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Research Article

The Role of Regional Public Brands in Live Streaming Sales of Agricultural Products and Their Impact on Farmers' Sustainable Income and Green Agricultural Development: An Empirical Analysis of Consumers in Guangdong, China

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ABSTRACT

Purpose: This research explores the impact of regional public brands on consumers' online purchase intentions and behaviour, with a specific emphasis on green agricultural products marketed through live streaming platforms in Guangdong, China. This study delves into how critical brand attributes, including brand awareness, perceived quality, and brand trust, shape consumers' intentions to purchase online and, in turn, influence their purchase behaviour.

Methodology: A quantitative methodology was adopted, employing a well-designed survey administered to 488 consumers engaged in live-streaming e-commerce for agricultural products in Guangdong. This study employed PLS-SEM to examine the interrelationships among the core constructs: brand awareness, perceived quality, brand trust, online purchasing intention, and subsequent purchasing behaviour. Additionally, mediation analysis was conducted to explore how online purchasing intention mediates the influence of brand-related factors on purchasing behaviour.

Findings: The findings indicated that brand awareness, perceived quality, and brand trust all have positive effects on consumers' online purchase intentions for green agricultural products, which subsequently shape their purchasing behaviour. Among these factors, brand awareness emerged as the most influential determinant of purchase intention. Additionally, the findings indicated that the intention to purchase online functions as an intermediary variable, connecting the impact of brand-related characteristics on consumers' purchasing decisions concerning green agricultural products.

Value: This study highlights the pivotal role regional public brands play in promoting green agricultural product sales via live-streaming platforms. The results offer practical implications for policymakers and marketers aiming to advance rural e-commerce and drive rural revitalization initiatives. In particular, the research stresses the significance of effective brand management in strengthening brand recognition, consumer trust, and perceived product quality, which are essential for achieving sustainable agricultural growth and increasing farmers' income.

Keywords: Regional Public Brands, Live Streaming, Online Purchase Intention, Online Purchase Behaviour, Brand Awareness, Perceived Quality, Brand Trust

INTRODUCTION

Since 2015, the Chinese government's No. 1 Document has constantly underscored the integration of e-commerce with rural and agricultural growth, emphasizing its strategic significance (Feng & Zhang, 2022; Gao, 2022). Building on this commitment, live streaming has emerged as a transformative tool in agricultural product sales, supported by government initiatives and e-commerce platforms. By 2023, approximately 597 million users—54.7% of the country's internet population—were actively engaging with live streaming (Statista, 2024), bridging the gap between consumers and field-produced goods (Xue & Dong, 2023). As the domain of e-commerce live streaming experiences

sustained growth and proliferation, it has emerged as a significant catalyst for agricultural economic expansion. Between 2020 and 2021, the annual growth rate of agricultural product sales facilitated by live streaming platforms exhibited a significant increase of 11.3% compared to the previous year. During the same period, Douyin e-commerce platform reported that from September 2021 to September 2022, 2.83 billion agricultural products were sold to urban areas, highlighting its role in rural development (Zheng et al., 2023). Specialized live-streaming platforms dedicated to agricultural products have proven to be an efficient and economical means to promote consumer engagement, improve user satisfaction, reduce information disparities, minimize transaction expenses, and increase farmers' earnings (Zheng et al., 2023). However, while the rapid expansion of live streaming e-commerce has significantly boosted agricultural economic growth, it also poses new challenges, such as balancing short-term sales surges with long-term brand development and ensuring consistent product quality to maintain consumer trust. These challenges require further research to establish sustainable development strategies.

Therefore, the Chinese government has implemented rules concerning the regional public branding of agricultural products. Regional public brands, representing local specialty agricultural products, serve a pivotal function in driving live streaming sales. The agricultural regional public brand represents a collaborative ownership model involving the government, businesses, and farmers within a specific geographical area (Sun et al., 2022). Its primary purpose is to promote and enhance the marketing and sales of locally produced agricultural products (Sun et al., 2022). Such brands are shaped by factors like natural environmental conditions, historical influences, and human activity. Typically, their nomenclature follows the format "origin name + product (category) name" (Majeed et al., 2021). For example, the regional public brand "Wuchang Rice", represents all rice produced in Wuchang city and is collaboratively managed by the local government, agricultural enterprises, and farmers in the region.

Regional public brands not only establish a trustworthy quality image for agricultural products, but also effectively enhance market recognition and premium capabilities (Liu & Wang, 2023; Zhu, 2020). Product branding increases the usefulness of agricultural products in consumers' eyes, affecting their subjective assessment of the products' quality (Yekimov et al., 2021). Brand premiums help offset the external costs associated with safe agricultural production, enabling farmers to establish self-sustaining pricing mechanisms. This, in turn, incentivizes the production of high-quality, safe agricultural products and supports the enhancement of product standards in quality and safety (Dan et al., 2021). Through the brand effect, regional characteristics and product competitiveness are highlighted, attracting more high-quality customers and promoting the long-term stable growth of farmers' income (Ma & Qiao, 2024). Moreover, regional public brands often integrate green and ecological farming methods, encouraging farmers to adopt environmentally friendly production practices while improving their income, thus supporting the green and sustainable development of agriculture (Ma & Qiao, 2024; Xu et al., 2024). Furthermore, live streamers can showcase the green production and processing methods of branded agricultural products in real-time, enhancing consumer trust in these practices (Wang & Fan, 2021). These interrelated factors mutually reinforce one another, driving both the stable growth of farmers' income and the sustainable development of the agricultural sector (Ma & Qiao, 2024).

However, a critical problem is highlighted in Xu's research (2020): the lack of national quality certifications for over 85% of distinctive agricultural products, which significantly impedes their market competitiveness and visibility. The state of both agricultural industrialization and brand development remains comparatively immature (Xin, 2022). The absence of brand recognition for numerous agricultural products, coupled with consumer skepticism over their quality and safety, poses significant challenges in the marketing and sale of such products. In particular, regions with multiple firms offering identical product varieties face new challenges posed by the advent of the digital economy, notably the threat of information and brand deception, thereby affecting regional agricultural products. Furthermore, the agriculture sector contends with a substantial problem of product "homogenization" inside its discourse (Guo et al., 2022). These issues collectively underscore the urgent need for innovative strategies and robust policy interventions to enhance brand differentiation, build consumer trust, and ensure the sustainable development of regional agricultural products in the digital economy. Without such efforts, the agricultural sector risks stagnating in its ability to compete in increasingly complex and dynamic markets.

Although numerous agricultural brands representing various regions in China have been established, most of them have yet to achieve significant influence (Ma & Qiao, 2024). This indicates that the potential of regional public brands is largely untapped. Consequently, enhancing the efficiency and premium capacity of live broadcast sales for agricultural products remains a formidable challenge (Zhu, 2020). Nonetheless, this is intricately linked to the

augmentation of farmers' income, since the absence of brand value in agricultural products undermines the sustainability of income development for farmers, making it challenging to mitigate the risks associated with market swings through brand influence (Ma & Qiao, 2024). As such, advancing regional public branding and leveraging live streaming effectively could serve as pivotal strategies to address these interconnected challenges.

Currently, the present circumstances of Chinese farmers are challenging and require enhancement. Firstly, China possesses a substantial peasant population base, with around 491 million rural population in 2022, accounting for around 34.8% of the country's overall population (Statista, 2023a), approximately 6.2% of the global population (World Bank, 2022). Secondly, their income is modest and significantly diverges from that of metropolitan residents. In China, the estimated average annual disposable income per capita for rural households in the year 2022 amounted to approximately $2,955 USD, equivalent to roughly 20,133 yuan. This figure represents a proportion of nearly 41% when compared to the income level of urban households, which stood at 49,283 yuan (Statista, 2023b). Furthermore, the revenue structure of farmers exhibits a proportionate issue. In 2022, farmers' income primarily came from urban employment salaries(42%), with farming business activities, including agricultural sales and rural tourism, contributing a modest 35%, while transfer income (mainly government subsidies) and property-based income accounted for 21% and 2%, respectively (National Bureau of Statistics of China, 2023). When urban employment offers higher wages compared to income from agricultural activities, a large-scale migration of farmers to cities may arise, leading to various social challenges such as labor shortages in agriculture, rural depopulation, difficulties for left-behind populations, and imbalances in resources and opportunities between urban and rural areas. Therefore, by actively fostering regional brands of distinctive agricultural products and making full use of emerging technologies, such as live broadcasting, and by combining modern branding technologies with digital platforms, rural producers can reach wider markets and ensure that economic benefits flow back to the agricultural sector, thereby narrowing the income gap between urban and rural areas. This is essential for promoting sustainable growth in farmers' incomes.

Within the framework of Consumer-Based Brand Equity Theory, elements such as associations, perceived quality, brand awareness, uniqueness, and loyalty collectively constitute brand equity (Aaker, 1992, 1996; Keller, 1993; Keller, 2003). Consumer preferences and purchase intentions are significantly influenced by brands with strong equity, which are also associated with improved communication effectiveness and higher profit margins (Keller, 1993; Rojas-Lamorena et al., 2022). Live broadcasting, an emerging e-commerce model operating as a social media platform for real-time information sharing, enables streamers to support consumers in assessing product quality, recognizing brands, and building confidence in both the products and their associated brands (Sun et al., 2022). The utilization of live video streaming for agricultural product sales has a notable effect on the advancement of rural areas and the well-being of agriculturalists in China, serving as a pivotal factor. Recent years have witnessed a growing body of research focused on consumers' purchase intentions within live streaming platforms (Xu et al., 2023). The existing body of literature remains insufficient, as few studies have incorporated brand-related factors as key research variables (Liu & Wang, 2023). Therefore, when examining the factors influencing consumers' behaviour and intention related to purchasing agricultural products through live streaming platforms, the inclusion of brand-related elements is of paramount importance, as it addresses a critical gap in the existing literature.

This study aims to explore the relationship between regional public brands of agricultural products and live streaming purchase behaviour by utilizing two key dimensions from the original brand equity model: brand awareness (BA) and perceived quality (PQ). Additionally, brand trust (BT) is incorporated, as it is identified in some studies as a critical component or sub-dimension of brand equity and a key factor influencing customers' purchasing intentions (Civelek & Ertemel, 2019; Denghua, 2007; Sun et al., 2022). Specifically in the context of agricultural product sales via live streaming, there has been limited research conducted on customer behaviour (Zheng et al., 2023). In summary, the study analyzed the factors influencing online purchasing behaviour (OPB) by utilizing SEM, with a focus on the impacts of brand awareness (BA), perceived quality (PQ), and brand trust (BT), along with the intermediary role played by online purchase intention (OPI). The research further explored the specific role of regional public brands in live-streamed sales of green agricultural products, providing insights into how BA, PQ, and BT shape consumer purchasing behaviour during live broadcasts. This study not only enriches the theoretical framework of the relationship between branding and consumer behavior but also offers practical guidance for how regional agricultural brands can better leverage live streaming e-commerce as a tool, particularly in enhancing the added value of agricultural products and advancing rural revitalization efforts.

LITERATURE REVIEW

Online Purchase Behaviour

Online purchase behaviour (OPB) pertains to the regularity with which individuals partake in purchasing activities via the Internet (Peña-García et al., 2020). The analysis of consumer buying behaviour is crucial for marketers as it provides insights into client expectations. Comprehending the determinants that influence customer buying behaviour is beneficial. Consumer purchase actions directly stem from their behavioural intents (Sultan et al., 2020). Alongside the swift advancement of Internet technology, scholarly research and discourse on online consumer behaviour have grown markedly, attracting considerable attention from academics (Wang & Xu, 2020; Zhang et al., 2021). Given its emergence as a distinctive form of e-commerce, it is imperative to investigate how live-streaming e-com influences consumer behavior in the acquisition of agricultural products (Dong et al., 2022), as its real-time interactions and social cues can amplify the bandwagon effect, influencing consumer decisions.

Brand Awareness

The capacity of potential consumers to associate a specific brand with a particular product category, as well as their ability to recognize or recall that brand, is referred to as brand awareness (BA) (Aaker, 1996). BA is an essential element of brand equity, reflecting consumers' direct reactions to agricultural businesses' marketing initiatives and influencing their brand understanding (Sun et al., 2022). BA, a critical factor for consumers during purchasing decisions, significantly impacts their choices (Rundle Thiele & Bennett, 2001). Consumers demonstrate a propensity to spend higher prices for products linked to esteemed brands owing to their perceived dependability and credibility (Knox, 2004). Research reveals the significant and positive influence that BA has on online purchase intention and repurchase intention (Coyle, 2022; Yang et al., 2022). Some scholars have identified that brand recognition exerts both direct and indirect influences on online purchasing intentions. Nonetheless, certain studies have found BA does not affect online purchasing intentions (Civelek & Ertemel, 2019; Febriyantoro, 2020). Consequently, the current literature indicates a discernible gap in understanding the link between BA and OPI. This study consequently posits the following hypothesis:

H1a: Brand awareness positively influences online purchase intention of agricultural products in live streaming.

H1b: Brand awareness positively influences online purchase behaviour of agricultural products in live streaming.

Perceived Quality

While brand equity and perceived superiority play significant roles, perceived quality (PQ) is fundamentally rooted in consumers' subjective evaluation of a product's intrinsic worth (Zhao & Feng, 2021). As quality remains a paramount consideration in consumer decision-making (Zhao & Feng, 2021; Zuo & Gou, 2023), it is imperative to delve deeper into the factors influencing PQ and its impact on purchase behavior. According to the majority of research, PQ immediately and favorably affects online purchase intention (Ruojin et al., 2021; Sun et al., 2022; Zhang & Duangekanong, 2023; Zhao & Feng, 2021; Zuo & Gou, 2023). Product quality, service quality, and perceived quality all exert a considerable and beneficial influence on customers' inclination to make an online purchase, according to a recent agricultural study in particular (Zuo & Gou, 2023). Online purchase intention is directly impacted by PQ, and it can also be influenced by mediators, like brand loyalty (Iriani, 2021). And consumer purchase behaviour is influenced by positive PQ. This study attempts to understand the PQ of agricultural products with regional public brands, and its relationship with online purchase intention and behaviour, by examining the following hypotheses:

H2a: Perceived quality has a positive relationship with online purchase intention of agricultural products in live streaming.

H2b: Perceived quality has a positive relationship with online purchase behaviour of agricultural products in live streaming.

Brand Trust

For customers who are unfamiliar with a brand, a crucial element in their decision-making process is trust (Sun et al., 2022). According to some earlier researchers, brand trust (BT) has two dimensions that reflect various perspectives on a brand's dependability. Reliability, the first component of BT, relates to a brand's technical or competence-based attributes, which includes the brand's ability and willingness to fulfill promises and meet customer

needs. Ascribing positive motives to the brand concerning the interests and well-being of customers constitutes the second component, which pertains to intentions (Delgado-Ballester et al., 2003; Doney & Cannon, 1997).

Consumers' propensity to buy is greatly influenced by BT, which is an essential component of brand equity (Denghua, 2007). An increase in purchase intention is indicative of a positive correlation with BT, suggesting that as BT rises, so does the intention to purchase (Aydin et al., 2014; Sanny et al., 2020). Consumers mostly exhibit trust as a psychological anticipation and prediction before buying agricultural products under regional public brands. Following a purchase, the quality of the goods will influence whether or not customers' expectations are fulfilled, which will affect their subsequent purchasing decisions (Sun et al., 2022). This study consequently postulates the following given the important role that brand trust plays in explaining purchasing intention and behaviour:

H3a: Brand trust has a positive relationship with online purchase intention of agricultural products in live streaming.

H3b: Brand trust positively impacts online purchase behaviour of agricultural products in live streaming.

Online Purchase Intention

Purchase intention, according to Fishbein and Ajzen (1977), is the genuine intention of consumers toward products. Purchase intention, according to some academics, is the transactional behaviour that customers display after evaluating a product; it gauges their likelihood of making a purchase depending on how they feel about the product (Iriani, 2021). Behavioural intention is identified as the primary and significant predictor of behaviour in the Theory of Planned Behaviour. Based on a study, the most important factor in converting a prospective customer into a real online buyer is their intention to make purchases online (Sriram et al., 2021). Consumers' desire to make online purchases has been found to significantly affect their actual OPB, according to a study on online buying (Bhardwaj et al., 2022). Although prior studies have typically indicated a positive and substantial link between OPI and OPB, other investigations have discovered that the strength of this relationship varies depending on the circumstances. Additionally, the dynamic character of developing markets may cause differences in the drivers of OPI compared to completely established markets, which might impact consumers' actual purchasing behaviour (Nwakaji & Goh, 2021). Therefore, within the framework of live streaming and the markets for agricultural products, it is essential to ascertain the factors that affect OPI and OPB. Thus, the following hypothesis were put forth:

H4: Online purchase intention has a positive relationship with online purchase behaviour of agricultural products in live streaming.
H5a: Online purchase intention mediates the relationship between brand awareness and online purchase behaviour of agricultural products in live streaming.
H5b: Online purchase intention mediates the relationship between perceived quality and online purchase behaviour of agricultural products in live streaming. .
H5c: Online purchase intention mediates the relationship between brand trust and online purchase behaviour of agricultural products in live streaming.

METHODOLOGY

This research utilized a cross-sectional design with a questionnaire. The online self-administered questionnaire was disseminated to customers in Guangdong province, China, via convenience sampling. The online survey link, accompanied by a succinct overview of the study's aims, was disseminated on Chinese social media platforms. The eligibility criteria for participants were: (1) Chinese customers residing in Guangdong province. The choice of taking the samples from the Guangdong province is justified as Guangdong province sustained its status as the preeminent province in China due to its high GDP for 33 straight years as of 2022 (China Briefing, 2023), while it's agricultural sector ranked fourth in China's primary industrial share (Zhou, 2022). Furthermore, Guangdong Province is one of the three locations in China exhibiting the most advanced development of live e-commerce (iResearch Inc., 2021). (2) Adults above 18 years old.

The questionnaire consisted of three components, the first of which was a screening choice: "I attest that I have read the material above and that I will willingly take part in this survey by checking this box. I will authorize the review of the recording, analysis, and use of data for this study" to guarantee ethical compliance. Individuals who responded with "Yes" may go to the second and third sections. The demographic attributes of the respondents comprise age, gender, marital status, and income level and educational attainment, made up the second section, while the items that measured the latent variables made up the third section.

There were 23 items altogether in the third section of the questionnaire, which included 5 factors. A seven-point Likert scale, where 1 signifies "strongly disagree" and 7 signifies "strongly agree," was employed to evaluate the responses. This study utilized a five-item scale developed by Fu, S., et al. to evaluate participants' purchasing behavior of agricultural products on live streaming platforms (Fu et al., 2023). To assess participants' intention to purchase agricultural products via live streaming, a six-item scale adapted from Dong, X., H. Zhao, and T. Li was employed (Dong et al., 2022). Additionally, the brand-related factors were measured using five items for BA, three items for PQ, and four items for BT, as developed by Sun, Y., et al. (2022).

According to Krejcie and Morgan's research (1970), a sample size of 384 would be required for a population of one million. This guideline would require a minimum sample size of 384 for the present study, which includes 89,011,000 Internet users in Guangdong province. Overall, 488 samples met the study's inclusion requirements, and the sample size that was collected for this investigation was larger than the bare minimum needed. 267 men and 221 women made up the sample; 24% of respondents were between the ages of 36 and 40; 34.4% of respondents held bachelor's degrees; 80.5% of respondents were unmarried; and 37.3% of respondents earned less than RMB 5000-7000 per month. The respondents' comprehensive demographic characteristics are shown in Table 1.

Table 1. Demographic Characteristics of the Respondents

Characteristics		Frequency (n)	Percentage (%)
Gender	**Male**	**267**	**54.7**
	Female	**221**	**45.3**
Age	**18~25**	**84**	**17.2**
	26~30	**58**	**11.9**
	31~35	**109**	**22.3**
	36~40	**117**	**24.0**
	41~45	**61**	**12.5**
	46~50	**32**	**6.6**
	Above 50	**27**	**5.5**
Education Level	**High School**	**93**	**19.1**
	Diploma	**149**	**30.5**
	Bachelor's degree	**168**	**34.4**
	Master's degree	**59**	**12.1**
	Doctoral degree	**13**	**2.7**
	Other professional qualification	**6**	**1.2**
Marital Status	**Married**	**91**	**18.6**
	Single	**393**	**80.5**
	Other	**4**	**.8**
Monthly income (after tax/yuan)	**Below 1,000**	**26**	**5.3**
	1000-3000	**53**	**10.9**
	3000-5000	**51**	**10.5**
	5000-7000	**182**	**37.3**
	7000-9000	**90**	**18.4**
	Above 9,000	**86**	**17.6**

Note: Total number of valid samples is 488.

RESULTS

The study employed variance-based PLS-SEM using SmartPLS 4, chosen for its lack of distribution assumptions and ability to maximize model variance (Sarstedt et al., 2019). SmartPLS provides advanced algorithms and modeling features with professional support (Ringle et al., 2023). Initially, the measurement model was evaluated, followed by the assessment of the structural model, in accordance with Henseler et al. (2019). The measurement model evaluation ensured internal consistency (Cronbach's alpha > 0.7) and reliability (CR > 0.7), with convergent validity demonstrated by CR > 0.7, AVE > 0.5, and AVE < CR (Chin, 1998; Hair Jr et al., 2021). Discriminant validity was also confirmed via the Fornell-Larcker criterion and the HTMT ratio (< 0.85) (Fornell & Larcker, 1981; Franke &

Sarstedt, 2019; Henseler et al., 2015). The hypotheses were tested using bootstrapping with 5,000 replications (Hair Jr et al., 2021).

All the items' outer loadings were found to be more than 0.708, according to the measurement model evaluation findings displayed in Table 2 and Figure 1. With CR (rho_c) ranging from 0.932 to 0.940 and Cronbach's alpha ranging from 0.890 to 0.920, all constructs demonstrated strong construct reliability and internal consistency. Additionally, all structures had AVEs between 0.703 and 0.819.

Table 2. Item Measurement Model Assessment

Constructs	Items	Outer Loadings	Cronbach's Alpha	Composite Reliability (rho_c)	AVE
Online Purchase Behaviour	**OPB1**	**0.872**	**0.920**	**0.940**	**0.758**
	OPB2	**0.859**			
	OPB3	**0.876**			
	OPB4	**0.878**			
	OPB5	**0.869**			
Online Purchase Intention	**OPI1**	**0.842**	**0.916**	**0.934**	**0.703**
	OPI2	**0.849**			
	OPI3.	**0.863**			
	OPI4.	**0.813**			
	OPI5	**0.840**			
	OPI6	**0.825**			
Brand Awareness	**BA1**	**0.808**	**0.910**	**0.933**	**0.735**
	BA2	**0.874**			
	BA3	**0.880**			
	BA4	**0.843**			
	BA5	**0.880**			
Perceived Quality	**PQ1**	**0.908**	**0.890**	**0.932**	**0.819**
	PQ2.	**0.899**			
	PQ3	**0.909**			
Brand Trust	**BT1**	**0.873**	**0.908**	**0.936**	**0.784**
	BT2	**0.874**			
	BT3.	**0.892**			
	BT4	**0.902**			

Note: Outer loadings> 0.708, Cronbach's alpha > 0.7, CR > 0.7, AVE > 0.5

The results presented in Table 3 demonstrate that the square root of the Average Variance Extracted (AVE) for each construct exceeds its correlation with other constructs, and further confirm that all values within the Heterotrait-Monotrait (HTMT) matrix fall below 0.85, thereby signifying discriminant validity exist across all constructs (Henseler et al., 2015).

Table 3. Discriminant Validity Assessment

		BA	BT	MeOPI	OPB	PQ
Fornell-Larcker criterion	**BA**	0.857				
	BT	0.471	0.885			
	MeOPI	0.625	0.499	0.839		
	OPB	0.561	0.457	0.699	0.871	
	PQ	0.517	0.434	0.501	0.500	0.905
Heterotrait-monotrait ratio of correlations (HTMT)	**BA**					
	BT	0.517				
	MeOPI	0.678	0.546			
	OPB	0.607	0.498	0.759		
	PQ	0.574	0.483	0.552	0.551	

Note: HTMT< 0.85

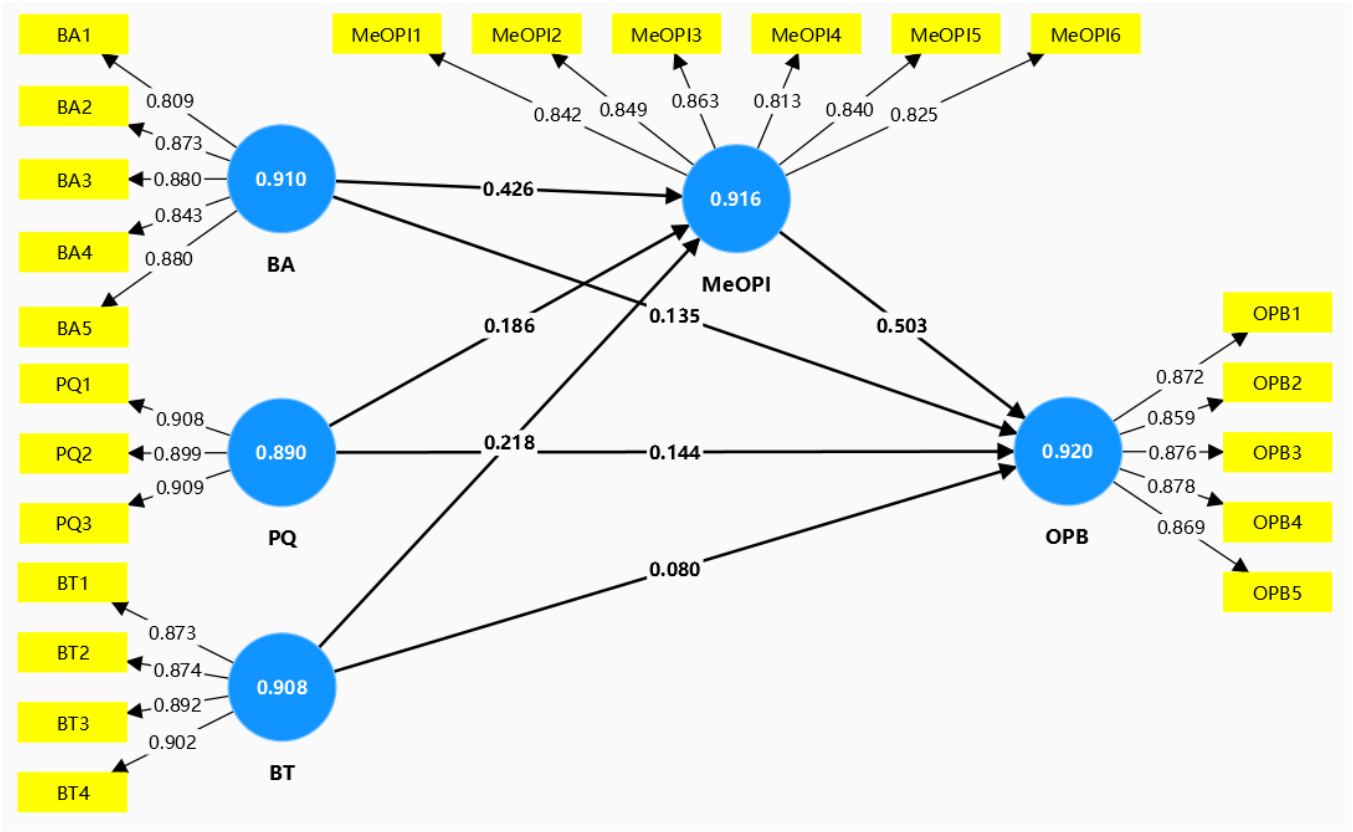

Figure 1 The Measurement Model Evaluation's Findings, Including Factor Loadings and Cronbach's Alpha

The structural model and the suggested hypotheses were then put to the test after the measurement model evaluation. With an SRMR (Standardized Root Mean Square Residual) of 0.043, which is less than 0.08 and suggests an acceptable model fit, the model fit indices show a strong fit for the estimated model (Henseler et al., 2016). A tight match to the saturated model is shown by the NFI of 0.919 (Kline, 2023; Sarstedt et al., 2021).

Significantly favorable relationships between BA and OPB are revealed by the findings of the total effect model evaluation, which are displayed in Table 4 (β =0.351,t-value =7.190), PQ and OPB (β =0.237, t-value =5.195), and BT and OPB (β =0.189, t-value= 4.222), Consequently, hypotheses H1b, H2b, and H3b are supported.

Additionally, when evaluating the direct influence, the findings indicated strong relationships between BA and OPI (β =0.426, t-value= 8.955), PQ and OPI (β = 0.186, t-value =4.089), BT and OPI (β =0.218, t-value= 4.895), and OPI and OPB (β =0.503, t-value =9.287). Thus, H1a, H2a, H3a, and H4 are supported.

The findings in Table 4 provide evidence of the mediation role of OPI in the relationships between BA and OPB (β = 0.214, t-value = 6.523), between PQ and OPB (β = 0.094, t-value = 3.593), and between BT and OPB (β =0.109, t-value = 4.262). This is in line with the indirect effect assessment results, which support hypotheses H5a, H5b, and H5c.

Table 4. Structural Model Assessment and Hypothesis Testing

Paths	Path coefficients (t-value)	95% confidence intervals	Hypothesis Testing
Total effects			
BA -> OPB	0.351***(7.190)	(0.259,0.450)	H1b supported
BT -> OPB	0.189***(4.222)	(0.101,0.279)	H3b supported
PQ -> OPB	0.237***(5.195)	(0.152,0.328)	H2b supported
Direct effects			
BA -> MeOPI	0.426***(8.955)	(0.334,0.522)	H1a supported
BA -> OPB	0.135**(2.838)	(0.044,0.233)	
BT -> MeOPI	0.218***(4.895)	(0.133,0.307)	H3a supported

BT -> OPB	0.080*(2.094)	(0.006,0.154)	
MeOPI -> OPB	0.503***(9.287)	(0.395,0.609)	H4 supported
PQ -> MeOPI	0.186***(4.089)	(0.096,0.273)	H2a supported
PQ -> OPB	0.144***(3.589)	(0.067,0.226)	
Mediation effects			
BA -> MeOPI -> OPB	0.214***(6.523)	(0.154,0.282)	H5a supported
BT -> MeOPI -> OPB	0.109***(4.262)	(0.062,0.161)	H5c supported
PQ -> MeOPI -> OPB	0.094***(3.593)	(0.045,0.147)	H5b supported

Note(s): ***p < 0.001; **p < 0.01; *p < 0.05

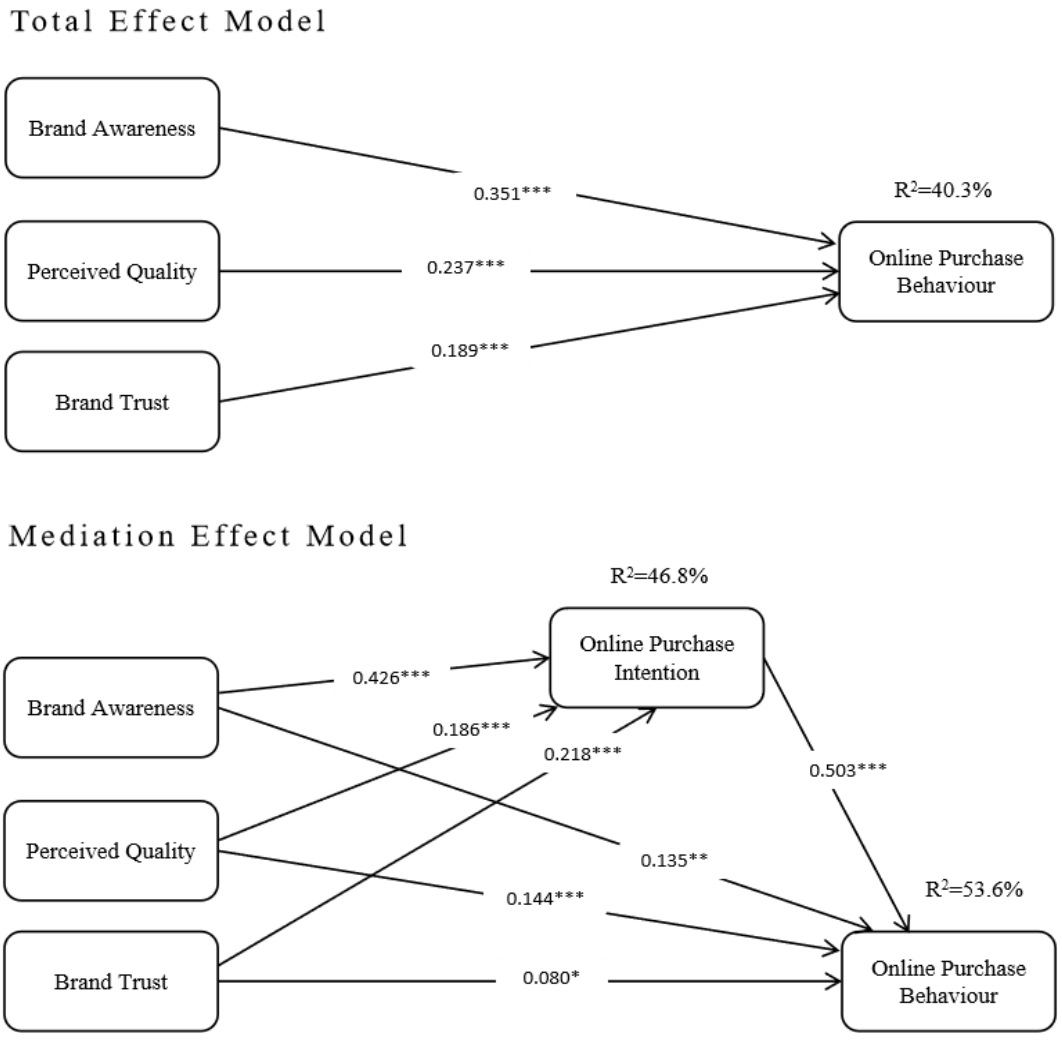

Figure 2 The Total Effect Model and the Mediation Model

Figure 2 illustrates the outcomes of the mediation model and total effect model tests. The total effect model accounted for 40.3% of OPB. The R^2 values in the mediation model indicated that 46.8% and 53.6% of the variance in OPI and OPB, respectively, can be explained, demonstrating the model's predictive capability.

CONCLUSION

This study aims to examine the key elements affecting customers' online purchase behaviour regarding agricultural product brands within the live broadcast e-commerce context. Firstly, the direct effects of BA, PQ, and BT on OPB are significant. While previous studies on regional branding primarily focused on the impact of brand equity variables on OPI, few have explored their direct effects on OPB. This study addresses this research gap by confirming the existence of a direct positive relationship between the brand equity elements (BA, PQ, and BT) and OPB. Among them, PQ exerts the most significant influence, with a path coefficient of 0.144, followed by BA at 0.135, while BT has the least influence at 0.080.

Secondly, this study provides evidence that BA, PQ, and BT exert positive effects on OPI, with the results for BA and BT corroborating the findings of Sun et al. (2022). However, Sun's study concludes that the direct effect of PQ on OPI is insignificant, suggesting that PQ influences OPI only through the mediating role of BT–a conclusion that diverges from the findings of this research. Upon further examination of the effects, it was determined that BA exerts the most significant direct influence on OPI, with a path coefficient of 0.426, succeeded by BT at 0.218 and PQ at 0.186, which is opposite of Sun's research point of view: "compared with awareness, brand trust can influence consumers' purchase intention more significantly" (Sun et al., 2022).

Thirdly, OPI serves as a crucial mediator between BA, PQ, BT, and OPB, which aligns with the study on customer online purchase intention by Bhardwaj A. et al. (2022). The inclusion of OPI as a mediating variable enhances the model's explanatory power (R^2) from 40.3% to 53.6%, showing its significance as a mediating factor. The hypotheses H1a, H1b, H2a, H2b, H3a, H3b, H4, H5a, H5b, and H5c are supported by the results, indicating a consistency between the observed data and the predictions made by these hypotheses. In evaluating the indirect effect on OPB when OPI is considered, BA exhibited the most significant influence with a path coefficient of 0.214, succeeded by BT at 0.109 and PQ at 0.094. Consequently, enhancing BA may be the most efficacious technique for augmenting online purchasing intention and behaviour.

Therefore, this study proposes the following recommendations: The government must enhance brand management and oversight, equilibrate resource distribution, and advance legislative frameworks to safeguard brand rights. Agricultural firms must improve their understanding of online communication, innovate live broadcast material, and establish brand trust through transparent production methods. Agricultural producers can leverage governmental assistance to enhance their brand visibility and digital marketing competencies. All organizations must cooperate to establish a regional brand communication network, reinforce industry self-regulation, and collectively uphold and elevate brand image. By implementing these approaches, we may effectively address issues in brand development and foster the robust advancement of regional public brands for agricultural products on new media platforms, including live broadcasts.

Based on the above, the contributions of this study are: Firstly, it expands the research on consumers' online purchase intentions to encompass behaviour with regional public brands, a topic that has been sparsely addressed in existing literature. The results of this study furnish a scientific foundation for the government to devise policies that bolster the advancement of regional public brands, hence facilitating the enhancement of the agriculture sector and the execution of the rural revitalization strategy. Secondly, it provides recommendations for enhancing the online purchase intentions and behaviour of customers for regional public brands of agricultural products. It offers pragmatic counsel for agricultural enterprises and live broadcast practitioners to enhance marketing tactics, with the objective of augmenting market influence, operational efficiency, and economic benefits of regional public brands. These initiatives will ultimately enhance farmers' sustainable income and address the challenges faced by rural farmers. It can also facilitate the popularization of green agriculture and sustainable production methods, enhance the protection of the agricultural ecological environment, and aid in achieving sustainable agricultural growth.

Nonetheless, the limits of this study reside in the model's explanatory strength, as reflected in the R^2 value of 53.6% for online purchase behaviour. This indicates that while the three independent variables and the mediating variable included in the model collectively account for a significant portion of the variance in online purchase behaviour, nearly half of the variance remains unexplained. This suggests that additional factors, not captured in the current model, may also influence the dependent variable. Future research is encouraged to incorporate other relevant variables or contextual factors to address this limitation and offer a more thorough elucidation of the influences, shaping the online purchase behaviour of green agricultural products with regional public brand in live streaming.

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