Behavioral analysis for the adoption of digital extension service in Nigeria: Extended Technology Acceptance Model Application on RiceAdvice

Amoussouhoui R.[1*], Arouna A.[2], Cerjak M.[3], Yergo W. G.[2], Banout J.[1]

[1]Department of Sustainable Technologies, Faculty of Tropical AgriSciences, Czech University of Life Science Prague, Kamycka 129, 165 00 Prague, Czechia

[2]Africa Rice Center (AfricaRice), 01 BP 2551 Bouake 01, Bouake, Cote d'Ivoire

[3]University of Zagreb Faculty of Agriculture, Department of Marketing in Agriculture

| Introduction & Goals

- Information Technology as a solution to agricultural challenges, farmers' efficiency, market access and climate change [1].

- Service providing using Agricultural Information Technology is described as the appropriate way for sustainable adoption.

- There is a lack of theoretical and empirical framework that support the adoption behavior.

- Study aims to analyse rice farmers' behaviors adopting a digital extension service versus the intention to adopt of a control group.

- Study conducted on a sample size of 1562 rice farmers, including 1202 treatments and 360 control using and extended Technology Acceptance Model (TAM).

| Methodology

■ Experimental design

Table 1. Proposed Business Profiles

Attributes	BP1	BP 2	BP3	No BP
Payment method	Cash payment after harvest	Payment cash after harvest and incorporated into the rice price	Cash at delivery	No choice
Price$/hectare	$13/hectare	$0.66/200kg	$8.8/hectare	
Length of partnership	2 seasons	More than 2 seasons	1 season	
Contract farming	Yes	Yes	Yes	

Figure 1. Experimental design

Figure 2. Design of initial extended TAM

| References

[1] Suri, T., & Udry, C. (2022). Agricultural Technology in Africa. *Journal of Economic Perspectives*, 36(1), 33–56. https://doi.org/10.1257/JEP.36.1.33

[2] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, 13(3), 319–339. https://doi.org/10.2307/249008

■ Data Analysis

- Original Technology Acceptance Model [2] and add two more constructs : ''Perceived payment method'' and ''Perceived price''.

- Data were analyzed using the Partial=Least Square Structural Equation Medeling (PL).
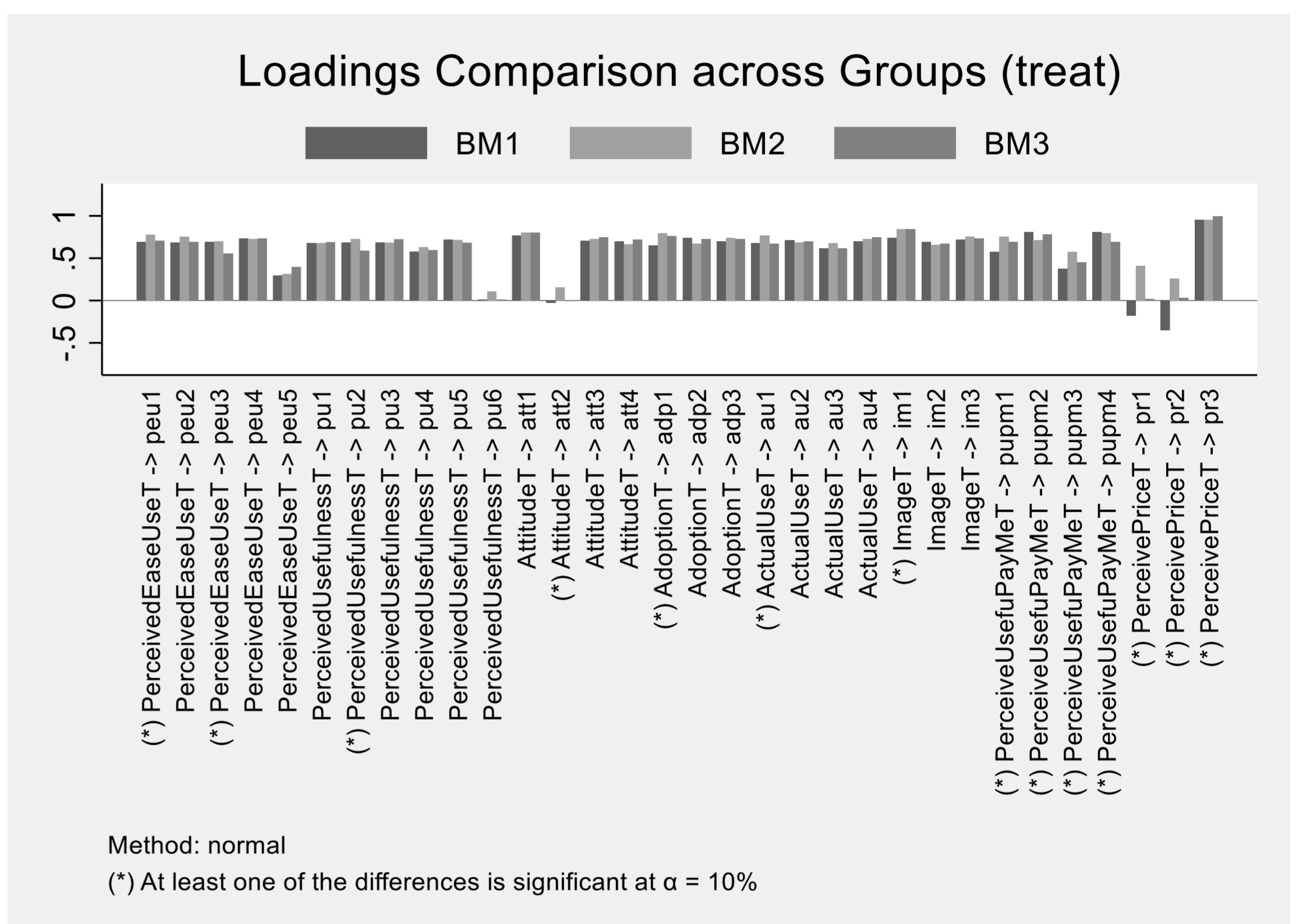
| Results and discussion

Method: normal
(*) At least one of the differences is significant at α = 10%

Figure 3. Loading factors comparison analysis

Method: normal
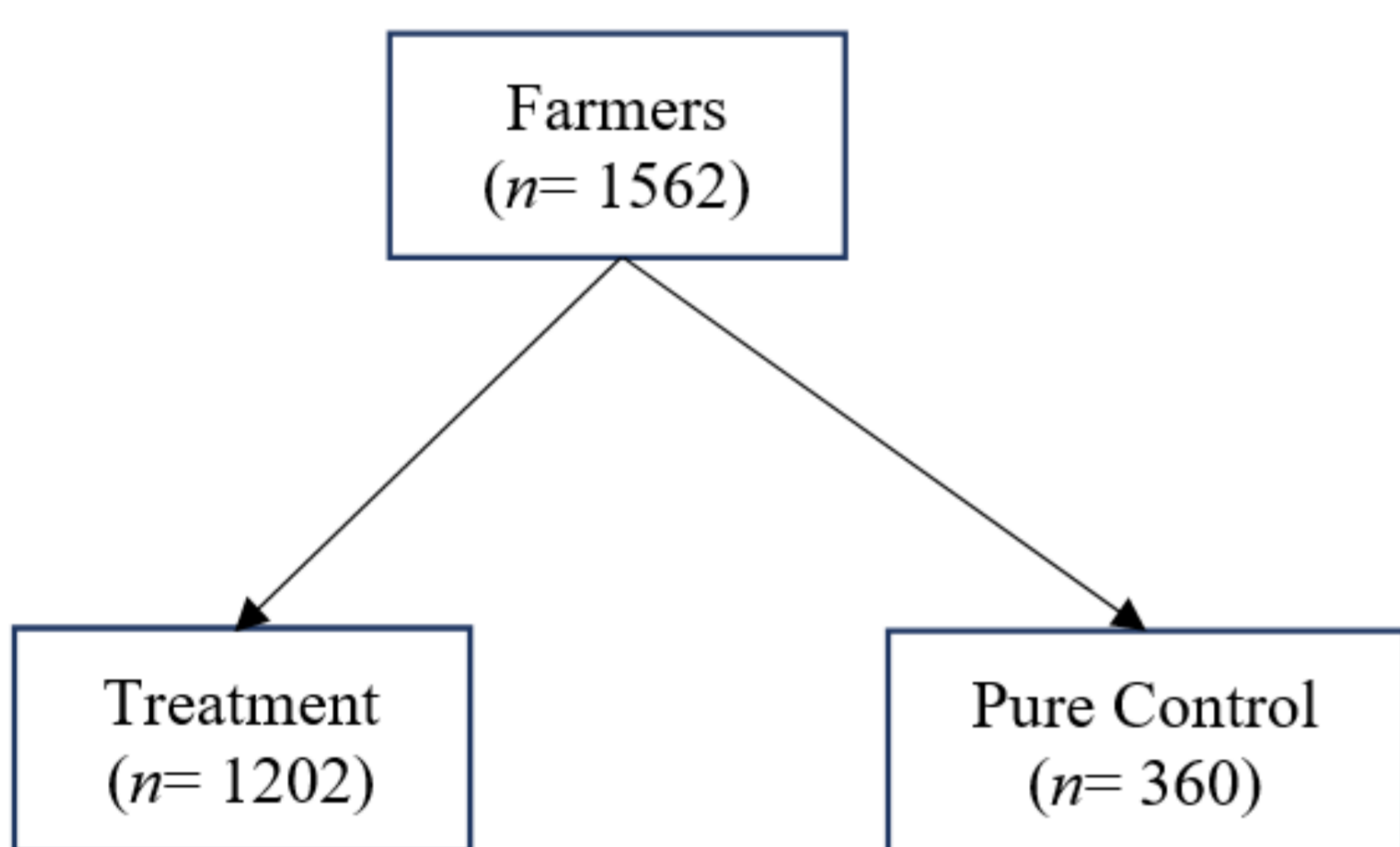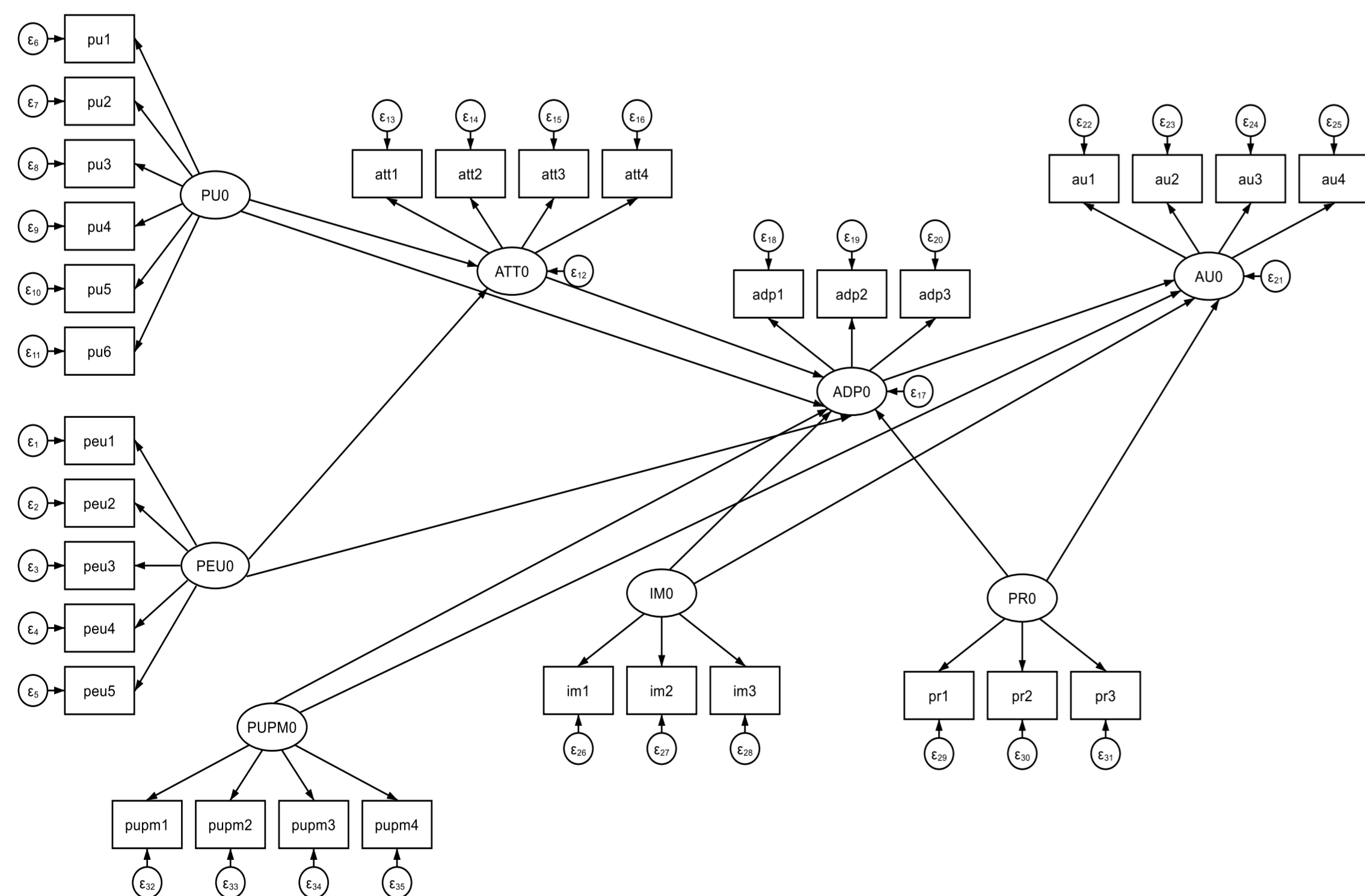(*) At least one of the differences is significant at α = 10%
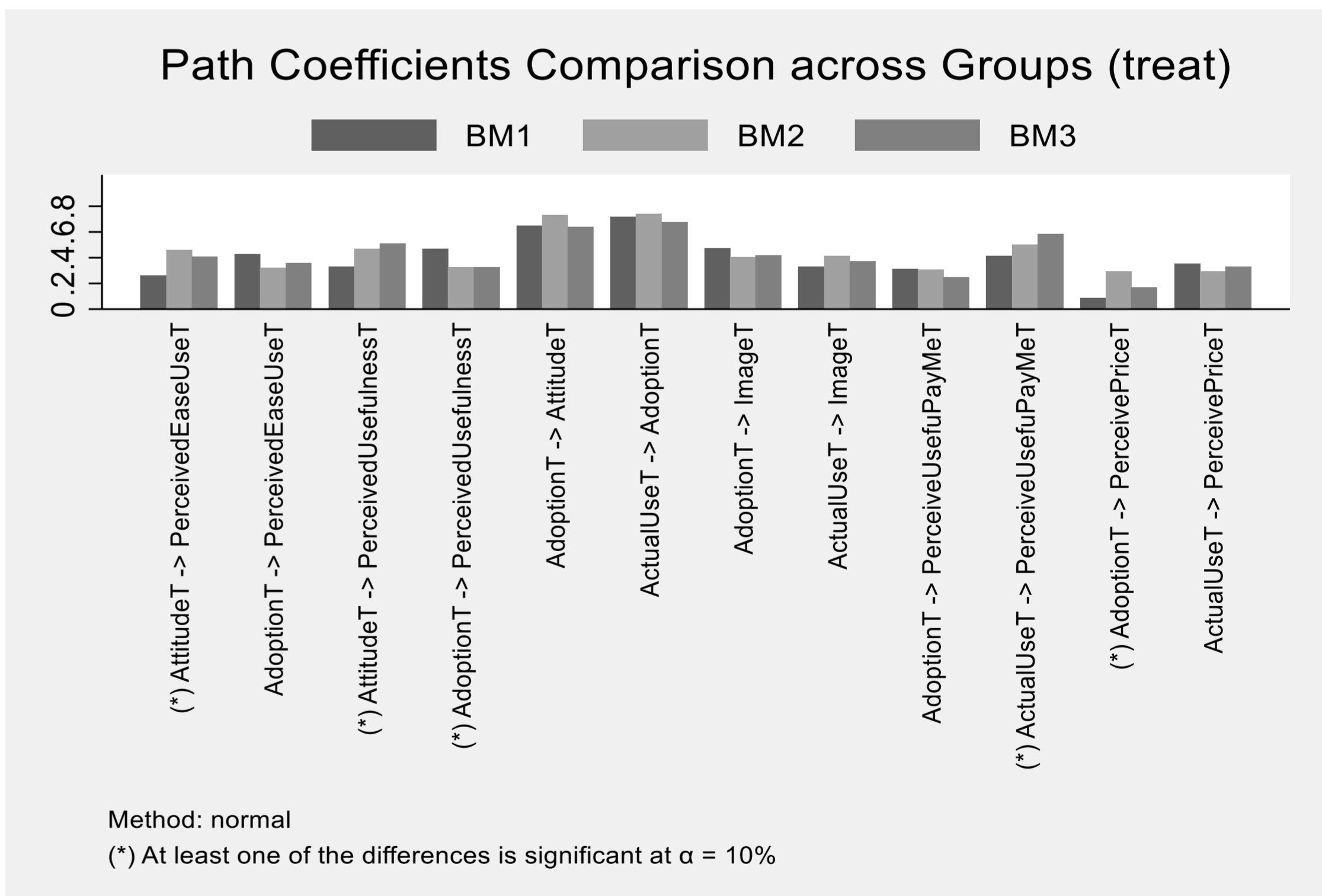
Figure 4. Path coefficients analysis

| Conclusion

- Study confirms that the two most crucial constructs in the TAM model are "perceived ease of use" and "perceived usefulness." These two constructs positively impact attitude, adoption, and intention to adopt, especially when they have a direct or indirect relationship,

- The payment and price options, which make up the bulk of the extension service proposal, favorably impact farmers' adoption and intent to adopt.

- There are differences between business profiles in how "perceived ease of use," "perceived usefulness," and "adoption" affect "attitude" and "adoption"

| Acknowledgement

Faculty of Tropical AgriSciences

*Corresponding author (photo): amoussouhoui@ftz.czu.cz