts [3]. Although digital payment systems greatly improved the sector by providing openness, less opportunity for corruption, and empowering farmers in India, additional steps need to be taken concerning the persisting issues. Promoting awareness and creating minimal dependence on middlemen besides

developing digital infrastructure will ensure sustainable development. Long-term growth and substantial progress in improving farmer livelihoods are achievable for the sector by capitalizing on the power of digital transformation in the country.



**Figure 1 Digital Payment Flow in Agricultural Transaction**

The figure 1 represents middlemen and digital payment gateways that are involved in agricultural transactions. Rural farmers often sell their products to middlemen, retailers, wholesalers, and businessmen who further sell these products to the consumers [4]. Financial transactions are further carried out through various digital payment gateways like PayPal, Razorpay, and Paytm. In this regard, Unified Payments Interface (UPI) is an integrated platform that supports smooth digital transactions. The diagram shows how the traditional structure of agricultural trade interacts with modern digital payment systems, and how the financial ecosystem in agriculture is changing [4]. Digital payments allow for direct transactions between farmers and consumers, bypassing traditional middlemen such as wholesalers and retailers. By using digital payment gateways like UPI, PayPal, Razorpay, and Paytm, farmers can receive payments instantly, ensuring better price realization and reducing dependency on intermediaries [5]. This not only enhances financial transparency but also minimizes transaction costs and

delays, ultimately increasing farmers' profits and fostering a more efficient agricultural supply chain.

## 2. Literature Review

- Manisha Lawankar, Rohit Shelar, and Bolleboina Shilpa (2023) investigated the increasing penetration of digital payment in Indian agriculture, focusing on its impact on farmers in the areas of access to finance and efficiency. Their research article in AgriCos e-Newsletter focuses on the process of transforming traditional agricultural transactions through digital financial solutions and, mentions the positives and negatives of it.
- Jainuddin, S. M., Hiremath, G.M., and Patil, S. (2015) conducted a comparative analysis of the efficiency of the Kisan Credit Card (KCC) scheme in Karnataka, evaluating its implementation in both commercial and cooperative banks. Their study, published in the Agricultural Economics Research Review, highlighted key differences in performance, accessibility, and financial outcomes between the two banking sectors.
- Pandey, T., Krishna, N., Vickers, V., Menezes, A., and Raghvendra, M. (2010) explored innovative payment solutions within the agricultural value chain, highlighting their role in enhancing financial inclusion and improving economic accessibility for farmers. The study discusses how these solutions can bridge the gap between farmers and financial services, improve access to credit, and streamline transactions, thereby contributing to more efficient agricultural practices and economic empowerment for rural communities.
- Dr. Satish Uplaonkar and Dr. Sharangoud Biradar (2020) looked at the payment innovation along agricultural value chains – one means of enhancing the opportunities for financial inclusion among farmers' populations for improvements to the process of making credit access easy among such farming activities; reduce financial frictions around making transaction procedures and improving

how all agriculture economic-related functions.

- Savelia Salsa Bila, Idqan Fahmi, and Suprehatin (2022) conducted a bibliometric analysis to assess the research trends and developments concerning the role played by the middlemen in agricultural marketing. Their study offers a comprehensive review of the several influencing factors regarding the intermediary's function in agricultural supply chains and useful insights into the existing body of literature on this matter.

### 3. Methods

The research employs a mixed-methods approach, combining qualitative and quantitative data to explore the role of digital payments in agriculture. It examines the involvement of middlemen in payment systems, particularly in the context of Direct Benefit Transfer (DBT) schemes, and identifies challenges such as payment failures and inefficiencies.

#### 3.1 Data Collection

##### 1. Primary Data

- **Surveys:** Farmers, stakeholders (e.g., banks, government agencies), and beneficiaries of schemes like PM-Kisan were interviewed to gather insights about their experiences with digital payment systems and challenges faced in resolving transaction failures.
- **Step 1:** Basic details of farmers were collected and a database of the same was created, Shown in Figure 2, Figure 3 & Figure 4.

- **Step 2:** Details of Government schemes and their advantages and utilization reports were studied.
- **Step 3:** Farmers for a taluk having around 25 villages were interviewed and enquired regarding the knowledge about existing schemes, digital payment modes, difficulties faced, and middlemen existence.

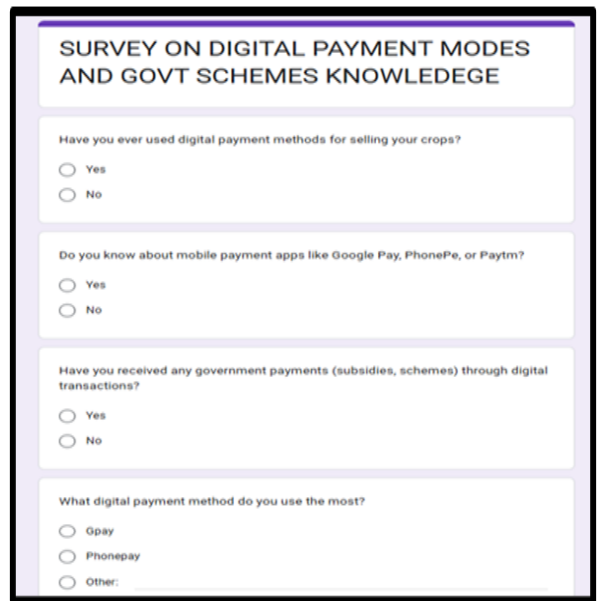


Figure 3 Survey

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Name	Contact No.	Username	Password	Taluk	District	Village	Hoballi	Post	State	Pincode	Crops	
2	M N Keshaviah	9480492232			Paryapathu	Mysore	Doddabehuru	Haranahalli	Koppa	Karnataka	571104	Com	
3	M N Manappa	9611015430			Paryapathu	Mysore	Doddabehuru	Haranahalli	Koppa	Karnataka	571104	Com	
4	H R Suresh	9032208534			Paryapathu	Mysore	Maru	Haranahalli	Koppa	Karnataka	571104	Cross, Ginger, Arecanut	
5	H R Papanna	9900813473			Paryapathu	Mysore	Maru	Haranahalli	Koppa	Karnataka	571104	Cross, Ginger, Arecanut	
6	C R Dhanak	9440129612			Paryapathu	Mysore	Cirgur	Haranahalli	Koppa	Karnataka	571104	Coffee, Arecanut, coconut	
7	K G Thilak	9442330392			Paryapathu	Mysore	Cirgur	Haranahalli	Koppa	Karnataka	571104	Paddy, coconut, com	
8	B K Laashamma	9480597999			Paryapathu	Mysore	Doddakemarahalli	Haranahalli	Koppa	Karnataka	571104	coffee, arecanut, pepper	
9	B L Ropavani	9663567301			Paryapathu	Mysore	Chikahosuru	Haranahalli	Koppa	Karnataka	571104	arecanut, paddy	
10	Basha	9501665104			Paryapathu	Mysore	Rangata	Haranahalli	Koppa	Karnataka	571104	com, ginger	
11	D C Chandrashe	9902304034			Paryapathu	Mysore	Doddaholuru	Haranahalli	Koppa	Karnataka	571104	arecanut, com, ginger	
12	Shafiq ulle khan	9902304036			Paryapathu	Mysore	Guddehosur	Haranahalli	Koppa	Karnataka	571104	Ragu, com, ginger, arecanut	
13	Ibrahim	9611510382			Paryapathu	Mysore	Guddehosur	Haranahalli	Koppa	Karnataka	571104	banana, ginger	
14	B S Ragesh	8971626155			Paryapathu	Mysore	Haranahalli	Haranahalli	Koppa	Karnataka	571104	com	
15	L S Rappa	8694007990			Paryapathu	Mysore	Kamathalli	Haranahalli	Koppa	Karnataka	571104	paddy, coffee, arecanut, pepper	
16	M R Ganabeesha	8453213276			Paryapathu	Mysore	Kamathalli	Haranahalli	Koppa	Karnataka	571104	arecanut, coffee	
17	N R Somantra	9141454108			Paryapathu	Mysore	Maru	Haranahalli	Koppa	Karnataka	571104	arecanut, coffee, coconut	
18	N R Devaiah	9482638952			Paryapathu	Mysore	Maru	Haranahalli	Koppa	Karnataka	571104	arecanut, coffee, coconut, pepper	

Figure 2 Data

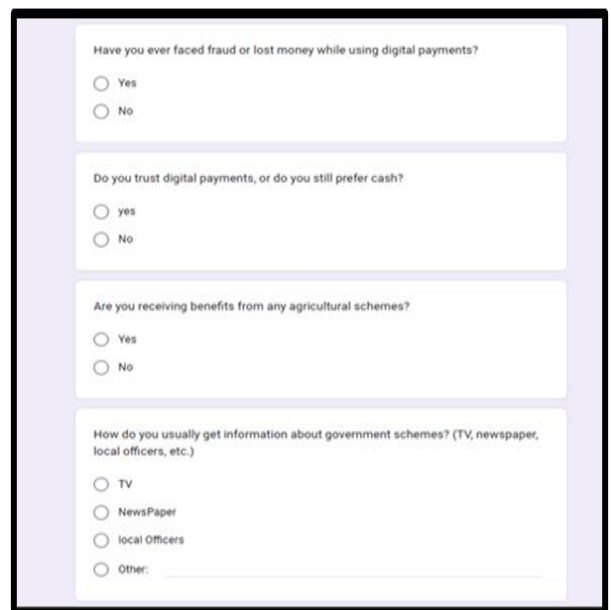


Figure 4 Photographs Relevant to The Subject of Study





Figure 5 Picture



Figure 6 Picture

## 2. Secondary Data

- **Reports and Guidelines:** Reviewed government-issued guidelines, such as the Payment Gateways and schemes, and

circulars related to DBT processes, shown in Figure 5 & Figure 6.

## 4. Effect of Middlemen

Middlemen play an intermediary role in the supply chain. While they bring a level of professionalism and efficiency into markets, they also create some problems, particularly in agriculture and digital payment systems.

### 4.1 Types of Middlemen

1. Wholesalers and Retailers– Purchase and sell goods while holding inventory (owning the goods). 2. Brokers and Real Estate Agents – Serve as intermediaries without holding inventory, earning a commission on sales [6].

### 4.2 Middlemen in Indian Agriculture

Middlemen play an important role in agricultural markets but often exploit farmers by:

- Controlling prices and taking a large share of profits.
- Withholding payments, placing farmers reliant on loans [7].
- Increased cost due to the number of transactions involved (storage, transportation, commissions).

### 4.3 Payment Systems Digital Intermediaries

Electronic payment system intermediaries include:

- Reserve Bank of India (RBI): It governs digital transactions through the enactment of laws like the Payment and Settlement Systems Act, 2007, and guidelines for UPI and prepaid wallets [8].
- National Payments Corporation of India (NPCI): It supervises digital payment systems such as UPI, IMPS, and Bharat Bill Payment System (BBPS) and enforces security features [9].
- Other Regulators: SEBI, IRDAI, and consumer protection laws ensure transparency and dispute resolution in digital payments.
- Government Payments (G2C): Governments use various methods to transfer benefits to citizens, such as:
- Direct Benefit Transfer (DBT): Uses NEFT, RTGS, and AEPS to transfer subsidies directly.

- IT-Enabled Payments: Fully digitized processes ensure faster and more transparent payments [9].

#### 4.4 Problems Caused by Middlemen

- Price Inflation: With every stage of the middleman, comes added warehousing, transport costs, and profit to the product thereby increasing its prices.
- Exploitative Practices: Farmers get cheaper while consumers are charged more money.
- Delayed Payments: Middlemen usually delay paying their farmers making them suffer due to financial breakdowns.
- Lack of Transparency: Electronic middlemen including banks and electronic payment processors were technical glitches and bureaucratic inefficiency led to delayed payments [10].

Issues related to digital payment through middlemen: DBT & NPCI 51.3% of the PM Kisan payment failures were caused by Aadhaar-related errors. 18.5% failed due to the pending state-level

correction. 5.3% failed because of banking errors [11].

#### 4.5 Recommendations for Reducing the Impact of Middlemen

- Direct Sale Strengthen: Farmers to access platforms such as eNAM or sell to end consumers directly to businesses.
- Smooth digital payment: Enhance co-ordination amongst Agencies like NPCI, RBI, and Commercial banks regarding communication issues with DBT Failures[12].
- Raise the transparency quotient Beneficiaries be able to monitor real-time about the payments, and seeding through Aadhaar with an immediate resolution of errors.
- Unified Grievance Redressal System: All DBT-related grievances should be handled through a centralized system so that they are addressed quickly.

### 5 Results & Discussions

The analyzed data and schemes are expressed as a table 1.

**Table 1 Analyzed Data and Scheme**

SL NO	Name	Digital Service or Offline Service	Through bank accounts	Schemes started in the year	Subsidy Status	Subsidy Effectiveness
1	PM-KISAN	e-scheme	Yes	February 24, 2019	Yes	PM-KISAN (Pradhan Mantri Kisan Samman Nidhi) is a government scheme that provides direct income support to farmers by transferring ₹6,000 annually in three installments.
2	Soil Health Card	Partial e-scheme	No	February 19, 2015	No	A Soil Health Card provides farmers with information about the nutrient status and pH levels of their soil, helping them make informed decisions for better crop management.
3	Pradhan Mantri Fasal Bima Yojana	e-scheme	Yes	January 13, 2016	Yes	The Pradhan Mantri Fasal Bima Yojana (PMFBY) is a crop insurance scheme aimed at providing financial support to farmers in case of crop

						loss due to natural calamities, pests, or diseases.
4	Rashtriya Krishi Vikas Yojana	Development scheme	No	August 2007	No	The Rashtriya Krishi Vikas Yojana (RKVY) aims to enhance agricultural productivity by providing financial support to states for implementing projects that promote sustainable agricultural development.
5	e-NAM	Not an e-scheme	Yes	2016	Yes	e-NAM (National Agriculture Market) is an online platform that connects farmers with buyers, enabling transparent and efficient trade of agricultural commodities across India. It integrates existing APMC (Agricultural Produce Market Committee) markets into a unified digital network for seamless transactions.
6	<u>Paramparagat Krishi Vikas Yojana</u>	Offline service	No	2015	No	The Paramparagat Krishi Vikas Yojana (PKVY) promotes organic farming by supporting farmers in adopting sustainable agricultural practices.
7	Kisan Credit Card	Hybrid	Yes	August 15, 1998	Yes	The Kisan Credit Card (KCC) is a government-backed scheme providing farmers with easy access to short-term credit for agricultural needs.
8	Pradhan Mantri Krishi Sinchayee Yojana	Not an e-scheme	No	July 1, 2015	No	The Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) aims to enhance irrigation coverage and improve water use efficiency in agriculture through the construction of irrigation infrastructure and better water management practices.

The table summarizes a range of agricultural schemes, not counting their mode of service (digital or offline), linkage with bank accounts, launch year, presence of subsidies, and effectiveness. Interestingly, e-schemes such as PM-KISAN, PMFBY, and e-NAM work through direct benefit transfers and digital transactions with fewer middlemen, while developmental and offline schemes like RKVY and PKVY primarily emphasize infrastructure and sustainable farming practices without direct digital inclusions. Subsidies are effective in different ways; they directly support

some farmers financially, whereas others help them through advisory or infrastructural developments.

### Conclusion

Digital payment systems are minimizing the role of middlemen by enabling direct transactions between farmers and consumers. With platforms like UPI, Paytm, Razorpay, and DBT-based schemes, financial benefits and payments reach farmers without intermediaries, ensuring fair pricing and reducing exploitation. Government initiatives such as PM-KISAN and e-NAM further support this shift by facilitating direct fund transfers and digital





marketplaces, cutting down unnecessary transaction layers. While challenges like technical failures and digital literacy gaps remain, the adoption of these systems is gradually improving financial transparency and empowering farmers with greater control over their earnings.

### Acknowledgements

The authors thank the DSCASC management for their enormous support in our subject of study. Also, thank the RSP HUB for their continued motivation and support of the reference community.

### References

- [1]. Jainuddin, S. M., Hiremath, G.M. and Patil, S. (2015) Efficiency of Kisan Credit Card (KCC) Scheme in Karnataka: A Comparative Study of Commercial and Co-operative Banks. *Agricultural Economics Research Review*. 28(2): 351-357.
- [2]. Pandey, T., Krishna, N., Vickers, V., Menezes, A. and Raghvendra, M. (2010) Innovative Payment Solutions in Agricultural Value Chain as a Means for Greater Financial Inclusion. *Agricultural Economics Research Review*. 23: 527-534.
- [3]. Manisha Lawankar , Rohit Shelar and Bolleboina Shilpa (2023). Revolutionizing Indian Agriculture: The Rise of Digital Payments for Farmers. *AgriCos e-Newsletter ,Open Access Multidisciplinary Monthly Online Magazine*, Volume: 04 ,Article No: 12,ISSN: 2582-7049.
- [4]. Arghyadeep Das,Neela Madhav Patnaik (2020). Innovations in Agricultural Credit Disbursement and Payment Systems for Financial Inclusion in Rural India. *International Journal of Current Microbiology and Applied Sciences* ISSN: 2319-7706, Volume 9, *Int.J.Curr.Microbiol.App.Sci* (2020) 9(2): 11-18, doi : <https://doi.org/10.20546/ijcmas.2020.902.003>.
- [5]. Ranjan, R. (2017). Challenges to farm produce marketing: A model of bargaining between farmers and middlemen under risk. *Journal of Agricultural and Resource Economics*, 42(3), 386405,<https://doi.org/10.22004/ag.econ.264068>.
- [6]. Dr. Satish Uplaonkar, Dr. Sharangoud Biradar(2020). Middleman Growth In Agricultural Field And Its Impact On Farmers. *IJCRT-An international open access,Peer-reviewed,Refereed journal*, Volume 8, ISSN: 2320-2882.
- [7]. ONOguoma, Nkwocha, Ibeawuchi (2010). Implications of middlemen in the supply chain of agricultural products. *Journal of Agriculture and Social Research (JASR)* ,VOL. 10, No. 2.
- [8]. Savelia Salsa Bila, Idqan Fahmi, Suprehatin(2022). A BIBLIOMETRIC ANALYSIS OF MIDDLEMEN RESEARCH: A CLOSER LOOK AT AGRICULTURAL MARKETING. *Business Review and Case Studies*, Vol. 3 No. 3, Permalink/DOI: <http://dx.doi.org/10.17358/brcs.3.3.249>, EISSN: 2721-6926.
- [9]. van Driel H (2003). The role of middlemen in the international coffee trade since 1870: The Dutch case. *Bus Hist.* 45(2):77–101. <https://doi.org/10.1080/713999313>.
- [10]. Savelia Salsa Bila, Idqan Fahmi, Suprehatin(2022). A Bibliometric Analysis Of Middlemen Research: A Closer Look At Agricultural Marketing. *Business Review and Case Studies*, Vol. 3 No. 3, Permalink/DOI: <http://dx.doi.org/10.17358/brcs.3.3.249>, EISSN: 2721-6926.
- [11]. van Driel H (2003). The role of middlemen in the international coffee trade since 1870: The Dutch case. *Bus Hist.* 45(2):77–101. <https://doi.org/10.1080/713999313>.
- [12]. Koshy NS, Jagadeesh K, Govindan S, Sami N (2021).Middlemen versus middlemen in agri-foodsupply chains in Bengaluru, India: Big data takes a byte. *Geoforum*,127 November:293–302, <https://doi.org/10.1016/j.geoforum.2021.11.013>.