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Bridging the Gap of Credit: A Micro-Level Analysis of Kisan Credit Card (KCC) in Prayagraj District

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Abstract

This study examines the effectiveness of the Kisan Credit Card (KCC) scheme in expanding institutional credit access and improving agricultural productivity among small and marginal farmers in Prayagraj district, Uttar Pradesh. Adopting a mixed-methods approach, the research integrates structured surveys of 120 respondents with qualitative insights from focus group discussions (FGDs) and stakeholder interviews. Quantitative findings reveal that 79.2% of KCC beneficiaries were male, indicating persistent gender disparities in formal credit access, while 61.7% were marginal landholders, highlighting structural vulnerability within the rural credit system. Awareness of core scheme components such as loan validity (87%) and interest subvention (76%) was high, but digital adoption remained limited—only 54.2% of farmers used RuPay cards regularly, and 42% were aware of embedded insurance benefits. Cross-tabulation and correlation analyses demonstrate significant disparities in credit utilization by gender and landholding, and a strong positive relationship ($r = 0.91$) between timely credit disbursement and crop yield improvement. Thematic evidence further exposes institutional bottlenecks, including Aadhaar mismatches, digital illiteracy, and gender-based constraints. The findings reinforce the **credit constraint hypothesis**, underscoring the importance of aligning KCC with complementary programs such as **PM-KISAN**, **PMFBY**, and **Self-Help Group (SHG)** initiatives. The study advocates for a shift toward **user-centric financial inclusion models** under KCC 2.0, integrating gender sensitivity, digital literacy, and institutional accountability.

Keywords

Kisan Credit Card (KCC); Agricultural Credit; Financial Inclusion; Rural Credit; Smallholder Farmers; Digital Financial Services; Gender Disparities

1. Introduction

Agriculture continues to serve as the backbone of India's economy, supporting nearly half of the population and contributing approximately 14% to national GDP (NITI Aayog, 2023). Timely and affordable access to credit remains pivotal for ensuring farm productivity, technological adoption, and livelihood resilience among small and marginal farmers. Recognizing this, the **Government of India**, in collaboration with the **Reserve Bank of India (RBI)** and **NABARD**, launched the **Kisan Credit Card (KCC)** scheme in 1998. Designed as a simplified, flexible, and interest-subsidized credit mechanism, the KCC has since evolved to encompass allied agricultural activities, consumption needs, and digital integration through **KCC 2.0**.

Despite its extensive coverage, gaps remain in the KCC scheme's outreach and operational efficiency. Challenges persist in **timely disbursement**, **digital adoption**, and **gender inclusivity**, particularly in states such as Uttar Pradesh, where smallholder dependency on institutional credit is high but financial literacy remains low. Prayagraj district, with its agrarian diversity, policy exposure, and significant KCC uptake, serves as an ideal case for localized empirical assessment. The present study thus seeks to evaluate the implementation effectiveness, usage patterns, and constraints of the KCC scheme in Prayagraj, using an integrated analytical framework that combines quantitative evidence with qualitative field narratives.

2. Literature Review

Institutional credit has long been recognized as a cornerstone of agricultural transformation and rural financial inclusion in India. **Rao and Tripathi (2001)** argue that access to formal credit bridges working capital gaps, enabling the adoption of modern inputs and reducing dependence on informal moneylenders. The introduction of the **Kisan Credit Card**

(KCC) scheme in 1998 was a landmark policy intervention, simplifying documentation and providing farmers with revolving credit facilities (Faruqui, 2001).

However, studies reveal persistent implementation bottlenecks and unequal access. **Chanda (2012)** identified delays in card issuance, inadequate targeting, and underutilization of credit limits, particularly among small and marginal farmers. More recent assessments (e.g., **NABARD, 2023**) highlight the uneven regional distribution of KCC coverage, with northern and eastern states lagging behind due to administrative inefficiencies and limited digital integration.

The **digital transformation of KCC 2.0**, incorporating RuPay cards and online reapplication features, aimed to enhance accessibility and transparency. Yet, **Chakrabarty and Kumar (2020)** caution that digital inclusion remains uneven due to infrastructural constraints and low smartphone penetration in rural areas. Similarly, the **Reserve Bank of India (2022)** reported low active RuPay-KCC usage, particularly among female and elderly farmers.

Gender disparities constitute another critical dimension. **Desai and Joshi (2018)** found that limited land ownership, restricted mobility, and low financial literacy significantly hinder women's participation in institutional credit systems. These barriers are echoed in **Sinha et al. (2021)**, who recommend the mobilization of Self-Help Groups (SHGs) and Farmer Producer Organizations (FPOs) to enhance women's access and utilization of KCCs.

Emerging literature also explores the synergistic potential of KCC with complementary welfare programs such as **PM-KISAN** (income support), **PMFBY** (crop insurance), and **e-NAM** (market integration). **Mitra et al. (2020)** argue that such integration creates a robust financial ecosystem, provided operational challenges are addressed. Nonetheless, limited interoperability and fragmented policy communication continue to hinder holistic implementation (Sharma & Prasad, 2021).

Finally, micro-level empirical studies underscore the role of local administrative efficiency, banking infrastructure, and community participation in shaping outcomes (Sharma & Prasad, 2021). However, localized evaluations focusing on regional variations in awareness, digital behavior, and gender inclusion remain scarce. The present study addresses this research gap through a comprehensive district-level analysis of the KCC scheme in Prayagraj.

2. Evolution, Challenges, and Theoretical Context

2.1 Evolution and Rationale of the KCC Scheme

The **Kisan Credit Card (KCC)** scheme was introduced in 1998 by NABARD, following the recommendations of the R.V. Gupta Committee, with the primary objective of simplifying and universalizing access to institutional agricultural credit. Its aim was to ensure timely, adequate, and affordable financing for farmers' short-term cultivation needs and working capital requirements (Chand & Singh, 2012). Over time, the scheme has evolved significantly, incorporating features such as digitization through **RuPay integration**, expansion to allied sectors, and convergence with major rural welfare initiatives like **PM-KISAN** and **PMFBY**.

Empirical studies, including Kumar and Shetty (2014), highlight KCC's contribution to reducing farmers' dependence on informal moneylenders and improving input responsiveness. However, these studies also draw attention to persistent administrative bottlenecks, procedural delays, and limited outreach in economically weaker regions. The recent expansion of KCC to include investment credit, insurance, and digital access through **KCC 2.0** underscores the government's emphasis on integrating financial inclusion with risk mitigation and digital transformation.

2.2 Access Disparities and Structural Barriers

Despite its national implementation, access to KCC remains deeply unequal. **Narayanan (2015)** and **Sahu and Rajasekhar (2018)** note that marginal, tenant, and women farmers are frequently excluded due to challenges such as unclear land titles, caste hierarchies, and cumbersome banking procedures. These disparities are particularly acute in northern India, where fragmented landholdings and patriarchal inheritance systems hinder eligibility.

Gender-based financial exclusion remains a major barrier to inclusive credit delivery. Studies such as **Desai and Joshi (2018)** reveal that even though women contribute significantly to agricultural labor, they remain largely invisible in formal credit networks. Mobility restrictions, lack of documentation, and limited digital literacy compound this gap. As a result, female farmers often rely on intermediaries or informal credit channels, perpetuating financial dependency and vulnerability.

2.3 Digital Inclusion and Financial Literacy in Rural India

The integration of RuPay cards, e-KYC, and **mobile** banking features under KCC 2.0 marked a major step toward modernizing rural credit and aligning it with the government's **Digital India** vision. However, this digital shift has produced uneven outcomes. **Chakrabarty and Kumar (2020)** argue that while digital tools can enhance transparency and efficiency, they also risk marginalizing digitally unskilled populations—particularly older farmers and women—who lack access to smartphones or stable internet connectivity.

According to **NABARD (2022)**, fewer than 60% of KCC beneficiaries in rural Uttar Pradesh actively used their RuPay cards independently, with many depending on Common Service Centres (CSCs) or family members for transactions. This reliance increases risks of PIN-sharing, data misuse, and fraud. Therefore, digitalization must be accompanied by investments in rural fintech infrastructure, capacity building, and trust enhancement. Without addressing these human and infrastructural constraints, digital inclusion initiatives risk deepening rather than bridging the financial divide.

2.4 KCC in the Context of Policy Convergence

Contemporary policy discourse emphasizes the need for convergence between KCC and complementary rural development programs. Scholars such as **Mitra et al. (2020)** argue that integrating KCC with **PM-KISAN's** income transfers enhances farmers' repayment capacity, while linking it with **PMFBY** offers protection against income shocks arising from crop loss. In addition, the incorporation of **Self-Help Groups (SHGs)** and women-led cooperatives into the KCC distribution framework has been suggested as a means to improve gender equity and credit penetration.

International experiences offer comparative insights. For instance, India's KCC framework shares conceptual similarities with Kenya's **M-Shwari** and Bangladesh's **Grameen Bank** initiatives but lacks their participatory, community-based design (FAO, 2021). Introducing localized, flexible, and community-anchored credit models could therefore strengthen KCC's last-mile delivery and sustainability.

2.5 Research Gaps and Contribution of This Study

Although existing literature has substantially examined KCC's macro-level outcomes, there remains limited micro-level evidence on how social, economic, and technological factors interact at the district level. Most studies emphasize aggregate performance indicators, overlooking regional variations in gender inclusion, digital behavior, and administrative efficiency.

This study fills that gap by offering a mixed-methods micro-level assessment of KCC's implementation in Prayagraj district, focusing on access patterns, credit utilization, and barriers related to gender, landholding, and technology. By combining cross-tabulated quantitative data with narrative field evidence, the study provides nuanced insights that link policy intent with grassroots realities. In doing so, it contributes to the evolving discourse on inclusive agricultural finance and institutional credit reform in rural India.

3. Methodology

3.1 Research Design

The study adopts a descriptive and analytical research design, integrating both quantitative and qualitative approaches to assess the effectiveness of the KCC scheme in Prayagraj district. A mixed-methods framework enables a holistic understanding of farmers' access, awareness, utilization, and satisfaction levels. The design follows a cross-sectional case study model, combining field-level data collected at one point in time with institutional and policy-based secondary sources. This approach allows for both statistical interpretation and contextual depth, aligning with best practices in applied agricultural economics research.

3.2 Study Area

The research was conducted in **Prayagraj district**, located in eastern Uttar Pradesh—a region characterized by diverse agro-ecological zones, medium irrigation intensity, and widespread adoption of government-sponsored credit schemes such as **KCC** and **PM-KISAN**. The district's dependence on smallholder agriculture makes it a relevant case for studying the dynamics of rural credit. Three development blocks—**Phulpur**, **Meja**, and **Soraon**—were purposively selected to represent variation in cropping systems, irrigation infrastructure, digital penetration, and institutional

outreach. This heterogeneity provides a robust basis for comparative analysis across socio-economic and geographical contexts.

3.3 Sampling Design

A purposive and stratified random sampling technique was employed to ensure representativeness across key demographic and structural variables. A total of **120 active KCC beneficiaries** were selected—forty from each of the three study blocks. Stratification was based on landholding size (marginal <1 ha, small 1–2 ha, and medium >2 ha), gender (male and female-headed households), and occupational type (crop farming, livestock rearing, or mixed activities). This structure facilitated analysis of subgroup-specific differences in credit access and utilization.

Participants were included based on their active KCC status, defined as having completed at least one cropping cycle under the scheme. This ensured data reliability and relevance to the scheme's operational phase.

3.4 Data Collection Methods

A multi-source data collection approach was adopted, combining **primary field data** with **secondary institutional sources**. Primary data were gathered through structured questionnaires administered to KCC beneficiaries, focusing on demographic characteristics, loan access, awareness of scheme features, and digital usage behavior. Semi-structured interviews with officials from the District Agriculture Office, **Krishi Vigyan Kendras (KVKs)**, and **Primary Agricultural Credit Societies (PACS)** provided institutional perspectives on policy implementation, procedural constraints, and monitoring mechanisms.

Additionally, **focus group discussions (FGDs)** were held with **Self-Help Groups (SHGs)** and women farmers to capture community-level perceptions and gender-specific challenges. These qualitative insights supplemented statistical findings with contextual narratives. Secondary data were collected from institutional reports and databases, including those of NABARD, RBI, and **PM-KISAN**, alongside relevant academic and policy literature to strengthen triangulation and analytical rigor.

3.4 Data Collection Methods

A multi-source data collection approach was employed, integrating both **primary** and **secondary** sources to ensure analytical depth and data triangulation.

Primary data were collected through structured questionnaires, semi-structured interviews, and focus group discussions (FGDs). Structured questionnaires were administered to all **120 sampled** KCC beneficiaries to capture demographic profiles, credit utilization patterns, awareness of KCC features such as RuPay cards and embedded insurance, experiences with disbursement timelines, and perceived impacts on productivity. Semi-structured interviews were conducted with key institutional stakeholders, including officials from the District Agriculture Office, Krishi Vigyan Kendras (KVKs), and Primary Agricultural Credit Societies (PACS), to understand administrative bottlenecks and procedural inefficiencies in scheme delivery. Additionally, FGDs were organized with Self-Help Groups (SHGs) and women farmers to document gender-specific constraints, social norms, and collective strategies influencing credit accessibility and utilization.

Secondary data were drawn from multiple institutional and academic sources. These included government reports from NABARD, RBI, and the District Agriculture Office; scheme databases such as **PM-KISAN**, **PMFBY**, and KCC transaction records; and relevant policy documents and scholarly studies that provided conceptual grounding and supported the triangulation of findings.

Ethical considerations were strictly followed. Informed consent was obtained from all participants prior to data collection, and participation was voluntary. Personal identifiers were anonymized to ensure confidentiality and compliance with academic research ethics.

3.5 Data Analysis Techniques

The study adopted a **mixed-methods analytical framework**, combining statistical and thematic approaches to capture both quantitative patterns and qualitative insights.

Quantitative Analysis

Quantitative data were analyzed using IBM SPSS v26, with cross-verification and visualization performed in Microsoft Excel. The analysis involved:

- **Descriptive statistics** (frequencies, percentages, and means) to summarize respondents' demographic profiles, awareness levels, and usage behavior.
- **Cross-tabulations** to identify disparities in credit access and utilization across subgroups such as gender, landholding size, and literacy level.
- **Chi-square tests** to assess the statistical significance of associations between socio-demographic characteristics and awareness or usage indicators.
- **Pearson correlation coefficients** to examine the strength and direction of relationships between credit disbursement timeliness and productivity outcomes such as crop yield improvement and technology adoption.

Qualitative Analysis

Qualitative data obtained from interviews and FGDs were subjected to **thematic coding and narrative interpretation**. Transcripts were reviewed to identify recurring themes such as documentation delays, PIN-sharing practices, gender-based exclusion, and digital illiteracy. A **narrative analysis** approach was used to contextualize quantitative results within farmers' lived experiences, using illustrative case studies—such as those of Savitri Devi from Soraon and Rajiv Pandey from Phulpur—to exemplify systemic and behavioral barriers.

This integrated analytical design enabled triangulation across multiple data sources, enhancing methodological robustness and ensuring that statistical results were reinforced by qualitative evidence.

3.6 Descriptive Statistical Findings

Table 1. Gender Distribution of Respondents

Gender	Percentage (%)
Male	79.17
Female	20.83

Source: created by author

Table 2. Landholding Size Distribution

Landholding Category	Percentage (%)
Marginal (<1 ha)	61.67
Small (1–2 ha)	25.00
Medium (>2 ha)	13.33

Source: created by author

These data indicate a clear gender imbalance among respondents and reaffirm the predominance of marginal and smallholders within the KCC user base.

Table 3. Awareness of Insurance Add-ons by Gender

Gender	Not Aware (%)	Aware (%)
Female	100.00	0.00
Male	26.32	73.68

Source: created by author

The complete lack of insurance awareness among female beneficiaries underscores a deep-seated gender gap in scheme outreach and financial literacy.

Table 4. KCC Usage Pattern by Landholding Size

Landholding	Agri Inputs (%)	Consumption (%)	Loan Repayment (%)
Marginal	100.00	0.00	0.00
Small	13.33	13.33	73.33
Medium	0.00	100.00	0.00

Source: created by author

Credit utilization patterns varied significantly by landholding size. Marginal farmers used KCC loans exclusively for agricultural inputs, while medium landholders primarily diverted credit toward consumption, possibly reflecting liquidity pressures or the use of funds for household expenditure.

Table 5. Correlation Matrix

Variables	Correlation Coefficient
Timely Disbursement & Yield Improvement	0.91

Source: created by author

A very strong positive correlation ($r = 0.91$) was observed between timely loan disbursement and yield improvement, highlighting that synchronization between credit delivery and agricultural cycles is crucial for enhancing productivity.

3.7 Thematic Insights

Qualitative analysis revealed five major themes consistent across interviews and FGDs:

1. **Documentation Delays:** Farmers frequently reported Aadhaar mismatches and Common Service Centre (CSC) errors as causes of loan processing delays.
2. **Digital Illiteracy:** Many beneficiaries, especially women and older farmers, depended on others to operate RuPay cards, often sharing PINs and risking misuse.
3. **Gender Barriers:** Women lacked awareness of insurance and faced restricted access due to mobility constraints and non-ownership of land titles.
4. **Input Prioritization:** Marginal farmers prioritized expenditure on fertilizers, seeds, and irrigation, directly linking credit to farm productivity.
5. **Diversion of Funds:** Medium farmers reported diverting funds toward consumption and social expenses, suggesting behavioral and monitoring gaps.

3.8 Limitations

While the study maintains methodological rigor, certain limitations are acknowledged. Incomplete land records in some villages posed challenges to verifying farmer eligibility and credit amounts. Limited digital connectivity in remote areas constrained the observation of real-time RuPay transactions, and self-reported responses may have introduced recall or desirability bias. Nonetheless, these limitations do not significantly detract from the study's validity, as triangulation across quantitative and qualitative sources minimized potential distortions.

4. Results and Discussion

The empirical findings provide valuable insights into the functioning of the KCC scheme in Prayagraj, revealing complex interlinkages among socio-demographic, institutional, and technological variables that shape credit access and utilization outcomes.

4. Results and Discussion

The findings provide critical insights into the functioning, inclusivity, and impact of the Kisan Credit Card (KCC) scheme in Prayagraj district. By integrating quantitative results with qualitative field evidence, this section examines patterns of awareness, utilization, digital adoption, and productivity linkages, while situating them within broader institutional and socio-economic contexts.

4.1 Socio-Economic Profile of Respondents

The analysis of respondents' socio-economic characteristics shows that a majority of KCC beneficiaries were male (79.2%), while women accounted for only 20.8%, reflecting the entrenched gender gap in access to institutional finance. This pattern mirrors national trends, as reported by NABARD (2023), and underscores structural barriers such as land ownership patterns, mobility restrictions, and limited awareness.

In terms of landholding, 61.7% of respondents were marginal farmers with less than one hectare, followed by 25% small farmers and 13.3% medium landholders. This distribution closely aligns with national agricultural census data, confirming that KCC beneficiaries predominantly represent smallholder households.

Literacy rates within the sample averaged 67%, and the majority of respondents were between 30 and 60 years of age, reflecting a productive but relatively risk-averse demographic profile. The predominance of small and marginal farmers in the KCC user base highlights the scheme's potential role in stabilizing rural livelihoods and bridging financial access gaps, though persistent exclusion of women and tenants remains an area of concern.

4.2 Awareness and Utilization Patterns of KCC

Levels of awareness regarding key KCC features varied widely across respondents. While a large majority (87%) were aware of the loan validity period and 76% understood interest subvention provisions, only 58% reported familiarity with digital components such as RuPay card use. Awareness of the embedded insurance benefit was particularly limited—only 42% of respondents had any knowledge of this feature.

A pronounced gender disparity emerged in awareness levels. Whereas 73.7% of male respondents reported knowledge of the insurance component, none of the female respondents were aware of it. The relationship between gender and insurance awareness was statistically significant ($\chi^2 = 36.2$, $p < 0.001$), confirming a substantial gender-based information gap. This finding supports earlier observations by **Desai and Joshi (2018)**, who noted similar patterns of financial literacy asymmetry across rural India.

Loan utilization patterns also varied significantly by landholding size. Marginal farmers (100%) used KCC credit exclusively for agricultural inputs such as seeds, fertilizers, and pesticides, while medium landholders reported complete diversion of funds toward consumption purposes. This difference in utilization was statistically significant ($\chi^2 = 14.68$, $p < 0.01$), suggesting that credit fungibility and income diversification among larger farmers may influence loan use. The evidence underscores the differentiated role of institutional credit across the rural income spectrum—productive for smallholders but potentially fungible for better-off households.

4.3 Digital Behavior and KCC 2.0 Adoption

The introduction of digital features under **KCC 2.0**—including RuPay-enabled transactions and online reapplication portals—was intended to enhance convenience and transparency. However, actual adoption remained modest. Only 54.2% of respondents reported using their RuPay cards regularly, and a mere 8% engaged with online services such as balance inquiries or reapplications.

Digital usage patterns revealed a clear socio-demographic divide. Female and elderly farmers were significantly less likely to use digital tools independently, relying instead on Common Service Centre (CSC) agents or family members to manage PIN-based transactions. Such dependence increases the risk of data breaches and financial misuse, reflecting concerns raised by **Chakrabarty and Kumar (2020)** regarding digital exclusion in rural financial systems. Connectivity limitations in blocks like Meja and Karchana further compounded these challenges, restricting the potential of digital credit delivery to enhance financial autonomy.

The findings suggest that digitalization without parallel investments in **digital literacy**, **trust-building**, and **rural connectivity infrastructure** risks reinforcing, rather than bridging, existing inequalities in financial access.

4.4 Impact of Timely Credit on Agricultural Productivity

Correlation analysis revealed a strong positive relationship ($r = 0.91$) between timely credit disbursement and self-reported improvements in crop yield. Farmers who received KCC funds within 10–14 days of application were substantially more likely to invest in high-quality inputs such as vermicompost, hybrid seeds, and irrigation systems.

This finding empirically supports the **credit constraint hypothesis**, which posits that liquidity access during critical agricultural cycles directly enhances productivity outcomes. It is consistent with the findings of **Mitra et al. (2020)**, who demonstrated that synchronized credit and cropping schedules lead to higher efficiency in resource utilization. The result underscores the vital importance of aligning institutional credit processes with seasonal farming requirements to maximize scheme impact.

4.5 Structural, Gender, and Institutional Barriers

Qualitative evidence from interviews and focus group discussions (FGDs) revealed a range of systemic barriers that continue to hinder equitable access and effective utilization of KCC credit.

A recurring constraint was documentation-related delay, particularly due to Aadhaar mismatches and errors at CSC service points, which frequently led to loan processing delays exceeding a month. **Digital illiteracy** emerged as another significant challenge: many female and elderly respondents reported sharing PINs with family members or CSC agents due to limited familiarity with digital interfaces, raising concerns of privacy and misuse.

Gendered constraints were among the most pervasive. Women's limited mobility, lack of land titles, and underrepresentation in institutional credit outreach programs resulted in their near-exclusion from the KCC's benefits. These issues were vividly illustrated by field narratives such as that of *Savitri Devi*, a woman farmer from Soraon, who struggled to use her RuPay card independently due to literacy barriers, and *Rajiv Pandey* from Phulpur, whose credit was delayed for weeks owing to biometric verification errors.

Together, these narratives reveal the intersectional nature of exclusion in rural credit systems—where gender, technology, and bureaucracy converge to limit the scheme's inclusivity and effectiveness.

4.6 Theoretical and Policy Implications

The evidence presented in this study reinforces the theoretical understanding that **timely, targeted, and integrated rural credit interventions** such as the KCC scheme can significantly enhance smallholder productivity. However, the impact is moderated by structural inequalities, low digital literacy, and institutional bottlenecks.

The findings point toward a multi-dimensional policy strategy for strengthening the KCC framework. First, convergence between **KCC**, **PM-KISAN**, and **PMFBY** should be institutionalized to create a holistic credit-insurance-income ecosystem that stabilizes farm incomes. Second, **Self-Help Groups (SHGs)** and **women's cooperatives** should be leveraged as decentralized delivery channels to improve outreach among underserved groups. Third, **financial and digital literacy modules** must be embedded within KCC disbursement and renewal processes, particularly for first-time or digitally excluded users. Finally, establishing **block-level grievance redressal systems** can expedite the resolution of Aadhaar and CSC-related issues, improving both efficiency and trust in the system.

These recommendations align with global best practices in inclusive finance, suggesting that sustainability in rural credit delivery depends as much on institutional responsiveness and user empowerment as on technological advancement.

4.7 Summary of Key Findings

Overall, the analysis demonstrates that **male farmers dominate institutional credit access (79%)**, while women remain largely excluded (21%). The scheme primarily serves **marginal and smallholders (86.7%)**, confirming its outreach focus, though disparities persist in awareness and utilization. Awareness of insurance add-ons is sharply gendered—**73.7% of males** reported familiarity, compared to **0% of females** ($\chi^2 = 36.2$, $p < 0.001$). Similarly, landholding size strongly influenced credit use patterns ($\chi^2 = 14.68$, $p < 0.01$), with marginal farmers prioritizing agricultural inputs and medium farmers diverting funds toward consumption.

Digital adoption remains uneven—**54.2% of respondents** regularly used RuPay cards, but online feature utilization was minimal. The strong correlation between **timely credit disbursement and yield improvement (r = 0.91)** underscores the transformative potential of institutional finance when delivered efficiently. Yet, recurring structural issues—Aadhaar mismatches, digital illiteracy, and gender-based exclusions—continue to undermine the scheme's inclusivity.

5. Conclusion and Policy Recommendations

5.1 Conclusion

This study provides empirical evidence of both the achievements and limitations of the Kisan Credit Card (KCC) scheme in promoting inclusive access to agricultural credit in Prayagraj district. While the scheme effectively reaches small and marginal farmers, its performance remains constrained by administrative inefficiencies, limited awareness, and digital asymmetries.

The analysis confirms that timely disbursement of credit has a statistically significant impact on productivity, validating the centrality of liquidity availability to farm output. However, the persistent gender gap—exemplified by women's complete lack of awareness of insurance features and low engagement with digital platforms—reveals a systemic exclusion within the institutional credit framework.

The qualitative findings highlight that operational issues such as Aadhaar mismatch, CSC dependency, and inadequate grievance mechanisms continue to impede equitable implementation. Addressing these barriers requires policy recalibration. Strengthening integration between KCC, PM-KISAN, and PMFBY can enhance resilience through combined credit and insurance support. Expanding women's participation through SHG-based KCC facilitation and embedding financial literacy into rural extension systems can further bridge existing divides.

In essence, the future of KCC lies not merely in technological modernization but in human-centered financial inclusion, where access, awareness, and accountability operate in tandem to empower smallholder farmers and ensure sustainable agricultural transformation.

5.2 Policy Recommendations

In light of the above findings, several multi-tiered and evidence-based policy measures are recommended to strengthen the inclusivity, efficiency, and sustainability of the Kisan Credit Card (KCC) scheme.

(a) Deepen Scheme Convergence and Integration

The convergence of KCC with other flagship schemes such as PM-KISAN, PMFBY, and eNAM should be prioritized to ensure synchronized financial, insurance, and market linkages. Establishing digital interoperability through shared dashboards and Application Programming Interfaces (APIs) at the Panchayat level can facilitate real-time beneficiary mapping and transaction monitoring, thereby improving delivery efficiency.

(b) Strengthen Gender-Inclusive Financial Literacy

Targeted gender-responsive interventions are essential for equitable participation. Tailored training programs focusing on RuPay card usage, digital security, and scheme benefits should be introduced for women farmers. The mobilization of **Self-Help Groups (SHGs)** and women-led cooperatives can enhance outreach, while vernacular financial literacy materials can address information asymmetries effectively.

(c) Optimize Credit Design and Disbursement Timelines

To reduce fund diversion and credit delays, need-based credit scoring mechanisms should be introduced, aligning disbursement cycles with regional cropping calendars. Automated top-up or renewal systems triggered by weather and crop data analytics can ensure continuous liquidity support. Such predictive credit models can minimize procedural delays and enhance timely access to credit.

(d) Decentralize Monitoring and Grievance Systems

Institutional accountability can be strengthened by forming **Block-level Credit Facilitation Committees (BCFCs)** comprising representatives from PACS, KVKs, and local NGOs. These committees should handle grievances related to

Aadhaar mismatches, biometric errors, and RuPay card distribution delays. A mobile-based grievance redressal platform with feedback loops should be integrated for real-time monitoring and transparency.

(e) Foster Data-Driven Credit Planning

Integrating KCC transaction data with socio-economic and agricultural performance indicators can improve evidence-based decision-making. District-level **GIS-enabled dashboards** should be developed to visualize credit flow patterns, identify low-access zones, and prioritize interventions in underserved blocks. This approach can support more targeted, data-driven agricultural credit planning.

(f) Incentivize Agro-Productive Credit Usage

Incentive structures such as **interest subvention bonuses** or **repayment rebates** can encourage productive loan utilization for agricultural inputs, irrigation, and farm machinery. Community-based loan rating systems, recognizing consistent repayment and productive use, can promote accountability and positive behavioral norms within the rural credit ecosystem.

5.3 Future Research Scope

This study opens several avenues for further research on institutional credit and agricultural finance. Future studies should adopt longitudinal and comparative designs to assess the long-term impact of KCC on farm income stability, indebtedness, and credit cycles across regions.

Incorporating variables such as climate risk, market volatility, and digital adoption behavior would provide a more comprehensive understanding of how formal credit mechanisms adapt to dynamic rural contexts. Experimental studies evaluating the integration of financial literacy and digital skill-building into KCC onboarding processes could also yield actionable policy insights.

References

1. Chakrabarty, M., & Kumar, A. (2020). Digital financial inclusion and the Kisan Credit Card scheme: An empirical assessment. *Economic Affairs, 65*(3), 413–422.
2. Chakrabarty, R., & Kumar, N. (2020). Digital banking and inclusion in rural India. *Economic and Political Weekly, 55*(3), 34–40.
3. Chanda, R. (2012). Agricultural credit delivery in India: Some issues. *Journal of Rural Development, 31*(4), 417–429.*
4. Desai, S., & Joshi, N. (2018). Gender dimensions of access to formal credit in Indian agriculture. *Indian Journal of Agricultural Economics, 73*(2), 245–260.*
5. Desai, S., & Joshi, O. (2018). Gender and credit in rural India: A policy review. *Indian Journal of Gender Studies, 25*(1), 65–84.*
6. Faruqui, S. (2001). Kisan Credit Card scheme: Progress and pitfalls. *NABARD Occasional Paper.*
7. Food and Agriculture Organization (FAO). (2021). *Digital financial services for agriculture.* Rome: FAO Publications.
8. Kumar, A., Singh, K. M., & Sinha, S. (2010). Institutional credit to agriculture sector in India: Status, performance and determinants. *Agricultural Economics Research Review, 23*(2), 253–264.*
9. Kumar, S., & Shetty, S. (2014). Institutional credit and Kisan Credit Card: Progress and challenges. *NABARD Occasional Paper Series.*
10. Mitra, A., Mehta, S., & Singh, R. (2020). Credit and productivity linkages in Indian agriculture. *Indian Economic Review, 55*(2), 103–126.*
11. Mitra, S., Bhatt, R., & Roy, D. (2020). Integrated welfare schemes and rural financial inclusion. *Policy Perspectives, 7*(2), 45–63.*
12. NABARD. (2022). *Annual status of agriculture and rural finance in India.* Mumbai: National Bank for Agriculture and Rural Development.
13. NABARD. (2023). *All-India rural financial inclusion survey.* Mumbai: National Bank for Agriculture and Rural Development.

14. Narayanan, S. (2015). Informal credit and its discontents: Perspectives from rural India. *Journal of Agrarian Change, 15*(4), 551–569.*
15. Reserve Bank of India (RBI). (2022). *Report on trends and progress of banking in India 2021–22.* Mumbai: Reserve Bank of India.
16. Sahu, G., & Rajasekhar, D. (2018). Institutional credit for smallholders: Are we missing the poor? *Agricultural Economics Research Review, 31*(1), 1–10.*
17. Sharma, P., & Prasad, R. (2021). Ground realities of Kisan Credit Card implementation: A block-level analysis. *Indian Journal of Public Administration, 67*(4), 550–566.*
18. Singh, R., & Bhogal, S. (2019). Utilization patterns of Kisan Credit Cards in North India: Evidence from field data. *Agricultural Finance Review, 79*(1), 111–127