



Characterisation of the digital divide and impact of the use of digital tools for Ivoirian cocoa farmers



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Introduction

#1 ICT concept

- ❖ ICT definition (Dieuzeide, 1994) : **Instruments carrying immaterial messages**
- ❖ Digitalization of the Agricultural Sector in Africa: **Opportunities and Risks** (Zscheischler, 2022).



#2 Notion of digital divide

- ❖ Origine of the concept (UIT, 1985)
- ❖ Typology of the digital divide:
 - North vs. South (Papadopoulos & Cleveland, 2023)
 - Urban vs. Rural (Malecki, 2013)
 - Socio-professional categories (Granjon, 2009)



Objectives and sampling

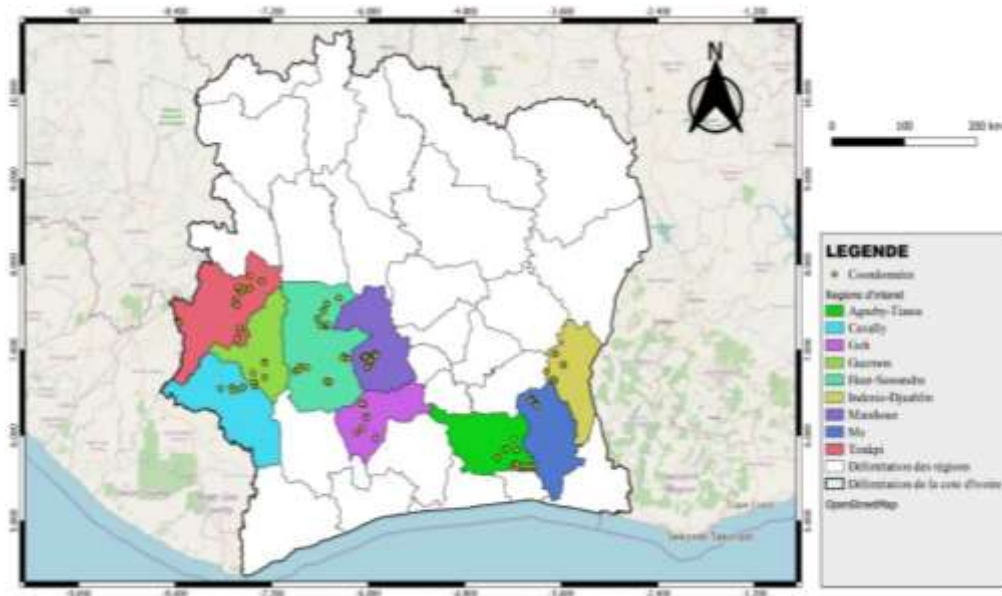


Objectives

- 1) Characterization of the digital divide within the population of cocoa farmers and study of the determinants of agricultural uses.
- 2) Assessment of the impact of digital usage on producers' income.



Study areas and sampling



- 9 regions belonging to historical cocoa loops (Ruf *et al.*, 2020)
- 903 cocoa farmers surveyed
- Random sampling of support cooperatives
- Stratified sampling (age and gender) of farmers according to Assiri *et al.* (2009) :
- 30% [18-40]; 50% [40 – 60] and 20% [60 +[
- 1/20 woman

Methodology

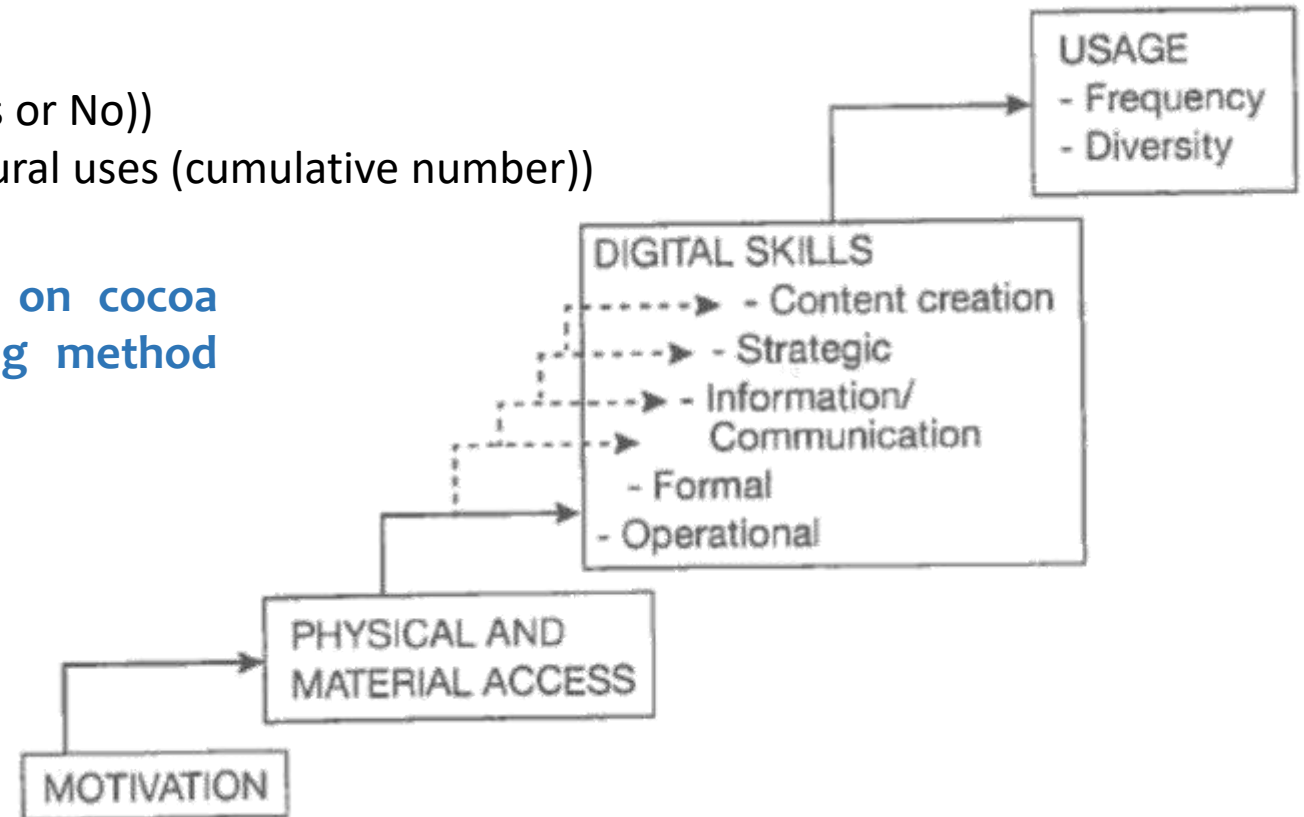
Characterization of the Digital Divide following the theoretical framework of Van Dijk (2013)

Basic descriptive statistics (histograms, pie charts)

Study of the determinants of each step:

- 1) Binary Logit models (motivation and access (Yes or No))
- 2) Poisson models (usage capabilities and agricultural uses (cumulative number))

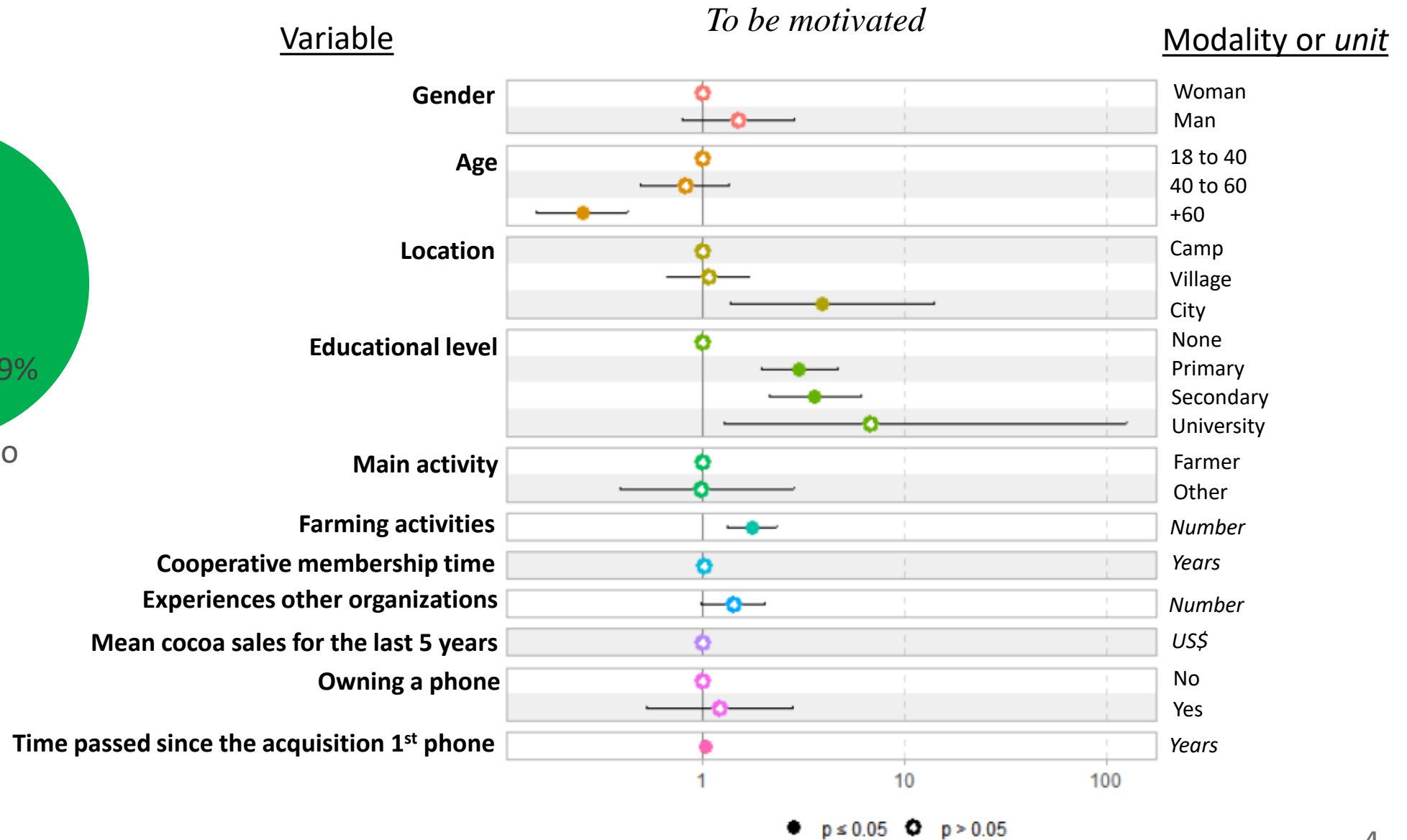
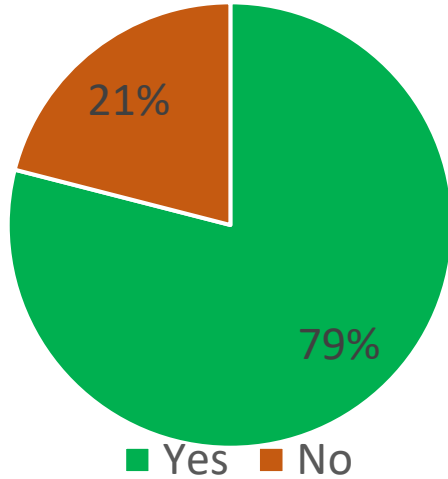
Analysis of the effect of digital technology on cocoa income using the nearest neighbor matching method (Rosenbaum & Rubin, 1983)



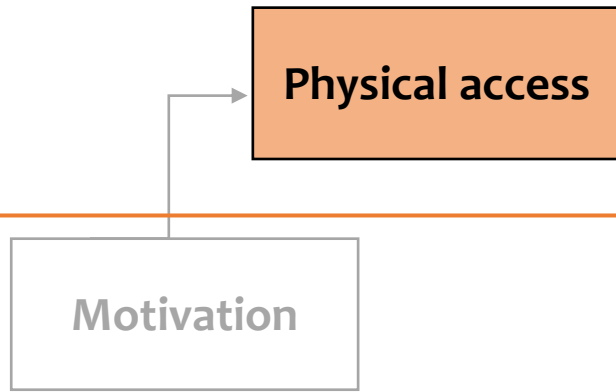
The four successive access steps in the appropriation of digital technology according to van Dijk (2013)

Results

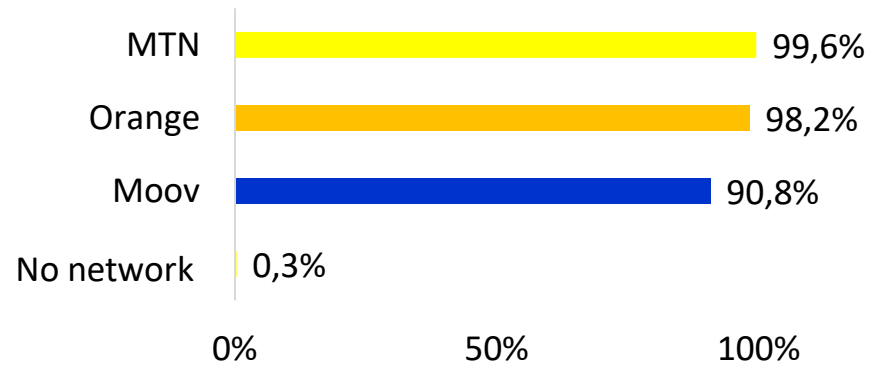
Motivation



Results

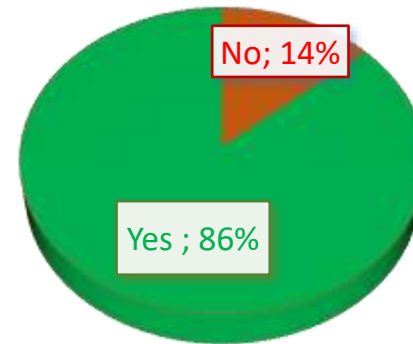


Area coverage by operator



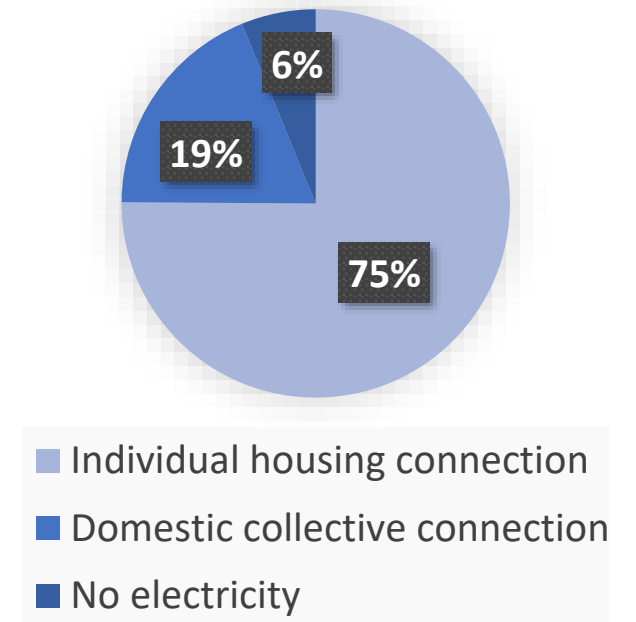
Not homogeneously present but network available in one or more places in the locality

Access to the network from the field



Even available in the field

Access to electricity



Little problem of access to electricity

Results

Material access

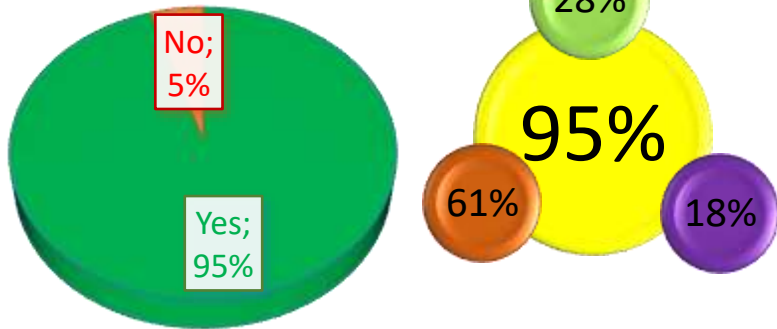
Physical access

Type of phones



Motivation

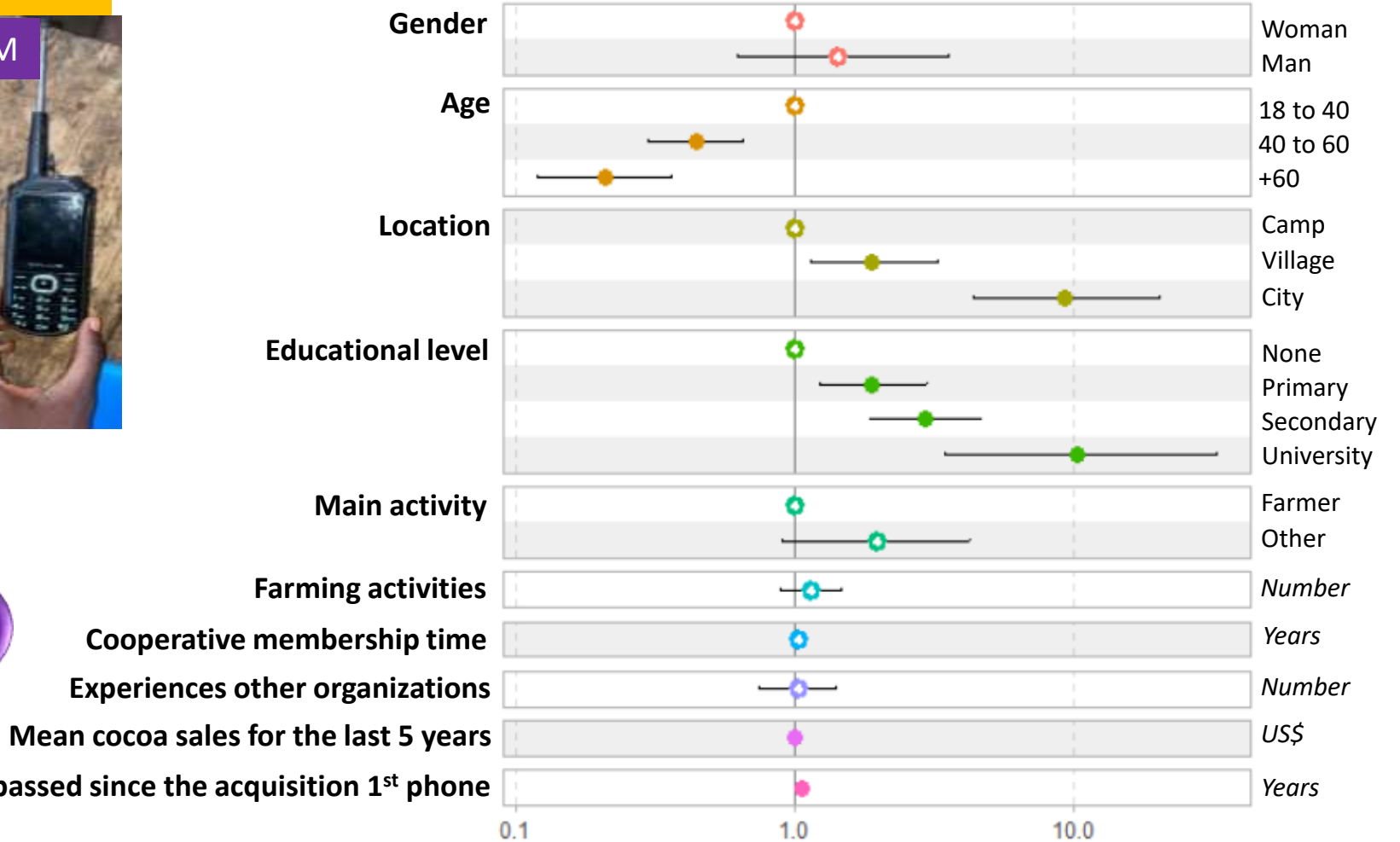
Owning a phone



Variable

To have a smartphone

Modality or unit



● p ≤ 0.05 ○ p > 0.05

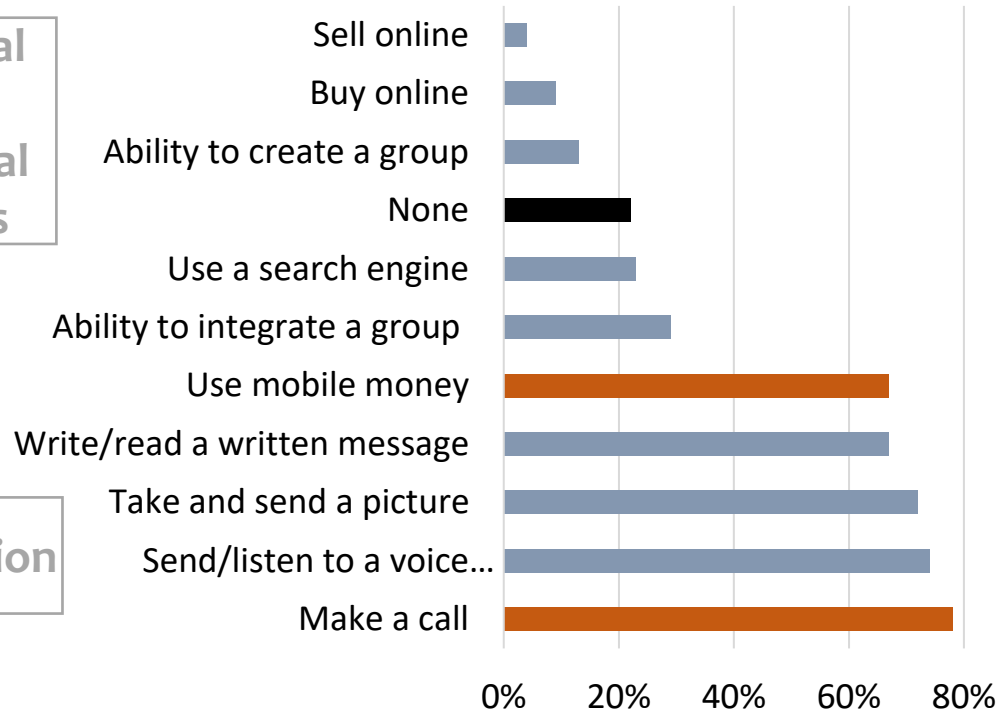
Results

Usage capabilities

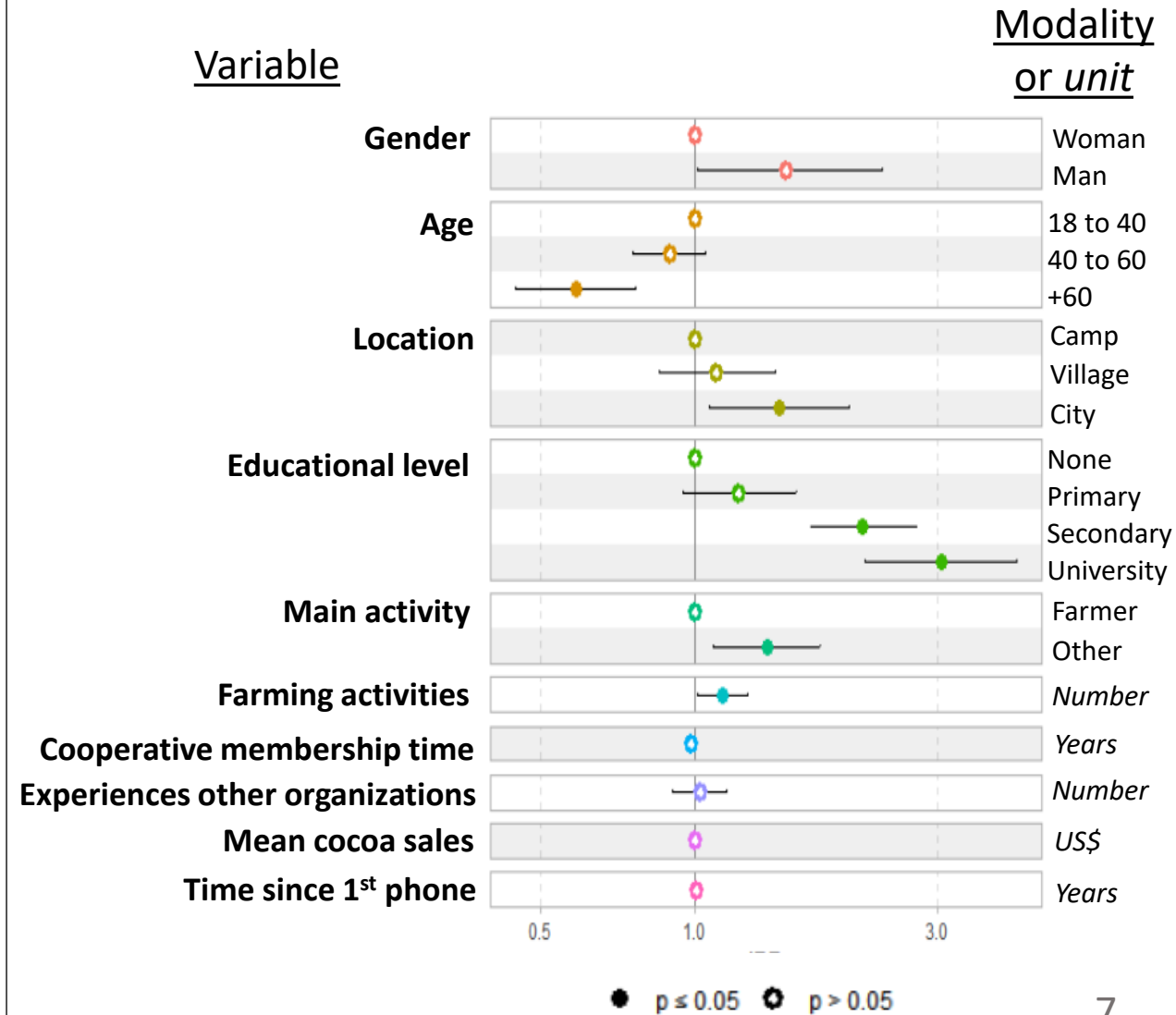
Physical and material access

Motivation

General digital capabilities of producers



To have digital capabilities



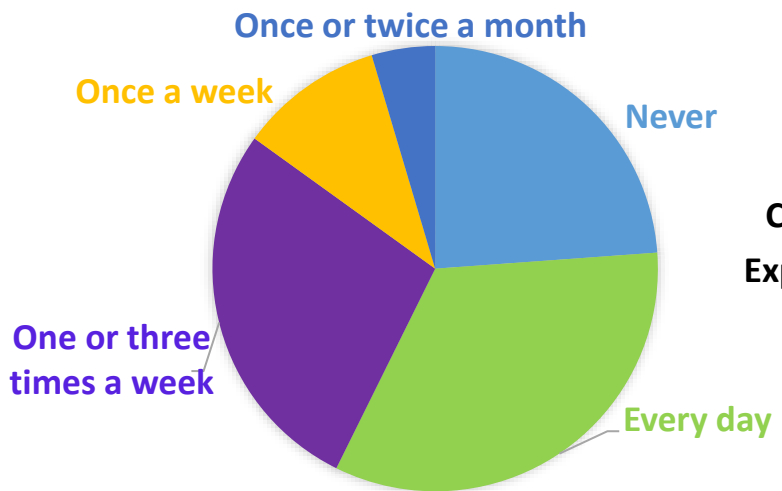
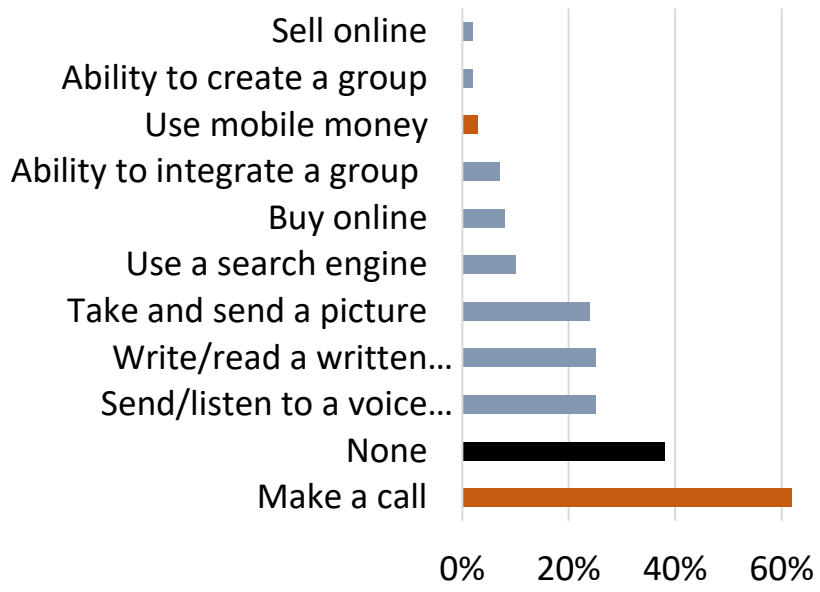
Results

Agricultural uses (Diversity and frequency)

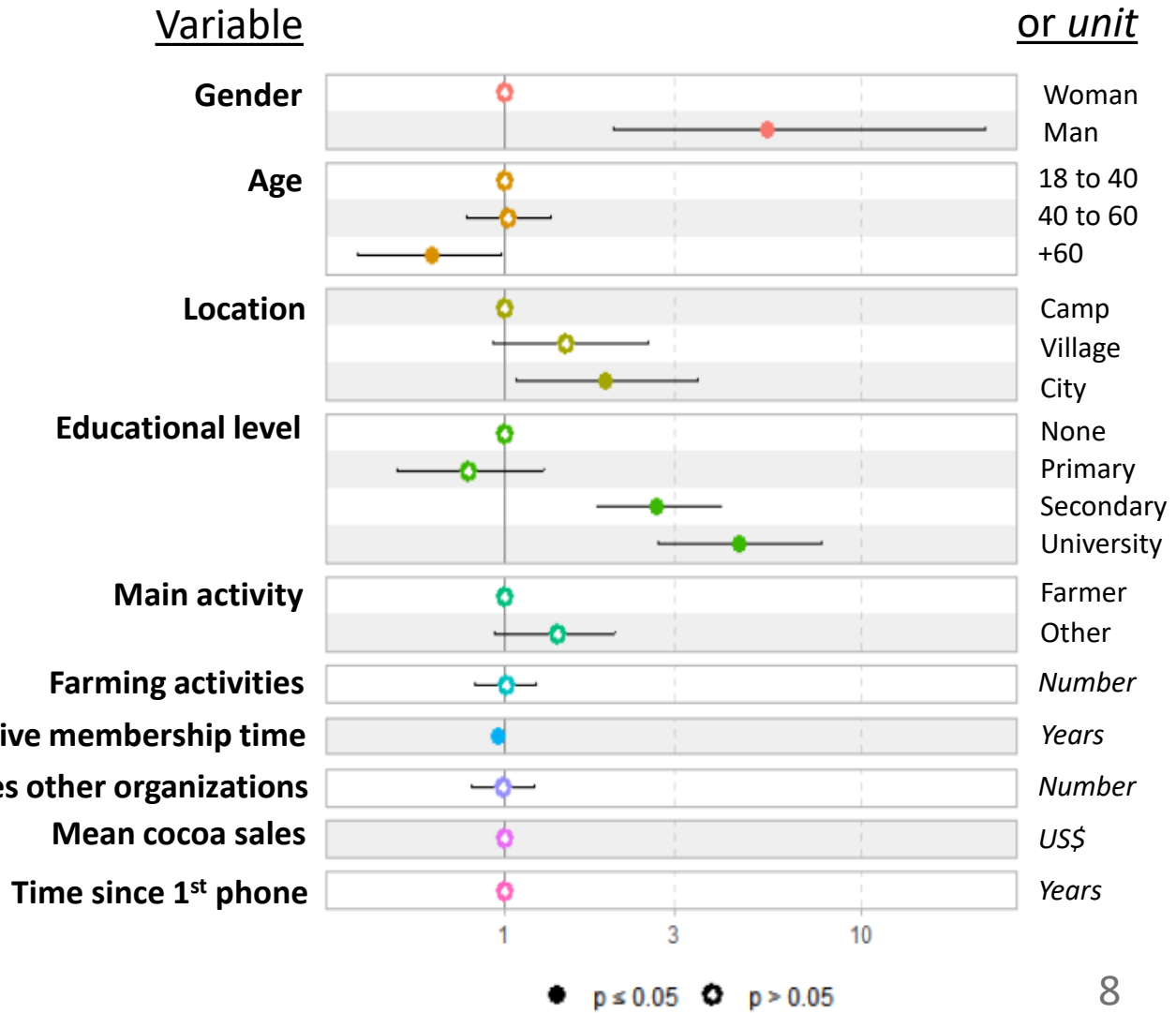
Usages capabilities

Physical and material access

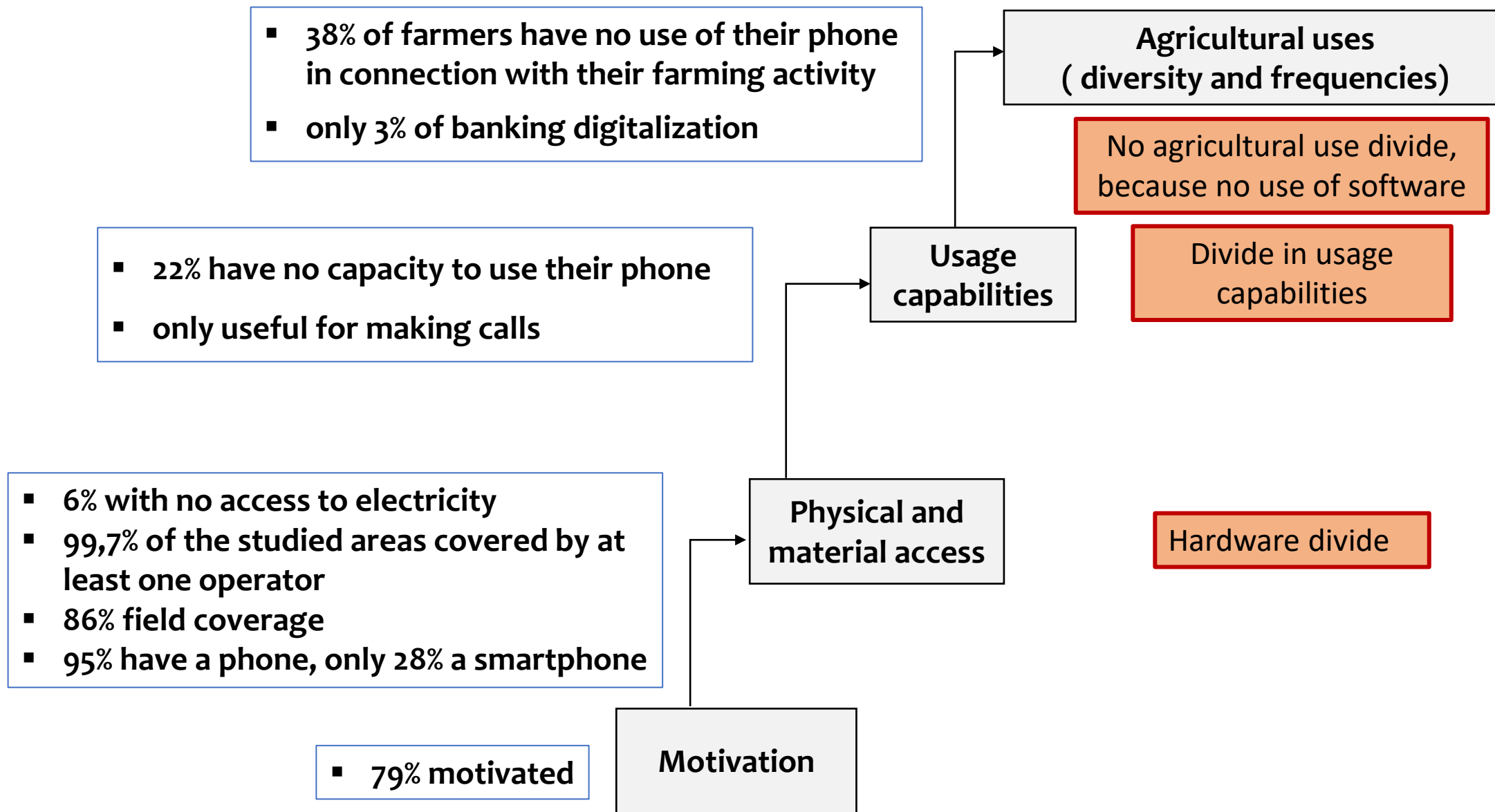
Motivation



To use digital skills for agricultural activities



Key results



Conclusion, recommendations and perspectives

Digital divide in terms of (i) equipment and (ii) farmers' skills in using digital technology

Income variation between digital users and non-users	Pr(> t)
20 US\$ ha ⁻¹	0,587

→ No significant effect of digital use on income

Recommendations at this stage

- ❖ **Reduce hardware, telephone and internet costs:** Facilitate access to smartphones, which are still extremely expensive for farmers, and reduce operating costs (5 US\$ for 1 Gbit in Ivory Coast while 3 US\$ in France (Alliance for affordable internet, a4ai.org), minimum wage in CI of 100 US\$).
- ❖ **More education:** To increase the capacity of use of the stakeholders, it is necessary to provide an adequate education (42% illiteracy in our sample).
- ❖ **Develop useful and suitable software for farmers**

- Interviews with other members of the farming households
 - Interviews with other actors in the cocoa sector
- } To understand the positive and negative interferences induced by digital technology that could affect the farmer.

The background features a complex network of glowing lines and dots. The lines are primarily blue and orange, curving and intersecting across the frame. Small, bright white and blue dots are scattered throughout, some appearing to be at the intersections of the lines. The overall effect is that of a digital or data network.

Thank you for your attention

References

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