

**Unraveling Post-Harvest Challenges: A Horticulture
Constraint Scale for Indian Farmers**

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**Archana G.
(14BM91S01)**

Under the guidance of

Dr. Prabina Rajib



**Vinod Gupta School of Management
Indian Institute of Technology Kharagpur
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ABSTRACT

Agriculture is a crucial sector in the Indian economy, employing around 50% of the workforce and contributing 17-18% of the GDP (World Bank, 2021). India has experienced growth in foodgrain production and agricultural exports in recent years (Department of Commerce, 2021). India has become a significant exporter of agricultural and horticultural products, with exports growing substantially over the past decade (APEDA, 2019). There has been a shift towards horticulture as it offers higher earnings compared to traditional agriculture (MoA & FW, 2021). Indian farmers, especially those in the horticulture sector, face numerous challenges that hinder their ability to maximize their income. These challenges include post-harvest issues related to inadequate storage and transport facilities, lack of processing infrastructure, and poor market linkages (APEDA, 2019). Addressing post-harvest challenges is critical for ensuring the long-term sustainability and growth of India's agriculture sector (Kumar & Kalita, 2017), particularly in the horticulture industry.

The objectives of this study are three-pronged. First, it fulfils the urgent need for a Post-Harvest Farmer Constraint Measurement (PHFCM) scale, guided by the Theory of Constraints (TOC) and Measurement Theory, specifically adapted to the conditions of Indian horticulture farmers. By building on the existing literature and engaging with key informants and farmer groups, it successfully designs, tests, and validates this scale. It uses 'Churchill's Scale Development Steps' as a framework, effectively bridging the gaps in current research. The constraints identified include infrastructure, market, finance, and information constraints. The research focuses on the district of Vijayapura in Karnataka to test and validate the scale. Here, it collects data from 2653 dry grape (Raisin) farmer households in the regional language 'Kannada', considering that Karnataka is India's second-largest grape producer.

Second, the research employs a robust methodology, including multinomial logit regression (MnLR), to model socio-economic factors impacting farmers' choice of marketing channels. The results indicated that farmers' education, age, gender, farm size, participation of commission agents, and awareness of the United Market Platform by Rashtriya e-Marketing Services significantly influenced their choice of marketing channel.

Third, Henry Garrett's ranking method is employed to analyze channel-wise post-harvest constraints. Garrett's ranking method revealed that the most significant constraints for grape farmers in the Vijayapura district were related to the market category, followed by infrastructure, information, and financial categories. This allows a detailed understanding of both the contributing factors and the severity of these constraints based on Theory of Constraints and provides a holistic understanding of the challenges in agricultural price risk management.

Keywords: *Horticulture, Post-Harvest, Farmer Constraints, Scale Development, Measurement Scale, Socio-Economic Factors, Marketing Channels.*