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Analysis of determinants of adoption of service-based business of digital agricultural extension technologies: an *ex-ante* evidence

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Abstract

Agricultural extension plays a crucial role in agriculture development, and its efficiency is still a real challenge that needs attention, especially to achieve the 2030 Sustainable Development Goals. The rise of digital agricultural extension technologies is an opportunity to support and improve the traditional extension approach. However, even if farmers are willing to use digital farming technologies, barriers such as access to IT devices (smartphone, internet, electricity, etc.), low e-literacy, and poor knowledge of IT tools make adoption difficult. This study aims to overcome these barriers through a service-based business approach. This study proposed ten theoretical business profiles (based on RiceAdvice technology services) to farmers and used the choice experiment to analyse the determining factors of the preferred business profiles. We also identify the most preferred business profile, essential attributes, and socio-economic factors for an optimum business profile. Results showed that gender, age, education level, knowledge of the technology, and household income are the determinants of the preferred business profile. Among the ten business profiles, business profile 3 is the first most preferred with 49.4% implying cash payment after harvest at 9.70 USD/hectare for more than two seasons contract, followed by business profile 6 with 44.7% with cash payment after harvest at 14.50 USD/hectare for one season contract and the business profile 1 with 26.8% implying cash payment at 14.50 USD/hectare for a one-season contract. The optimum business profile would include all education levels, with 14.50 USD/hectare as the optimum price for a cash payment after harvest with no access to credit. This study provides a framework for sustainable dissemination of digital farming technologies and an operational template for a service-based business using digital farming technologies to promote private extension firms taking advantage of the new agricultural technologies.

Keywords: Agricultural extension, business profile, extension application, Nigeria, sustainable development