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# The Impact of Demographic Factors on Online Purchase Intentions for Agricultural Products: A Consumer Behavior Perspective

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## Abstract

This study examines the influence of demographic factors on online purchase intentions for agricultural products, adopting a consumer behavior perspective. The research explores the roles of age, income level, education, and geographic location in shaping consumer attitudes and intentions toward e-commerce platforms for agricultural products. Utilizing a mixed-methods approach, the study combines survey data from 500 respondents with in-depth interviews to identify critical determinants and their interactions. Findings reveal that younger consumers with higher incomes and urban residency demonstrate stronger online purchase intentions, driven by convenience, perceived product quality, and trust in digital platforms. The study also highlights significant moderating effects of age and income on consumer behavior, offering theoretical insights and practical implications for e-commerce strategies in the agricultural sector. Recommendations emphasize tailored marketing approaches to enhance accessibility and trust among diverse demographic groups. This research contributes to the growing body of knowledge on e-commerce in agriculture and provides actionable strategies for stakeholders aiming to optimize digital consumer engagement.

## Keywords

Demographic factors
Online purchase intention
Agricultural products
E-commerce
Consumer behavior
Age moderation
Income level moderation

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## 1. Introduction

The rise of e-commerce has revolutionized the agricultural industry, particularly in emerging markets such as China. Digital platforms enable producers to bypass traditional intermediaries, reduce costs, and connect directly with consumers, resulting in increased efficiency and accessibility for agricultural products. This transformation is further driven by consumer demand for convenience,

competitive pricing, and product variety. However, disparities in adoption rates reveal the significant role of demographic factors, including age, income, education, and geographic location, in shaping online purchase intentions [1,2].

Research indicates that younger consumers, often residing in urban areas, are more likely to embrace e-commerce platforms due to their familiarity with technology and a preference for convenience. By contrast, older individuals and rural residents encounter challenges such as limited digital literacy and distrust in online transactions. Addressing these disparities is crucial for enhancing the reach and effectiveness of e-commerce platforms, particularly for agricultural products where trust and perceived quality are vital [3].

Consumer trust is a pivotal factor influencing online purchase behavior, particularly in the agricultural sector. Concerns about product authenticity, freshness, and food safety are heightened, making trust in digital platforms essential for encouraging consumer participation. Factors such as platform reliability, product reviews, and transparent information significantly influence trust formation[4]. Despite the growing prevalence of agricultural e-commerce, limited research has examined the interplay between demographic factors and key behavioral drivers such as perceived convenience, trust, and product quality[5]. Understanding these interactions can offer actionable insights for designing more inclusive and effective platforms.

This study addresses these gaps by investigating how demographic factors influence online purchase intentions for agricultural products. The research aims to explore the moderating effects of variables such as age, income, and education on key determinants of consumer behavior. By providing a comprehensive analysis of these dynamics, the study contributes to the academic literature on consumer behavior and offers practical recommendations for optimizing e-commerce strategies. Stakeholders, including policymakers and platform developers, can leverage these findings to tailor their approaches, addressing the needs of diverse consumer groups while fostering greater adoption of agricultural e-commerce.

# 2. Literature Review

## 2.1. Demographic Factors Influencing Online Purchase Intentions

Demographic variables such as age, income, education, and geographic location significantly impact consumers' online purchasing behaviors, particularly concerning agricultural products. Younger consumers, familiar with digital technologies, exhibit a higher propensity for online shopping, while older individuals may face challenges due to limited digital literacy. Income levels also play a role, with higher-income groups more likely to trust and engage in e-commerce platforms. Geographic disparities exist, as urban residents have better access to digital infrastructure compared to their rural counterparts. Understanding these factors is critical for promoting inclusivity in agricultural e-commerce.

## 2.2. Trust and Perceived Value in E-commerce

Trust is a pivotal factor influencing online purchase intentions, especially for agricultural products where concerns about authenticity and quality are prevalent. Research highlights that platform reliability, transparency, and consumer reviews play essential roles in building trust among users. Perceived value, encompassing factors like convenience, price, and product quality, also drives consumer behavior. Studies have shown that higher perceived value and trust in e-commerce platforms lead to increased purchase intentions.

## 2.3. Impact of Live-Streaming on Agricultural Product Sales

The emergence of live-streaming commerce has introduced new dynamics in consumer behavior. Live-streaming platforms enhance interactivity and trust, positively influencing consumers' purchase intentions for agricultural products. Features such as perceived interactivity and endorsements during live streams significantly affect consumer attitudes and intentions. This method also allows farmers and sellers to directly interact with potential buyers, fostering a sense of authenticity and transparency [6].

## 2.4. Factors Influencing Farmers' Adoption of E-commerce

Farmers' adoption of e-commerce platforms for selling

agricultural products is influenced by factors such as household labor, subjective willingness, policy perception, and risk perception. A study on rural farmers indicated that government incentives and technical training significantly improve their likelihood of adopting e-commerce [7]. Understanding these factors is essential for designing supportive frameworks to increase farmer participation in digital markets.

### 2.5. Consumer Segmentation in Online Agricultural Markets

Consumer segmentation studies reveal diverse motivations behind purchasing agricultural products online. Segments such as ethical consumers, brand-quality pursuers, and well-heeled shoppers exhibit distinct characteristics and behaviors, highlighting the need for tailored marketing strategies [8]. Additionally, personalized recommendations and promotions targeting these segments have proven effective in enhancing consumer engagement [9].

## 3. Research Methodology

### 3.1. Research Design

This study employs a convergent mixed-methods design, combining quantitative and qualitative approaches to comprehensively explore how demographic factors influence online purchase intentions for agricultural products. This design allows for simultaneous collection and analysis of both numerical and narrative data, ensuring a holistic understanding of consumer behavior. Mixed-methods research is particularly effective in contexts where complex social dynamics, such as trust and demographic disparities, play a critical role [10].

The quantitative component uses survey instruments to identify patterns and correlations, while the qualitative component involves in-depth interviews to uncover the nuances behind these patterns. By integrating findings from both approaches, the study achieves a balanced perspective, addressing both breadth and depth [11].

### 3.2. Sampling and Participants

The sampling strategy ensures representation of diverse demographic groups. A total of 500 participants were selected using stratified random sampling:

Age Distribution: 30% under 30 years, 50% between 31–50 years, and 20% over 50 years.

Income Levels: 40% low-income, 40% middle-income, and 20% high-income households.

Geographic Representation: 60% from urban areas and 40% from rural regions.

This stratification aligns with previous research on consumer demographics in e-commerce, ensuring sufficient variability for meaningful analysis [12]. Inclusion criteria required participants to have prior experience with e-commerce platforms for purchasing agricultural products.

### 3.3. Data Collection

#### 3.3.1. Quantitative Survey

A structured questionnaire was administered online through platforms such as WeChat and QQ. The survey included three sections:

Demographic Information: Age, income, education, and location.

Behavioral Variables: Perceived convenience, trust, product quality, and value.

Purchase Intentions: Likelihood of purchasing agricultural products online in the future.

The 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), was used to capture participants' attitudes. Online distribution ensured broad accessibility and minimized geographical constraints [13].

#### 3.3.2. Qualitative Interviews

Semi-structured interviews were conducted with 20 participants from different demographic segments. These interviews focused on:

Challenges faced while purchasing agricultural products online.

The role of trust in shaping purchase decisions.

Preferences for e-commerce platform features.

Interviews were conducted via video conferencing tools such as Zoom to accommodate participants' schedules. The flexibility of semi-structured interviews allowed participants to share detailed personal experiences, enriching the qualitative dataset [14].

### 3.4. Data Analysis

#### 3.4.1. Quantitative Analysis

Statistical analyses were performed using SPSS:

Descriptive Statistics: To summarize demographic characteristics and response trends.

Correlation Analysis: To assess relationships between demographic factors and purchase intentions.

Multiple Regression Analysis: To evaluate the predictive influence of trust, perceived value, and demographic variables on online purchase behavior.

Quantitative analysis provides empirical evidence to support or refute hypothesized relationships.

#### 3.4.2. Qualitative Analysis

Qualitative data were analyzed using NVivo software to facilitate thematic analysis. Key steps included:

Coding: Identifying recurring themes such as trust concerns, digital literacy barriers, and platform preferences.

Theme Development: Grouping similar codes into broader categories.

Triangulation: Comparing qualitative themes with quantitative findings to ensure consistency and validity.

Thematic analysis provides nuanced insights into consumer motivations and barriers, complementing statistical results [15].

## 4. Results and Discussion

### 4.1. Descriptive Statistics

The study surveyed 500 participants, with an even representation across demographic groups. **Table 4.1** summarizes the key demographic characteristics of the sample.

### 4.2. Correlation Analysis

The correlation analysis revealed significant relationships between demographic variables and online purchase intentions:

Age: Younger consumers (under 30) demonstrated higher online purchase intentions compared to older age groups ($r=0.45, p<0.01$ $r = 0.45$, $p < 0.01$ $r=0.45, p<0.01$).

Income: High-income groups exhibited stronger purchase intentions ($r=0.38, p<0.05$ $r = 0.38$, $p < 0.05$ $r=0.38, p<0.05$).

Geographic location: Urban residents were more

**Table 4.1:** Demographic Characteristics of Respondents

| Demographic Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Age | Under 30 | 150 | 30% |
| | 31–50 | 250 | 50% |
| | Over 50 | 100 | 20% |
| Income Level | Low-income (<¥50,000) | 200 | 40% |
| | Middle-income (¥50,000–¥150,000) | 200 | 40% |
| | High-income (>¥150,000) | 100 | 20% |
| Geographic Location | Urban | 300 | 60% |
| | Rural | 200 | 40% |

**Table 4.**2: Regression Analysis of Factors Influencing Online Purchase Intentions

| Predictor | Beta (β) | t-value | p-value |
|---|---|---|---|
| Trust | 0.35 | 6.21 | <0.01 |
| Perceived Value | 0.42 | 7.45 | <0.01 |
| Age | -0.28 | -5.12 | <0.01 |
| Income Level | 0.22 | 4.01 | <0.05 |
| Geographic Location | 0.30 | 5.67 | <0.01 |

inclined toward online purchases than rural residents (r=0.50,p<0.01r = 0.50, p < 0.01r=0.50,p<0.01).

These results confirm that demographic factors are critical predictors of online purchasing behavior, consistent with prior research.

### 4.3. Regression Analysis

A multiple regression analysis was conducted to evaluate the impact of trust, perceived value, and demographic variables on online purchase intentions. **Table 4.2** presents the regression results.

Interpretation:

Trust and perceived value were the strongest predictors, explaining 48% of the variance in online purchase intentions (R2=0.48,p<0.01R^2 = 0.48, p < 0.01R2=0.48,p<0.01).

Younger age, higher income levels, and urban residency positively influenced purchase intentions.

### 4.4. Thematic Analysis of Qualitative Data

Qualitative analysis of interview data revealed three primary themes:

Trust and Risk Concerns: Participants highlighted concerns about product authenticity and delivery reliability, particularly for fresh and perishable agricultural products.

Digital Literacy Barriers: Older respondents expressed difficulty navigating e-commerce platforms, indicating a need for user-friendly interfaces.

Platform Preferences: Features such as transparent pricing, quality certifications, and interactive customer support were highly valued.

These themes align with quantitative findings, emphasizing the importance of trust-building measures and tailored platform features.

### 4.5. Discussion

The results reinforce the significance of demographic factors in shaping online purchase intentions. Younger, higher-income, and urban consumers were more likely to engage in online shopping for agricultural products, corroborating prior studies. Trust and perceived value emerged as pivotal drivers, suggesting that e-commerce platforms must prioritize reliability and transparency to attract a broader demographic base.

Notably, rural consumers and older individuals remain underrepresented in the digital market, underscoring the need for targeted strategies to bridge this gap. Initiatives such as educational campaigns, simplified platform designs, and localized marketing can enhance inclusivity and adoption rates.

## 5. Conclusion and Recommendations

### 5.1 Conclusion

This study explored the influence of demographic factors on online purchase intentions for agricultural products, integrating quantitative and qualitative methodologies. The findings highlight the significant roles of age, income, and geographic location in shaping consumer behavior in e-commerce platforms. Younger, higher-income, and urban consumers demonstrated stronger online purchase intentions, driven by greater digital literacy, higher trust in e-commerce, and perceived convenience.

Trust and perceived value emerged as the most influential factors, emphasizing the necessity for e-commerce platforms to maintain reliability, transparency, and high-quality service standards. However, rural consumers and older individuals remain underrepresented in the digital market, primarily due to barriers such as limited digital literacy and concerns over product authenticity.

By addressing these barriers and leveraging demographic insights, e-commerce platforms can expand their reach and foster greater adoption among diverse consumer groups.

### 5.2. Recommendations

Based on the findings, the following recommendations are proposed to enhance the effectiveness of agricultural e-commerce platforms:

(1)Improve Digital Accessibility:

Simplify user interfaces to accommodate older users and those with limited digital experience.

Offer multilingual support for consumers in rural or ethnically diverse regions.

(2)Build Consumer Trust:

Implement transparent quality certification systems to address concerns about product authenticity and safety.

Enhance customer support channels, including live chat and interactive FAQs.

(3)Localized Marketing Strategies:

Develop targeted campaigns addressing the specific needs of rural consumers, such as emphasizing affordability and delivery reliability.

Collaborate with local influencers or community leaders to build trust within smaller, rural communities.

(4)Educational Initiatives:

Launch digital literacy workshops to empower rural consumers and older individuals with the necessary skills to navigate e-commerce platforms.

Partner with governmental and non-governmental organizations to provide training programs focused on digital tools and online purchasing.

(5)Enhance Live-Streaming Commerce:

Expand the use of live-streaming to promote agricultural products, emphasizing transparency through real-time interaction with sellers.

Integrate feedback mechanisms within live-streaming sessions to address consumer queries and concerns immediately.

### 5.3. Limitations and Future Research Directions

Limitations:

The study's sample size, while representative, may not fully capture regional or cultural nuances in consumer behavior.

Self-reported data from surveys may be subject to bias, affecting the reliability of certain findings.

The cross-sectional design of the study limits its ability to assess long-term changes in consumer behavior.

Future Research Directions:

Conduct longitudinal studies to explore how demographic factors influence online purchasing behaviors over time.

Investigate the impact of emerging technologies, such as blockchain and AI, on trust and perceived value in agricultural e-commerce.

Explore cultural differences in online purchase intentions for agricultural products across different regions or countries.

### 5.4. Final Thoughts

The integration of demographic insights with behavioral drivers offers valuable strategies for enhancing the inclusivity and effectiveness of e-commerce platforms in the agricultural sector. By addressing barriers and promoting tailored solutions, e-commerce platforms can unlock the potential of underrepresented consumer groups, fostering sustainable growth and bridging the digital divide in agricultural markets.

**Disclosure statement**

The author declares no conflict of interest.

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