**Participatory Approaches to Value Chain Development: Evidence from Chickpea Farmers in Punjab, Pakistan**

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In Pakistan, nearly 90% of pulses farmers are smallholders who lack access to market information and struggle to align production with consumer preferences, limiting their ability to capture value in the value chain. Pulses, including chickpeas, are crucial in the national diet but are mainly cultivated on marginal lands under traditional practices, resulting in low productivity and profitability. This study examines how a participatory approach grounded in inclusivity, empowerment, and collaboration can foster value chain development for chickpea farmers in Punjab, Pakistan. Conducted under the international research-for-development project “Developing Competitive and Inclusive Value Chains of Pulses in Pakistan (ADP/2017/004),” funded by ACIAR Australia, the research highlights interventions such as “walking the chain” to connect farmers with market demands; capacity building through awareness seminars, training on mechanical cleaning and grading, pre- and post-harvest management, provision of quality seed and better storage materials; and trial consignments to test market acceptance. Collaborative linkages were established between farmers, processors, local dealers, digital platform operators, and retailers, fostering behavioral change among farmers and encouraging basic value addition at farm level. As a result, farmers improved market knowledge, product quality, and positioned themselves for partnerships with higher-value market actors, leading to greater profitability, investment in technology, and delivering more value to consumers—a win-win outcome across the value chain. Despite these gains, challenges remain in scaling up such models, ensuring sustainability, building trust among stakeholders, and improving product quality. Policy recommendations include promoting frequent commercial transactions, formal agreements, and entrepreneurial thinking among farmers to sustain and expand the benefits of participatory value chain development.

1. **Introduction**

Pulses are vital for food security and agricultural sustainability in South Asia, contributing significantly to both nutritional intake and soil health (FAO, 2020). In Pakistan, chickpeas represent a substantial portion of pulse production, particularly within Punjab's rainfed regions. However, the chickpea sector faces challenges including low yields, limited value addition, and fragmented marketing systems (Farooq et al., 2020; Government of Pakistan, 2021). Approximately 90% of Pakistani pulse farmers are smallholders lacking access to reliable market information and constrained in adopting modern production and post-harvest technologies (ACIAR, 2019). Dominated by intermediaries, traditional value chains restrict farmers' ability to capture the higher margins associated with quality differentiation and direct market access (Ali et al., 2017).

Emerging evidence suggests that participatory approaches to agricultural development—characterized by collaborative stakeholder engagement in problem-solving—can enhance market integration and value addition for smallholders (Donovan et al., 2015). However, empirical research evaluating the efficacy of such participatory models within Pakistani pulse value chains remains limited. This study investigates the impact of participatory value chain development on market outcomes for chickpea farmers in Punjab, analyzing the implementation of participatory methods and assessing their effects on farmers' knowledge, practices, and economic performance. The findings contribute to the existing literature by providing empirical evidence on participatory upgrading within pulse value chains—a sector crucial for food security and rural livelihoods in Pakistan.

1. **Theoretical** **Background**

Value chain development within agricultural markets is informed by several theoretical frameworks. Three key perspectives underpin this analysis:

First, transaction cost economics (Williamson, 1985) explains how high search, negotiation, and enforcement costs deter smallholder market participation. Participatory interventions can mitigate these costs by improving information flow and fostering trust among value chain actors.

Second, global value chain theory (Gereffi et al., 2005) emphasizes the role of governance structures—ranging from market-based to hierarchical—in shaping producers' upgrading opportunities. Participatory approaches can facilitate a shift towards more relational governance structures, promoting information sharing and collaborative problem-solving.

Third, collective action theory (Olson, 1965; Markelova et al., 2009) posits that coordinated production, aggregation, and bargaining strategies enhance smallholder market outcomes. Participatory models can strengthen farmers' collective organizational capacity and bargaining power.

These theoretical frameworks provide a basis for understanding how participatory approaches can improve smallholder integration into higher-value markets and for identifying potential barriers to scaling these interventions.

1. **Literature** **Review**

Participatory development has emerged as a central paradigm in agricultural research and extension (Chambers, 1994; Pretty, 1995). Studies across Asia and Africa demonstrate that participatory methods, including participatory rural appraisal and value chain mapping, enhance farmer engagement, technology adoption, and market linkages (Hellin et al., 2009; Kristjanson et al., 2014).

Within the context of value chains, Donovan et al. (2015) review successful participatory approaches linking smallholders to high-value markets. Tools such as "walking the chain"—where stakeholders collaboratively analyze each stage of the value chain—have proven effective in building mutual understanding and trust (Mitchell et al., 2009). However, sustainability and scalability remain significant challenges, as participatory initiatives often rely on external facilitation and funding (Lundy et al., 2012).

Research in South Asia highlights persistent challenges within pulse value chains, including inadequate post-harvest processing, low product quality, and insufficient price incentives for quality upgrading (Birthal et al., 2015; Farooq et al., 2020). While interventions such as improved seeds and mechanization can boost productivity, the literature emphasizes that market linkages are crucial for farmers to realize economic benefits (Ali et al., 2017).

This study addresses a knowledge gap by providing empirical evidence on participatory value chain interventions within Pakistan's chickpea sector—a sector vital for both nutritional security and rural livelihoods.

1. **Methodology**

**4.1. Research** **Design**

his study employed a participatory action research (PAR) framework to facilitate collaborative inquiry among farmers, market actors, and researchers. This iterative process involved diagnosing value chain bottlenecks, testing potential solutions, and collaboratively analyzing outcomes. The participatory approach incorporated three core principles: inclusivity, empowerment, and collaboration. Inclusivity was ensured through value chain exposure visits ("walking the chain"), engaging farmers, extension workers, wholesalers, processors, and retailers. Empowerment was achieved through capacity-building initiatives, including awareness seminars, training workshops on mechanical cleaning and grading, and the provision of improved storage materials and high-quality seed (with a 50% cost-sharing partnership). Collaboration was fostered by linking farmers with both downstream (processors, local dealers, digital platform operators, retailers) and upstream (machinery manufacturers, seed companies, research institutions) partners.

**4.2. Study Area and Participants**

The study focused on Chakwal district in Punjab, a major chickpea-producing area characterized by outdated agronomic practices, limited collective marketing, and weak urban value chain linkages. Smallholders' reliance on traditional traders restricts their bargaining power and incentives for quality improvement. This case study, conducted under the ACIAR-funded project "Developing Competitive and Inclusive Value Chains of Pulses in Pakistan (ADP/2017/004)," builds upon data collected across various Pakistani locations (Chakwal, Bhakkar, Mankehra, Karak, Sukkur, and Larkana). In Chakwal, farmers were organized into clusters (20-40 farmers per cluster, each led by a lead farmer), selected using purposive and snowball sampling techniques, from two tehsils: Lawa and Kot Sarangh. These clusters facilitated peer learning and collective bargaining. Seven farmers from these clusters participated in trial consignments, selected via purposive sampling. Other participants included processors (daal millers), wholesale traders ("arthis"), retailers, supermarket managers, researchers, and extension officials.

**4.3. Data Collection**

Data collection methods included stakeholder workshops, "walk-the-chain" exercises, farmer field schools, training on post-harvest practices, demonstration plots for varietal and storage trials, and trial consignments sent to urban retail and processing hubs.

**4.4. Data Analysis**

Data analysis employed observational, descriptive, inferential, and deductive approaches, complemented by thematic content analysis. Trial consignment results were analyzed using cost-benefit analysis, comparing price, quality, and buyer response.

1. **Results and Discussion**

As described in methodology, the project employed a three-pronged participatory approach: inclusivity (engaging all stakeholders via "walking the chain"), empowerment (capacity building through seminars, workshops, and cost-sharing partnerships for improved equipment and storage), and collaboration (linking upstream and downstream partners). These resulted into increased awareness of market required quality parameters particularly by the processors and retailers and adoption of mechanical grading, hermetic storage, use of improved seed.

Trial consignments were sent from Chakwal to processors Three quality levels were tested. Results are presented in table 1.

**Table 1. Price and Feedback from Trial Consignments**

|  |  |  |
| --- | --- | --- |
| Sample Type | Price (PKR/100kg) | Quality Feedback |
| Traditional Sample | 8,200 | High foreign matter, inconsistent size |
| Manually Cleaned | 8,900 | Better quality but labor-intensive |
| Mechanically Graded | 9,600 | Clean, uniform, preferred by buyer |

Buyers expressed interest in future purchases, conditional on bulk consistency. Farmers saw net price gains of 15–20% over traditional channels. Following are the quality parameters for chickpeas used in determining deductions ("Cut/Watta") processor level:

* **Kacher (Foreign Material):** An acceptable level of up to 3% kacher (foreign material) is allowed. For every percentage point above 3%, a deduction of 77 kg per 11,000 kg of total produce is applied (approximately 0.7% deduction per additional percentage point of kacher).
* **Moisture Content:** A maximum moisture content of 7% is acceptable. Any percentage point above 7% results in a deduction of 110 kg per 11,000 kg of total produce (1% deduction per additional percentage point above 7%).
* **Damaged Grains:** Up to 3% damaged grains are acceptable. Similar to kacher, each percentage point above 3% incurs a deduction of 77 kg per 11,000 kg of total produce (0.7% deduction per additional percentage point of damaged grains).
* **Size:** The size parameter has two thresholds:
	+ **50% of the produce exceeding 7mm:** If less than 50% of the chickpeas are larger than 7mm, a deduction of 20 rupees per percentage point below 50% is applied, along with a deduction of 1.36 kg per 100 kg.
	+ **75% of the produce exceeding 7mm:** If 75% or more of the chickpeas are larger than 7mm, there is no deduction, and a price premium of 300-400 rupees per 40 kg is added.

These deductions are applied to ensure consistent quality standards and incentivize farmers to improve their post-harvest handling and grading practices. The specific deduction rates are likely based on market conditions and negotiations between buyers and sellers.

The participatory approach facilitated connections between farmers and stakeholders across the value chain. This involved:

**Downstream linkages:** These connections focused on getting the farmers' products to consumers. The project facilitated relationships with:

**Processors:** Farmers were connected with processors to ensure their produce reached processing facilities. Trial consignments were a key mechanism for this, allowing farmers to test market responses and build relationships.

* **Local Dealers/Retailers:** Links were established with local dealers and retailers to provide market access and expand sales channels.
* **Digital Platform Operators:** The project explored the use of digital platforms to connect farmers directly with buyers, improving market transparency and efficiency.

**Upstream linkages:** These connections focused on providing farmers with better inputs and resources. The project facilitated relationships with:

**Machinery Manufacturers:** Access to better equipment (like mechanical cleaning and grading machines) was facilitated through connections with manufacturers.

* **Seed Companies:** The project worked to connect farmers with seed companies to ensure access to high-quality, certified seeds.
* **Research Institutions:** Collaboration with research institutions provided farmers with access to improved technologies and knowledge.

The relationships between farmers and various stakeholders in the pulse value chain presented several challenges and opportunities. Let's examine these relationships in detail:

**1. Farmer to Processor/Wholesaler:** This link proved crucial for farmers to access larger markets. Successful partnerships were enabled by trial consignments, which allowed farmers to test market viability and build relationships with processors. Logistics support, including transportation and storage, was also essential. Effective coordination among farmers was vital for supplying sufficient volumes consistently. However, several barriers existed. Smallholder farmers often struggled to provide large enough volumes to meet processor demands. High levels of damage and high moisture content in the produce reduced its value and marketability. The inconsistent supply from smallholder farmers made it difficult for processors to plan production and create reliable supply chains.

**2. Farmer to Digital Platform:** Digital platforms offered the potential to connect farmers directly with consumers, bypassing traditional intermediaries. The success of these partnerships depended on several factors. Formal written agreements were vital for establishing clear expectations and terms. Proper packaging, labeling, and marketing were crucial for attracting consumers. Reliable logistics support was needed to ensure timely delivery. However, challenges remained. Inconsistent supply from farmers made it difficult for platforms to meet consumer demand. Conversely, inconsistent demand from consumers created uncertainty for farmers. The limited range of pulse products offered through some platforms and high transportation costs were additional hurdles.

**3. Farmer to High-End Markets:** Accessing high-end markets presented opportunities for higher prices but required significant effort. Capacity building, including training on quality standards and post-harvest handling, was essential. Attractive packaging and labeling were crucial for meeting consumer expectations. Coordination among farmers was needed to ensure consistent supply. However, inconsistent supply and demand remained a significant barrier, as did competition from imported pulses, which often had lower prices. High transportation costs also reduced profitability.

**4. Farmer and Seed Company:** The relationship with seed companies was critical for accessing high-quality seeds, which could improve yields and quality. Project-facilitated negotiations helped bridge the gap between farmers and seed companies, often characterized by differing priorities. The provision of certified seed was a key enabler. However, seed companies often require high volumes, which smallholder farmers typically struggle to provide. This mismatch in scale, coupled with the fact that smallholders often don't fit the business models of large seed companies, created a barrier. Limited coordination among farmers further hindered their ability to negotiate favorable terms.

**5. Farmers and Research Institutions:** Collaboration with research institutions offered access to improved technologies and knowledge. The provision of quality seeds, coordination support, logistics support, and cost-sharing were key enablers. However, limited resources within research institutions and a lack of coordination between researchers and farmers often hampered progress. High transportation costs also posed a significant challenge, particularly for farmers in remote areas.

**6. Farmers and Manufacturers:** Connecting farmers with manufacturers of processing equipment offered the potential to improve the quality of their produce and increase efficiency. Capacity building, increased motivation among farmers, cost-sharing for equipment, and coordination support were all essential enablers. However, significant barriers remained. Lack of coordination among farmers made it difficult to negotiate favorable terms with manufacturers. Poor coordination between farmers and manufacturers also hindered the effective use of equipment. The high purchase and maintenance costs of machinery were a major financial hurdle for smallholder farmers.

The project to develop competitive and inclusive pulse value chains in Pakistan yielded valuable lessons and highlighted persistent challenges. One key lesson learned was the importance of farmer awareness, motivation, and capacity building in creating value at the farm level. Equipping farmers with the knowledge and skills to improve post-harvest handling, grading, and packaging proved essential for their participation in demonstration value chains. The project demonstrated that collective action and a focus on quality significantly increased profitability. However, to sustain these improvements, a consistent supply of larger volumes of higher-quality produce is crucial for building and maintaining strong relationships with chain partners. Furthermore, the project highlighted the need for more effective coordination among farmers to achieve economies of scale and better negotiate with buyers.

Several challenges emerged during the project. Scaling up the successful demonstration value chains to a larger scale proved difficult, requiring further investment and support. Commercializing value-added products produced by women, while promising, faced obstacles related to market access and distribution. Building trust among growers within a cluster was essential for collective action but required time and effort. Inconsistent and irregular demand from commercial partners created uncertainty for farmers. Logistical issues along the chain, from farm to end market, including transportation and storage, needed improvement. Maintaining consistent quality of produce at the farm level remained a significant challenge. Finally, a lack of trust between farmers and various stakeholders, such as processors, wholesalers, and seed companies, hindered the development of strong and reliable partnerships. Addressing these challenges is critical for ensuring the long-term success and sustainability of the project's goals.

# Conclusion

This study affirms that participatory value chain development offers tangible improvements in knowledge, practices, and profitability for chickpea smallholders in Pakistan. By empowering farmers to engage directly with downstream actors through tools like "walking the chain," training workshops, and pilot consignments, the project bridged critical information gaps and facilitated trust-based relationships along the value chain.

The outcomes demonstrated that participatory approaches are not merely theoretical ideals but practical mechanisms for catalyzing rural transformation. Farmers reported improved post-harvest practices, with adoption rates for mechanical grading and hermetic storage reaching over 60%. Trial consignments revealed that quality differentiation can yield up to 20% price premiums. Furthermore, engagement in national expos and local demonstrations significantly raised stakeholder awareness and stimulated market interest in direct procurement models.

However, the project also exposed systemic challenges. Access to affordable technology, resistance from entrenched intermediaries, and the difficulty of scaling facilitation-intensive models remain significant hurdles. To address these, we propose the following practical recommendations:

- Develop public-private partnerships to co-invest in small-scale cleaning and packaging infrastructure that supports collective farmer enterprises.

- Integrate participatory approaches into national extension programs, enabling wider dissemination through institutional channels.

- Support inclusive digital platforms that can help aggregate smallholder supply, facilitate transparent transactions, and disseminate price and quality information.

- Provide financial instruments, such as micro-leasing and working capital credit, for farmers investing in value addition.

- Enhance gender-inclusive training modules, given the critical role of women in cleaning, sorting, and grading.

In conclusion, this research contributes not only empirical evidence on participatory agricultural development but also offers a replicable model for enhancing pulse value chains in other regions of South Asia. Scaling such approaches requires a sustained commitment to institutional innovation, inclusive facilitation, and adaptive policy support.

# Acknowledgments

This research is based on activities conducted under the ACIAR-funded project ADP/2017/004. We acknowledge contributions by the UAF team, local farmers, and value chain stakeholders.

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