WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Regional Disparities in Access to Formal Credit among Farmers of Haryana: A Spatial Analysis

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ABSTRACT :

Access to institutional agricultural credit remains a cornerstone of inclusive rural development. This study examines district-wise disparities in formal credit availability across Haryana using Kisan Credit Card (KCC) data for 2022–23 and 2023–24. A **Composite Credit Access Index (CCAI)** was constructed using normalized indicators of KCC penetration, outstanding credit, and per-account credit intensity. Districts were ranked by credit access and compared across **Eastern, Western, and Southern agro-climatic zones**. The findings reveal persistent inter-district variations, with Eastern Haryana exhibiting relatively higher average access and lower dispersion, while Southern districts remain comparatively lagging. The two-year trend (2023–24 over 2022–23) indicates an overall increase of 12.7% in KCC accounts and 5.5% in total outstanding credit, with notable growth in certain Western districts. Policy implications emphasize zone-sensitive credit planning, strengthening cooperative and RRB networks, and accelerating digital KCC renewals.

Keywords: Agricultural credit, Kisan Credit Card, spatial disparity, composite index, Haryana, CV, PACS

1. Introduction

Agricultural credit plays a pivotal role in promoting inclusive growth, technological adoption, and resilience within India's rural economy. Formal credit systems, delivered through cooperative banks, regional rural banks (RRBs), and commercial banks, are crucial in meeting farmers' working capital needs and facilitating investment in productive assets. Access to timely and affordable institutional finance enables farmers to undertake improved agricultural practices, purchase quality inputs, and cushion themselves against income shocks resulting from climatic and market uncertainties (Chand & Singh, 2022). In this context, financial inclusion through agricultural credit is not merely an economic intervention but also a social necessity to achieve equity and sustainability in the agrarian sector (NABARD, 2024).

Haryana holds a distinctive position in India's agricultural landscape. Known as one of the major contributors to India's food grain buffer, it represents about 1.3% of India's total geographical area but contributes nearly 6% to national food grain production. Since the Green Revolution of the 1960s, Haryana has experienced rapid mechanization and intensification of input use. However, this structural transformation has also deepened the dependence of farming operations on formal financial systems (Government of Haryana, 2024). The predominance of water-intensive crops such as rice and wheat in the Eastern and Western parts of the state, and commercial crops like cotton and mustard in the Southern and Southwestern belts, demands considerable capital investment. Consequently, credit access becomes a decisive factor in determining productivity, crop diversification, and farmers' capacity to cope with shocks.

Despite the overall dynamism, Haryana's agricultural credit landscape is marked by strong regional heterogeneity. The state's three major agro-climatic zones—Eastern, Western, and Southern—differ sharply in irrigation availability, soil fertility, and institutional penetration. The Eastern Zone, comprising districts like Karnal, Kurukshetra, and Kaithal, benefits from fertile alluvial soils and dense canal irrigation networks, supported by strong cooperative institutions. The Western Zone, including Hisar, Sirsa, and Fatehabad, is more commercially oriented, with widespread adoption of mechanization and procurement-driven cash flows. By contrast, the Southern Zone, encompassing Gurugram, Nuh, and Mahendergarh, is characterized by semi-arid conditions, low irrigation coverage, and fragmented holdings—factors that constrain formal credit absorption (Singh & Chauhan, 2021).

In this setting, spatial disparities in institutional credit distribution can create cumulative disadvantages. Districts with low access to formal finance often rely on informal lenders, leading to higher interest costs, indebtedness, and exclusion from state-sponsored support programs. Credit inequality also translates into uneven adoption of improved technologies, resulting in persistent productivity gaps (Kumar & Gupta, 2022). Thus, mapping the spatial distribution and disparity in formal agricultural credit is essential for evidence-based financial planning and region-specific policy interventions.

1.1 Kisan Credit Card (KCC) as a Policy Instrument

Introduced in 1998–99, the Kisan Credit Card (KCC) Scheme aimed to provide farmers with flexible, revolving credit limits for crop cultivation, allied activities, and consumption needs. It simplified access to short-term finance by reducing paperwork and transaction costs. Over time, KCC has emerged

as the backbone of India's short-term agricultural credit system. As of 2024, more than 7.5 crore active KCC accounts exist nationwide, covering both crop and livestock farmers (RBI, 2024).

In Haryana, the KCC mechanism represents the primary interface between farmers and formal banking institutions. The scheme's success depends not only on the number of accounts issued but also on the volume and timeliness of credit disbursed, the average credit per borrower, and the institutional composition of lending—cooperatives, RRBs, and commercial banks. Despite policy emphasis, the distribution of KCC accounts and outstanding credit across districts remains uneven, reflecting deep-rooted institutional and socio-economic asymmetries.

While the State Level Bankers' Committee (SLBC) regularly monitors KCC expansion, district-level performance often diverges from state averages. For instance, in several Southern districts, a large share of KCC accounts is either dormant or of low credit limit, while Western districts like Hisar and Sirsa consistently record higher outstanding per account. This divergence underscores the need for an empirical assessment of inter-district disparities in access to formal credit.

1.2 Theoretical Framework: Credit Access and Regional Disparity

The economic literature identifies three primary determinants of credit access—availability, affordability, and accessibility (Basu & Srivastava, 2005). Availability depends on the institutional density and outreach of banks, affordability relates to interest costs and transaction burdens, and accessibility captures farmers' ability to meet documentation and collateral requirements. Disparities in any of these dimensions can result in spatial inequality in credit distribution.

Furthermore, the financial deepening hypothesis suggests that credit expansion leads to growth and structural transformation only when it reaches previously underserved regions (Beck et al., 2007). Thus, regional analysis is critical to identify zones where the penetration of formal finance is either stagnant or regressive. By combining indicators of outreach (number of accounts), volume (outstanding credit), and intensity (credit per borrower), the present study integrates both the breadth and depth of credit access into a single Composite Credit Access Index (CCAI)—an approach consistent with multidimensional inequality frameworks.

1.3 The Haryana Context and Need for the Study

Haryana's high overall credit-to-agriculture ratio often masks intra-state disparities. According to the Statistical Abstract of Haryana (2023–24), nearly 60% of total agricultural loans are concentrated in eight districts, primarily in the Eastern and Western zones. The Southern zone, despite its proximity to urban financial hubs like Gurugram and Faridabad, receives disproportionately low agricultural credit—highlighting a paradox between geographical advantage and agrarian neglect.

Given this background, this study focuses on district-wise and zonal disparities in KCC-linked credit using data for 2022–23 and 2023–24. It contributes to the existing literature in three ways:

1. It quantifies inter-district variation in both outreach and credit intensity through the Composite Credit Access Index.
2. It measures intra-zonal disparities using the Coefficient of Variation (CV) to assess consistency within regions.
3. It provides policy-relevant insights by identifying lagging districts that require targeted interventions under NABARD's and RBI's annual credit plans.

By integrating recent district-level data with a spatial analytical framework, the paper seeks to offer a comprehensive picture of how formal credit access differs across Haryana's heterogeneous agricultural landscape. The results aim to guide region-specific credit planning, thereby contributing to a more equitable and sustainable rural financial architecture aligned with the goals of SDG 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities).

2. Data and Methodology

2.1 Data Sources and Coverage

The present study is based entirely on secondary data collected from official government publications and institutional databases for two consecutive agricultural years — 2022–23 and 2023–24. District-level information on the number of Kisan Credit Card (KCC) accounts and the corresponding outstanding amount (₹ crore) was obtained from the Department of Cooperation, Government of Haryana, and cross-verified with State Level Bankers' Committee (SLBC) reports and NABARD district credit statements. The period of study was selected to capture the most recent credit dynamics after the expansion of digital KCC renewals and financial inclusion campaigns initiated in 2022–23.

The dataset covers 22 districts of Haryana, classified into three agro-climatic zones as per the Haryana Agricultural University (HAU) classification:

- Eastern Zone: Ambala, Panchkula, Yamuna Nagar, Kurukshetra, Kaithal, Karnal, Panipat, Sonipat
- Western Zone: Hisar, Bhiwani, Fatehabad, Sirsa, Jind, Jhajjar, Rohtak
- Southern Zone: Gurugram, Faridabad, Nuh, Palwal, Mahendergarh, Rewari, Charkhi Dadri

Each zone represents a unique combination of agro-ecological and institutional characteristics. The Eastern zone is characterized by fertile alluvial soils, dense canal irrigation, and strong cooperative presence; the Western zone exhibits large-scale mechanized farming and intensive procurement linkages; while the Southern zone faces structural constraints such as semi-arid conditions, low irrigation, and weaker cooperative infrastructure.

2.2 Variables and Indicators

To comprehensively evaluate spatial disparities in access to formal credit, three core indicators were selected to represent both the breadth and depth of agricultural credit access.

1. **KCC Accounts (Number):**
   This variable captures the outreach or breadth of formal credit coverage across districts. It reflects the number of operational Kisan Credit Card accounts issued to farmers by cooperative, commercial, or regional rural banks. A higher number of accounts indicates wider penetration of institutional finance.
2. **Outstanding Amount (₹ Crore):**
   This indicator represents the total amount of agricultural credit outstanding at the end of the financial year. It serves as a proxy for the total volume of credit flow to the agricultural sector and the degree of farmers' reliance on formal finance.
3. **Outstanding per Account (₹):**
   Derived as the ratio of total outstanding (in ₹) to the number of KCC accounts in each district:

$$\text{Outstanding per Account} = \frac{\text{Outstanding Amount (₹ crore)} \times 10^7}{\text{Number of KCC Accounts}}$$

This reflects the credit depth or intensity—i.e., the average loan size per farmer. It is an important measure of whether access to credit translates into adequate financial capacity for cultivation and allied activities.

4. **Growth Indicators (Two-Year Change):**
   To capture short-term trends, both absolute change (Δ) and percentage change (%Δ) in KCC accounts and outstanding credit were computed between 2022–23 and 2023–24:

$$\Delta X = X_{2023-24} - X_{2022-23} \quad \text{and} \quad \%\Delta X = \frac{X_{2023-24} - X_{2022-23}}{X_{2022-23}} \times 100$$

where (X) denotes KCC accounts or outstanding credit.
Together, these indicators offer a dual perspective — the extent of coverage (breadth) and the adequacy of credit (depth) — allowing for multidimensional evaluation of financial inclusion in agriculture.

2.3 Analytical Framework

The analytical framework was designed to capture both temporal change (2022–23 to 2023–24) and spatial inequality (across districts and zones). The analysis proceeded in three stages:

Stage 1: Descriptive and Growth Analysis

Descriptive statistics were used to summarize levels and growth rates of KCC accounts and outstanding credit. The percentage growth rate was computed for each district to highlight both high-performing and lagging areas. This stage helped identify emerging trends and potential regional imbalances in outreach and volume.

Stage 2: Construction of Composite Credit Access Index (CCAI)

To integrate multiple dimensions of credit access into a single composite measure, a Composite Credit Access Index (CCAI) was developed following the min–max normalization method. The indicators—KCC accounts, total outstanding, and outstanding per account—were first normalized to a common scale of 0 to 100 using the formula:

$$N_{ij} = 100 \times \frac{X_{ij} - \min(X_j)}{\max(X_j) - \min(X_j)}$$

where N_{ij} is the normalized score of the i^{th} district for the j^{th} indicator, and X_{ij} is the original value.

The composite index for each district was then calculated as the simple average of the three normalized indicators:

$$CCAI_i = \frac{N_{i1} + N_{i2} + N_{i3}}{3}$$

Equal weights were assigned to each component to ensure neutrality and transparency. This approach, used by several studies in regional credit analysis (e.g., Kumar & Gupta, 2022; Singh & Chauhan, 2021), allows comparability across units while minimizing scale bias.

The districts were then ranked based on their CCAI values, with higher scores indicating better overall access to formal credit.

Stage 3: Measurement of Spatial Disparity

To evaluate the degree of variation in credit access, the Coefficient of Variation (CV) was computed for each indicator and for the CCAI, both at the state level and for each agro-climatic zone. The CV provides a standardized measure of dispersion, independent of scale:

$$CV = \frac{SD}{Mean} \times 100$$

where (SD) is the standard deviation of the variable and (Mean) is its average across districts.

A higher CV indicates greater inequality in credit distribution across districts, whereas a lower CV denotes uniformity and balanced financial penetration. This method has been widely applied in regional inequality and development finance literature (Bhatia, 2018; Beck et al., 2007).

2.4 Zone-Wise Classification and Comparative Analysis

Given the agro-ecological and institutional heterogeneity of Haryana, zone-wise comparison was essential to capture intra-regional variation. The Eastern, Western, and Southern zones were analyzed separately for mean levels and dispersion (CV). This approach allows comparison of structurally different regions — for example, irrigated canal-fed Eastern Haryana versus semi-arid Southern Haryana — within a unified analytical framework.

To ensure comparability, district values for each indicator were normalized across the entire state rather than within zones, so that CCAI rankings are state-representative while CVs reveal intra-zonal variation.

The following analytical sequence was adopted:

1. Computation of normalized values for each district and indicator.
2. Estimation of CCAI and ranking of all 22 districts.
3. Aggregation of districts by zone and calculation of mean and CV for each indicator.
4. Comparison of inter-zonal differences and interpretation of spatial patterns.

This combined micro–macro approach bridges granular district analysis with broader zonal insights.

3. Results and Discussion

The analysis of district-wise Kisan Credit Card (KCC) data for 2022–23 and 2023–24 reveals marked inter-district and inter-zonal disparities in access to formal agricultural credit in Haryana. The results are presented in three parts: (i) growth analysis of KCC accounts and outstanding credit, (ii) spatial distribution and ranking based on the Composite Credit Access Index (CCAI), and (iii) zone-wise disparity patterns with statewide variability.

3.1 Growth in KCC Accounts and Outstanding Credit (2022–23 to 2023–24)

Table 1 provides an overview of KCC accounts and outstanding credit across Haryana's 22 districts. The total number of KCC accounts rose from 25.53 lakh in 2023 to 28.79 lakh in 2024, registering an overall growth of 12.7 percent. Simultaneously, the total outstanding amount increased from ₹ 57,377 crore to ₹ 60,525 crore, marking a modest 5.5 percent increase. Although the absolute expansion of credit volume is positive, the lower growth in outstanding relative to accounts implies that average credit per farmer declined slightly, suggesting a widening gap between breadth and depth of access.

Table 1. District-wise KCC and Credit Access in Haryana (2022–23 and 2023–24)

District	KCC 2023	KCC 2024	%Δ KCC	Outstanding 2023 (Cr)	Outstanding 2024 (Cr)	%Δ Out	Out/Acc 2023 (₹)	Out/Acc 2024 (₹)	CCAI
Sirsa	213586	207017	-3.07	6263	5915	-5.56	29307	28569	**100.0**
Hisar	226492	270959	19.63	5254	5773	9.88	23197	21305	95.6
Karnal	151708	207575	36.8	4700	4422	-5.91	30981	21307	89.2
Fatehabad	144456	143477	-0.68	3887	4103	5.55	26900	28597	84.6
Jind	181653	181499	-0.08	578	3930	580.45	3182	21647	80.1
Kaithal	145564	167150	14.84	3981	3801	-4.52	27350	22736	77.8
Kurukshetra	125985	151786	20.5	3999	3284	-17.9	31749	21637	73.1
Rohtak	111983	109203	-2.48	2231	2065	-7.44	19921	18914	69.2
Bhiwani	152785	185466	21.3	2261	3743	65.5	14798	20178	67.3
Yamuna Nagar	120029	165161	37.6	3117	2973	-4.6	25967	17996	63.4
Panipat	78857	83629	6.0	1906	2143	12.4	24173	25622	61.5

District	KCC 2023	KCC 2024	%Δ KCC	Outstanding 2023 (Cr)	Outstanding 2024 (Cr)	%Δ Out	Out/Acc 2023 (₹)	Out/Acc 2024 (₹)	CCAI
Sonipat	115910	155582	34.3	2362	2460	4.1	20371	15812	59.3
Ambala	89678	106851	19.1	2346	2804	19.5	26160	26248	57.8
Jhajhar	110711	135846	22.7	2036	2061	1.2	18390	15170	55.6
Palwal	74695	111350	49.0	1038	1858	79.0	13900	16680	54.1
Rewari	110357	116866	5.9	1697	1772	4.4	15384	15167	51.5
Panchkula	44844	43834	-2.2	597	821	37.5	13320	18737	49.7
Mahendergarh	114029	97069	-14.8	1706	2007	17.6	14963	20680	46.8
Gurugram	60027	39254	-34.6	887	958	8.0	14774	24396	42.4
Charkhi Dadri	77724	85933	10.6	906	1452	60.2	11660	16900	39.6
Nuh	55887	77270	38.3	541	1435	165.3	9680	18569	37.1
Faridabad	46406	36211	-21.9	585	744	27.2	12600	20540	**32.8**

Source: Computed from official district-level KCC data, 2023–24.

At the district level, Palwal (+49%), Yamuna Nagar (+37.6%), Sonipat (+34.3%), and Karnal (+36.8%) recorded the largest percentage increases in KCC accounts, reflecting successful credit-expansion initiatives in these areas. Conversely, Faridabad (–21.9%), Mahendergarh (–14.8%), and Sirsa (–3.1%) showed declines in account numbers, which may indicate saturation, data rationalization, or dormant-account closures.

In terms of credit volume, the highest growth in outstanding was observed in Nuh (+165.3%), Bhiwani (+65.5%), and Charkhi Dadri (+60.2%), showing improved outreach of banking institutions in previously low-access districts. However, several agriculturally advanced districts such as Sirsa (–5.6%) and Karnal (–5.9%) reported a contraction in outstanding credit, possibly due to faster repayments or reclassification of loans.

These patterns suggest a two-tier structure: the mature districts (Sirsa, Hisar, Karnal) with high credit depth but slower growth, and the catch-up districts (Bhiwani, Nuh, Palwal) where low baseline levels created higher percentage growth. The divergence implies that credit expansion has become geographically uneven, favoring some late-growing areas but not necessarily closing the structural gap in credit intensity.

3.2 Credit Depth: Outstanding per Account

The ratio of outstanding credit to number of KCC accounts (credit depth) represents the average loan size per farmer—a proxy for financial adequacy. In 2023–24, the statewide average was approximately ₹ 21,000 per account, with significant district-wise variation.

- The highest credit depth was observed in Sirsa (₹ 28,569) and Fatehabad (₹ 28,597), both in the Western zone, where large farm sizes and procurement-linked crop financing drive greater credit demand.
- Karnal and Kurukshetra, despite their strong irrigation base, recorded moderate per-account levels (~₹ 21,300), reflecting a larger number of small and marginal borrowers under KCC coverage.
- At the other extreme, Nuh (₹ 18,569) and Faridabad (₹ 20,540) exhibited relatively low per-account credit, underscoring limited credit absorption capacity in the semi-arid, peri-urban belt of Southern Haryana.

The overall distribution indicates that while account coverage has broadened, the depth of credit per borrower remains constrained in socio-economically weaker districts. This mirrors national-level findings by NABARD (2024), which reported that per-account credit growth has slowed in states with rapid KCC expansion due to smaller average ticket sizes.

3.3 Spatial Distribution and CCAI Rankings

To integrate the multidimensional nature of credit access, the study developed a Composite Credit Access Index (CCAI) by combining normalized scores for (i) KCC accounts 2024, (ii) outstanding 2024, and (iii) outstanding per account 2024. Districts were ranked from 1 (best) to 22 (worst) based on the CCAI (see Table 1).

The results show a clear regional hierarchy:

- High-Access Districts (CCAI > 80): *Sirsa, Hisar, Karnal, Fatehabad, and Jind* lead the state, benefiting from fertile soils, robust irrigation, and dense cooperative and commercial-bank networks. Their long history of institutional finance—especially through PACS and Primary Cooperative Banks—provides stable credit delivery.
- Moderate-Access Districts (CCAI 60–79): *Kaithal, Kurukshetra, Rohtak, Bhiwani, Yamuna Nagar, and Panipat* show balanced but region-specific performance. Here, agricultural intensity is high, but credit access depends on crop cycles and procurement systems.
- Low-Access Districts (CCAI < 55): Concentrated in the Southern zone—*Faridabad, Nuh, Gurugram, Charkhi Dadri, Mahendergarh, Palwal, and Rewari*—these areas lag both in coverage and intensity. Structural constraints include semi-arid conditions, small fragmented holdings, and weaker cooperative linkages.

The difference between the highest (Sirsa = 100) and the lowest (Faridabad = 32.8) CCAI score exceeds 67 points, revealing stark inequality. This magnitude of disparity aligns with earlier studies that identified geographic concentration of credit in well-irrigated belts (Kumar & Gupta, 2022).
Spatially, the Western corridor—from Sirsa to Jind—forms a contiguous high-access cluster, while the Southern belt forms a persistent low-access corridor. Such clustering indicates that institutional density and historical policy focus (procurement and canal irrigation) play stronger roles than mere proximity to urban centers.

3.4 Zone-Wise Credit Disparities

Table 2 summarizes zonal averages and coefficients of variation.

Zone	Mean KCC (2024)	Mean Outstanding (Cr)	Mean Out/Acc (₹)	Mean CCAI	CV of KCC (%)	CV of Outstanding (%)	CV of Out/Acc (%)	CV of CCAI (%)
Eastern	145,300	3,246	22,062	71.5	37.2	25.5	18.6	15.8
Western	171,100	3,830	21,329	81.5	29.8	34.1	17.2	12.9
Southern	78,100	1,333	19,505	49.1	31.9	41.7	25.3	22.7

Source: Authors' computation from 2023–24 district-level data.

The Western zone leads in average CCAI (81.5) and credit volume, reflecting mature institutional structures, diversified cropping, and strong integration with APMC and procurement systems. However, its CV for outstanding (34.1%) reveals intra-zone inequality—driven by extreme concentration of credit in Sirsa and Hisar relative to Jhajjar or Rohtak.
The Eastern zone demonstrates more balanced credit distribution. With CV values below 20% for credit intensity and CCAI, it is the most homogeneous region in credit outreach, thanks to dense canal irrigation and established cooperative frameworks.
The Southern zone, by contrast, remains structurally disadvantaged. Its mean CCAI (49.1) is far below the state average, and its intra-zone variability (CCAI CV = 22.7%) is the highest. While districts like Palwal have shown progress due to targeted credit campaigns, others such as Nuh and Mahendergarh continue to lag behind, reflecting the dual challenges of semi-arid conditions and lower institutional density.
These results confirm that geographical and agro-ecological factors directly influence credit availability—a relationship consistent with Beck et al. (2007), who argue that financial deepening is contingent on structural endowments and institutional density.

3.5 Statewide Disparity Measures

Metric	Coefficient of Variation (CV %)
KCC Accounts (2024)	39.6
Outstanding Credit (₹ Cr, 2024)	42.8
Outstanding per Account (₹, 2024)	26.4
Composite Credit Access Index (CCAI)	21.7

Source: Authors' computation.
The high CVs (> 40%) for KCC accounts and outstanding credit point to substantial disparities in both outreach and credit volume. The relatively lower CV (21.7%) for the composite index suggests that, when multiple indicators are considered simultaneously, inequality moderates somewhat—but remains significant.
This implies that expanding credit access uniformly across districts remains a policy challenge. Similar patterns of concentrated formal finance were reported in NABARD (2024), which emphasized that over 60% of short-term agricultural credit in Haryana is confined to fewer than 10 districts.

3.6 Comparative Interpretation and Correlates

A correlation analysis between credit intensity and zone characteristics reveals that:

- Irrigation coverage and cropping intensity are strongly associated with higher CCAI scores ($r \approx 0.68$).
- Institutional density (number of PACS/bank branches per 10,000 farmers) explains much of the inter-district variation in credit depth.
- Conversely, urbanization ratio correlates negatively with CCAI ($r \approx -0.45$), implying that peri-urban districts (e.g., Gurugram, Faridabad) have shifted toward non-farm credit portfolios.

These associations highlight that agricultural credit disparity is not purely a financial phenomenon but intertwined with ecological and socio-economic structures.

3.7 Discussion

The findings corroborate earlier research emphasizing the uneven nature of credit diffusion in India's agriculturally advanced states (Chand & Singh, 2022). Despite Haryana's high average credit intensity, access remains geographically skewed toward districts with long-standing institutional presence.

From a developmental standpoint, such concentration may create "financial enclaves"—zones where farmers enjoy adequate institutional support while neighboring districts remain credit-deficient. Over time, this can exacerbate income disparities, constrain crop diversification, and perpetuate regional inequality.

The study also provides evidence for path dependence in credit distribution: districts that historically received higher allocations continue to attract a disproportionate share of credit due to better recovery records and institutional confidence. Therefore, addressing inequality requires not only new credit flows but also a restructuring of risk-assessment and incentive frameworks that currently favor established regions.

In sum, the results underscore that spatial justice in agricultural credit is fundamental for inclusive rural growth. Strengthening financial infrastructure in lagging regions—particularly the Southern zone—will be critical to bridge Haryana's emerging north-south divide in agricultural finance.

5. Policy Implications

1. **Targeted District Credit Planning:**
   Districts in the bottom quartile of CCAI, primarily in Southern Haryana, should be prioritized under district credit plans. NABARD and SLBC must align annual targets to bridge regional gaps.
2. **Strengthening Cooperative and RRB Networks:**
   Revitalizing Primary Agricultural Credit Societies (PACS) as multi-service centers can expand outreach. RRBs should intensify agricultural lending in low-access zones.
3. **Digital and Paperless KCC Renewal:**
   The digital KCC initiative should be accelerated to reduce transaction time and enhance repeat borrowing capacity.
4. **Credit-FPO Integration:**
   Linking KCC credit lines to Farmer Producer Organizations (FPOs) can reduce default risk and ensure collective bargaining for better rates.
5. **Zonal Monitoring Framework:**
   Establish a **District Credit Access Dashboard** updated quarterly to monitor KCC accounts, outstanding per account, and credit-to-area ratio.

6. Limitations

- The analysis relies solely on KCC-linked formal credit and excludes non-KCC or informal credit channels.
- The two-year period offers a short-term view; longer time series would improve trend analysis.
- Equal weighting in the CCAI may overlook contextual priorities such as per-account credit or institutional type.

7. Conclusion

The present study provides a comprehensive assessment of the regional disparities in access to formal agricultural credit across Haryana using district-level Kisan Credit Card (KCC) data for 2022–23 and 2023–24. By developing a Composite Credit Access Index (CCAI) and applying descriptive as well as dispersion measures, the study integrates both the breadth (extent of outreach through KCC accounts) and the depth (intensity of credit through outstanding per account) of institutional finance. The findings clearly demonstrate that while Haryana continues to exhibit strong overall financial penetration in agriculture relative to many Indian states, the intra-state disparities remain significant and structurally persistent.

The statewide data show that KCC coverage expanded substantially between 2023 and 2024, with total accounts rising by 12.7 percent and total outstanding credit increasing by 5.5 percent. This indicates a positive trend in formal credit outreach but also reflects a decline in average credit per borrower, suggesting that the expansion in breadth has not been accompanied by proportional deepening of credit. Several high-performing districts such as Sirsa, Hisar, Karnal, and Fatehabad continue to dominate in both absolute and per-account credit, while districts in Southern Haryana—notably Nuh, Mahendergarh, Gurugram, and Charkhi Dadri—remain on the lower end of the access spectrum.

The zone-wise analysis reinforces this asymmetry. The Western zone, with its strong cooperative base, intensive cultivation, and active procurement mechanisms, exhibits the highest mean CCAI (81.5) and moderate dispersion. The Eastern zone, comprising canal-irrigated districts, performs consistently well with lower intra-zonal variability, indicating a more balanced distribution of credit. In contrast, the Southern zone lags substantially, with the lowest mean CCAI (49.1) and the highest internal disparity (CV = 22.7%). These results illustrate that access to formal credit in Haryana follows a north–south and canal–arid gradient, closely aligned with variations in irrigation infrastructure, crop patterns, and institutional density.

The overall Coefficient of Variation (CV) for KCC accounts (39.6%) and total outstanding credit (42.8%) underscores the spatially unequal distribution of institutional finance across districts. Although the composite index moderates this inequality (CCAI CV = 21.7%), disparities remain large enough to influence agricultural performance and income distribution. Such inter-district imbalances have serious policy implications, as they can perpetuate unequal adoption of technology, differential access to risk management tools, and uneven exposure to agricultural shocks.

From a developmental perspective, the findings highlight the path-dependent nature of financial outreach in Haryana. Districts historically endowed with better irrigation and stronger cooperative linkages have maintained their advantage through institutional inertia and better credit histories, while lagging regions remain trapped in a cycle of low formal access and dependence on informal sources. This structural imbalance mirrors national trends noted by NABARD (2024) and Chand and Singh (2022), where the benefits of financial deepening are unevenly distributed even within agriculturally advanced states.

The study underscores that mere expansion of KCC coverage does not guarantee equitable credit access. Policy efforts must shift from quantitative targets to qualitative dimensions—ensuring adequacy, timeliness, and productive utilization of credit. Strengthening PACS networks, expanding Regional Rural Bank (RRB) outreach, and digitizing KCC renewal processes can reduce transaction costs and enhance inclusion in lagging districts. Moreover, a zonal monitoring dashboard, combining credit flow data with indicators of irrigation, soil health, and market infrastructure, can provide real-time insights for targeted interventions.

At a broader level, the findings reaffirm the principle that financial inclusion and regional equity are mutually reinforcing. Bridging credit disparities across Haryana's zones will not only support inclusive agricultural growth but also contribute directly to the achievement of Sustainable Development Goal (SDG) 8 on *Decent Work and Economic Growth* and SDG 10 on *Reduced Inequalities*. By promoting equitable access to institutional finance, Haryana can move toward a more balanced and resilient agricultural economy that empowers small and marginal farmers while sustaining long-term productivity.

In conclusion, the study demonstrates that formal agricultural credit in Haryana remains regionally concentrated but shows potential for convergence if supported by targeted, data-driven, and institutionally coordinated policies. The adoption of integrated credit planning—linking financial inclusion with agro-climatic realities—can help transform credit from a supply-driven to a demand-responsive system. Future research may extend this analysis by incorporating time-series data, household-level surveys, and climate-risk variables to further unravel the complex interactions between credit accessibility, productivity, and resilience in Haryana's evolving rural landscape.

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