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# MULTIDIMENSIONAL ECONOMIC EMPOWERMENT AMONG SMALL-SCALE RICE FARMERS IN PAKISTAN: IMPLICATIONS FOR AGRICULTURAL MICROFINANCE

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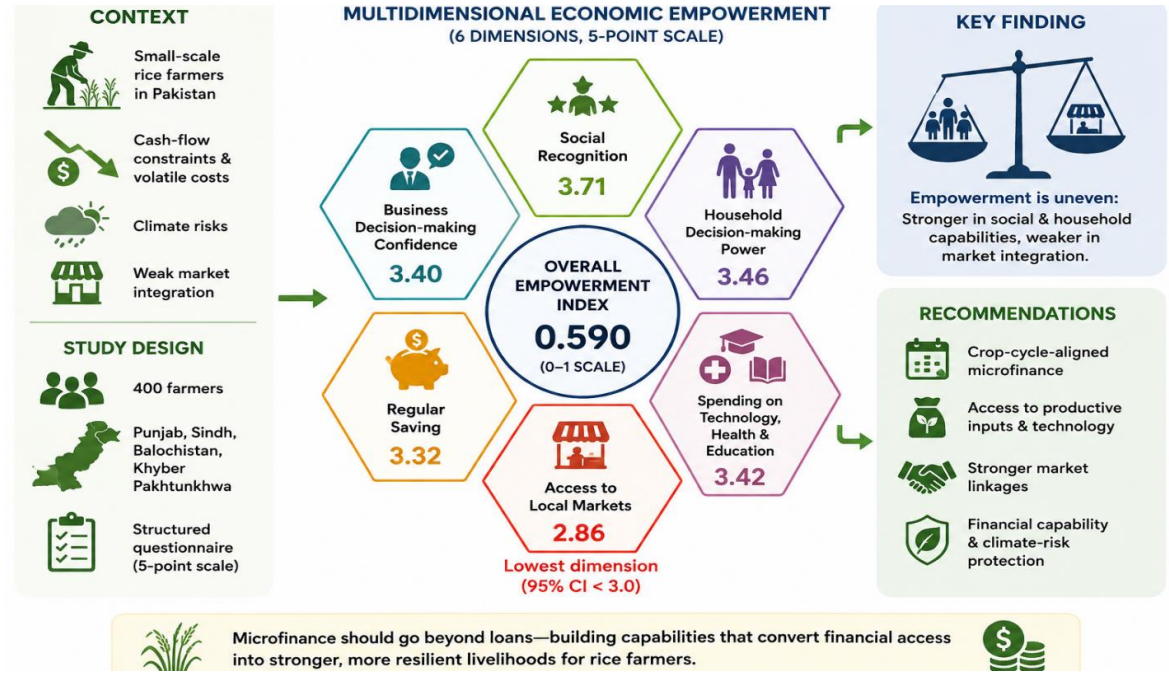
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## ABSTRACT

Small-scale rice farmers in Pakistan operate under seasonal cash-flow constraints, volatile input costs, weak market integration and recurrent climate-related risks. Agricultural microfinance is frequently proposed as a mechanism for strengthening rural livelihoods, yet empowerment is broader than access to credit alone. This study profiles multidimensional economic empowerment among small-scale rice farmers using a structured questionnaire designed for rice-growing communities in Pakistan. The survey targeted 400 farmers in Punjab, Sindh, Balochistan and Khyber Pakhtunkhwa, following a 15-farmer pilot test. Economic empowerment was summarized through six five-point indicators covering business decision-making confidence, social recognition, household decision-making power, regular saving, spending on technology, health and education, and access to local markets. Each dimension was normalized to a 0-1 scale using the stated min-max transformation. The aggregate index derived from the reported component means was 0.590. Social recognition recorded the highest mean score (3.71), followed by household decision-making power (3.46), welfare-related spending (3.42), business confidence (3.40) and regular saving (3.32). Local market access was the weakest dimension (2.86), and its 95% confidence interval remained below the neutral midpoint of 3.0. The results indicate that empowerment among rice farmers

is uneven: social and household-level capabilities appear stronger than market integration. Agricultural microfinance programs should therefore move beyond loan disbursement toward crop-cycle-aligned finance, productive input access, market linkages, practical financial capability and climate-risk protection. The study offers a multidimensional framework for designing rural finance around the capabilities that farmers need to convert financial access into more resilient livelihoods.

**KEYWORDS:** Microfinance, Economic Empowerment, Rice Farmers, Smallholders, Financial inclusion, Rural Finance, Pakistan.




## 1 INTRODUCTION

Agriculture remains a major component of Pakistan's economy and a central source of rural employment. The Pakistan Economic Survey 2025-26 reports that agriculture contributes 23.4% of national gross domestic product and accounts for 33.1% of employment (Government of Pakistan, 2026). Rice occupies an important position within this rural economy because it generates farm income, supports processing and trading activities, and contributes to export earnings. The economic importance of the crop is nevertheless accompanied by persistent constraints at farm level, particularly for smallholders with limited working capital and weak capacity to absorb production shocks.

Rice cultivation requires substantial expenditure before harvest. Farmers must finance land preparation, seed, fertilizer, pesticides, irrigation, labor and harvesting while most crop

revenue is realized only after the production cycle is completed. This timing creates a structural liquidity problem. Formal lenders may be reluctant to serve small farmers because incomes are seasonal, collateral is limited and repayment capacity can be disrupted by weather and price shocks. Informal lenders can fill the short-term liquidity gap, but interlinked credit and output-marketing arrangements may reduce farmers' bargaining power and reinforce dependency.

Microfinance has expanded the financial options available to underserved households by combining small loans with savings, insurance, payment services and financial education. Pakistan's regulatory framework for microfinance banks now places explicit emphasis on governance, operations, consumer protection and risk management (State Bank of Pakistan, 2025). The wider global financial-inclusion agenda similarly stresses not only account ownership but also the ability to save, borrow, make payments and manage risk (World Bank, 2025). These developments are particularly relevant to small-scale agriculture, where the usefulness of finance depends on its timing, affordability and connection to productive opportunities.

Evidence on microcredit cautions against assuming that access alone produces transformative welfare gains. Randomized evaluations show that average effects are often modest and heterogeneous across households and settings (Banerjee, Karlan, and Zinman, 2015; Banerjee et al., 2015; Meager, 2019). In agriculture, however, finance can operate through a distinct productive channel because liquidity can be converted directly into seed, fertilizer, irrigation, machinery and other inputs. Pakistan-specific research has linked institutional credit and financial capability with farm productivity and access to agricultural finance (Bashir and Mehmood, 2010; Raza et al., 2023a, 2023b). At the same time, climate, market, production and financial risks remain closely connected in rice farming (Mohsin et al., 2024).

A narrow focus on loan uptake therefore provides an incomplete picture of farmer welfare. Economic empowerment also involves the ability to make decisions, maintain precautionary savings, invest in household well-being, participate in markets and gain social recognition. Kabeer's resource-agency-achievement framework is useful in this respect because it separates access to resources from the ability to exercise choice and realize valued outcomes (Kabeer, 1999). The sustainable-livelihoods perspective similarly treats financial capital as one component of a wider asset system that includes human, social, physical and natural capital (DFID, 1999).

This study examines the multidimensional profile of economic empowerment among small-scale rice farmers in Pakistan and draws implications for the design of agricultural

microfinance. It addresses two related questions in a single empirical framework: how strongly do farmers score across distinct empowerment dimensions, and which dimensions remain comparatively weak? By focusing on the pattern of empowerment rather than equating credit access with impact, the study provides a more defensible basis for identifying where rural finance can be combined with productive, market and risk-management support.

## 2. Theoretical Background and Analytical Framework

### 2.1 Microfinance as a rural financial capability

Financial-development theory emphasizes the role of financial intermediation in mobilizing savings, allocating capital and reducing transaction costs. For small rice farmers, these functions are practical rather than abstract. A timely loan can prevent underinvestment at planting, while savings can provide liquidity between harvests and insurance can protect household assets when production fails. Yet the developmental value of finance depends on whether services are accessible, affordable and compatible with agricultural cash flow.

The agricultural setting also introduces a strong sequencing problem. Credit that arrives after input purchase, or repayment that begins before harvest, may fail to relax the actual constraint faced by a farmer. Similarly, a loan that covers only part of the seasonal production budget can lead to delayed fertilizer application, reduced seed quality or supplementary borrowing. Product design is therefore inseparable from productive capability.

### 2.2 Economic empowerment as resources, agency and achievement

Economic empowerment is best treated as a multidimensional outcome. Resources matter because they define the means available to a farmer; agency matters because resources must be converted into choices; achievements matter because the resulting decisions should improve the farmer's economic and social position. In the present study, confidence in business decisions and household decision-making represent agency, while saving, household investment, market access and social recognition reflect different forms of achievement.

This formulation also explains why market access deserves separate attention. A farmer can improve production and household decision-making yet remain weakly empowered if buyers, storage, price information and market channels remain controlled by intermediaries. The capacity to sell on better terms is therefore an important bridge between farm-level improvements and durable economic gains.

### 2.3 Analytical framework

Figure 1 integrates the theoretical logic of the study. Agricultural microfinance provides financial resources, but the pathway to empowerment runs through productive capability.

Input affordability, technology adoption, risk management and market participation translate financial resources into livelihood outcomes. These pathways are conditioned by the crop calendar, farm resources, irrigation, climate exposure, infrastructure, institutional quality and government support. The framework therefore treats empowerment as the result of interaction between finance and the wider rural production environment.

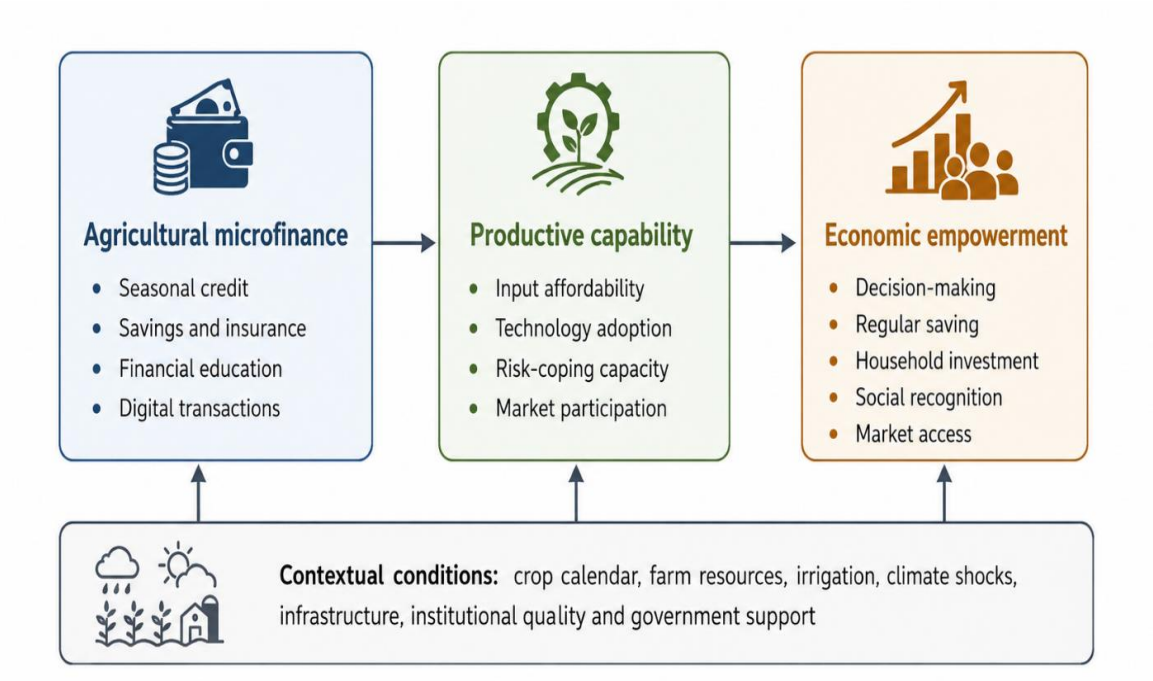



**Figure 1. Analytical framework linking agricultural microfinance, productive capability and multidimensional economic empowerment.**

## 3. MATERIALS AND METHODS

### 3.1 Study design and setting

The study used a quantitative cross-sectional survey focused on small-scale rice farmers in rural Pakistan. The sampling design was structured around four provincial strata: Punjab, Sindh, Balochistan and Khyber Pakhtunkhwa. These provinces represent contrasting irrigation systems, market conditions, levels of financial-service outreach and exposure to climatic stress. The intended sample was 400 farmers distributed across the provincial strata.

The questionnaire referred to farming conditions during 2024 and 2025 and collected information on farmer characteristics, rice production, microfinance use, training, risk, market access and economic empowerment. The present analysis treats the data as a cross-sectional survey because the reported results summarize respondents in a single analytical dataset.

### 3.2 Questionnaire development

The survey instrument contained seven modules covering respondent and family characteristics, rice-farming costs and benefits, microfinance use, agricultural technology and risk response, economic empowerment, farmer feedback and pilot-study remarks. A pilot survey with 15 farmers was conducted before the formal survey. Feedback was collected through individual interviews, after which ambiguous items were reworded and questions on crop-cycle suitability, training content, climate risk, market access and the transparency of financial transactions were strengthened.

### 3.3 Measurement of economic empowerment

Economic empowerment was summarized through six five-point indicators reported in the empirical results: business decision-making confidence, social recognition as a successful farmer, greater household decision-making power, regular saving for emergencies or future needs, increased spending on technology, health and education, and access to local markets. These dimensions capture agency, financial resilience, household investment, social standing and market participation.

For comparability across dimensions, each mean score was transformed from the original 1-5 scale to a 0-1 scale using the stated min-max transformation, normalized score = (mean - 1) / 4. The overall Economic Empowerment Index was calculated as the arithmetic mean of the six normalized component scores. The normalized values reported in this article were recalculated directly from the published component means using this formula.

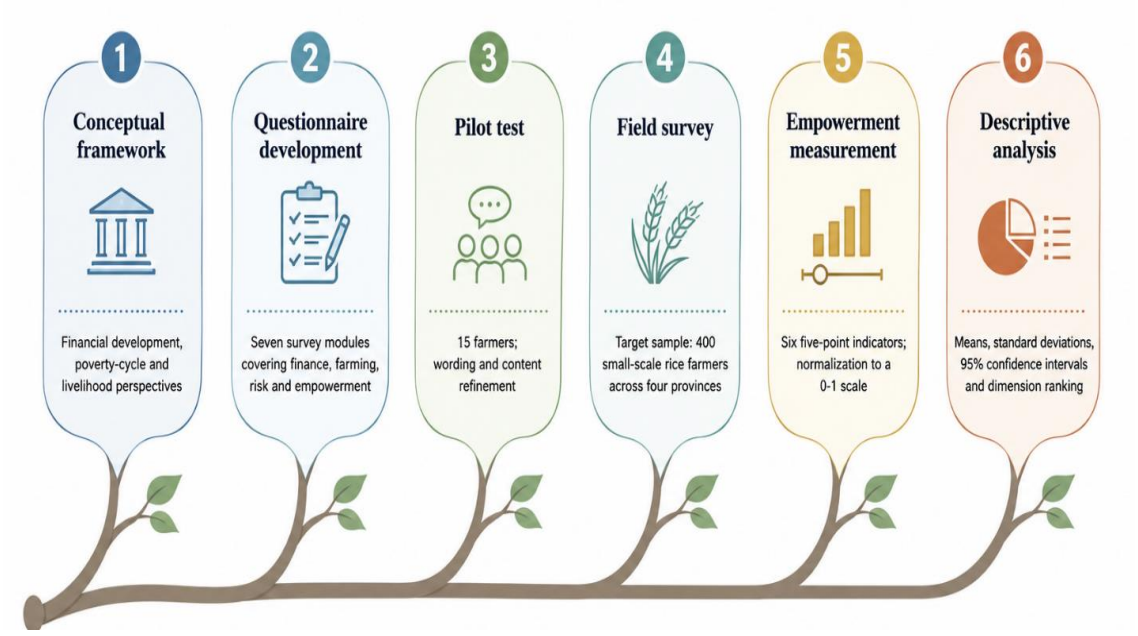



**Figure 2. Survey design and analytical workflow.**

| Dimension | Interpretive meaning | Scale |
|---|---|---|
| Business decision-making confidence | Confidence in making farm and business choices | 1-5 |
| Social recognition | Recognition and standing as a successful farmer in the community | 1-5 |
| Household decision-making power | Influence over economic decisions within the household | 1-5 |
| Regular saving | Capacity to maintain precautionary savings for emergencies and future needs | 1-5 |
| Technology, health and education spending | Ability to allocate resources to productive and welfare-enhancing expenditure | 1-5 |
| Local market access | Ability to participate in local markets and reach buyers | 1-5 |

### 3.4 Statistical analysis

The analysis was descriptive and focused on the magnitude and dispersion of the six empowerment dimensions. Means and standard deviations were used to summarize each dimension. Approximate 95% confidence intervals for the mean were calculated as mean ± 1.96(SD/√N), using N = 400 as reported in the descriptive results. The neutral midpoint of the original scale (3.0) was used as a visual reference rather than as a formal hypothesis threshold. The six normalized dimension scores were then averaged to obtain the aggregate empowerment index.

## 4. RESULTS

### 4.1 Overall economic empowerment profile

The aggregate empowerment index calculated from the six reported component means was 0.590 on the 0-1 scale. The component profile was not uniform. Social recognition was the strongest dimension, with a mean of 3.71, while local market access was the weakest, with a mean of 2.86. Household decision-making power, welfare-related spending, business confidence and regular saving all recorded means between 3.32 and 3.46. This distribution indicates that perceived empowerment was stronger in social and household domains than in the farmer's connection to markets.

**Table 2. Descriptive profile of the six economic-empowerment dimensions.**

| Dimension | Mean | SD | 95% CI | Normalized score | Rank |
|---|---|---|---|---|---|
| Business decision-making confidence | 3.40 | 0.491 | [3.35, 3.45] | 0.600 | 4 |
| Social recognition as a successful farmer | 3.71 | 0.454 | [3.67, 3.75] | 0.677 | 1 |
| Household decision-making power | 3.46 | 0.499 | [3.41, 3.51] | 0.615 | 2 |
| Regular saving for emergencies/future | 3.32 | 0.990 | [3.22, 3.42] | 0.580 | 5 |
| Spending on technology, health and education | 3.42 | 0.520 | [3.37, 3.47] | 0.605 | 3 |
| Access to local markets | 2.86 | 1.171 | [2.75, 2.97] | 0.465 | 6 |

### 4.2 Variation across empowerment dimensions

The 95% confidence intervals reinforce the contrast among dimensions. Social recognition had an interval of approximately 3.67-3.75, household decision-making 3.41-3.51, welfare-related spending 3.37-3.47, business confidence 3.35-3.45 and regular saving 3.22-3.42. All five intervals were above the scale midpoint. In contrast, the confidence interval for local market access was approximately 2.75-2.97 and remained below the midpoint. The gap between the highest and lowest component means was 0.85 scale points.

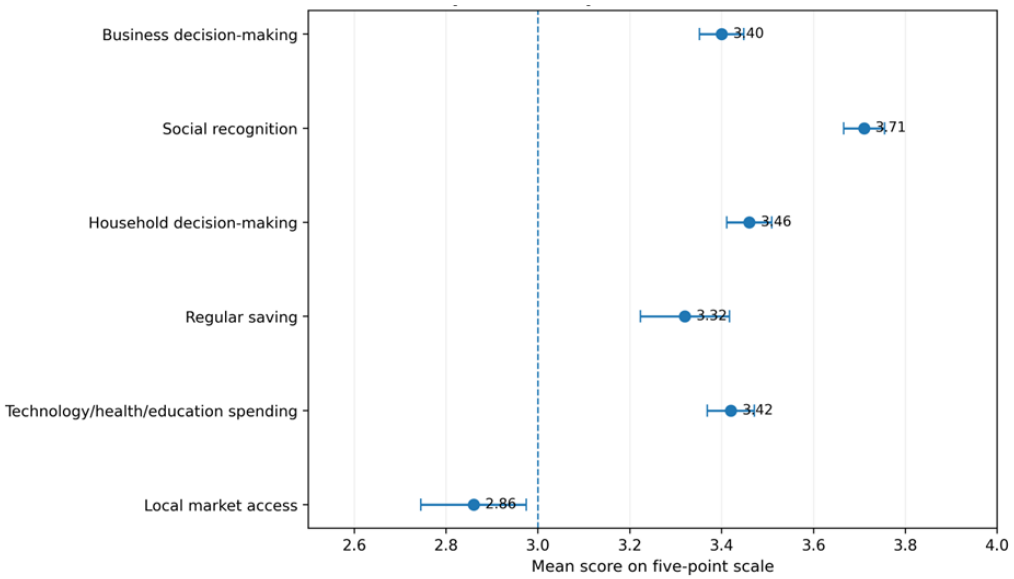



**Figure 3. Mean economic-empowerment scores with approximate 95% confidence intervals. The dashed line indicates the neutral midpoint of the five-point response scale.**

## 5. DISCUSSION

### 5.1 Uneven empowerment: stronger agency than market integration

The results reveal an important asymmetry in the empowerment profile. Farmers reported comparatively strong social recognition, household decision-making and business confidence, yet local market access remained below the midpoint. This pattern suggests that empowerment is not a single continuum on which every capability advances at the same pace. Farmers may gain confidence, status and influence within the household while still operating in markets characterized by weak bargaining power, dependence on intermediaries, limited storage and restricted access to price information.

The finding is consistent with a resources-agency-achievement interpretation of empowerment. Financial resources can enlarge the set of choices available to farmers, but the achievement of better market outcomes depends on institutions outside the household. Roads,

storage, buyer competition, quality standards, information flows and contract enforcement determine whether increased production or improved decision-making can be converted into higher and more stable returns.

**5.2 Implications for agricultural microfinance**

Agricultural microfinance should therefore be designed around the production cycle rather than around a generic microenterprise model. Rice farmers incur concentrated expenditures before planting and receive most cash income after harvest. Loan disbursement should occur early enough to finance land preparation and input purchase, and repayment schedules should reflect harvest-based cash flow. This is consistent with the broader principle that financial access becomes useful only when it is aligned with the timing and structure of the underlying economic activity.

The empowerment profile also supports linking finance with productive input channels. Institutional credit has been associated with rice productivity in Pakistan, while financial literacy and credit access shape farm performance and the ability to use formal finance effectively (Bashir and Mehmood, 2010; Raza et al., 2023a, 2023b). Microfinance institutions can strengthen this pathway by working with certified seed and fertilizer suppliers, extension services and machinery providers, provided that farmers retain choice and prices remain transparent.

Savings and risk-management products deserve equal attention. The regular-saving score was positive but lower than the social and decision-making dimensions. Savings can reduce the need for distress borrowing, while appropriate crop-risk protection can prevent a productive loan from becoming a debt burden after flood, drought or other shocks. The importance of these mechanisms is reinforced by evidence that climate, production, market and financial risks are tightly connected in Pakistan's rice sector (Mohsin et al., 2024).

**5.3 Market access as the critical bottleneck**

Local market access was the only empowerment dimension whose confidence interval remained below the neutral midpoint. This makes market integration the clearest practical weakness identified by the survey. A credit program that improves input purchasing without improving the terms on which output is sold may raise production yet leave farmers exposed to the same marketing constraints. Agricultural finance should therefore be coordinated with buyer linkages, grading and quality information, storage access and transparent price discovery.

Digital finance may contribute to this process by reducing transaction costs and improving records, but technology should not be treated as a substitute for market institutions. The State

Bank of Pakistan's revised microfinance regulations emphasize consumer protection and risk management, which provides an institutional foundation for safer expansion of digital and branchless services (State Bank of Pakistan, 2025). The relevant policy objective is not digitalization for its own sake, but the use of technology to improve transparency, access and farmer bargaining capacity.

**5.4 Policy implications**

Government policy can increase the return to microfinance by reducing the non-financial constraints surrounding rice production. Irrigation reliability, rural roads, storage, extension, input-quality regulation and market information all affect the productivity of borrowed capital. Public support for agricultural credit is therefore most effective when coordinated with agricultural infrastructure and extension rather than delivered as an isolated lending target.

Financial-literacy initiatives should focus on practical farm cash-flow management, effective borrowing costs, repayment planning, savings, insurance and marketing decisions. The Global Findex 2025 framework emphasizes that meaningful financial inclusion involves the use of financial services to save, borrow, make payments and manage risk, not simply ownership of an account (World Bank, 2025). For rice farmers, these capabilities should be integrated with extension services so that financial and production decisions are addressed together.

**5.5 Limitations**

The study is cross-sectional and based on self-reported survey responses. The results therefore describe perceived empowerment and cannot establish whether microfinance caused the observed outcomes. The analysis also relies on aggregate component statistics rather than respondent-level re-estimation of a latent empowerment construct. The equal weighting of the six dimensions is transparent and easy to interpret, but alternative weighting schemes could produce somewhat different aggregate scores.

The provincial sampling strategy was designed to capture heterogeneity in agricultural and financial conditions, but the present analysis reports only the pooled empowerment profile. Future studies should estimate province-specific and gender-specific patterns using verified respondent-level data. Longitudinal data collected before and after financial-service use would allow stronger assessment of how credit timing, loan size, effective cost, savings, insurance and market linkages contribute to changes in farmer welfare.

## 6. CONCLUSION

Economic empowerment among the surveyed small-scale rice farmers was multidimensional and uneven. The aggregate index calculated from the six reported component means was 0.590. Social recognition, household decision-making, welfare-related spending, business confidence and regular saving were all above the midpoint of the five-point scale, whereas local market access remained below it. The central empirical message is therefore not that farmers lack agency, but that stronger household and social capabilities have not been matched by equally strong market integration.

This distinction has direct implications for agricultural microfinance. Expanding credit alone is unlikely to resolve the constraints facing rice farmers. Financial services should be aligned with the crop calendar and connected to productive inputs, practical financial capability, market access and climate-risk protection. A rural-finance strategy built around these complementary capabilities is more consistent with the multidimensional nature of empowerment and with the realities of smallholder rice production in Pakistan.

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