



CONSUMERS' VALUATION OF BLOCKCHAIN-BASED TRACEABILITY FOR FETA CHEESE IN GREECE: A SEGMENTATION STUDY

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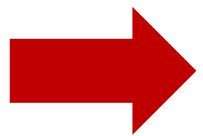
Background

- **Food fraud** is a key concern in modern world due to complex global supply chains.
- **Food traceability** is a prominent tool to address food fraud (*Aung & Chang, 2014*)
- Consumers are **willing to pay a price premium for traceable foods** (*Tran et al., 2024*) due to:
 - Concerns about food fraud and safety incidents
 - Demand for sustainable production
- Applications of blockchain (as a “trust machine”) may revolutionise (food) traceability systems (*Yavaprabhas et al., 2023; Collart & Canales, 2021*).

Case study context

Product of interest: Feta cheese in Greece

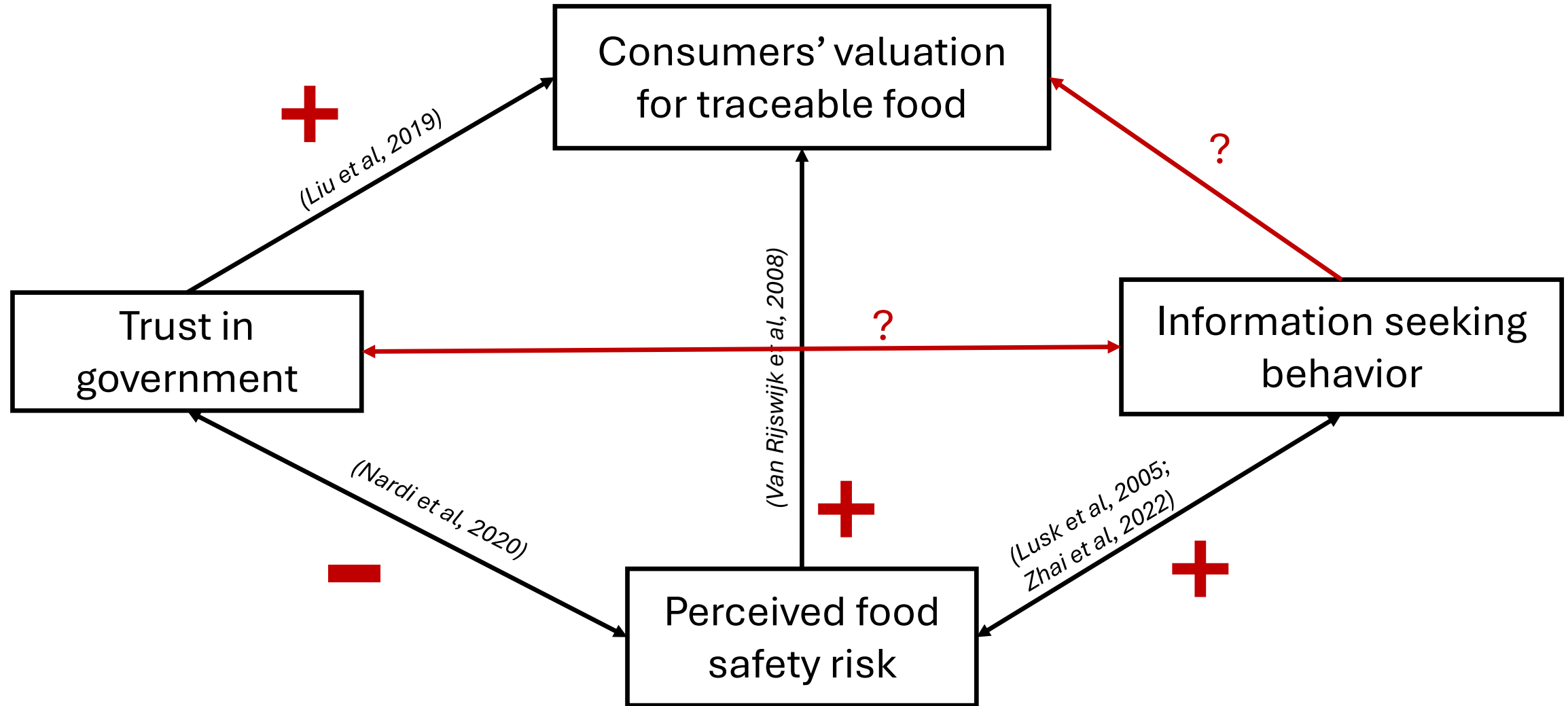
- A Protected Designation of Origin (PDO) product
- Subject to **food fraud** due to difficulties in verifying the origin of raw materials
 - Illegal raw materials: cow milk, imported sheep milk.
 - Fragmented productions: **80%** milk from small-scale & family farms.



Potentially low trust in government (in control food systems)

High risk might motivate seeking product information

Conceptual framework



Research objective

Objective 1: Identify the consumer segments based on consumers' trust in government and product information-seeking behavior.

Objective 2: Profile the consumer segments with regard to socio-demographic and consumption variables.

Objective 3: Estimate the effect of consumer segment memberships on the WTP of traceable food.

Methods & materials

Qualtrics survey

N=707 Greek consumers

1) “Governmental trust” & “Product information-seeking behavior” = five-point Likert scale (4 items/construct)

2) Choice experiments = 16 choice set (CE)s / 2 blocks = 8 CEs for each

With **2 alternatives 1 opt-out option**

Option A	Option B
	
€6.0	€5.3



Πληροφορίες γνησιότητας

Production Designation of Origin (PDO)

Blockchain

Company information – QR code

Product traceability information – QR code

Prices (400g)

€ 5.0; 5.3; 5.6; 6.0

Methods & materials

Cluster analysis

(Hierarchical clustering
Then, K-means clustering)



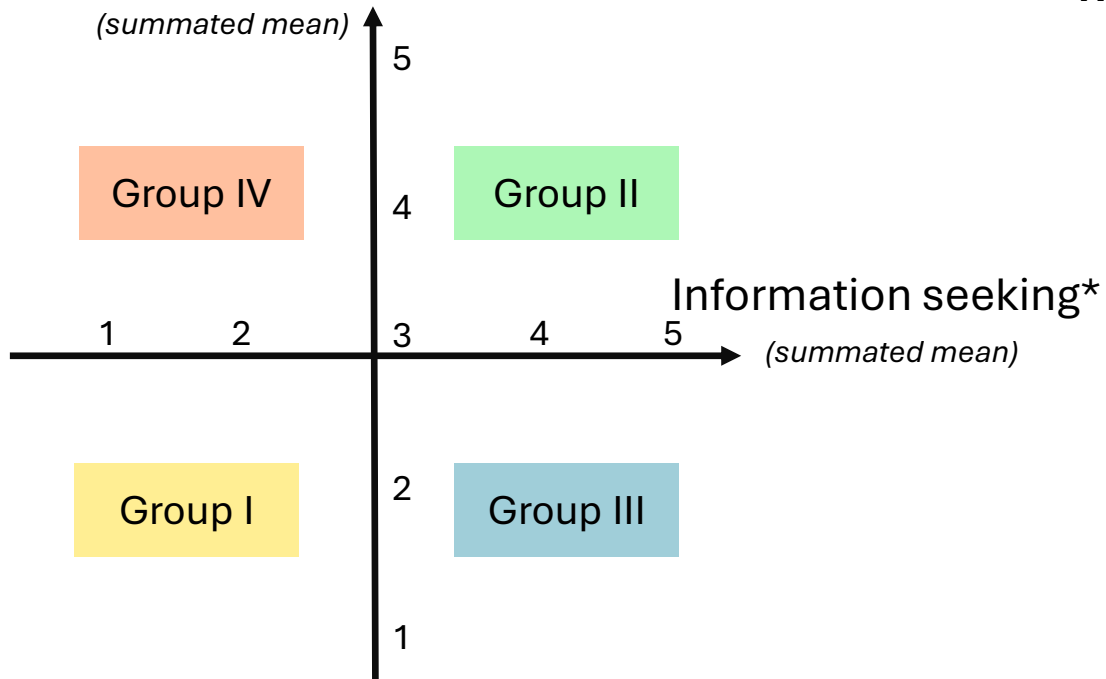
Effects of cluster
membership on WTP for
traceable food attributes



Cluster profiling

Governmental trust*

(summated mean)



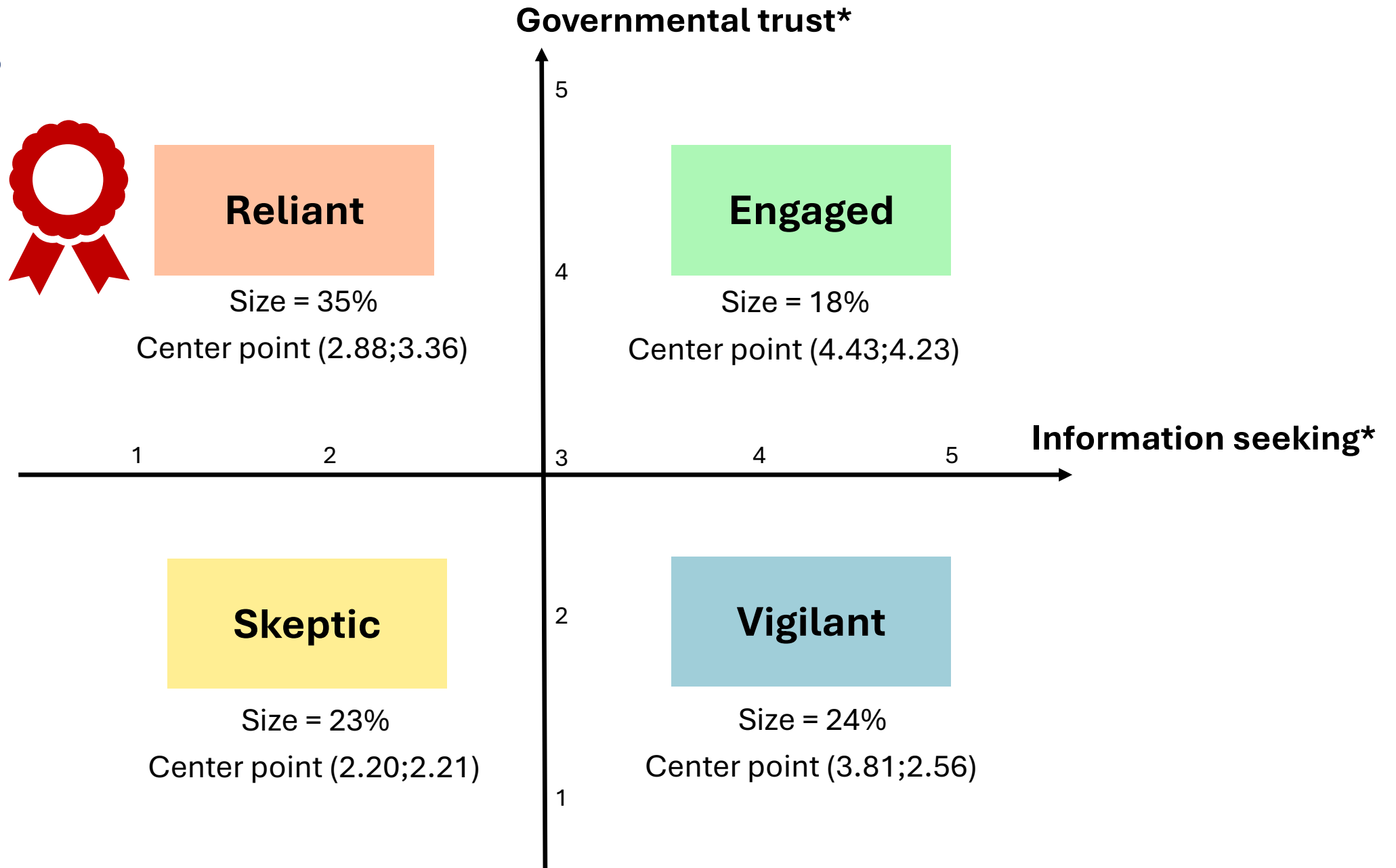
Random parameter logit (RPL)

models with cluster
memberships as interaction
terms and of each segment.

Multinomial logistic

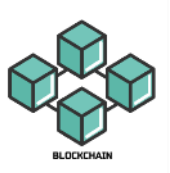
regression model using
Reliant group as the
reference groups

Results



*summated means of 4 items, measured by a five-point Likert scale

Results

Effect of Cluster Membership (dummy) as an interaction term		N = 707	N = 707	N = 707	N = 707
		Skeptic	Engaged	Vigilant	Reliant
	Production Designation of Origin (PDO)	-	+	ns	+
	Blockchain	-	+	+	ns
	Company information – QR code	-	+	ns	ns
	Product traceability information – QR code	-	+	+	ns

+, - indicated significant positive or negative effects on consumers' valuation for the examined attributes at $p\text{-value} < 0.05$; "ns" means not significant.

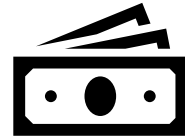
Results

Marginal WTP (€) in each segment*		N = 159	N = 128	N = 170	N = 250
		Skeptic	Engaged	Vigilant	Reliant
	Production Designation of Origin (PDO)	€ 0.52	€ 1.43	€ 0.79	€ 0.81
	Blockchain	€ 0.05	€ 0.39	€ 0.41	€ 0.26
	Company information – QR code	€ 0.36	€ 1.08	€ 0.65	€ 0.57
	Product traceability information – QR code	€ 0.39	€ 1.26	€ 1.20	€ 0.64

*All WTP estimates are significant at $p\text{-value} < 0.05$.

Skeptic

WTP:
Low for all
examined
attributes



Income

ns



Education

ns



Feta purchase
frequency

<

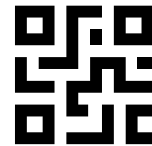
Reliant

**Infrequent
buyers**



Knowledge

ns

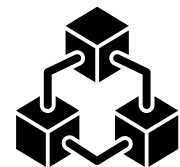


Familiarity with
QR code

<

Reliant

Uninformed



Familiarity with
blockchain

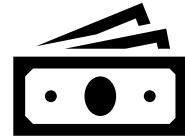
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Reliant

**Results based on a multinomial regression model using Reliant as the reference group.*

Engaged

WTP:
High for all the
examined
attributes



Income

ns



Education

ns



Feta purchase
frequency

>

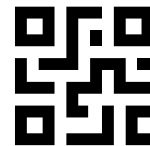
Reliant

**Frequent
buyers**



Knowledge

ns

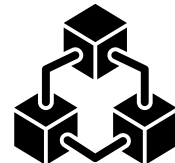


Familiarity with
QR code

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Reliant

**Well-
informed**

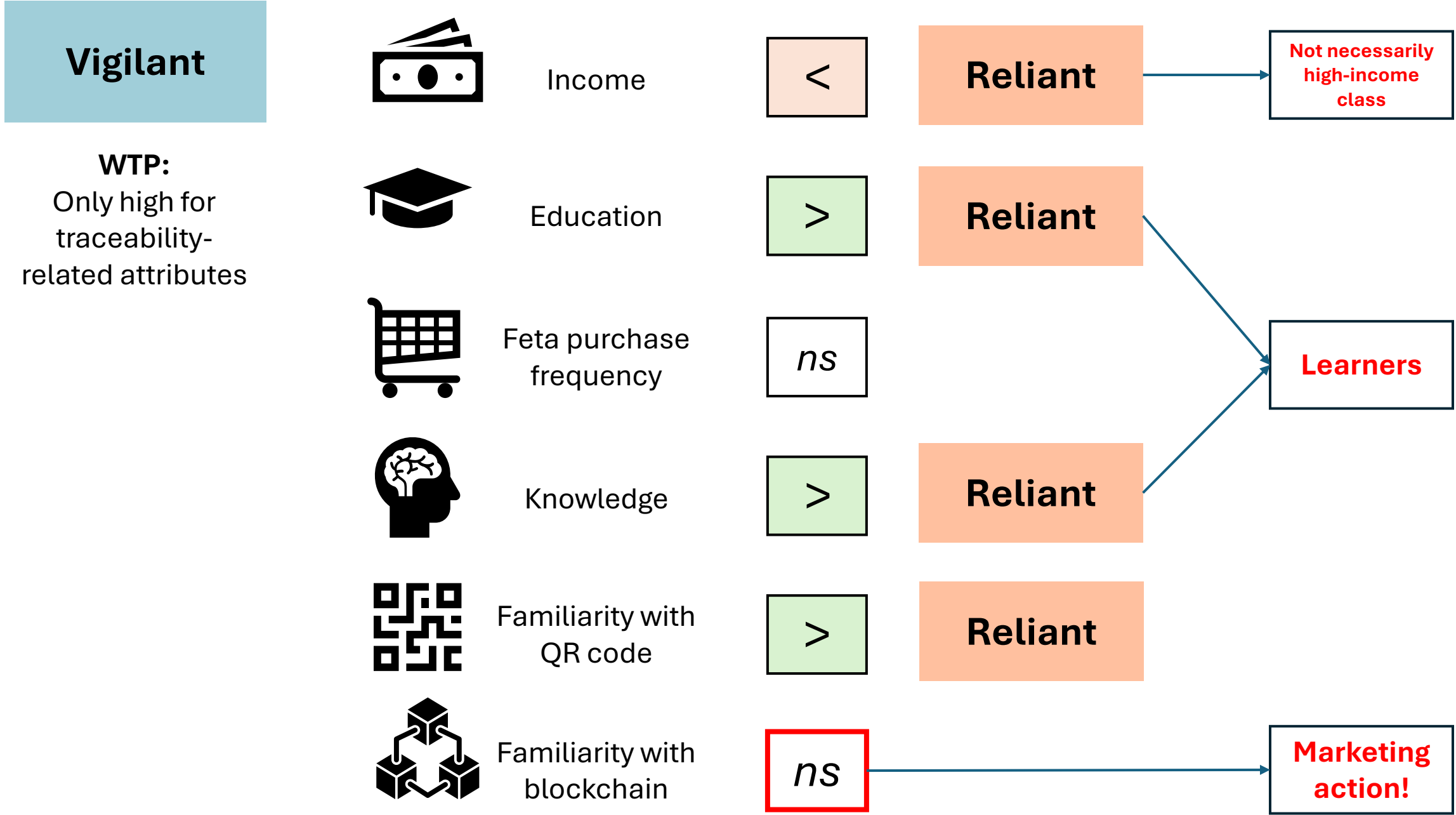


Familiarity with
blockchain

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Reliant

**Results based on a multinomial regression model using Reliant as the reference group.*



**Results based on a multinomial regression model using Reliant as the reference group.*

Final remarks

Practical implications

- (1) The Skeptic: Price sensitive → Discounts/ Promotions.
- (2) The Engaged: Ready to BC-traceable products.
- (3) The Vigilant: Need to communication about blockchain benefits.
- (4) The Reliant: Prefer PDO → attention to and communication about the authenticity of the current certified products.

Scientific implication

Previous studies: High trust in government = High valuation of (BC) traceable food (*Liu et al, 2019; Li et al, 2023*)

→ This study challenged the findings by examining the joint impact of information-seeking behaviors (e.g., Vigilant and Reliant).

Thank you for your attention!

Q&A

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