

Essays on Improving Quality in Agricultural Supply Chain

Ph.D. Scholar

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The agricultural supply chain has been going through a paradigm shift, from a productivity-based approach to a quality-based sustainable approach (Dong, 2021). The significance of agricultural product quality has become an increasingly important issue. Technological advancement coupled with urbanization changes the lifestyles and food consumption behavior of the consumers. The demand for high-quality food increases as people become more health-conscious. It creates new opportunities to increase income and improve livelihood of smallholders and marginal farmers in the developing economies. The recent proliferation in e-commerce business (Tian et al., 2018) shows a possibility of growth for the various segments, including agriculture, which can be translated into a driving force for the economic development of the farmers.

However, it poses significant challenges to the farming community of developing economies to improve the quality of their product. The difficulty in producing high-quality agricultural products in developing countries rests on various interrelated factors (FAO, 2017). First, the fragmented landholding pattern is a significant obstacle to achieving uniformity in production quality. Most farmers are smallholders, with an average landholding of about 1 hectare. For example, 85% of the cultivable land in India falls under this category (FAO, 2010; Singh, 2021). Second, the meager economic condition of the farmers causes farming activity at the subsistence level. The farmers have limited interest in improving the farming infrastructure and using high-quality inputs owing to their financial hardships. Third, it is often difficult for farmers to obtain

credits and loans conveniently to upgrade their existing infrastructure to ensure high quality (Kapil, 2021). Fourth, the limited knowledge among farmers hinders following environmentally sustainable Good Agricultural Practices (GAP) (FAO, 2016). Fifth, the farming community predominantly stays in the rural area with limited access to modern agricultural techniques, reliable information about input costs and market prices, consumer demands, efficient sales channels, connectivity, and logistics (APEDA, 2016).

The agricultural cooperative is an important institution that helps the farmers to increase their profitability (Chaddad and Cook, 2004). An agricultural cooperative benefits the farmers by reducing production costs, stabilizing process yield, increasing brand awareness, eliminating intermediaries, and managing price uncertainty (An et al., 2015). Similarly, food manufacturers or food retailers have also in recent decades been collaborating with small farmers in helping them improve quality and access more lucrative markets.

In this thesis, we investigate various approaches to ensure the quality of agricultural products while increasing the profitability of smallholder farmers in developing economies. The thesis consists of three independent essays; we explore different research problems pertaining to the quality aspects in the agricultural supply chain in each essay. The first essay discusses the impact of *quality testing* by the cooperative on quality improvement efforts by the farmer. The second essay compares *economically motivated adulteration* under different milk aggregator models. The third essay describes the impact of *supply chain finance* on the quality decision of a capital-constrained farmer.

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