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Report on the identification of determinants of farmers' adoption of innovative RM tools (Task 3.c)

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Report on the identification of determinants of farmers' adoption of innovative RM tools (Task 3.c).

Authors: Elisa Giampietri, Alice Stiletto, Samuele Trestini – University of Padova

Introduction

European farmers are increasingly exposed to systemic risks linked to climate change, market fluctuations, and phytosanitary emergencies, which compromise the economic sustainability of their operations (Spiegel et al., 2020). Traditional insurance mechanisms under the Common Agricultural Policy (CAP), such as indemnity-based schemes, offer partial solutions but remain underused and poorly suited for systemic or uninsurable risks (Liesivaara and Myyrä, 2014). In response, innovative tools like mutual funds (MF) for phytosanitary risks and index-based insurance (II) have been introduced and subsidized. However, uptake in Italy remains limited despite policy support (Giampietri et al., 2020; Arata et al., 2023). Understanding farmers' behavior toward these tools is critical to improve their implementation. This study investigates whether the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) can effectively explain farmers' intention to adopt MF and II. Indeed, UTAUT is a widely recognized framework for analyzing innovation adoption, valued for its integration of individual behavioral factors and contextual influences. However, despite its comprehensive nature and strong theoretical grounding, its use in agricultural research, particularly in the context of risk management tool adoption, remains limited. A notable exception is the study by Rippo and Cerroni (2023), which investigated the adoption of the Income Stabilization Tool (IST) among apple growers in Trentino, Italy. However, the study did not employ the UTAUT's validated measurement scales for its constructs, nor did it use structural equation modeling, which is generally considered the appropriate methodological approach for testing the theory.

Data collection and methods

A structured pilot questionnaire was conducted in Spring 2025 among 25 arable crop producers in Italy. Respondents were selected from the Italian Farm Accountancy Data Network. The survey included two sections corresponding to the two investigated risk management tools, namely MF and II. Each section featured 5-point Likert scale items adapted from validated sources to measure five UTAUT constructs: Performance Expectancy (adapted from Venkatesh et al., 2003 and Michels et al., 2024); Effort Expectancy (adapted from Hu et al., 2022); Social Influence (adapted from Michels et al., 2024); Facilitating Conditions (adapted from Hu et al., 2022); Intention to Adopt (adapted from

Michels et al., 2024). Respondents received standardized explanations of both MF and II prior to completing the questionnaire. Ordinary Least Squares (OLS) regression was used to test which UTAUT factors significantly influenced farmers' adoption intentions.

Results

All UTAUT constructs showed high internal consistency, with Cronbach's alpha values exceeding 0.7, supporting the reliability of the adapted scales (Hair et al., 2019). The average scores suggest moderate agreement with the items, with performance expectancy rated highest in both contexts (mutual fund for phytosanitary risks = 3.05, index-based insurance = 3.07), while intention to adopt received the lowest scores (mutual fund for phytosanitary risks = 2.52, index-based insurance = 2.72), suggesting a cautious but slightly favourable attitude toward these innovations.

Our analysis shows that farmers' willingness to adopt new risk management tools is influenced by different factors, depending on the type of tool. For index-based insurance, both performance expectancy and social influence play a key role, while for mutual funds for phytosanitary risks, social influence alone is significant. Therefore, farmers are more likely to adopt index-based insurance when they believe it is practical and helpful in managing risks, aligning with previous research by Penone et al. (2024). Our findings also highlight the significant role of social influence. Farmers are more likely to adopt both index-based insurance and mutual funds for phytosanitary risks when they are encouraged or influenced by trusted individuals. This reflects the importance of peer networks and trust in driving the adoption of new approaches to risk management, and aligns with Giampietri et al. (2020), who found that social trust is pivotal in adopting risk management tools like the IST, namely a mutual fund covering income losses. On the other hand, factors like ease of use (known as effort expectancy) and facilitating conditions did not significantly impact adoption in this study. However, this result should be viewed with caution, as the findings are based on a small pilot sample.

Conclusions

This pilot study highlights the UTAUT framework's relevance and applicability for analyzing farmers' behavioral intentions regarding innovative risk management tools like MF and II. The findings point to performance expectancy and social influence as key predictors, especially for II, while social influence alone affects MF adoption. These insights underscore the need for peer-led extension programs, increased awareness-building, and policies that leverage existing social networks to enhance uptake. The evidence supports the UTAUT's potential as a comprehensive tool in the agricultural context, particularly where adoption decisions are complex and shaped by both individual

perceptions and social contexts. While findings are preliminary, they offer a promising basis for future research aiming at informing RM tools' policy design.

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