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Mohit Rangi
Assistant Professor, Department of Public Administration, PIG Government College for Women, Jind, Haryana, India

Dr. Rajesh Kundu
Assistant Professor, Department of Public Administration, Maharshi Dayanand University, Rohtak, Haryana, Haryana, India

Corresponding Author:
Mohit Rangi
Assistant Professor, Department of Public Administration, PIG Government College for Women, Jind, Haryana, India

Digitising agriculture procurement in Haryana: An empirical study of Meri Fasal Mera Byora and E-Kharid Portal

Mohit Rangi and Rajesh Kundu

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Abstract
The digitisation of agricultural procurement has become a key policy focus aimed at enhancing transparency, efficiency, and accountability in India's mandi system. This paper examines two flagship digital initiatives in Haryana-Meri Fasal Mera Byora (MFMB) and e-Kharid, which together manage crop registration and public procurement operations. Drawing on primary data from multiple stakeholder groups including farmers, commission agents, labourers, market committee officials, and procurement agency representatives, the study explores system adoption, technical challenges, payment practices, and stakeholder perceptions. The findings reveal widespread usage of digital platforms but also highlight persistent issues such as portal disruptions, procedural complexities, and delays in payment disbursement. Despite these operational gaps, most institutional respondents view digital reforms as beneficial in improving procurement governance. The study concludes that while digital systems have strengthened core processes, further improvements in infrastructure, user support, and system reliability are essential to realise their full potential in agricultural marketing.

Keywords: Digital procurement, Meri Fasal Mera Byora, e-kharid portal, direct benefit transfer (DBT), e-governance, MSP procurement

Introduction
India's agriculture sector forms the backbone of its economy, employing over 40% of the workforce and significantly contributing to rural incomes and food security. A crucial component of the government's agricultural policy is the public procurement system, which assures Minimum Support Prices (MSP) for major foodgrains and supplies subsidised food under the Public Distribution System (PDS). However, this system, while essential, has historically faced challenges related to transparency, efficiency, and inclusivity, especially at the mandi (market) level. Manual procedures, delayed payments, irregular lifting of crops, arbitrary deductions, and manipulation of sale records have often plagued the procurement process. Recognising these structural issues, the Government of India and various state governments have embraced digitisation as a strategic intervention. In recent years, several e-governance initiatives in agriculture have aimed to modernise the procurement value chain. Prominent among these are Agricultural Marketing Information Network (AGMARKNET) (for market price discovery), e-NAM (for market integration), and more recently, the Central Foodgrain Procurement Portal (CFPP), which seeks to harmonise state-level procurement portals into a single national monitoring platform.

Haryana, a leading contributor to India's foodgrain buffer stock, has been proactive in deploying digital platforms to manage its procurement process. Two major portals have become central to this transformation: Meri Fasal Mera Byora (MFMB) and e-Kharid. While MFMB focuses on pre-harvest farmer registration and land-crop data, e-Kharid facilitates post-harvest procurement processes such as crop arrival, gate pass generation, weighment, quality testing, and payment disbursal. Together, these portals form the backbone of Haryana's digitised procurement infrastructure. This paper explores the institutional logic, design, and implementation of these digital systems, while assessing their impact and effectiveness in achieving greater transparency, accountability, and farmer empowerment. Drawing on secondary data, official reports, and existing literature, the study sets the stage for an empirical investigation based on primary stakeholder inputs, which is covered in the second part of the paper.

Early Digitisation: Agmarknet

The Agricultural Marketing Information Network (AGMARKNET), launched by the Ministry of Agriculture, was among the first major digital interventions. This ICT-based platform links agricultural produce markets (mandis) across India, enabling the speedy dissemination of real-time market information such as commodity prices and arrivals, to farmers, traders, and other stakeholders. AGMARKNET also provides international price trends, supports marketing research, and strengthens the interface with farmers by offering information in regional languages. It aims to empower farmers to respond to market dynamics and adopt better marketing practices.

Electronic National Agriculture Market: e-NAM

Building on these foundations, the government launched the National Agriculture Market (e-NAM) in 2016. e-NAM is a pan-India electronic trading portal that connects Agricultural Produce Market Committees (APMCs) and mandis, creating a unified national market for agricultural commodities, key features include:

- Online trading and bidding for farmers and traders, accessible from any location.
- Quality assaying using AI-based machines, enabling informed bidding.
- E-payment settlement directly into farmers' accounts.
- Single-window access to market information, arrivals, and prices.
- Integration of over 1,389 mandis and more than 90 commodities, facilitating better price discovery and reducing information asymmetry.

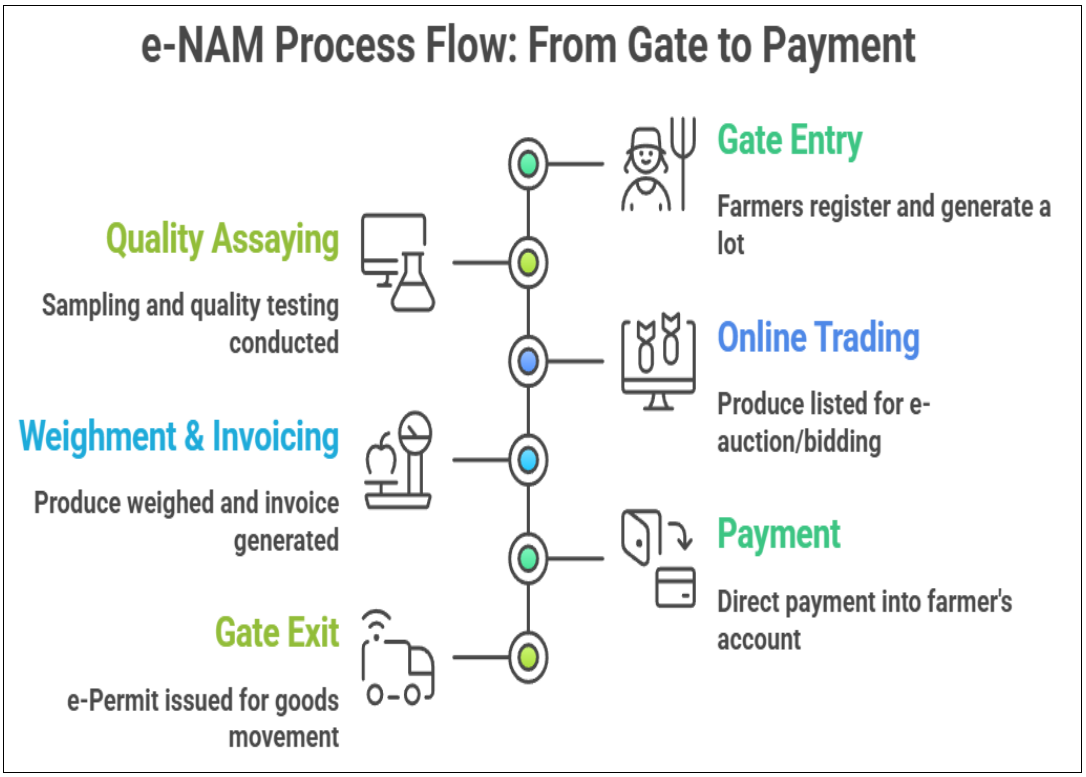

Fig 1: E-NAM Process

As of October 31, 2024, the e-NAM platform had integrated 1,389 mandis across 23 states and 4 Union Territories, with 1.78 crore farmers, 2.62 lakh traders, and over 4,250 Farmer Producer Organizations registered. The cumulative value of agricultural produce traded on e-NAM reached ₹3.79 lakh crore, with more than 200 commodities available for online trading. In the first four months of 2024-25 alone, trade turnover surpassed ₹23,500 crore, reflecting a 13% year-on-year increase.

Public Procurement: Central Foodgrains Procurement Portal (CFPP)

While AGMARKNET and e-NAM primarily serve private trade and price discovery, the Central Foodgrain Procurement Portal (CFPP) represents a major step in digitising public procurement. Developed by the Department of Food and Public Distribution, CFPP aggregates procurement data from 24 state portals, providing:

- Real-time monitoring and data accuracy across states.
- Online farmer registration and integration of land records.
- Digitised mandi operations and direct online transfer of Minimum Support Price (MSP) payments to farmers.
- Computerised warehouse management for real-time visibility of foodgrain stocks.
- Uniformity and transparency in procurement operations, facilitating financial reconciliation and data-driven policymaking.

The CFPP addresses longstanding challenges such as data fragmentation, fraudulent reporting, payment delays, and lack of traceability in public procurement. Its integration with state systems and direct payment features have improved efficiency and accountability in the distribution of food grains.

Haryana's Digital Procurement Framework: An Analytical Overview

In Haryana, one of the country's leading contributors to the central grain pool, public procurement has long been channelled through the mandi system under the framework of regulated markets. However, the state's pre-digital procurement regime was marked by several operational and ethical deficiencies that hindered efficiency, equity, and trust in the system. Manual recordkeeping, reliance on middlemen, fragmented inter-departmental coordination, and procedural opacity created significant bottlenecks. Farmers often had to make multiple visits to mandis for crop registration, endure unauthorized deductions by commission agents, and face delays in crop lifting and payments. Moreover, monitoring of actual cultivation data was largely unreliable, depending on outdated or estimated records provided by patwaris rather than field-based assessments. This lack of accurate crop forecasting resulted in logistical mismatches during procurement seasons and inefficiencies in resource allocation. In addition, the pre-digital system allowed several avenues for misuse. The J-form, a critical document that serves as proof of sale in the mandi, was occasionally misused to route unaccounted income through the guise of agricultural earnings. Such practices not only damaged the integrity of the procurement system but also limited the scope of accountability. The dominance of commission agents in financial transactions created further barriers for small and marginal farmers, many of whom lacked negotiation power or real-time information about their payments. These systemic inefficiencies and malpractices provided a compelling impetus for the state to adopt digital solutions aimed at enhancing transparency, accountability, and efficiency in agricultural procurement.

The need for digital reform

Recognising these deeply entrenched issues, the Government of Haryana initiated a digital transformation of its agricultural procurement framework with an aim to:

- Eliminate manual processes and human error through automation.
- Create a unified digital database of land, crop, and farmer records.
- Ensure Direct Benefit Transfers (DBT) to farmers' bank accounts, bypassing intermediaries.
- Monitor procurement operations in real-time and enable data-driven decision-making.
- Empower farmers through simplified access to information and services.

The COVID-19 pandemic served as a crucial turning point, reinforcing the urgency for contactless, real-time interfaces to maintain continuity in food procurement and delivery systems. The state responded by developing and implementing two key portals MFMB and e-Kharid, to digitize the pre-harvest and post-harvest phases of procurement, respectively.

Meri Fasal Mera Byora (MFMB) Portal

MFMB functions as a comprehensive pre-harvest registration system, capturing critical data such as farmer identity, land records, crop details, and bank information. In 2017, farmers lacked access to any online registration facility. By 2018, the process moved towards partial digitization printed forms for crops like wheat and mustard were collected by officials and manually uploaded onto the MFMB portal, but land verification remained manual and disconnected from revenue records. In 2019, the platform became fully online, marked a significant shift towards data-driven governance in Haryana's agricultural sector, integrating with revenue land records and enabling auto-verification through *e-Girdawari* the Agriculture Department, and HARSAC. This verified database not only ensures that procurement benefits reach genuine local cultivators but also integrates seamlessly with central and state schemes like PM-KISAN, crop insurance, and input subsidies, thereby serving as a multipurpose digital platform. By preventing non-local entry and ensuring traceability, MFMB has laid a strong foundation for targeted and equitable procurement planning.

Key features of MFMB include

- **Unified Registration System:** Farmers are required to digitally register crop details each season, subject to verification by patwaris and agricultural officials.
- **Single Source of Verified Information:** The database supports planning by providing real-time insights into expected crop arrivals, aiding in manpower deployment and procurement centre allocation.
- **Eligibility for Benefits:** Registration is mandatory for receiving MSP payments, crop insurance claims, and compensation under schemes like PM-KISAN, thereby linking welfare with verified data.
- **Out-of-State Registration Monitoring:** Farmers from outside Haryana are registered separately, allowing the state to prioritise procurement for its own cultivators.

Table 1: Number of farmers registered on MFMB season-wise

Season	Number of Farmers	Area Registered (in acres)
Kharif 2020	914,283	5,060,758
Rabi 2020-21	938,195	6,151,992
Kharif 2021	796,272	5,150,943
Rabi 2021-22	894,515	5,940,830
Kharif 2022	771,046	5,290,870
Rabi 2022-23	852,246	5,734,705
Kharif 2023	928,739	6,360,301
Rabi 2023-24	957,268	6,411,913

Source: RTI 2024, Department of Agriculture & Farmers' Welfare

The data on farmer registrations and cultivated area under the Meri Fasal Mera Byora (MFMB) portal from Kharif 2020 to Rabi 2023-24 reveals a steady and substantial engagement with the digital procurement system, with farmer registrations ranging from around 770,000 to over 957,000 and total registered area crossing 6.4 million acres in the latest Rabi season. However, a clear seasonal variation is evident: Rabi seasons consistently report higher registrations and area coverage compared to Kharif. This discrepancy can be attributed to the nature of crops cultivated and their procurement patterns. In Rabi, crops such as wheat, mustard, and gram are predominantly procured by government agencies through mandis under the MSP regime, which incentivizes formal registration. Conversely, in Kharif, crops like Basmati rice and cotton though widely cultivated, are often sold directly to private traders, bypassing mandis and formal procurement channels. As a result, many farmers cultivating these crops do not register on MFMB, leading to relatively lower figures in Kharif seasons.

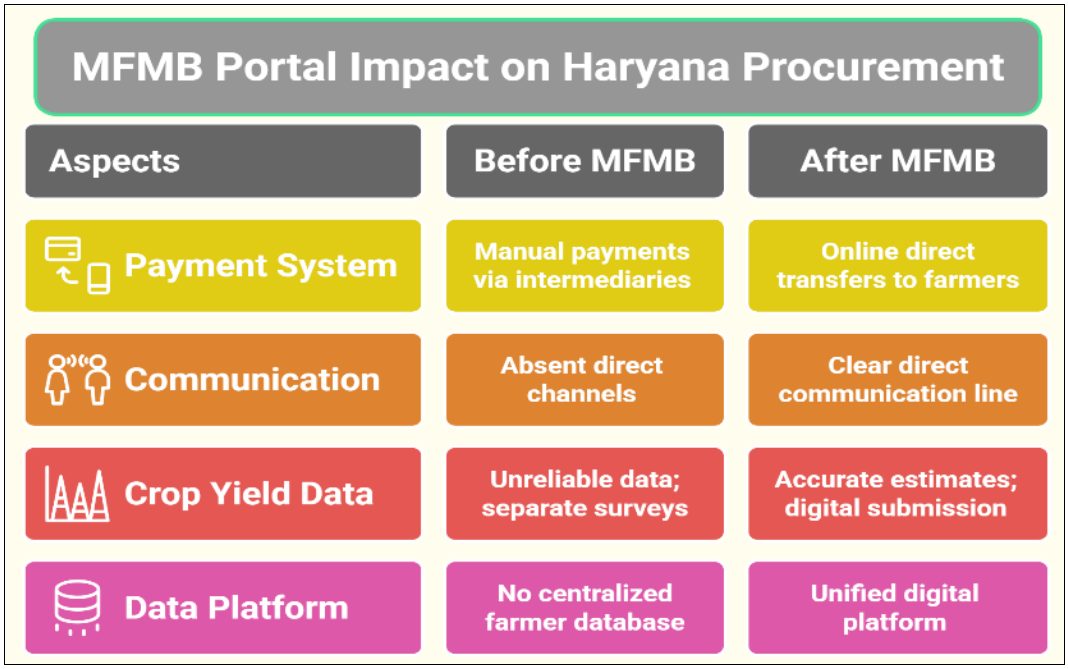

Fig 2: Before & After MFMB Portal

E-Kharid Portal

Complementing MFMB, the e-Kharid portal operational since 2016, addresses the post-harvest phase by digitising every stage of the procurement process. Developed by the Haryana State Agricultural Marketing Board in collaboration with HAFED, e-Kharid incorporates biometric verification, electronic weighment, real-time data recording, and automatic J-Form generation. Importantly, it facilitates Direct Benefit Transfer (DBT) of the Minimum Support Price (MSP) directly into farmers' bank accounts, thereby eliminating manual paperwork, reducing opportunities for discretion and corruption, and ensuring timely, transparent payments.

Notable features of e-Kharid portal include:-

- **Real-Time Transaction Logging:** Every step from arrival to weighment to final payment, is captured on the portal, enabling real-time oversight.
- **Direct Benefit Transfer (DBT):** Farmers receive payments directly into their bank accounts, reducing delays and curbing exploitation by intermediaries.
- **Digital J-Forms:** Automatically generated once procurement is completed, these serve as verifiable proof of sale and are linked with farmer records.
- **Operational Transparency:** The portal facilitates end-to-end traceability, improving warehouse management, dispatch planning, and audit compliance.

The rollout of both portals was conducted in a phased manner across districts. Training sessions were organized for patwaris, commission agents, procurement officials, and market staff. To promote inclusivity, Common Service Centres (CSCs) were deployed to assist digitally illiterate farmers, especially in rural areas. These centres became critical access points for farmers needing help with portal login, registration, and document uploads. Initial implementation challenges such as portal outages, false registrations, and bandwidth limitations, were addressed through real-time IT support, daily reviews during peak seasons, and performance incentives for CSC operators. This adaptive governance approach ensured the continuous improvement of platform functionalities based on field-level feedback. Collectively, Haryana's digital procurement framework intends to exemplifies how state-level innovation can address entrenched challenges in agricultural marketing and procurement, setting a benchmark for other regions in India.

Sampling

The study employed purposive and stratified sampling to capture perspectives from all major stakeholders in Haryana's agricultural procurement system. A total of 400 respondents were selected from ten principal yards (mandi), including 250 farmers, 100 commission agents, 30 market committee officials, and 20 procurement agency personnel. Farmers were surveyed on MFMB registration, mode of registration, issues faced, and payment experience under e-Kharid. Arhtiyas were asked about the impact and technical challenges of the portals. Market officials and procurement agency representatives provided insights into implementation and coordination. This diverse sample ensured a comprehensive understanding of the system's digital transformation.

Results and Discussions

Registration on the Meri Fasal Mera Byora (MFMB) portal is a mandatory step for farmers to participate in the government's MSP-based procurement process. It serves the purpose of documenting crop details, land ownership, and bank information to enable transparent procurement and direct benefit transfers.

Table 2: Registration of Crops on MFMB portal

		Frequency	Percent
MFMB registration	No	8	3.2%
	Yes	230	92.0%
	Not aware (NA)	12	4.8%
	Total	250	100.0%

Source: Field Survey

The data reveals that an overwhelming majority (92%) of the surveyed farmers have completed registration on the MFMB portal an essential prerequisite for participating in mandi-based procurement under the MSP regime. A minimal proportion (3.2%) reported being unregistered, and 4.8% were unaware of the portal or the requirement. This high rate of registration reflects effective outreach and institutional enforcement of digital compliance, indicating that most farmers are integrated into the formal procurement mechanism facilitated by MFMB.

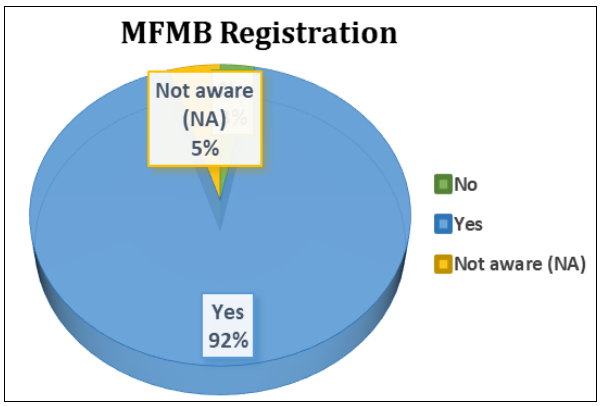

Fig 3: MFMB Registration

Registration on MFMB by Channel

Understanding the mode of MFMB registration provides insights into digital accessibility and outreach effectiveness. This table captures the distribution of registration methods, including self-registration, Common Service Centres (CSCs), and assistance by commission agents, highlighting the vital facilitative role of CSCs in rural digital governance.

Table 3: Registration on MFMB by

		Frequency	Percent
Registration on MFMB by	Self	76	30.4%
	CSC	151	60.4%
	Not Registered/NA	18	7.2%
	Commission agent	5	2.0%
	Total	250	100.0%

Source: Field Survey

The data highlights that 60.4% of farmers relied on Common Service Centres (CSCs) to register on the MFMB portal, underscoring the pivotal role of CSCs in bridging the digital access gap in rural areas. About 30.4% registered independently, indicating a moderate level of digital awareness among farmers. Only 2% used commission agents, and 7.2% were either unregistered or unaware, suggesting some remaining gaps in outreach or accessibility. Overall, the findings reflect growing digital integration in procurement processes, supported by institutional facilitation.

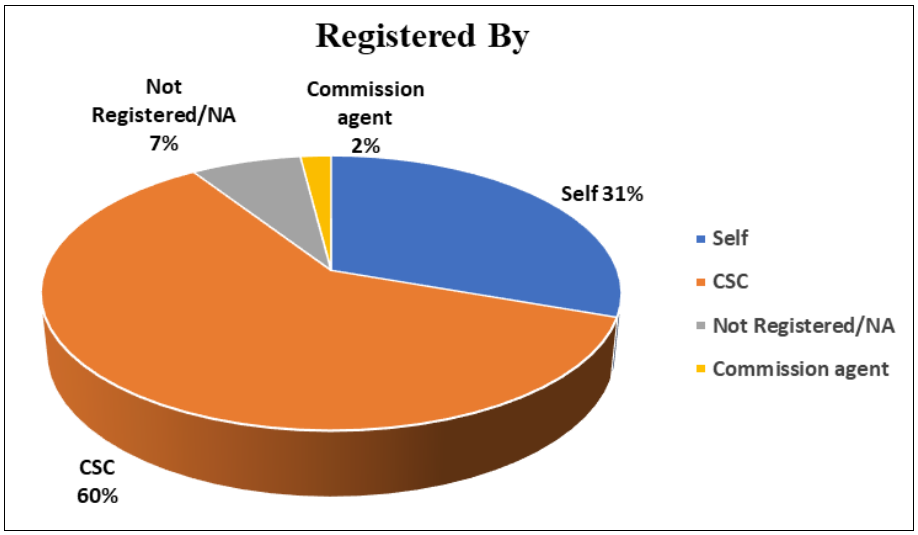

Fig 4: Registration on MFMB by

Problem faced while registering crops on MFMB portal

Farmers reported a range of issues while registering on the MFMB portal, including difficulties with the portal interface, errors requiring corrections or edits, and instances of false registrations. These challenges often stem from limited digital literacy, inadequate system responsiveness, and lack of on-ground technical support. Such issues can hinder accurate data entry and delay farmers' access to procurement-related services.

Table 4: Problem faced while registering crops on MFMB portal

		Frequency	Percent
MFMB problem	No	144	57.6%
	Portal Interface Issue	38	15.2%
	False registration	23	9.2%
	Correction/edit issue	27	10.8%
	Not Registered/NA	18	7.2%
	Total	250	100.0%

Source: Field Survey

The data in Table 4 highlights that while the majority of farmers (57.6%) did not face difficulties during registration on the MFMB portal, a considerable proportion experienced operational challenges. Specifically, 15.2% encountered portal interface issues, and 10.8% faced problems editing or correcting entries pointing to technical limitations in the system. Additionally, 9.2% reported instances of false registration, raising concerns about data authenticity and access to procurement benefits. These insights underscore the need for improved digital infrastructure, user support mechanisms, and monitoring to enhance the efficiency and reliability of the MFMB platform.

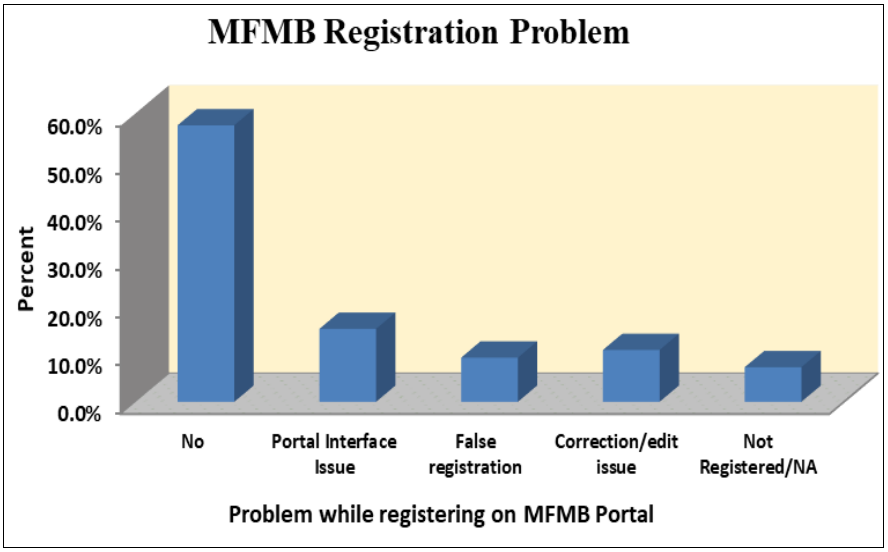

Fig 5: MFMB Registration Problem

Payment method

The mode of payment is a key indicator in agricultural marketing research, offering insights into farmers' financial independence, their reliance on commission agents, and the efficiency of direct payment mechanisms. Within Haryana's mandi procurement system, this variable highlights the transition from traditional agent-based payments to digitized, direct transfers enabled by platforms like e-Kharid and Meri Fasal Mera Byora (MFMB). It also reflects the degree of farmers' financial inclusion and their awareness of the advantages associated with transparent, timely payments.

Table 5: Preferred Payment method by Farmers

		Frequency	Percent
Payment method	Direct	126	50.4%
	Through Agent	32	12.8%
	Doesn't matter	92	36.8%

Source: Field Survey

The data shows that 50.4% of farmers prefer direct payments, reflecting growing trust in digital transfers and reduced reliance on intermediaries. Only 12.8% still prefer payments through commission agents, suggesting a decline in agent-mediated financial transactions. Meanwhile, 36.8% of respondents express no strong preference, likely emphasizing timely payments over the mode of transfer. These findings indicate gradual but significant acceptance of direct payment mechanisms facilitated by platforms like e-Kharid and MFMB.

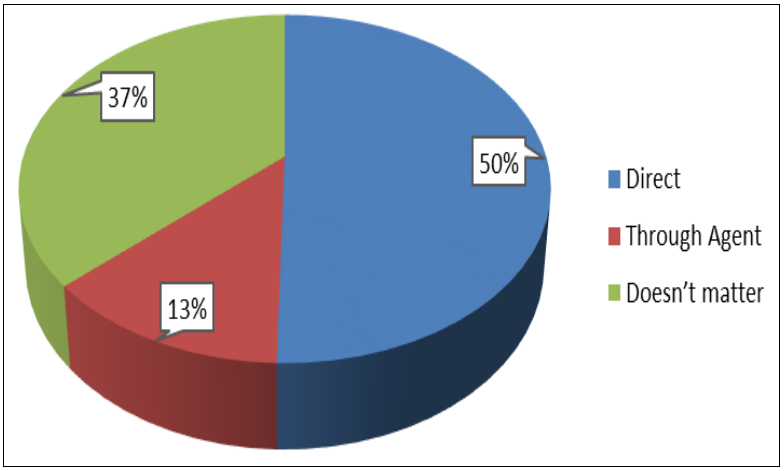

Fig 6: Payment method

Payment duration

Timely payment is a critical aspect of the procurement process under Haryana's policy, which mandates disbursal within 72 hours of generating the J-form. The table reflects actual payment timelines experienced by farmers, shedding light on ground-level implementation of this policy.

Table 6: Payment duration

		Frequency	Percent
Payment duration	Within 3 days	104	41.6%
	3 to 5 days	94	37.6%
	More than 5 days	52	20.8%
	Total	250	100.0%

Source: Field Survey

The findings show that 41.6% of farmers received payments within the stipulated time frame. However, 37.6% experienced a delay of 3 to 5 days, and 20.8% faced delays beyond 5 days. These delays suggest operational inefficiencies in the post-sale processes such as lifting and verification, especially in high-arrival mandis. Persistent delays, despite digital mechanisms, undermine farmer confidence and can compel them to rely on informal credit or distress sales, defeating the core objective of timely income assurance.

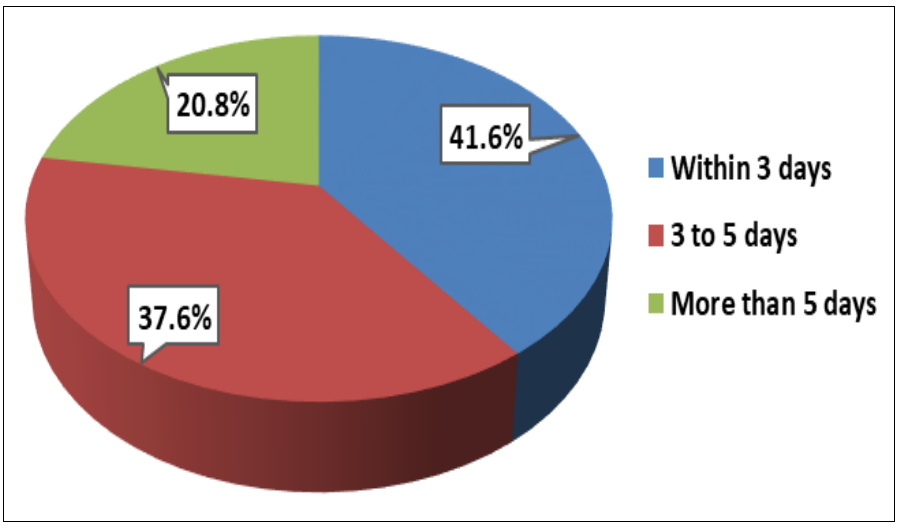

Fig 7: Payment duration

Impact of digital tools and technology on procurement operations

This variable captures the perceived effectiveness of digital tools like MFMB, e-Kharid, and e-NAM in improving procurement operations. As procurement becomes increasingly digitized, it is essential to evaluate how such platforms impact transparency, efficiency, and service delivery.

Table 7: Impact of digital tools and technology on procurement

		Frequency	Percentage (%)
Impact of Digital Tools and Technology on Procurement Operations	Significant improvement	114	76.0%
	Moderate improvement	24	16.0%
	Minimal impact	12	8.0%
	Negative impact	0	0.0%
	Total	150	100%

Source: Field Survey

The data reveals that a substantial majority (76%) of the respondents including commission agents, market committee officials, and procurement agency personnel, perceived a significant improvement in procurement operations due to the adoption of digital tools such as the e-Kharid portal, MFMB, and online documentation systems. This strong endorsement reflects growing institutional confidence in digital reforms. An additional 16% acknowledged moderate improvement, suggesting some gains tempered by operational or contextual limitations. Only 8% reported minimal impact, and none experienced negative consequences. The findings highlight a broadly positive reception toward digitization across institutional stakeholders, reinforcing the need for continued investment, troubleshooting, and system refinement to further enhance the transparency, speed, and efficiency of agricultural procurement processes.

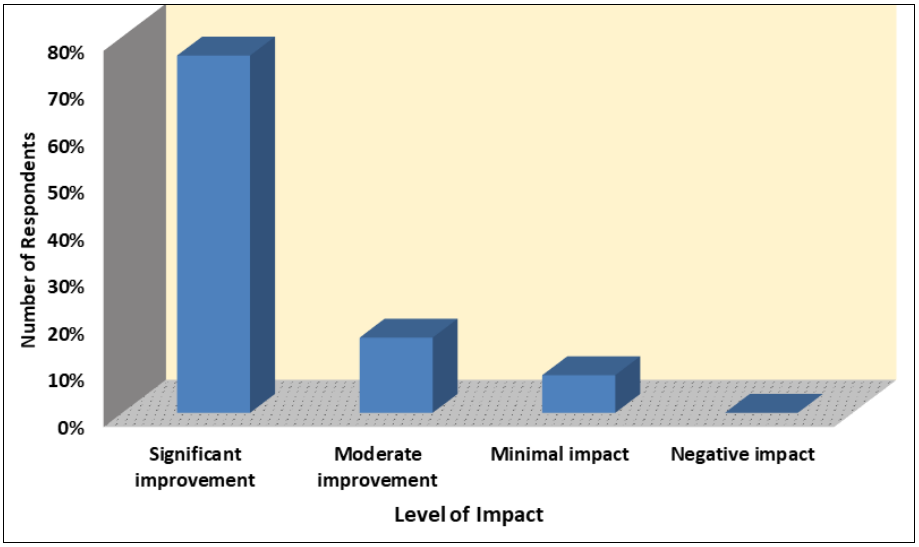

Fig 8: Impact of digital tools and technology on procurement

Technical glitches in e-Kharid disrupting procurement

In a digitised procurement ecosystem, the reliability and uninterrupted functioning of digital platforms like the e-Kharid portal are critical for ensuring smooth operations in agricultural markets. Any recurring technical glitches can delay transactions, disrupt real-time coordination among stakeholders, and erode trust in the system.

Table 8: Frequency of technical glitches in e-kharid disrupting procurement (N=100)

	Response Option	Number of Respondents	Percentage (%)
Frequency of technical glitches in e-Kharid disrupting procurement	Frequently	71	47.3%
	Occasionally	48	32.0%
	Rarely	31	20.7%
	Never	0	0.0%
	Total	150	100.0%

Source: Field Survey

The data reveals that technical glitches in the e-Kharid portal continue to pose operational challenges during procurement. Nearly 47% of respondents reported facing disruptions frequently, indicating a recurring issue that could undermine the efficiency of digital procurement mechanisms. An additional 32% experienced glitches occasionally, while 21% reported such issues as rare. Importantly, no respondent indicated that glitches were never a problem, reflecting a widespread presence of technical inefficiencies. These findings highlight the need for robust IT support, real-time troubleshooting mechanisms, and system upgrades to ensure seamless functioning of digital platforms central to procurement operations.

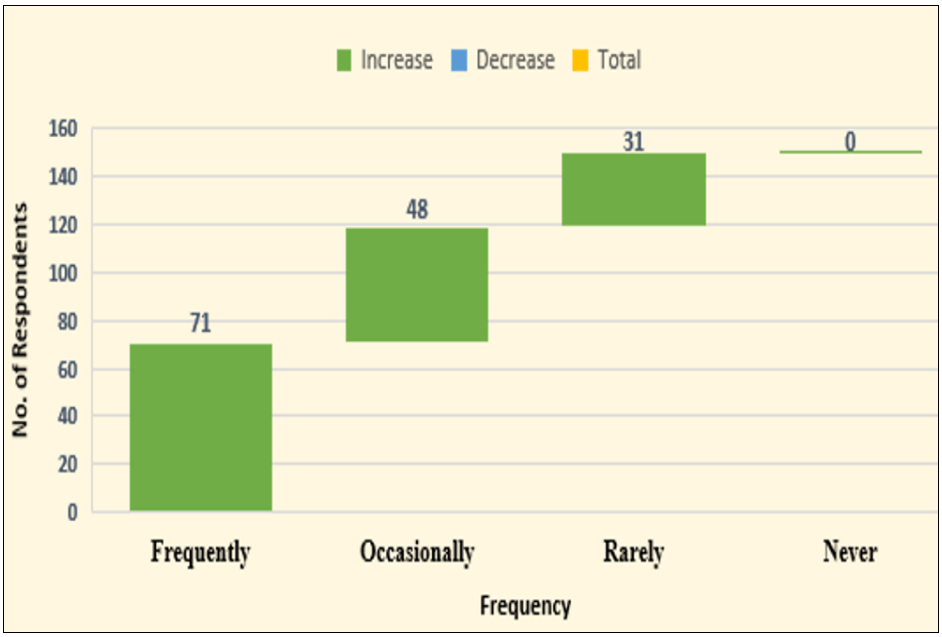

Fig 8: Technical Glitches in e-Kharid Portal

Summary and Conclusions

The findings of this study reinforce the transformative potential of digital platforms MFMB and e-Kharid, in modernizing Haryana's agricultural procurement system. Drawing upon the theoretical framework of digital governance and public service delivery reform, the results indicate that these platforms have significantly improved transparency, operational efficiency, and farmer inclusion. High MFMB registration rates among farmers highlight successful institutional outreach and compliance, while the extensive use of Common Service Centres (CSCs) emphasizes their critical role in bridging rural digital access gaps. However, issues such as false registration, portal interface difficulties, and error correction constraints point to continuing implementation challenges. The preference for direct digital payments among farmers, along with moderate but growing digital literacy, reflects increased trust in formal channels. However, delays in payment disbursement, despite the integration of digital processes signal gaps in ground-level coordination, particularly in crop lifting and J-form processing. Furthermore, feedback from institutional stakeholders revealed strong support for the reforms, though recurring technical glitches in the e-Kharid portal remain a key bottleneck, affecting confidence and operational flow. The implementation of MFMB and e-Kharid marks a paradigm shift in Haryana's procurement governance i.e., minimizing paperwork, building a centralized farmer-crop database, and enhancing accountability, but the persistence of systemic constraints suggests that the reform process is still evolving.

To consolidate these digital gains, Haryana must address remaining gaps with practical, system-responsive reforms. Real-time IT support in mandis especially during peak procurement seasons, would help reduce disruption from technical glitches. Comprehensive and continuous training for CSC operators, market officials, and commission agents should be institutionalized to ensure uniform digital literacy and smooth operational execution. Streamlining the MFMB correction mechanism would empower farmers to manage their data independently and reduce their reliance on intermediaries. Linking crop lifting with J-form generation in real time could address delays in payment, thereby improving compliance with the 72-hour policy mandate. Upgrading internet infrastructure in rural procurement zones and establishing mandi-level dashboards for local problem-solving would enhance responsiveness and trust. These grounded improvements, tailored to Haryana's context, can strengthen the digital procurement architecture and position the state as a model for replicable reforms in India's agri-governance landscape.

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