

Hungarian University of Agriculture and Life Sciences

Factors influencing people to buy Fresh food online in China and Hungary

Doctoral (Ph.D.) dissertation

by

Jieqian Zhang

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Name of Doctoral School: Doctoral School of Economics and Regional Sciences
Discipline: Management and Business Administration Sciences

Head of Doctoral School: Prof. Dr. Zoltán Bujdosó, PhD
Head of Institute of Rural Development and Sustainable Economy
Head of Doctoral School of Economics and Regional Sciences

Supervisor: Dr. habil. Ildikó Rudnák, PhD
Institute of Agricultural and Food Economics
Department of Agricultural Management and Leadership Science

Approval of the Head of Doctoral School **Approval of the Supervisor**

Dr. Zoltán Bujdosó Dr. Ildikó Rudnák

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1. Background of the work and its aims

1.1 Research Background

With the widespread application of mobile internet and digital payment technologies, the global retail industry is undergoing a profound transformation from offline brick-and-mortar stores to online digital platforms. Fresh food, as a high-frequency category of daily consumption, has seen particularly significant online adoption. This shift in global consumption patterns has not only reshaped traditional agricultural supply chains and retail structures but has also spawned a new business ecosystem supported by instant delivery, cold chain logistics, and platform big data. The booming development of fresh food e-commerce fundamentally reflects consumers' pursuit of convenience, quality, and diversified lifestyles in the digital economy era. Although the rapid growth of fresh food e-commerce is not evenly distributed globally, its development level and consumer acceptance are deeply influenced by a combination of factors, including local economic foundations, infrastructure, cultural habits, and market environments. Therefore, in-depth research into the behavioral logic and underlying reasons for consumers' online purchases of fresh food in different market environments has significant commercial value. Furthermore, this also helps us understand the localization of the global digital economy and the changes in consumer culture.

Especially in cross-cultural comparative studies, consumers in different countries often exhibit different behavioral patterns in terms of risk perception, trust building, price sensitivity, and technology acceptance. Therefore, this study, by systematically comparing China and Hungary—two countries with significantly different market environments—can not only reveal the differences in consumer behavior mechanisms under different cultural backgrounds, but also further explore how digital technology is accepted, adapted to, and reshapes consumption patterns in different social contexts. This research is expected to provide a more comprehensive theoretical explanation for understanding the complexity of consumer behavior in the digital age. Simultaneously, this research can also provide valuable references for e-commerce platforms, retail enterprises, and policymakers to better promote the digital transformation of the fresh food supply chain and the sustainable development of international markets.

This study selects China—the world's most representative and largest market—and Hungary—a rapidly developing market in Central and Eastern Europe—as comparison objects. The study employs grounded theory—a qualitative research method that emphasizes bottom-up construction of empirical data theories—to systematically explore the differences in online fresh food purchasing behavior between Chinese and Hungarian consumers and their potential formation mechanisms. Through interviews and a rigorous three-level coding procedure, this study aims to extract and compare the core categories and theoretical models influencing consumer decisions in China and Hungary. Subsequently, this study uses structural equation modeling to conduct quantitative tests and cross-cultural comparisons on 898 valid questionnaires from both countries. This will reveal the cross-cultural commonalities and context-dependent

characteristics of consumer behavior in the digital economy, providing a solid theoretical foundation and practical guidance for fresh food e-commerce platforms to formulate internationalization strategies and optimize localized operations.

1.2 Research aims

Against the backdrop of the accelerating penetration of the global digital economy into basic consumer sectors, this study uses the fresh food e-commerce markets of China and Hungary as comparative contexts to systematically analyse the formation mechanism of online fresh food consumption behaviour. The aim is to reveal the structural differences in consumer decision-making logic under different institutional environments and market development stages. Specific research objectives include:

- To construct a theoretical framework to explain consumer behaviour in online fresh food e-commerce within a cross-cultural context
- To compare the structural differences in the mechanisms of online fresh food purchasing behaviour between Chinese and Hungarian consumers.
- To provide decision support for the internationalization and localization of fresh food e-commerce platforms, thereby promoting the platform's operational transformation from standardization to overseas
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2. Material And Method

2.1 Methodology

This study focuses on the formation mechanism of consumer behavior in the context of online fresh food shopping. A mixed-method design was employed, using grounded theory as the theory generation tool and combining it with a questionnaire survey for empirical testing. The overall research path followed a logical sequence of "qualitative exploration – quantitative verification."

The qualitative exploration phase adopted a two-stage progressive design framework. The core coding process of grounded theory was centered on a Chinese sample, supplemented by a Hungarian sample, aiming to verify the cross-cultural applicability of the theoretical model and identify potential situational differences.

In the quantitative research phase, based on the core categories and structural relationships obtained in the qualitative phase, relevant variables were operationalized, and measurement scales were constructed, ultimately forming a formal questionnaire. Therefore, based on the inferred model and dimensions, a structured questionnaire containing 47 measurement items was created.

After rigorous data quality control and cleaning procedures, 462 valid samples were obtained from China and 436 valid samples from Hungary, for a total of 898 valid samples.

This study employs a systematic analytical framework, encompassing descriptive statistics, reliability and validity testing, confirmatory factor analysis, common method bias testing, measurement equivalence testing, structural equation modeling analysis, mediation effect testing, and moderating effect testing. This comprehensive methodology lays a solid foundation for subsequent empirical analysis.

2.2 Grounded Theory Coding Based on Chinese Samples derived from interviews

2.2.1 Open Coding

Chinese respondents' perceptions and evaluations of fresh food e-commerce exhibit a relatively clear multi-dimensional structure.

At the product and quality level, value and efficiency level, and trust and relationship level, brand reputation, user reviews, after-sales guarantees, delivery services, and recommendations from acquaintances significantly influence platform selection. Meanwhile, environmental awareness, green delivery, and sustainable development concepts are gradually entering consumer considerations, but currently remain secondary motivations. We found that consumers are placing higher demands on platforms, including supply chain integration, cold chain logistics, same-city delivery, localized services, and improved regulatory mechanisms, reflecting a shift in consumer focus from "whether to use" to "how to use it better."

Chinese consumers' fresh food e-commerce purchasing behavior is primarily driven by quality assurance, efficiency value, price rationality, and trust mechanisms, forming a relatively complex consumer decision-making logic and providing a foundation for subsequent theoretical model construction.

2.2.2 Axial Coding

The core coding phase established conceptual interconnections, synthesising the 217 initial concepts extracted from open coding into eight primary categories and several subcategories through intrinsic logical reasoning.

(1) Health Consciousness (2) Green Consumption Values；(3)Perceived Product Quality; (4) Perceived Service Convenience; (5)Perceived Information Transparency; (6) Platform Trust; (7) Perceived Value; (8) Purchasing Behaviour; (9)Perceived Market Competitiveness

2.2.3 Selective Coding

This study examines the intrinsic connections between nine primary categories (health consciousness, green consumption values, perceived product quality, perceived service convenience, perceived information transparency, platform trust, perceived value, purchasing behaviour, perceived market competitiveness) and their 40 sub-categories. Employing continuous comparative analysis to examine causal logic, temporal sequences, and strength of influence among these categories, the study ultimately identifies the core category as: 'Value-Driven Trust-Building Mechanism'

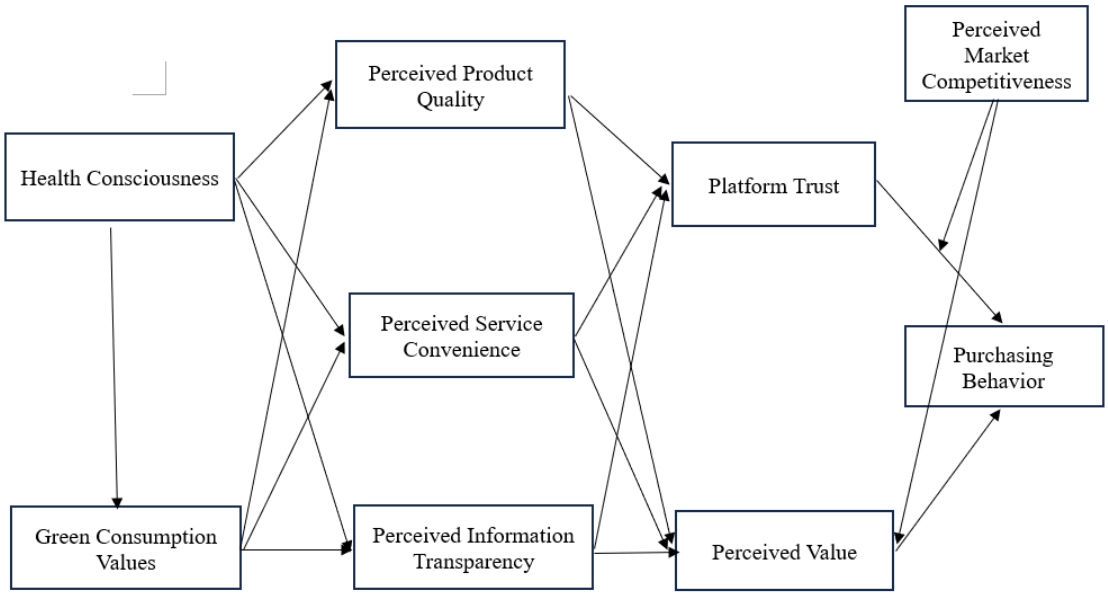


Figure 3-1 Theoretical Model of Factors Influencing Chinese Consumers' Online Purchasing Behaviour for Fresh Food

Source: The author's own work

This core category reveals the underlying logic shaping purchasing behaviour among Chinese fresh food e-commerce consumers: driven initially by health consciousness

and green values, consumers conduct multidimensional assessments of product quality, service convenience, and information transparency to evaluate overall value and establish platform trust. Ultimately, within the contextually moderating influence of market competition, this process crystallises into purchasing decisions and behavioural patterns. This core category not only integrates the theoretical relationships of the preceding nine primary categories but also reveals the distinctiveness of consumer behaviour within the Chinese context. Compared to Western consumers, who rely more heavily on brand reputation, Chinese consumers place greater emphasis on a dual-path mechanism involving information transparency and comprehensive value assessment. Simultaneously, the intensity of market competition significantly modulates the conversion efficiency between trust and loyalty. This finding establishes a robust foundation for subsequent theoretical model construction and hypothesis development, while identifying the intrinsic mechanisms influencing online purchasing behaviour among Chinese fresh produce consumers.

2.3 Grounded Theory Coding Based on Hungarian Samples derived from interviews

2.3.1 Open Coding

This study systematically codes the transcripts of in-depth interviews with 18 Hungarian respondents. The coding process also utilizes NVivo12 qualitative analysis software for data management, establishing a multi-level node tree structure to achieve dynamic organization and real-time adjustment of concepts. The openness coding results for grounded theory

The open coding results based on grounded theory show that Hungarian consumers' perceptions and behaviours regarding fresh food e-commerce exhibit a relatively clear and multi-dimensional conceptual structure.

The open coding effectively revealed the core focus dimensions behind Hungarian fresh food e-commerce consumer behaviour, laying a solid foundation for the concept aggregation and logical relationship construction in the subsequent main axis coding.

2.3.2 Axial Coding

The main axis coding of the Hungarian sample categorizes 156 initial concepts into 7 main categories and several subcategories according to their internal logic. Based on this, a theoretical framework for the influencing factors of consumer fresh produce

purchasing behaviour in the Hungarian context is constructed. The specific content is as follows:

(1) Health Consciousness; (2) Green Consumption Values; (3)Perceived Service Convenience; (4)Perceived Information Transparency; (5) Platform Trust; (6)Perceived Value; (7)Purchasing Behaviour

2.3.3 Selective Coding

Theoretical Implications of the Core Category

Based on the axial and selective coding results of the Hungarian interview sample, this article identifies and names the core category "Convenience-Driven Direct Trust Mechanism," and analyses and summarizes the internal logic of Hungarian fresh food e-commerce consumer purchasing behaviour (**Figure 3-1).**

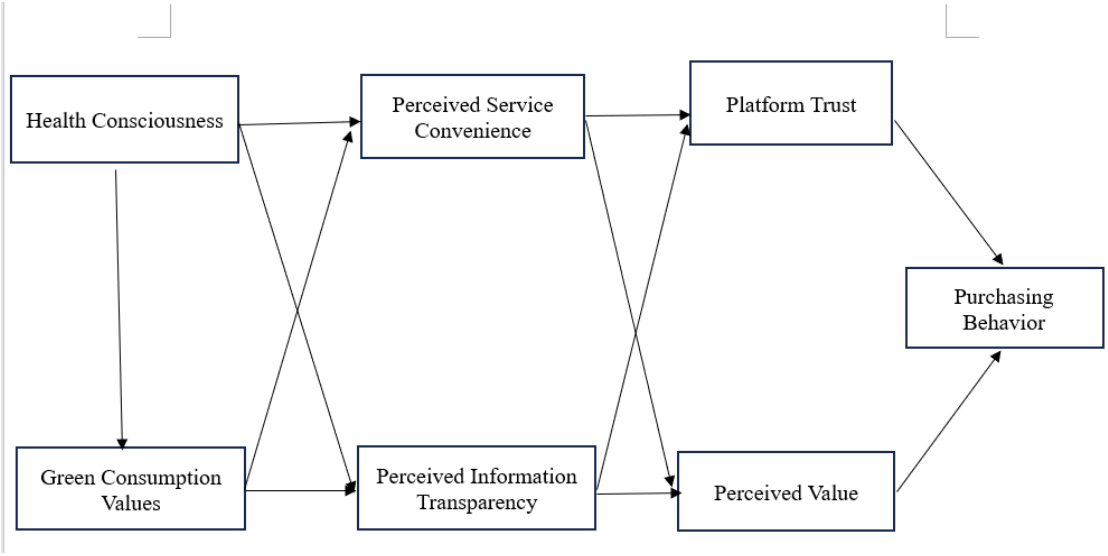


Figure 3-2 Theoretical Model of Factors Influencing Hungarian Consumers' Online Purchasing Behaviour for Fresh Food

Source: The author's own work

The purchasing behaviour of Hungarian consumers in the fresh food e-commerce sector exhibits a simplified pattern of "convenience priority, rapid value assessment, and direct trust establishment." Their trust-building path is significantly shorter than in the Chinese context, and they show lower sensitivity to product quality differences. The moderating effect of market competition factors has not yet been fully realized.

4. RESEARCH QUESTIONS AND HYPOTHESES

4.1 The Relationship Between Health Consciousness and Green Consumption Values

H1: *Health Consciousness has a significant positive impact on green consumption values, and this impact is stronger in the Chinese context than in the Hungarian context.*

4.2 The Impact of Health Consciousness on Perceived Evaluation

H2a: *Health Consciousness has a significant positive impact on perceived product quality (applicable only to China).*

H2b: *Health Consciousness has a significant positive impact on perceived service convenience.*

H2c: *Health Consciousness has a significant positive impact on perceived information transparency.*

4.3 The Impact of Green Consumption Value on Perceived

H3a: *Green consumption values have a significant positive impact on perceived service convenience.*

H3b: *Green consumption values have a significant positive impact on perceived information transparency.*

H3c: *Green consumption values have a reinforcing effect on the positive impact of perceived information transparency.*

4.4 The Impact of Perceived Evaluation on Platform Trust

H4a: *Perceived product quality has a significant positive impact on platform trust (applicable only to China).*

H4b: *Perceived service convenience has a significant positive impact on platform trust.*

H4c: *Perceived information transparency has a significant positive impact on platform trust.*

4.5 The Impact of Perceived Evaluation on Perceived Value

H5a: Perceived product quality has a significant positive impact on perceived value (applicable only to China).

H5b: Perceived service convenience has a significant positive impact on perceived value.

H5c: Perceived information transparency has a significant positive impact on perceived value.

4.6 The Impact of Platform Trust and Perceived Value on Purchasing Behaviour

H6a: *Platform trust has a significant positive impact on purchasing behaviour.*

H6b: *Perceived value has a significant positive impact on purchasing behaviour.*

4.7 Moderating Effect of Perceived Market Competitiveness

H7a*: Perceived market competitiveness negatively moderates the positive impact of platform trust on purchase behaviour (applicable only to China).*

H7b: *Perceived market competitiveness negatively moderates the positive impact of perceived value on purchase behaviour (applicable only to China).*

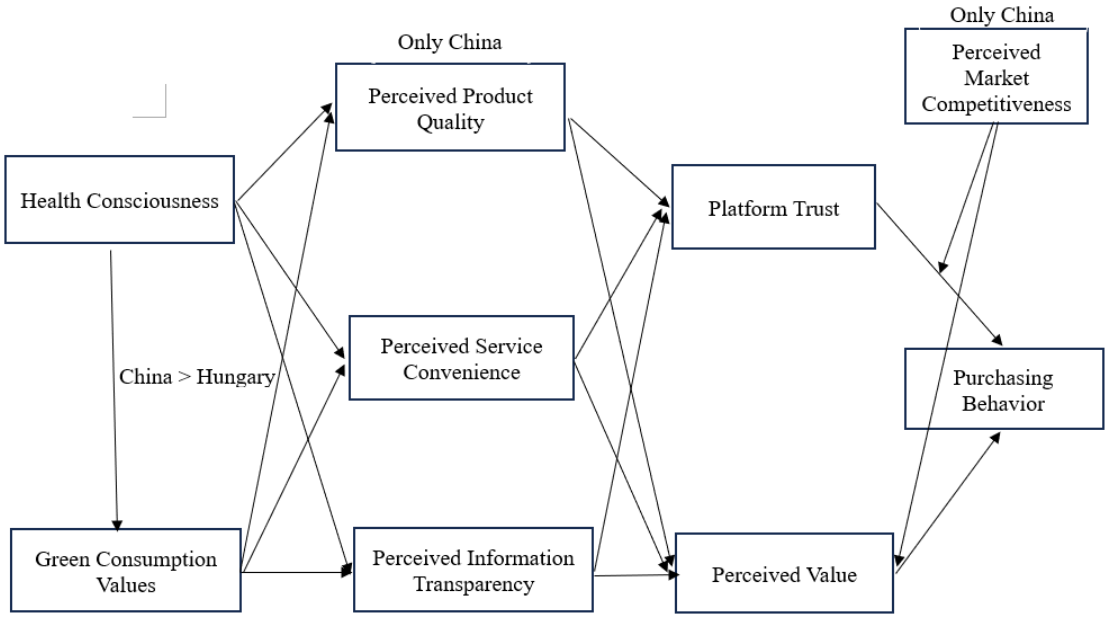


Figure4 -1 Model architecture diagram of this study

Source: The author's own work

Based on the core categories and theoretical framework derived from grounded theory coding in Chapter 3, a cross-cultural comparative research model of fresh food e-commerce consumer purchasing behaviour has been systematically constructed. (**Figure 4-1**).

5 RESULT AND DISCUSSION

5.1 Reliability and Validity Testing of the Scale

In this study, to ensure the stability and consistency of the scale measurement, the reliability analysis of the survey items was mainly conducted using Cronbach's α coefficient.

In the result, the Cronbach's α coefficients for each variable in the Chinese sample ranged from 0.779 (PSC) to 0.871 (HC), while those in the Hungarian sample ranged from 0.693 (PSC) to 0.811 (HC), both exceeding the acceptable threshold of 0.7, indicating that the scale has good internal consistency in both Chinese and Hungarian contexts.

This study used the KMO test and Bartlett's test of sphericity to determine whether the data were suitable for factor analysis. The results showed that the KMO values of all variables in the Chinese and Hungarian samples ranged from 0.652 to 0.873, and the Bartlett's test of sphericity was significant ($p = 0.000$), indicating that the data were suitable for factor analysis and that the scale had a good foundation for construct validity.

5.2 Measurement Invariance and Structural Invariance Analysis

To ensure the validity of cross-cultural comparisons between the Chinese and Hungarian samples, this study employed multi-group confirmatory factor analysis (MG-CFA) to examine measurement invariance and structural invariance. Specifically, configural invariance, metric invariance, and structural invariance were tested sequentially.

5.2.1 Configural Invariance and Metric Invariance

The assessment of configural invariance in this study was conducted by estimating an identical factor structure across both samples without imposing any equality constraints. The results indicated an acceptable model fit (CFI = 0.848), suggesting that the Chinese and Hungarian samples exhibit consistency in their overall factor structures. This result serves as a baseline for subsequent invariance tests.

Based on the results above, metric invariance was subsequently assessed by constraining the factor loadings (i.e., measurement weights) to be equal across both sample groups. The results showed that the CFI value for the constrained model remained consistent with that of the configural model (CFI = 0.840), and the change in CFI (ΔCFI) was 0.008, falling below the recommended threshold of 0.01. The metric invariance was supported.

This finding indicates that, within the two cultural contexts examined, the individual measurement items carry equivalent meanings, thereby permitting meaningful comparisons regarding the structural relationships among the latent constructs.

5.2.3 Structural Invariance

Having established metric invariance, this study proceeded to test for structural invariance by constraining the structural paths (i.e., structural weights) between the latent variables to be equal across both sample groups. The results revealed that the unconstrained structural model yielded a CFI value of 0.942, while the constrained model yielded a CFI value of 0.943. The change in CFI (ΔCFI) was 0.001, which is well below the threshold of 0.01.

Therefore, structural invariance was supported.

This indicates that the Chinese and Hungarian samples demonstrate consistency in the relationships among their latent constructs; furthermore, it implies that the theoretical model proposed in this study functions in a similar manner across both cultural contexts. These results provide strong evidence for the cross-cultural robustness and generalizability of the proposed model of fresh food e-commerce purchasing behavior.

5.3 Correlation Analysis

In the correlation analysis, this study used the Pearso product-moment correlation coefficient to conduct correlation analyses on the independent variables (HC, GCV), mediating variables (PPQ, PSC, PIT, PT, PV), dependent variable (PB), and moderating variable (PMC) for the Chinese sample (N=462) and the Hungarian sample (N=436), respectively. The results are shown in **Tables 5-1** and **5-2**.

Tables 5-1 *Correlation coefficient matrix of variables studied in Chinese sample*

variable	1.HC	2.GCV	3.PPQ	4.PSC	5.PIT	6.PT	7.PV	8.PB	9.PMC
1.HC	1								
2.GCV	0.308**	1							
3.PPQ	0.190**	0.262**	1						
4.PSC	0.241**	0.170**	0.312**	1					
5.PIT	0.320**	0.231**	0.375**	0.388**	1				
6.PT	0.233**	0.205**	0.498	0.166**	0.164**	1			
7.PV	0.265**	0.228**	0.265**	0.270**	0.306**	0.405	1		
8.PB	0.254**	0.211**	0.334**	0.342**	0.287**	0.365	0.381	1	
9.PMC	0.101*	0.084	0.156**	0.221**	0.142**	0.118*	0.175**	0.198**	1

Source:

Table 5-2 *Correlation coefficient matrix of variables in Hungarian sample (N=436)*

variable	1.HC	2.GCV	3.PPQ	4.PSC	5.PIT	6.PT	7.PV	8.PB	9.PMC
1.HC	1								
2.GCV	0.169**	1							
3.PPQ	0.220**	0.192**	1						
4.PSC	0.168**	0.252**	0.321**	1					
5.PIT	0.173**	0.197**	0.247**	0.423	1				
6.PT	0.212**	0.234**	0.284**	0.173**	0.247**	1			
7.PV	0.143**	0.188**	0.097	0.284**	0.322	0.411	1		
8.PB	0.087	0.045	0.167**	0.315**	0.246**	0.332	0.290	1	
9.PMC	0.132*	0.101*	0.184**	0.089	0.067	0.124*	0.211**	0.103*	1

Note: *p < 0.05, ** p < 0.01 (two-tailed test). The diagonal is 1. The abbreviations of variables are the same as Table 5-2.

Source: The author's own work

Most core variables in both countries exhibit statistically significant positive correlations ($p<0.01$), which initially supports the basic logic of positive correlations among variables in the theoretical model of this study. Platform trust (PT) and perceived value (PV) are both moderately positively correlated with purchasing behaviour (PB) (Chinese sample: PT-PB=0.365, PV-PB=0.381; Hungarian sample: PT-PB=0.332, PV-PB=0.290).

Secondly, cross-border comparisons reveal key differences. In the Chinese sample, Health Consciousness (HC), green consumption values (GCV), and purchasing

behaviour (PB) are all significantly positively correlated (HC-PB=0.254, GCV-PB=0.211). However, in the Hungarian sample, neither of these relationships is significant (HC-PB=0.087, GCV-PB=0.045). This provides quantitative evidence for the findings of grounded theory, indicating that health and environmental values have a more direct driving effect on Chinese consumer behaviour, while their influence on Hungarian consumers may be more indirect or weaker.

Third, the role of perceived product quality (PPQ) shows significant contextual differences. In the Chinese sample, PPQ is strongly correlated with platform trust (PT) (0.498), making it one of the most important associated variables, and is also significantly correlated with purchasing behaviour (PB) (0.334). In the Hungarian sample, while the correlation between PPQ and PT is significant, its strength is weaker (0.284), and its correlation with perceived value (PV) is even insignificant (0.097). This confirms the grounded theory assertion that "perceived product quality is a context-dependent construct," indicating that perceived product quality holds a less central position in the decision-making network of Hungarian consumers than in China.

Finally, the moderating variable perceived market competitiveness (PMC) and purchasing behaviour (PB) show a weakly significant positive correlation in both countries (0.198 in China, 0.103 in Hungary).

5.4 Model Construction and Testing Analysis

5.4.1 Structural Equation Modelling

This study constructed and fitted structural equation models based on data from Chinese samples (N=462) and Hungarian samples (N=436), respectively. In the model, Health consciousness (HC) and green consumption values (GCV) were used as exogenous latent variables (independent variables), perceived product quality (PPQ), perceived service convenience (PSC), perceived information transparency (PIT), platform trust (PT), and perceived value (PV) were used as endogenous latent variables (mediating variables), and purchasing behaviour (PB) was used as the final endogenous latent variable (dependent variable). The model path was set according to the previously proposed theoretical assumptions, and the parameters were estimated using the maximum likelihood estimation method with AMOS software.

5.4.2 Model Fit Index Analysis

Table 5-3 *Fitting results of the Sino-Hungarian model*

Model adaptation metrics	Recommended Value	Fit value of Chinese sample	Hungarian sample fit	Adaptation judgment
X2/df	<3.00 p.m.	2.152	1.271	Y
GFI	>0.80	0.877	0.929	Y
AGFI	>0.80	0.855	0.916	Y
RMSEA	<0.08	0.050	0.025	Y
TLI	>0.90	0.919	0.966	Y
NFI	>0.90	0.927	0.969	Y
CFI	>0.90	0.927	0.969	Y

Source: The author's own work

As shown in **Table 5-3**, the analysis results for both countries are much less than 3, indicating that the difference between the model and the data is not significant. RMSEA (Root Mean Square Error of Approximation) is an important indicator for measuring model error. The values for both countries (0.050 for China, 0.025 for Hungary) are both below the critical value of 0.08, showing that the model has a good approximate fit. Regarding the relative fit indices, TLI, IFI, and CFI (both > 0.90 for both countries) indicate that the model has significantly improved compared to the baseline model. The absolute fit indices GFI and AGFI (both > 0.85) further illustrate that the model can effectively reproduce the covariance structure of the observed data

5.4.3 Path Analysis

Table 5-4 *Path analysis results of Chinese consumer sample*

Influence path	Estimation coefficient	Standard deviation	Statistics	P-value	Inspection results
GCV←HC	0.308	0.056	5.528	***	established
PPQ←HC	0.190	0.047	4.026	***	established
PSC←HC	0.241	0.057	4.235	***	established
PIT←HC	0.320	0.054	5.941	***	established
PPQ←GCV	0.262	0.047	5.530	***	established
PSC←GCV	0.170	0.056	3.048	0.002	established
PIT←GCV	0.231	0.052	4.486	***	established
PV←PIT	0.306	0.056	5.455	***	established
PT←PPQ	0.498	0.066	7.495	***	established
PT←PSC	0.166	0.053	3.108	0.002	established
PV←PSC	0.270	0.057	4.773	***	established
PV←PPQ	0.265	0.064	4.115	***	established
PT←PIT	0.164	0.052	3.154	0.002	established
PB←PT	0.365	0.061	5.953	***	established
PB←PV	0.381	0.057	6.662	***	established

Source: The author's own work

As shown **Table 5-4**, the Chinese consumer sample data exhibits a complex, multi-dimensional, chain-like influence network strongly driven by perceived product quality. Health consciousness (HC) not only directly reinforces green consumption values (GCV) as a fundamental value, but also significantly positively influences perceived product quality (PPQ), perceived service convenience (PSC), and perceived information transparency (PIT), indicating that Chinese consumers' health concerns have fully permeated their evaluation criteria for platform core attributes. Crucially, perceived product quality (PPQ) has an exceptionally strong driving effect on platform trust (PT) (β=0.498, $p<0.001$), serving as the core cognitive foundation for building trust. This confirms that, within the specific market and food safety context of China, the physical quality of products is an indispensable key indicator for consumers to establish initial and sustained trust. Meanwhile, perceived service convenience (PSC) and perceived information transparency (PIT) not only directly contribute to trust building, but also indirectly play a role by enhancing perceived value (PV), forming multiple parallel pathways of "cognitive assessment - value judgment - trust formation", which ultimately drive purchasing behaviour (PB) together and powerfully.

Table 5-5 *Path analysis results of Hungarian consumer sample*

Influence path	Estimation coefficient	Standard deviation	Statistics	P-value	Inspection results
GCV←HC	0.169	0.061	2.777	0.005	established
PPQ←HC	-0.053	0.051	-1.042	0.297	Not established
PSC←HC	0.220	0.061	3.608	***	established
PIT←HC	0.168	0.053	3.188	0.001	established
PPQ←GCV	-0.011	0.051	-0.215	0.829	Not established
PSC←GCV	0.192	0.063	3.057	0.002	established
PIT←GCV	0.252	0.054	4.638	***	established
PV←PIT	0.322	0.076	4.210	***	established
PT←PPQ	-0.057	0.054	-1.068	0.286	Not established
PT←PSC	0.173	0.053	3.276	0.001	established
PV←PSC	0.284	0.072	3.945	***	established
PV←PPQ	0.097	0.072	1.361	0.173	Not established
PT←PIT	0.247	0.061	4.077	***	established
PB←PT	0.332	0.085	3.913	***	established
PB←PV	0.290	0.061	4.725	***	established

Source: The author's own work

Compared to Chinese consumers, the path diagram of the Hungarian (**Table 5-5)** consumer sample reflects its core characteristics of service convenience and information transparency, with a relatively simple and direct path. Specifically,

although Health consciousness (HC) and green values (GCV) still significantly influence some perceived dimensions, their impact on perceived product quality (PPQ) did not pass the significance test. Subsequently, perceived service convenience (PSC) and perceived information transparency (PIT) constitute the two pillars of the driving mechanism: they not only make significant direct contributions to perceived value (PV) but are also key sources of building platform trust (PT). Ultimately, platform trust (PT) and perceived value (PV) are both effectively converted into purchasing behaviour, but their pre-driving logic is fundamentally different from that of the Chinese sample.

5.4.4 Mediation Effect Test

(1) Mediation Effect Test of Chinese Consumer Sample

The regression analysis results preliminarily support the existence of multilevel mediation effects. To accurately quantify the existence and magnitude of various mediation effects, we used the bias-corrected nonparametric percentile bootstrap method (5000 repeated samplings) to test the total indirect effect, specific indirect effect paths, and direct effects. The results are summarized. The Bootstrap test results precisely quantify the multi-level mediation model.

First, Among them, the total indirect effect through the "Perceived Value (PV)" path (0.101) is slightly higher than that through the "Platform Trust (PT)" path (0.082). Specifically, in the chain path, the effects via "HC → PIT → PV → PB" and "HC → PPQ → PT → PB" are the most prominent. The direct effect of HC remains significant, indicating that its influence does not depend on the mediating variables specified in this study.

Second, for Green Consumption Values (GCV), its total indirect effect is 0.144 (68.2%), while the direct effect is not significant, constituting complete mediation. This means that GCV only influences purchasing behaviour by stimulating consumers' higher demands for platform attributes (especially product quality and information transparency) and through the mediating evaluation of value and trust. Specifically, among the indirect effects through the PT path, the "GCV → PPQ → PT → PB" path contributes the most; among the indirect effects through the PV path, the two chain paths "GCV → PIT → PV → PB" and "GCV → PPQ → PV → PB" contribute significantly.

(2) Mediation Effect Test of Hungarian Consumer Samples

Preliminary evidence of the mediation analysis is presented through a series of nested regression models. The results provide preliminary support for the mediation effect in the Hungarian sample.

To accurately validate and quantify these mediating effects, we employed a bias-corrected nonparametric percentile bootstrap method (5000 repeated samplings). Since the overall effect was not significant, we focused primarily on the significance of specific indirect effect pathways. The results are summarized .

The Bootstrap test results precisely quantify the mediation model of the Hungarian sample. First, for Health consciousness (HC), although its total effect is not significant, the total indirect effect is significant (0.065), and the direct effect is not significant, indicating that the impact of HC on PB is entirely transmitted through mediating variables. The indirect effect is achieved through two paths: "Platform Trust (PT)" and "Perceived Value (PV)," with comparable strengths. Among the specific chain paths, the paths "HC → PIT → PT → PB," "HC → PSC → PV → PB," and "HC directly to PT" contribute significantly.5

Second, for green consumption values (GCV), its total effect is also not significant, but the total indirect effect is significant (0.086), and the direct effect is not significant, constituting complete mediation. The indirect effect of GCV is slightly stronger than that of HC, and the indirect effect through the "Perceived Value (PV)" path (0.053) is slightly stronger than that through the "Platform Trust (PT)" path (0.046). In specific chain paths, the paths “GCV → PIT → PT → PB”, “GCV → PIT → PV → PB”, and “GCV directly to PV” all show significant conduction effects.

5.4.5 Moderating Effect Test

Hierarchical regression analysis was used to analyze the moderating effect.

First, a basic model containing only control variables was constructed (Model 1). Platform trust (PT) and perceived value (PV) were added as independent variables to Model 1, forming the main effect model (Model 2). The moderating variable perceived market competitiveness (PMC) and its interaction terms with PT and PV (PT×PMC, PV×PMC) were added to Model 2, forming the complete moderating model (Model 3). The moderating effect was determined by observing the significance (β3) of the interaction term coefficients in Model 3 and their sign relationship with the PT/PV main effect coefficients (β1): if β3 is significant and its sign is opposite to β1, the moderating effect is weakened (negative).

(1) Moderating Effect Test for Chinese Sample

Table 5-6 *Results of moderation effect test in Chinese samples (dependent variable: purchasing behaviour PA).*

variable	Model 1 (Base Model)	Model 2 (main effect model)	Model 3 (Conditioning Model)
Control variables	Controlled	Controlled	Controlled
Core antecedent variables			
Platform Trust (PT)	-	0.365***(0.061)	0.342***(0.062)
Perceived Value (PV)	-	0.381***(0.057)	0.365***(0.059)
Moderate variables			
Perceived Market Competitiveness (PMC)	-	-	0.085*(0.041)
interaction items			
PT×PMC	-	-	-0.151(0.048)
PV×PMC	-	-	-0.138(0.046)
Model statistics			
R^2	0.032	0.283	0.312
Adjusted R^2	0.024	0.274	0.299
ΔR^2	-	0.251***	0.029**
F-number	3.012*	25.587***	22.831***

The values in the table are β of the standardized regression coefficient, and the brackets are standard errors. P<0.05，**p<0.01，***p<0.001。 Control variables include gender, age, income, education, and online shopping experience.
Source: The author's own work

In **Table 5-6** Perceived market competitiveness (PMC) plays a moderating role in the influence of platform trust and perceived value on consumer decisions in China. First, Model 2 shows that, without considering the moderating effect, both platform trust (PT) and perceived value (PV) have highly significant positive predictive effects on purchasing behaviour (PA) (β=0.365, P<0.001; β=0.381, P<0.001), jointly explaining 28.3% of the variance in purchasing behaviour, laying a solid foundation for the main effect analysis in subsequent moderating analyses. The key finding lies in Model 3: when perceiving market competitiveness (PMC) and its interaction terms with PT and PV are introduced, the regression coefficients of both interaction terms (PT×PMC and PV×PMC) are significantly negative (β=-0.151, P<0.01; β=-0.138, P<0.01). According to the criteria for determining the moderating effect, the interaction term coefficient (β_3) has the opposite sign to the corresponding main effect coefficient (β_1, i.e., the coefficients of PT and PV), indicating that perceived market competitiveness has a significant weakening effect (negative moderating effect) on both the "PT→PB" and "PV→PB" paths. Specifically, this means that in the Chinese market environment, the higher the perceived intensity of competition, the weaker the driving force of platform trust and perceived value on the final purchase decision. Furthermore, the explanatory power (R^2) of the model increased from 0.283 in Model 2 to 0.312 in Model 3, and the

F-test for ΔR^2 (0.029) was significant ($P < 0.01$), further supporting the incremental contribution of the moderating variables and their interaction terms to the model.

Table 5-7 *Simple slope analysis of the moderating effect of Chinese samples*

Moderating variable (PMC) level	path	Effect value (β)	Standard error	t-value	p-value
Low Level (-1SD)	PT→PB	0.493	0.072	6.847	0.000
	PV→PB	0.503	0.068	7.397	0.000
Mean	PT→PB	0.342	0.062	5.532	0.000
	PV→PB	0.365	0.059	6.186	0.000
High level (+1SD)	PT→PB	0.191	0.065	2.938	0.003
	PV→PB	0.227	0.062	3.661	0.000

Source: The author's own work

Consumers' perceived market competitiveness increases from a low level (-1 SD) to a high level (+1 SD), the driving effect of platform trust (PT) and perceived value (PV) on purchasing behaviour (PB) exhibits a systematic decreasing trend. Specifically, the effect size of the PT→PA path decreases from 0.493 under low perceived competition to 0.342 at the mean level, and further weakens to 0.191 under high perceived competition; similarly, the PV→PB. Path decreases from 0.503 to 0.365, and then to 0.227. This gradient change intuitively confirms the weakening moderating effect of PMC, that is, the more intense the market competition environment, the weaker the power of consumers' intrinsic trust and value to translate into actual purchasing behaviour. All paths remain statistically significant in all three scenarios ($P < 0.01$), indicating that the moderating variables do not change the direction of the relationship, but rather systematically change the strength of the relationship (**Table 5-7)**.

(2) Moderating Effect Test for Hungarian Sample

Table 5-8 *Results of the Hungarian sample moderating effect test (dependent variable: purchasing behaviour PB).*

variable	Model1(Base Model)	Model2(MainEffectModel)	Model3(ConditioningModel)
Controlvariables	Controlled	Controlled	Controlled
Coreantecedentvariables			
PlatformTrust(PT)	-	0.332***(0.065)	0.328***(0.065)
PerceivedValue(PV)	-	0.290***(0.063)	0.285***(0.063)
Moderatevariables			
PerceivedMarketCompetitiveness(PMC)	-	-	0.048(0.034)
interactionitems			
PT×PMC	-	-	0.042(0.039)
PV×PMC	-	-	-0.055(0.037)

Modelstatistics			
R^2	0.028	0.210	0.216
AdjustedR^2	0.019	0.199	0.201
ΔR^2	-	0.182***	0.006
F-value	2.478*	16.278***	13.123***

Note: The values in the table are β standardized regression coefficients, and the brackets are standard errors. P<0.05，**p<0.01，***p<0.001。 Control variables include gender, age, income, education, and online shopping experience.
Source: The author's own work

As shown in **Table 5-8** the moderating effect test results of the Hungarian sample present a completely different pattern from those of the Chinese sample.

First, Model 2 reaffirms that platform trust (PT) and perceived value (PV) have robust and significant main effects on purchasing behaviour (PB) (β=0.332, P<0.001; β=0.290, P<0.001), indicating that in the Hungarian context, consumers' internal psychological assessment is also a core mechanism driving purchases. However, the results of Model 3 show that when perceived market competitiveness (PMC) and interaction terms are introduced, the coefficients of both interaction terms (PT×PMC and PV×PMC) do not reach statistical significance (β=0.042, P=0.282; β=-0.055, P=0.137). This result indicates that in the Hungarian market, consumers' subjective perception of the intensity of market competition does not significantly change the strength of the relationship between "platform trust → purchasing behaviour" or "perceived value → purchasing behaviour." Meanwhile, the increment in the model's explanatory power (ΔR^2=0.006) is also very small and insignificant.

5.5 Conclusion

I can conclude that Hypothesis H1, which states that health awareness (HC) has a significant positive impact on green consumption values (GVC), and that this impact is more significant in the Chinese context, is valid.

Regarding the impact of health awareness, hypotheses H2a, H2b, and H2c predict positive impacts on perceived product quality (PPQ), perceived service convenience (PSC), and perceived information transparency (PIT), respectively. In the Chinese sample, all three paths are significant; therefore, hypotheses H2a, H2b, and H2c are validated in the Chinese context. In the Hungarian sample, HC has no significant impact on PPQ but has a significant impact on PSC and PIT. Therefore, hypotheses H2b and H2c are also confirmed in Hungary, while hypotheses H2a are only confirmed in China, indicating context dependence.

Regarding the impact of green consumption values (GCV), hypotheses H3a, H3b, and H3c predict a positive impact and reinforcing effect of GCV on PSC and PIT. The results show that GCV has a significant impact on both PSC and PIT in both countries' samples, and hypotheses H3a and H3b were confirmed in both countries. The reinforcing effect of GCV on PIT described by hypothesis H3c is also reflected in the comparison of path coefficients in the two countries' samples. Especially in Hungary, the effects of GCV on PIT are complementary, which partially confirms this hypothesis. This section explores how perception translates into trust and value, ultimately driving purchasing behavior. Hypotheses H4a and H5a predict the positive impact of perceived product quality (PPQ) on platform trust (PT) and perceived value (PV), respectively. In China, both paths are significant. However, in Hungary, the impact of PPQ on PT and PV is not significant, further confirming that PPQ is a context-dependent variable.

Hypotheses H4b, H4c, H5b, and H5c examine the positive impacts of perceived service convenience (PSC) and perceived information transparency (PIT) on PT and PV, respectively. The results show that in the Chinese sample, the paths of PSC on PT and PV, and PIT on PT and PV, are significant. Therefore, hypotheses H4b, H4c, H5b, and H5c are also validated in China. In the Hungarian sample, the paths of PSC on PT and PV, and PIT on PT and PV, are also significant. Therefore, hypotheses H4b, H4c, H5b, and H5c are also validated in Hungary.

This study hypothesizes that H6a and H6b predict the positive impact of platform trust (PT) and perceived value (PV) on purchasing behavior (PB). Path analysis of the samples from both countries shows that PT and PV have a significant driving effect on PB ($p<0.001$), and H6a and H6b are validated in a cross-cultural context, highlighting the universal importance of trust and value as core psychological factors.

Finally, this study examines the moderating effect of perceived market competitiveness (PMC). Hypotheses H7a and H7b predict that PMC will have a negative moderating effect on the PT→PA and PV→PB paths, and that this moderating effect applies only in China. The moderating effect analysis results show that in the Chinese sample, the interaction coefficients of PT×PMC and PV×PMC are both significantly negative, indicating that perceived market competition does indeed weaken the driving effect of trust and value on purchasing behavior, thus confirming hypotheses H7a and H7b in the Chinese context. In the Hungarian sample, the coefficients of these two interaction terms are not significant ($p>0.05$), and the incremental increase in model explanatory power is small, indicating that PMC has no significant moderating effect in the relatively less competitive Hungarian market. Therefore, hypotheses H7a and H7b are not confirmed in Hungary.

In summary, of the 17 hypotheses proposed in this study, 12 were confirmed as core relationships stable across cultures, and 5 were identified as context-dependent hypotheses (valid only in China).

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

This study systematically explored the differences in online fresh food purchasing behaviour between Chinese and Hungarian consumers by integrating qualitative exploration using grounded theory and quantitative verification using structural equation modelling. The main conclusions are as follows:

First, the online fresh food purchasing behaviour of Chinese and Hungarian consumers follows two distinct core driving logics: a "value-driven complex trust-building mechanism" and a "convenience-driven simplified trust-building mechanism." In the Chinese market, consumer decision-making is a highly rational, multi-stage, and multi-dimensional complex process. Their behaviour is activated by a deep-seated health consciousness and green values. Through rigorous evaluation of product quality, service convenience, and information transparency, they form a comprehensive perceived value and gradually build platform trust through a path requiring multiple verifications, ultimately leading to purchase under the regulation of intense market competition.

In contrast, the decision-making path of Hungarian consumers is more direct and simplified. Their behaviour is primarily triggered by service convenience, supplemented by requirements for basic information transparency. Trust building relies more on a stable and reliable service experience itself, rather than repeated verification of the product's physical quality. This "convenience-first" logic makes the decision-making process faster and less affected by external market competition. The fundamental difference between these two mechanisms stems from the different stages of economic and social development, food safety institutional environments, market competition patterns, and deep-seated consumer cultures in the two countries.

Second, the profound differences in trust-building paths are key to distinguishing consumer behaviour patterns in the two countries, particularly in the contextual dependence of the core variable "perceived product quality." This study confirms that "perceived product quality" is an indispensable independent core construct in the Chinese context. It is the central hub connecting consumer health concerns and platform trust, and its influence is significant. This reflects that, having experienced food safety

incidents and facing an environment of abundant but inconsistent market supply, Chinese consumers regard verifying the physical quality of products as an insurmountable cornerstone for building trust.

However, in the Hungarian sample, this variable failed to form a significant influence path on platform trust and perceived value. This does not mean that Hungarian consumers do not value quality, but rather that under the unified, high-standard food safety regulatory system of the EU, consumers hold a high institutional baseline trust in the quality of products from online channels. Therefore, perceived quality did not become an active variable in their platform differentiation choices and trust building. This finding precisely reveals the shaping effect of institutional trust on consumers' micro-decision-making structures.

Third, the market environment, especially "perceived market competitiveness," as an important contextual moderating variable, has significant national boundaries in its influence, profoundly affecting the formation and maintenance of platform loyalty. This study verified that, in the Chinese context, perceived market competitiveness significantly negatively moderates both the "platform trust → purchase behaviour" and "perceived value → purchase behaviour" paths. This indicates that even if consumers establish trust in a platform and recognize its value, a highly competitive market environment (manifested as numerous platform choices, frequent promotions, and convenient price comparison) will stimulate their risk diversification and continuous search for the best, thereby weakening user stickiness and loyalty to a single platform and fostering a multi-platform rotation behaviour pattern.

In contrast, in Hungary, the fresh food e-commerce market is still in its development stage, exhibiting an oligopolistic or limited competitive landscape. Consumers perceive a low level of market competition, so the moderating effect is not significant. Once a platform establishes trust through its services, it is easier to achieve a higher user retention rate.

6.2 Recommendations

Based on the above conclusions, this study proposes the following countermeasures for fresh food e-commerce platforms in their cross-border operations and localization practices:

Implement a cross-border market entry and operation strategy of "dual-core drive and differentiated in-depth cultivation". when entering different national markets, platforms must abandon the mindset of simply replicating a single successful model. For markets like China, "quality trust" and "emotional value" should be established as the dual core strategies. At the operational level, every effort should be made to build and visualize its quality assurance system, such as strengthening direct sourcing, providing detailed testing reports and traceability information, and strictly adhering to quality control standards, as the cornerstone for establishing initial trust. Simultaneously, in a highly competitive environment, it is necessary to go beyond basic functional value and build emotional connections and social value with consumers through community operations, content ecosystems (such as recipe recommendations and health knowledge), and membership systems to resist user churn caused by pure price competition.

For markets like Hungary, the core strategy should focus on "ultimate convenience" and "transparency and reliability." The optimization focus is on improving the smoothness of the end-to-end service experience, such as simplifying the ordering process, providing precise and flexible delivery time windows, and ensuring efficient customer service response. Simultaneously, all key information (price breakdown, delivery status, return and exchange policies) should be presented in a clear and user-friendly manner, directly accumulating trust capital through stable service fulfilment, rather than excessively promoting in-depth quality information that may not be perceived as a differentiating advantage by local consumers.

In the Chinese market, a counter-cyclical competitive barrier combining "quality visualization" and "humanized service" should be built. Faced with the perceived weakening effect of market competition on user loyalty, local Chinese platforms need to build deep defences in two aspects. On the one hand, "quality trust" should be moved from promises to perceptions. Actively utilizing digital technologies such as blockchain and the Internet of Things, the transparency of the supply chain should be upgraded from a marketing gimmick to a real-time, tamper-proof experiential element. For

example, the entire process of fresh produce growth, harvesting, testing, and transportation can be made available to consumers in the form of videos or data streams, transforming the abstract concept of "high quality" into a concrete and credible narrative, thereby strengthening the weakest link in the trust chain. On the other hand, injecting a "human touch" into standardized services can enhance emotional loyalty.

Beyond algorithm-driven efficiency, design service touchpoints that convey care, such as standardized polite language from delivery personnel, thoughtful reminders for inclement weather, and personalized product recommendations for repeat customers. By enhancing users' enjoyment and sense of belonging during the transaction process, strengthening their emotional bond with the platform, switching platforms means not only comparing prices and quality, but also abandoning a habit and relationship, thus effectively buffering the impact of market competition.

6.3 Research Innovations

Existing research on online shopping consumer behaviour is mostly conducted within a single country or cultural context, assuming a relatively consistent institutional environment, digital infrastructure, and consumption concepts, thus focusing on the role of individual psychological factors or platform functional factors. However, consumer shopping behaviour can differ significantly across national contexts, especially in the highly uncertain commodity sector of fresh food. This study compares China and Hungary within the same analytical framework, constructing a cross-cultural model of online fresh food consumer behaviour mechanisms. The two countries exhibit structural differences in their digital economy development stages, e-commerce penetration levels, cold chain logistics system maturity, and food consumption traditions. These differences in institutional and market environments provide comparative conditions for identifying the role of situational variables in the formation of consumer behaviour.

Methodologically, this study systematically practices and demonstrates the advantages of a hybrid research approach integrating qualitative exploration and quantitative verification in the study of complex consumer behaviour. Instead of directly applying existing theoretical models for hypothesis testing, this study first employs a bottom-up qualitative approach—grounded theory—to delve into the real-world contexts of

consumers in both China and Hungary, extracting two core categories and their inherent dimensions: "value-driven trust building" and "convenience-driven direct trust." Building upon this foundation, the emerging categories are operationalized into measurable variables, and structural equation modeling is constructed for quantitative verification and path comparison. This approach is crucial for e-commerce companies to formulate effective internationalization and localization strategies.

In Hungary and similar European markets, focus on "service commitment fulfillment" and "community value creation" to achieve steady market penetration and user retention. Given the "convenience-driven" nature of local consumer decisions and the high level of institutional trust, platform strategies should avoid overcomplication and focus on depth of execution. First, make "reliability" the brand's primary label. This means 100% fulfilment of promises regarding delivery timeliness, product descriptions, and after-sales policies. Any service failure can significantly damage the initially established direct trust. Therefore, the operational focus should be on the stability of the logistics system, the accuracy of inventory management, and the first-time resolution rate of customer service issues. Secondly, explore a "light community" model that integrates with local lifestyles. Leveraging the platform's advantage in integrating local specialty agricultural products, or collaborating with nutritionists and chefs to provide recipes and cooking techniques tailored to local food culture, the shopping platform can be extended into a lifestyle advocate. This light interaction based on shared interests adds a subtle layer of social and emotional value to its practical convenience, thus establishing a differentiated user mindset and higher switching costs in a market where competition is not yet fierce.

6.4 Limitations

While this study achieved a series of valuable findings through rigorous mixed-method research, certain limitations remain, requiring further refinement and breakthroughs in future research. Firstly, there are limitations in sample coverage and representativeness. Although in-depth interviews and questionnaires were conducted in both China and Hungary, respondents were primarily concentrated in large cities with relatively mature fresh food e-commerce development (such as Beijing and Budapest), and the sample group mainly consisted of middle-aged and young adults, middle-to-high-income urban

residents with higher education levels. While this ensured the representativeness of the sample to the core consumer group, it failed to fully encompass the behavioural characteristics of attributes of the product, small and medium-sized cities, and marginalized or potential user groups such as low-income and elderly individuals. The economic development and consumer culture differences within the vast geographical areas of the two countries may have been partially simplified in the study; future research could further capture regional heterogeneity within the country through stratified sampling.

7 New Scientific Results

Based on a systematic comparative study of fresh food e-commerce consumers in China and Hungary, this paper has made several original scientific discoveries in the field of cross-cultural digital consumption and significantly expanded the theoretical understanding of the differences in consumer behaviour between China and Europe.

1, This study conducted an original comparative analysis of fresh food e-commerce consumers in China and Hungary using a hybrid methodology.

2, The core theoretical contribution of this study lies in revealing two distinctly different yet structurally stable consumer behaviour logics: the Chinese sample exhibit a "value-driven complex trust-building mechanism," with a highly rational, multi-stage, and multi-dimensional evaluation process.

3, This study identifies and empirically demonstrates that "perceived product quality" is a key construct with a high context-dependent nature, and its role differs fundamentally between the Chinese and Hungarian models.

4, This study is the first to incorporate "perceived market competitiveness" as a context-moderating variable into a cross-cultural model, revealing its significant national border effect.

5, This study constructs and validates a cross-cultural comparative model integrating "value-driven - multi-dimensional perception - trust value mechanism - behavioural outcome - competitive modulation."

6, This study provides cross-cultural empirical evidence for understanding the tension between "global models" and "local adaptation" in the context of digital economic globalization.

8 The publications

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Fűrész, Á. & Zhang, J. (2025). Fiedler's Contingency Model: A Situational Approach to Managerial Effectiveness. In Leadership Theories and Models in Today's Perspectives (pp. 73–81).

Bujdosó, D. E., Zhang, J., & Barczi, A. (2025). A Bibliometric Exploration of Transactional Analysis in Leadership and Management Research. In Leadership Theories and Models in Today's Perspectives (pp. 9–25).

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