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Assessing agri-tech support for smallholder farmers in the Philippines: A multi-criteria gap analysis

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Abstract

The Philippines has demonstrated significant adoption of digital technology brought about by the prevalent online platform use among its young demographics. This trend has influenced multiple industries to integrate digitalisation, including agriculture. With the growing role of online marketplaces in agricultural trade, agri-tech enterprises (i.e., operators of agri-food e-commerce) have become instrumental in redefining the Philippine agri-food value chain. This development has empowered smallholder farmers to participate directly in the food system, shifting away from the traditional model characterised by isolation and limited market access. Therefore, understanding the assistance framework of agri-tech for smallholders is critical to enhancing rural livelihoods and ensuring equitability in the food system. This study assesses the gap between smallholder farmers' perceptions and their expectations regarding support mechanisms provided by agri-tech enterprises. Through grounded theory, eight (8) key support mechanisms were identified, such as collaborative partnerships, facilitating post-harvest infrastructure, farm development, market optimisation, production support services, quality and standards enforcement, skills enhancement, and revitalizing the agri-food system. This has further affirmed the role of agri-tech not only to support market access but also to offer assistance throughout the agri-food value chain. Data from sixteen (16) smallholder farmers, employing an integrated multi-criteria evaluation—combining Analytic Hierarchy Process (AHP), VIKOR, and Importance-Performance Analysis (IPA)—revealed a significant misalignment between perceived priorities and actual expectations. While agri-tech prioritises revitalizing the agri-food system through a data-driven and digitally connected system to enhance decision-making and farm efficiency, smallholders expect assistance for market optimisation and production support services such as provision of credit and inputs. To better integrate smallholders into digital value chains, agri-tech enterprises must recalibrate their approach, particularly by strengthening market access and production support needs. Stakeholders in the digital agri-food system are recommended to co-develop inclusive tools necessary for timely production and enhancement of the demand and supply linkages that align well with smallholder expectations. These strategies are crucial for connecting the agri-tech support mechanisms with the needs of smallholders and reinforcing their collective role in building equitable and sustainable agri-food systems.

Keywords: Agri-food value chain, digital food system, e-commerce, gap analysis

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