

DATA-DRIVEN GROWING IN DEVELOPING MARKETS

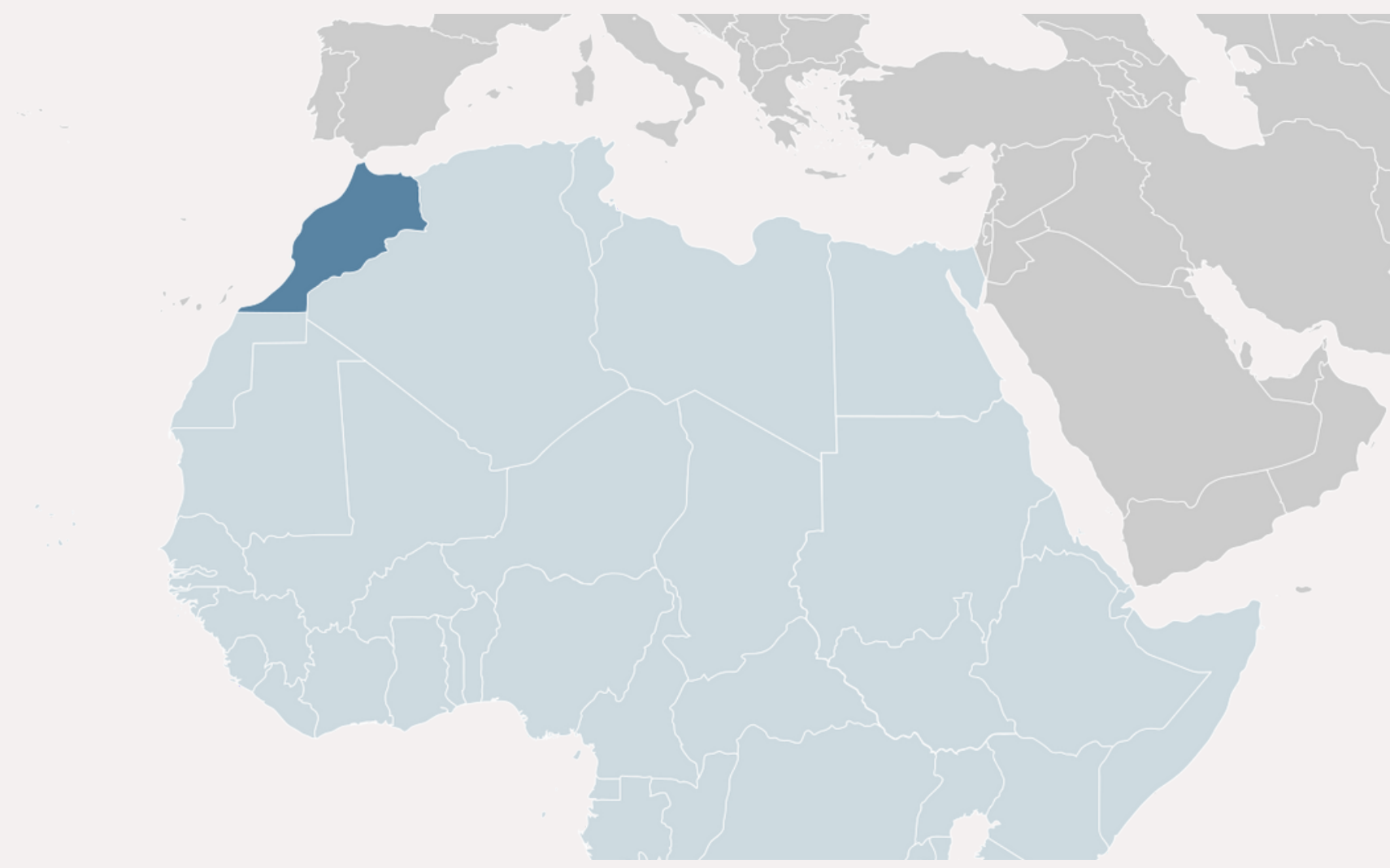
A case study into the factors that influence the adoption of Data-Driven Growing technologies by farmers in the region of Agadir, Morocco

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INTRODUCTION

The Moroccan agricultural sector faces significant challenges. The productivity of the current greenhouses is quite low and their cultivation requires a lot of water. This has caused significant problems like water scarcity and drought. Data-driven growing has helped growers in other markets increase their productivity while reducing their resource use. This reaps the question of how data-driven growing can help growers in Morocco.



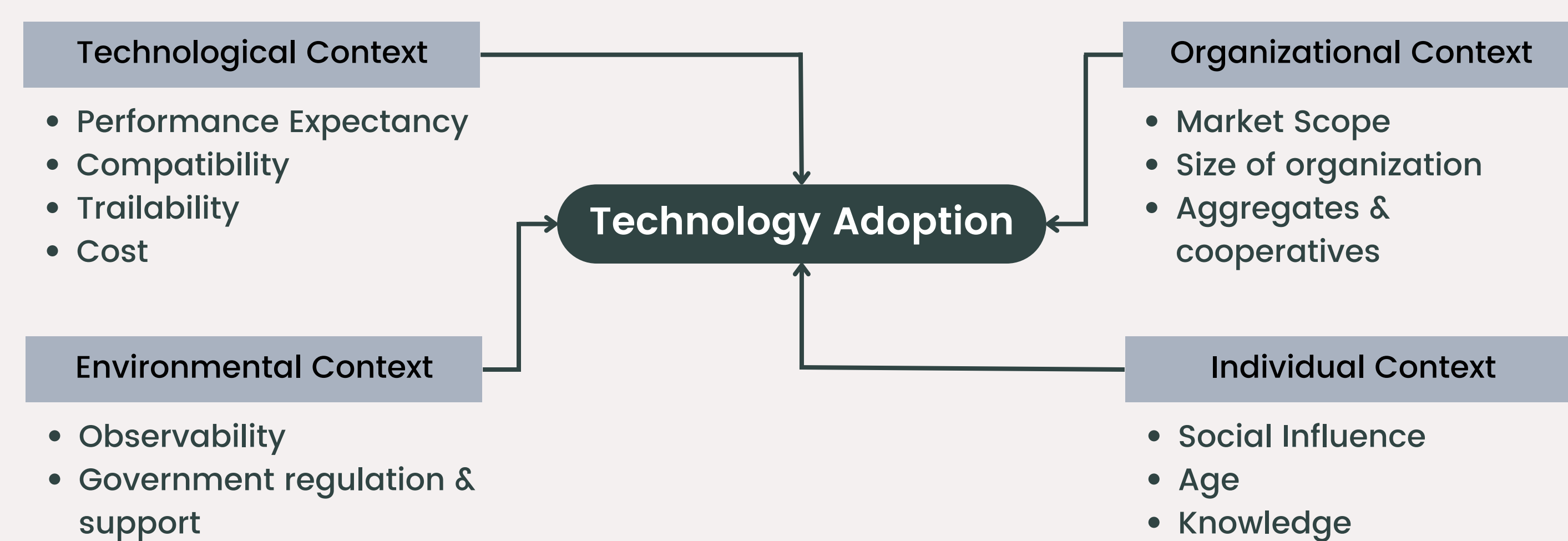
OBJECTIVE

This research set out to find the answer to the following research question:

What factors influence the adoption of data-driven growing technologies by growers in Morocco?

THEORETICAL FRAMEWORK

This research combines two models for researching technology adoption. Individual factors from the UTAUT model are combined with technological, organizational and environmental factors from the TOE framework.



METHODOLOGY

DATA COLLECTION

3 Semi-structured interviews



Observations



14 Roundtable discussions



Document analysis



QUALITATIVE THEMATIC CODING

1

Inductive creation of first-level codes

2

Grouping of codes

3

Categorization into overarching themes

RESULTS

TECHNOLOGICAL CONTEXT

Performance expectancy is an important factor in the adoption of new technology. Growers need to see more value in data to increase the adoption of DDG.

Compatibility of DDG in their current greenhouses is low. Growers can benefit from DDG in terms of water and fertilizer use, but could also perform crop registration.

Trialability significantly increases technology adoption. Growers want to see the technology work in practice before they decide to adopt it.

Cost is a limiting factor. Many growers lack the capital and financing opportunities for big long-term investments. This reduces the uptake of new technology.

ORGANIZATIONAL CONTEXT

The **market scope** of growers influences technology adoption. Exported varieties yield more profits and therefore enable investments. However, market uncertainties reduce long-term investments.

The **size of the organization** positively impacts the uptake of technology. Larger growers have more intention to adopt innovation.

Aggregates & cooperatives play a big part in the uptake of new technologies. Cooperating through these structures increases these growers' market position and financial capabilities.

ENVIRONMENTAL CONTEXT

Observability. Growers in Morocco have a lot of contact with each other. Positive experiences with the innovation of one grower result in the adoption of that technology by other growers.

Government regulation & support are significant drivers for new technology. Many growers innovate because of subsidies and support from the government

INDIVIDUAL CONTEXT

Social influence has no effect.

Age negatively affects the adoption of new technology. Older growers are less tech-savvy and more conservative about their current practices.

Knowledge is a barrier to implementing DDG. Many growers lack the required knowledge to operate a greenhouse based on data.

CONCLUSION

Moroccan growers experience major problems due to climate change and increasing costs. These growers will have to innovate to stay profitable and to combat water scarcity and drought. Knowing what factors influence the adoption of new technology can greatly help with diffusing innovation amongst growers. The most important factors that influence the adoption intention of growers are the expected performance of the technology and the cost. Companies that want to sell data-driven technology in the Moroccan market need to develop a system with clear benefits for growers and low costs. The system should be easy to understand and operate, has to be compatible with the current greenhouses in Morocco and growers need to be made aware of the benefits. Such a technology could spread quickly through the market due to the high observability and trialability in Morocco. The government, aggregates and cooperatives can play a big role in overcoming the cost barrier.

DISCUSSION

Implications

- Combining the UTAUT and TOE framework gives a holistic perspective on the case
- Strategies can be made to increase the uptake of DDG by Moroccan farmers

Limitations

- Language barrier
- Lack of transcripts
- No random sample
- Limited generalizability