Exploring consumer intention to purchase blockchain-traced pasta*

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Abstract

This study explores consumers' purchase intentions for organic pasta with blockchain-based traceability, employing an extended theory of planned behaviour (TPB) model. Analysing responses from 190 Italian respondents via a structured online questionnaire, the research investigates how attitudes, subjective norms, perceived behavioural control, trust in quality certifications, and attitudes toward technology shape purchase intentions for blockchain-based food. Structural equation modelling (SEM) reveals that subjective norms, perceived behavioural control, and positive attitudes toward technology significantly influence purchase intention. In contrast, trust in quality certifications and general attitudes toward blockchain traceability show no direct impact. The findings highlight the importance of social influence and technological familiarity in promoting blockchain adoption for food transparency.

Keywords

Consumer purchase intention, Theory of Planned Behaviour (TPB), organic pasta, blockchain, traceability, food transparency, Italian consumers, blockchain adoption, food quality certification, technology acceptance, agri-food sector

1. Introduction

Consumers are increasingly concerned about food safety, traceability and transparency in the current globalized food market. These issues have led to declining consumer trust, especially in complex food supply chains [1]. In this context, blockchain technology can further increase transparency by providing a decentralized and immutable product history record [2]. While blockchain technology's potential to improve traceability and trust is widely recognized, consumer adoption continues to depend on various behavioural factors. Previous studies indicate that blockchain technology positively influences consumers' purchasing decisions [3,4,5]. However, the perceived value of the innovative traceability solution varies widely. We conducted an online questionnaire selecting a convenience sample of 251 Italian respondents to investigate purchasing intentions toward organic pasta. The study applies an extended theory of planned behaviour (TPB) model to explore the factors influencing consumer purchase intentions in the context of blockchain-traced organic pasta.

2. Theoretical framework

The theory of planned behaviour (TPB) postulated by Ajzen (1980) [6] assumes that individual behaviour depends on three key elements: attitudes toward the behaviour of buying blockchain-

* *Short Paper Proceedings, Volume I of the 11th International Conference on Information and Communication Technologies in Agriculture, Food & Environment (HAICTA 2024), Karlovasi, Samos, Greece, 17-20 October 2024.*

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traced products (ATT), subjective norms (SN), and perceived behavioural control (PBC). As shown in Figure 1, this model assumes that attitude, subjective norm, and behavioural control impact behavioural intention and, in turn, on behaviour. However, this study aims to enhance the predictive power of TPB. In addition to the original elements of TPB, additional constructs are introduced: Trust in quality certification (TQC), and Attitude toward technology (TEC). In this model, we only measure intention; however, we include behavior because we believe that intention is an indicator of behavior.

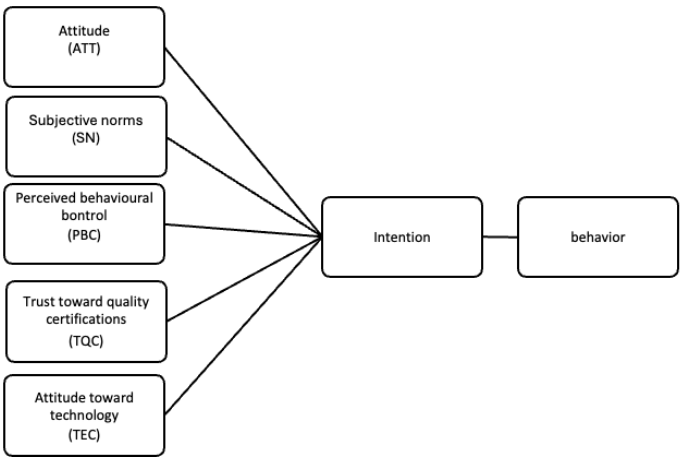

Figure 1: Proposed model. Source: Author's elaboration.

3. Data and Methods

Data were collected through an online survey distributed across social media platforms to select a convenience sample of Italian consumers. A total of 251 responses were collected, with 190 complete responses valid for analysis after data screening. Based on TPB constructs, the questionnaire also included questions on consumer trust in quality certifications and attitudes toward technology.

Structural Equation Modeling (SEM) was employed to assess the relationships among these constructs. The SEM well well-established practice and widely used technique in several research domains was chosen to examine the expanded theoretical framework. Various multivariate analysis techniques are included under the umbrella of SEM [7]. This study used the partial least squares approach (PLS-SEM). PLS-SEM is a statistical tool that has gained popularity among researchers who use it to analyse empirical data and evaluate different relationships concurrently [8].

4. Results

The PLS-SEM analysis (Table 1) showed that SN - subjective norms ($\beta = 0.403$) and TEC - Attitude toward technology ($\beta = 0.306$) significantly impacted consumers' intentions to purchase blockchain-traced organic pasta (INT), supporting our hypotheses H1 and H5. Moreover, PBC - perceived behavioural control ($\beta = 0.187$) was also a significant predictor, confirming our hypothesis H2. However, ATT - attitudes toward the behaviour of buying blockchain-traced products ($\beta = 0.003$) and TQC - trust in quality certifications ($\beta = 0.006$) did not significantly influence purchase intentions, rejecting the hypotheses H3 and H4.

Table 1
Results of the hypothesis testing

Hypothesis No.	Relationship	Coefficient	*p*-Value	Decision	F^2
H1	SN -> INT	0.403	0.000***	Accepted	0.216
H2	PBC -> INT	0.187	0.017**	Accepted	0.032
H3	ATT-> INT	0.003	0.969	Rejected	0.000
H4	TQC -> INT	0.006	0.913	Rejected	0.000
H5	TEC -> INT	0.306	0.000***	Accepted	0.099

Note: ** $0.01 < p < 0.05$, *** $0 < p < 0.01$, $R^2\_a = 0.582$, $Q^2 = 0.439$

5. Conclusions and Discussion

The findings reveal that social influences and perceived behavioural control are crucial for encouraging the adoption of blockchain-traced foods. The significant role of subjective norms indicates that social endorsement can drive consumer intention toward blockchain-labeled organic pasta. Furthermore, a positive attitude toward technology is pivotal, underscoring the importance of technological familiarity in adoption behaviours. However, trust in existing quality certifications did not affect purchase intentions, suggesting that blockchain traceability does not yet align with traditional trust markers in consumers' minds.

Policymakers and producers should consider strategies that focus on simplifying blockchain product accessibility, enhancing social endorsement, and educating consumers about blockchain's added value for transparency and food safety. By addressing these areas, stakeholders can better support blockchain adoption in the agri-food sector and improve trust, traceability, and product authenticity.

Acknowledgements

This study was carried out within the Agritech National Research Center and received funding from the European Union Next-GenerationEU (PIANO NAZIONALE DI RIPRESA E RESILIENZA (PNRR) – MISSIONE 4 COMPONENTE 2, INVESTIMENTO 1.4 – D.D. 1032 17/06/2022, CN00000022) for the authors G.M. and M.C.. This paper reflects only the authors' views and opinions, neither the European Union nor the European Commission can be considered responsible for them. The study received funding from the European Union's HE research and innovation program under grant agreement No 101084188, for the authors A.C. and S.S.. Views and opinions expressed are, however, those of the authors only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for any use that may be made of the information the document contains. A special thank goes to Alessandra Russo for her help during the data collection.

Declaration on Generative AI

The author(s) have not employed any Generative AI tools.

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