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An Analysis of Online Grocery Shopping Behaviors among Male Consumers across Age Groups

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Abstract

During the Coronavirus 19 (COVID-19) pandemic, online shopping became increasingly normalized and substantially transformed consumers' everyday lifestyles, contributing to what is often described as the "new normal". In particular, grocery shopping experienced an accelerated shift toward online channels during the pandemic, and online grocery shopping remains an important consumer behavior today. This study employed a quantitative research design using online surveys administered through Amazon Mechanical Turk (MTurk). Data were collected from 180 male online grocery shoppers to examine their preferences regarding online grocery shopping, shopping behaviors, and future intentions to purchase groceries online across different age groups, including participants in their 20s, 30s, 40s, and 50s. The number of participants was unevenly distributed across the four age groups. The findings indicated that male participants across all age groups perceived online grocery shopping as useful and enjoyable. Participants in their 20s, 30s, and 40s reported greater social influence from family members, friends, neighbors, and other people close to them and expressed stronger intentions to continue purchasing groceries online in the future. In contrast, participants in their 50s reported lower levels of social influence and appeared more likely to use a combination of traditional in-store and online grocery-shopping methods when purchasing food in the future. Additionally, when shopping for groceries online, participants in their 20s placed greater importance on price and customer service, those in their 30s emphasized delivery time, those in their 40s focused on price, and those in their 50s prioritized freshness. Overall, this study demonstrates that male consumers' online grocery shopping behaviors and preferences vary across age groups. These findings suggest that online grocery retailers should develop differentiated marketing strategies that address the specific preferences and expectations

of male consumers across different age groups.

Keywords

Male Consumers, Age Groups, Online Grocery Shopping Behaviors, Online Grocery Shopping Intention

1. Introduction

The coronavirus 19 (COVID-19) pandemic brought unprecedented changes to people's daily lives. To reduce the spread of the virus, individuals were required to stay at home and minimize in-person contact and social interactions. As a result, many activities shifted from face-to-face settings to virtual or online platforms. Consumer shopping behavior also changed significantly, as many individuals transitioned from brick-and-mortar stores to online shopping. Consequently, online shopping became an increasingly important means of purchasing goods and services, and online retail markets expanded rapidly across numerous industries.

Online grocery shopping, in particular, emerged as one of the fastest-growing categories in e-commerce, with U.S. online grocery sales increasing by 104% during the pandemic. The benefits of online grocery shopping—including home delivery, time savings, convenience, and a wide variety of product choices—have continued to support beyond the pandemic (Asgari et al., 2023; Brüggemann & Pauwels, 2025; Seo, 2024a). In 2026, approximately 157.5 million Americans were estimated to purchase groceries online, while 19.5% of Americans reportedly purchased groceries online at least once per month (Capital One Shopping Research, 2026).

Recent research suggests that the online grocery market will is expected to continue expanding within both market size and profitability. According to Capital One Shopping Research (2026), U.S. online grocery sales are projected to reach $363.8 billion in 2026 and $393.1 billion in 2027. The number of online grocery shoppers is expected to exceed 187 million by 2030. Moreover, consumers spend considerably more per online grocery transaction, averaging $108, than per in-store transaction, which averages $45.70. Collectively, these projections and spending patterns indicate that the online grocery sector has substantial market potential and is likely to experience continued sales growth.

Previous studies have identified grocery shopping as an important form of household labor and found that women are often the primary grocery shoppers within households. Research has also indicated that gender significantly influences shopping patterns in both traditional stores and online retail environments (Pradhana & Sastiono, 2019; Tutar et al., 2024). In online shopping contexts, women tend to place greater importance on product selection, perceived risk, and the overall shopping experience, whereas men tend to prioritize speed, simplicity, and ease of use (Dai et al., 2019; Pradhana & Sastiono, 2019). Similarly, in grocery

shopping contexts, women tend to shop for food more frequently and spend more time engaging in grocery-shopping activities than men (Frank & Peschel, 2020; Guppy et al., 2019; Li & Widener, 2025; Zatz et al., 2021).

These findings suggest that men and women may differ in their approaches to both traditional and online grocery shopping. Although an increasing number of male consumers purchase groceries online, research specifically examining their online grocery-shopping behaviors and purchase intentions remains limited. Addressing this gap is important for developing a better understanding of male consumers as a distinct segment of the growing online grocery market. Therefore, the present study focuses specifically on the male consumers' online grocery-shopping behaviors and purchase intentions. In particular, the study examines male consumers' perceived benefits of online grocery shopping and evaluates how these perceptions influence their intentions to continue purchasing groceries online in the future.

2. Literature Review

Online Grocery Shopping

Advances in technology have enabled many consumers to own and use personal electronic devices, including smartphones, tablets, and personal computers. The widespread availability of these technologies, together with improved internet access and digital network infrastructure, has made online shopping increasingly accessible worldwide (Bezirgani & Lachapelle, 2021; Seo, 2024a). As a result, consumers can purchase multiple products with only a few clicks and shop at any time and from almost any location. In particular, online grocery shopping, as a form of e-commerce, enables consumers to conveniently purchase a wide range of food products (Driediger & Bhatiasevi, 2019).

The adoption of online grocery shopping accelerated during the COVID-19 pandemic, when the U.S. online grocery market experienced substantial growth as increasing numbers of consumers purchased groceries through digital platforms. These platforms allowed consumers to purchase perishable products, such as vegetables, fruits, seafood, meats, and dairy products, as well as various household supplies, without visiting physical grocery stores. During the pandemic, consumers' intentions to purchase groceries online were also strongly influenced by personal attitudes and social influences (Tyrväinen & Karjaluoto, 2022). Furthermore, consumers who were satisfied with their previous online shopping experiences, including website ease of use, were more likely to revisit online platforms and repurchase groceries (Chakraborty, 2019; Mortimer et al., 2016; Shukla & Sharma, 2018). Together, these factors contributed to the growing acceptance and appeal of online grocery shopping among a broad range of consumers. In the post-pandemic period, grocery retailers have continued to provide online ordering and delivery services through third-party delivery platforms or their own delivery systems, often with additional delivery, service, or handling fees (Jamal et al., 2025; Rho, 2026; Tang et al., 2026; Seo, 2024a).

Grocery shopping has traditionally been viewed as a household responsibility undertaken more frequently by women than by men and may also represent a source of stress for household members. Previous studies have found that women engage in grocery shopping more frequently and spend more time on grocery-shopping activities than men (Guppy et al., 2019; Kolpashnikova, 2018; Taylor et al., 2015). However, more recent research suggests that traditional gender differences in grocery shopping may be changing. Davis (2023) and Islam et al. (2026), for example, reported no significant gender differences in grocery-shopping activities in the United States following the 2008 Great Recession. Similarly, Carlson et al. (2022) found that some male consumers assumed the role of primary grocery shopper during the COVID-19 pandemic. Seo (2024b) also reported that more male than female consumers purchased groceries online. Collectively, these findings indicate that grocery shopping is no longer exclusively associated with women, as many men purchase groceries for themselves and their households.

Although male consumers are increasingly purchasing groceries through online platforms, empirical evidence concerning their online grocery-shopping behaviors remains limited. In particular, age-related differences in male consumers' online grocery-shopping behaviors have received insufficient research attention. Previous research has identified age-related differences in online grocery shopping more broadly. Consumers between 18 and 34 years of age were reported to be the primary users of online grocery services, whereas consumers aged 55 years and older were less likely to purchase groceries online (Capital One Shopping Research, 2026). These findings suggest that online grocery-shopping patterns may vary across age groups. Therefore, the present study examines differences in male consumers' online grocery-shopping behaviors across age groups and provides insights that may inform future marketing strategies aimed at attracting and retaining male customers.

3. Methodology

3.1. Research Hypotheses

The following research hypotheses were developed based on the preceding literature review of male consumers' online grocery-shopping behaviors. These hypotheses are intended to examine the factors that influence male consumers' intentions to continue purchasing groceries online in the future.

H1: There are significant differences in grocery shopping patterns among four ages groups: those in their 20's, 30's, 40's and 50's.

H2: There are significant differences in online grocery shopping attitudes among four age groups.

H3: There are significant differences among the four age groups in the factors considered when purchasing groceries online.

H4: There are significant differences in the influence of other people's opinions (OPO) regarding online grocery shopping among the four age groups.

H5: There are significant differences in future online grocery shopping inten-

tions (OGSI) among the four age groups.

3.2. Sampling and Data Collection

The present study employed quantitative research design and used convenience sampling to collect data through an online survey administered via Amazon Mechanical Turk (MTurk). To be eligible to participate in the study, respondents were required to be male consumers aged 18 years or older, reside in the United States, and have experience purchasing groceries online within the previous 6 months. MTurk is a widely used online crowdsourcing platform for recruiting research participants (Cummings & Sibona, 2017). Before the main data collection, the questionnaire was pilot tested with 47 participants at an institution in the southeastern United States to assess the validity and reliability of the research instrument. After the pilot test was completed, the questionnaire was distributed to eligible participants through MTurk. Participants accessed the survey through the platform and received monetary compensation upon completion. A total of 183 responses were collected. One participant did not complete the survey, and two participants did not respond to all required survey questions. After these incomplete responses were excluded, 180 valid responses were retained for data analysis.

3.3. Research Questionnaire

The questionnaire is composed of 6 sections: (1) 1 item measuring grocery-shopping frequencies, (2) 1 item identifying factors considered when purchasing groceries online, (3) 2 items measuring attitudes toward online grocery shopping, (4) 3 items assessing the influence of other people on participants' online-grocery shopping, (5) 4 items measuring future intentions to use online grocery-shopping services, and (6) 6 demographic items. To examine online grocery-shopping behaviors, the researcher adapted validated measures from previous research (Bezirgani & Lachapelle, 2021), with minor modifications to fit the context of the present study.

Participants responded to the relevant statement using 7-point Likert-type scales, ranging from 1 ("Strongly Disagree") to 7 ("Strongly Agree"). Attitudes toward online grocery shopping were measured using 7-point semantic differential scales, with responses ranging from 1 ("Extremely stressful or useless") to 7 ("Extremely reassuring or useful"). Participants were also asked about their grocery-shopping habits and their experiences with online grocery shopping. The questionnaire required approximately 10 - 15 minutes to complete.

4. Data Analysis and Results

4.1. Description of the Sample

Of the 180 male participants, 88.3% (n = 159) identified as Caucasian. Participants ranged in age from 25 to 58 years, with a mean age of 32.4 years and a median age of 30 years. The most frequently reported household size was four individuals (n = 63, 35.0%). Overall, 75.0% of participants (n = 135) lived households consisting

of more than three individuals. Table 1 presents the descriptive characteristics of the study sample.

4.2. Data Analysis

For further analysis, the data were analyzed using IBM SPSS statistics. Descriptive and inferential analyses included frequency distribution, chi-square tests, and multivariable analysis of variance (MANOVA) and analysis of variance (ANOVA) if the MONOVA was significant. The internal consistency of the multi-item scales was assessed using Cronbach's alpha (α) was measured. The Cronbach's alpha coefficients were .724 for the influence of other people on participants' online-grocery shopping behavior and .802 for future intentions to use online grocery-shopping services. Both Cronbach's alpha coefficients exceeded the commonly accepted threshold of .70, indicating acceptable internal consistency (Taber, 2018).

Table 1. Statistics of the sample.

	Frequency (*n*)	Percent (%)
Race/Ethnic Group		
White/Caucasian	159	88.3
African American	7	3.9
American Indian/Aleut	8	4.4
Asian/Pacific Islander	4	2.2
Other	2	1.1
Age		
25 - 29	11	6.1
30 - 39	155	86.1
40 - 49	8	4.4
50 - 59	6	3.3
Household		
Only One	15	8.3
Two	30	16.7
Three	59	32.8
Four	63	35.0
Five	13	7.2
Total	180	100%

4.3. Hypothesis Testing

4.3.1. Testing Hypothesis 1 (H1)

A chi-square test of independence was conducted to examine the relationship between age group and grocery-shopping frequency among male participants in their 20s, 30s, 40s, and 50s ages. The results indicated a statistically significant association between age group and grocery-shopping frequency, $\chi^2 = 13.38$, $p = 0.012$ (*Monte Carlo, two-sided*). Overall, many participants reported shopping for

groceries once a week. Based on the significant chi-square test result, Hypothesis 1 was supported. The results of the chi-square analysis (χ^2) are present in Table 2.

Table 2. The important factors for online grocery shopping.

Grocery Shopping Frequency		Age Groups			
		20s	30s	40s	50s
Every Day	Count	**9**	**48**	3	**0**
	Expect Count	**3.7**	**51.7**	2.5	**2.0**
Once a Week	Count	**2**	**98**	5	**5**
	Expect Count	**6.7**	**94.7**	4.9	**3.7**
Once a Month	Count	0	9	0	1
	Expect Count	0.6	8.6	0.4	0.3
Total (n = 180)	Count	11	155	8	6
	Expect Count	11.0	155.0	8.0	6.0
	% within Gen.	6.1%	86.1%	4.4%	3.3%

4.3.2. Testing Hypothesis 2 (H2)

A multivariable analysis of variance (MANOVA) was conducted to examine different in online grocery shopping attitudes across four age groups. When the overall MANOVA results were statistically significant, separate analyses of variance (ANOVA) were conducted for each dependent variable. The two-item online grocery shopping attitudes scale demonstrated acceptable internal consistency, with a Cronbach's alpha (α) 0.732. As shown in Table 3, the MANOVA revealed statistically significant differences in online grocery-shopping attitudes across the four age groups, Wilks' Lambda, $F = 2.35$, $p = 0.031$. Follow-up ANOVAs indicated significant age-group differences for both Reassuring ($F = 3.90$, $p = 0.010$) and Useful ($F = 3.90$, $p = 0.016$). Participants in their 20s age reported the highest mean scores both Reassuring ($M = 6.09$) and Useful ($M = 6.36$). In contrast, participants in their 30s reported the lowest mean score for Reassuring ($M = 4.31$), whereas participants in their 50s reported the lowest mean score for Useful ($M = 4.83$).

Table 3. MONOVA and ANOVA results for online grocery shopping attitudes across age groups.

	Age Group Means				Univariate F	Multivariate F
	20s (n = 11)	30s (n = 155)	40s (n = 8)	50s (n = 6)		
Online Grocery Shopping Attitudes						**2.35*** **
Reassuring	**6.09**	**4.31**	**4.75**	**4.33**	**3.90*** **	
Useful	**6.36**	**4.87**	**5.38**	**4.83**	**3.56*** **	

Note: Means with different superscript letters differ significantly across age groups. Scores ranged from 1 (Extremely Stressful or Extremely Useless) to 7 (Extremely Reassuring or Extremely Useful). ***$p \leq 0.05$.

4.3.3. Testing Hypothesis 3 (H3)

A chi-square test of independence was conducted to examine the association between age group and factors considered when purchasing groceries online. The results revealed a statistically significant association between age group and online grocery purchasing factors, $\chi^2 = 27.66$, $p = 0.024$ (*Monte Carlo, two-sided*). Overall, price was the most frequently reported factor influencing participants' online grocery purchasing decisions, followed by delivery time. These findings indicated that the factors considered when purchasing groceries online varied significantly across age groups. Therefore, hypothesis 3 was supported. The results of the *chi*-square analysis are presented in Table 4.

Table 4. The important factor for online grocery shopping.

Important Factor for online Grocery		Age Groups			
		20s	30s	40s	50s
Price	Count	**6**	**56**	**6**	**1**
	Expect Count	**4.2**	**59.4**	**3.1**	**2.3**
Delivery Time	Count	1	**33**	**0**	1
	Expect Count	2.1	**30.1**	**1.6**	1.2
Convenience	Count	0	9	0	1
	Expect Count	0.6	8.6	0.4	0.3
Customer Service	Count	**3**	17	0	0
	Expect Count	**1.2**	17.2	0.9	0.7
Freshness	Count	1	27	1	**2**
	Expect Count	1.9	26.7	1.4	**1.0**
Other (please specify)	Count	0	**1**	0	**1**
	Expect Count	0.1	**1.7**	0.1	**0.1**
Total (n = 180)	Count	11	155	8	6
	Expect Count	11.0	155.0	8.0	6.0
	% within Gen.	6.1%	86.1%	4.4%	3.3%

4.3.4. Testing Hypothesis 4 (H4)

A MANOVA was conducted to determine whether the influence of other people's opinions (OPO) regarding online grocery shopping differed significantly across age groups. Follow-up ANOVAs were then conducted to examine age-group differences in each individual OPO item. The three-item scale measuring the influence of other people's opinions (OPO) regarding online grocery shopping demonstrated acceptable internal consistency, with a Cronbach's alpha (α) of .724. OPO1 and OPO2 were used to assess the influence of important people in participants' social networks on their online grocery-shopping decisions. OPO3 ("I would make less impulsive purchases online than in person") was retained in the study because it captures a different but relevant aspect of consumers' perceptions of online grocery shopping.

The MANOVA revealed statistically significant differences in the influence of other people's opinions (OPO) regarding online grocery shopping across the four age groups, Wilks' Lambda, $F = 2.51$, $p = 0.008$. Follow-up ANOVAs indicated significant age-group differences for all three OPO items; OPO 1 ($F = 3.949$, $p = 0.017$), OPO 2 ($F = 3.74$, $p = 0.012$), and OPO 3 ($F = 4.28$, $p = 0.006$). Participants in their 20s reported the highest mean scores of all three OPO items: OPO 1 ($M = 5.91$), OPO 2 ($M = 5.91$) and OPO 3 ($M = 6.36$). In contrast, participants in their 50s reported the lowest mean scores: OPO 1 ($M = 4.17$), OPO 2 ($M = 4.00$) and OPO 3 ($M = 4.00$). The results indicate that the influence of other people's opinions regarding online grocery shopping varied significantly across age groups. Therefore, Hypothesis 4 was supported. The results of the MANOVA and follow-up ANOVAs are presented in Table 5.

Table 5. MONOVA and ANOVA results for personal opinions regarding online grocery shopping across age groups.

	Age Group Means				Univariate F	Multivariate F
	20s ($n = 11$)	30s ($n = 155$)	40s ($n = 8$)	50s ($n = 6$)		
Influence of Other People's Opinions (OPO)						**2.51*** **
OPO 1: The most important people in my life think I should buy a portion or all of my groceries online.	**5.91**	**5.27**	**4.50**	**4.17**	**3.49*** **	
OPO 2: The most important people in my life recommend that I use online grocery shopping.	**5.91**	**5.36**	**4.75**	**4.00**	**3.74*** **	
OPO 3: I would make less impulsive purchases online than in person.	**6.36**	**5.30**	**5.63**	**4.00**	**4.28*** **	

Note: Means with different superscript letters differ significantly across age groups. Scores ranged from 1 (Strongly Disagree) to 7 (Strongly Agree). ***$p \leq 0.05$.

4.3.5. Testing Hypothesis 5 (H5)

A MANOVA was conducted to determine whether the future online grocery shopping intentions (OGSI) differed significantly among the four age groups. The four-item scale measuring the future online grocery shopping intentions demonstrated acceptable internal consistency, with a Cronbach's alpha (α) of .802. The MANOVA revealed statistically significant differences in future online grocery shopping intentions across the four age groups, Wilks' Lambda, $F = 1.85$, $p = 0.038$. Follow-up ANOVAs indicated significant age-group differences for all four OGSI items; OGSI 1 ($F = 5.00$, $p = 0.002$), OGSI 2 ($F = 4.52$, $p = 0.004$), OGSI 3 ($F = 3.02$, $p = 0.031$), and OGSI 4 ($F = 3.95$, $p = 0.009$). Participants in their 20s reported the highest mean scores all four OGSI items: OGSI 1 ($M = 6.46$), OGSI 2 ($M = 6.09$), OGSI 3 ($M = 6.09$), and OGSI 4 ($M = 6.09$). In contrast, participants in their 50s reported the lowest mean scores: OGSI 1 ($M = 4.17$), OGSI 2 ($M =$

4.00), OGSI 3 (M = 4.50), and OGSI 4 (M = 3.83). The results indicate that future online grocery shopping intentions varied significantly across age groups. Therefore, Hypothesis 5 was supported. The results of the MANOVA and follow-up ANOVAs are presented in Table 6.

Table 6. MONOVA and ANOVA results for future online grocery shopping intentions across age groups.

	Age Group Means				Univariate F	Multivariate F
	20s (n = 11)	30s (n = 155)	40s (n = 8)	50s (n = 6)		
Grocery Shopping Intentions (OGSI)						**2.51*** **
OGSI 1: In the future, the online grocery is one of the first places I intend to look when I need the food items.	**6.46**	**5.32**	**5.63**	**4.17**	**5.00*** **	
OGSI 2: I intend to continue to visit the online grocery retailer's site in the future.	**6.09**	**5.31**	**5.75**	**4.00**	**4.52*** **	
OGSI 3: I have a favorable attitude toward continuing to do business with the online grocery retailer over the next few years.	**6.09**	**5.20**	**5.88**	**4.50**	**3.02*** **	
OGSI 4: I intend to continue doing business with the online grocery retailer over next few years	**6.09**	**5.30**	**5.63**	**3.83**	**3.95*** **	

Note: Means with different superscript letters differ significantly across age groups. Scores ranged from 1 (Strongly Disagree) to 7 (Strongly Agree). ***$p \leq 0.05$.

5. Discussion

Online grocery shopping has become an increasingly common alternative method of purchasing food, particularly since the COVID-19 pandemic. The findings of the present study indicated that many male consumers aged between 20 and 30 purchased groceries online. These findings were consistent with those of Brüggemann and Pauwels (2025), Statista Research Department (2025), and Capital One Shopping Research (2026). One possible explanation is that younger consumers may be more familiar with online shopping and digital platforms, which could make them more comfortable purchasing groceries online. In addition, many respondents (75%, n = 135) lived in households consisting of more than three people, suggesting that household size may be an important consideration in their online grocery shopping behaviors. Overall, these results provide insight into the online grocery shopping patterns of male consumers and suggest that age and household size were important characteristics associated with male consumers' online grocery shopping behaviors. The shopping characters of each age group are discussed below.

5.1. The 20s Age Group

Male consumers in their 20s represented the youngest age group in this study (n = 11) and exhibited several distinctive grocery shopping behavior patterns. Participants in this age group were more likely than those in the other age groups to report a preference for purchasing groceries every day. One possible explanation is that younger consumers may purchase smaller quantities of food more frequently rather than making larger, less frequent grocery purchases. However, this interpretation should be considered cautiously because living arrangements and reasons for shopping frequency were not directly examined in the present study.

Compared with the other age groups in the online grocery shopping, participants in their 20s reported the highest level of enjoyment of online grocery shopping (M = 6.09) and perceived usefulness (M = 6.36), suggesting particularly positive perceptions of online grocery shopping among male consumers. When purchasing groceries online, participants in this age group placed considerable importance on price and customer service. Their emphasis on customer service may reflect concerns about potential online-purchasing problems, such as missing items, return policies, and other service-related issues.

Participants in this age group also reported relatively strong social influences on their online grocery-shopping decisions. They had the highest mean scores for OPO1 (M = 5.91) and OPO2 (M = 5.91), suggesting that the opinions of friends, relatives, or other people close to them may influence their online grocery-shopping decisions. In addition, this group reported a high mean score for OPO3 (M = 6.36), indicating a strong perception that online grocery shopping may help reduce impulsive purchases. This group reported also demonstrated strong intentions to continue purchasing groceries online over the next few years. This group had the highest mean scores for OGSI1 (M = 6.46), OGSI2 (M = 6.09), OGSI3 (M = 6.09), and OGSI4 (M = 6.09). Collectively, these descriptive findings indicate that male consumers in their 20s were characterized by favorable perceptions of online grocery shopping, strong future purchase intentions, frequent grocery-shopping preferences, sensitivity to price and customer service, and relatively strong social influences. Given the small number of participants in this age group, however, these findings should be interpreted cautiously and examined further in future research with a larger sample of younger male consumers.

5.2. The 30s Age Group

Male consumers in their 30s represented the largest age groups in this study (n = 155). Participants in this age group reported purchasing groceries both daily and once a week, although once a week was more commonly preferred. Compared with the other age groups, participants in their 30s reported the lowest mean score for enjoyment of online grocery shopping (M = 4.31) and the third-lowest mean score for perceived usefulness (M = 4.87). These findings suggested that although participants in their 30s generally recognized online grocery shopping as a useful method for purchasing food, they did not perceive the experience as particularly

enjoyable. Grocery shopping may therefore be viewed as a necessary routine than as an enjoyable activity among consumers in this age group. Their relatively lower level of enjoyment may also suggest that some aspects of the online grocery-shopping process, such as searching for, selecting, or browsing grocery products through computers or other electronic devices, were less appealing to this age group. However, this interpretation should be considered cautiously because difficulties with technology use were not directly measured in the present study.

When purchasing groceries online, participants in their 30s placed considerable importance on delivery time. One possible explanation is that consumers in this age group may have busy work or family schedules and may therefore value timely and convenient delivery. However, this interpretation should also be considered cautiously if work schedules and the presence of children in the household were not directly measured. Price was the second most important consideration for this age group. Participants also expressed concerns about additional costs associated with online grocery shopping, particularly high tipping expenses.

According to the results of the study, participants in their 30s appeared to be influenced by friends, family members, and nearby neighbors in their online grocery-shopping decisions. This age group had the second-highest mean scores for OPO1 ($M = 5.27$) and OPO2 ($M = 5.36$), suggesting that social influences may have played an important role in their online grocery-shopping behaviors. Participants in this age group also agreed that online grocery shopping may help reduce impulsive purchases, as indicated by the OPO3 mean score ($M = 5.30$). Another interesting finding was that participants in their 30s had the third-highest mean scores for OGSI1 ($M = 5.32$), OGSI2 ($M = 5.31$), OGSI3 ($M = 5.20$), and OGSI4 ($M = 5.30$). These results suggest that although participants in their 30s reported relatively lower enjoyment of online grocery shopping, they still demonstrated moderately strong intentions to continue purchasing groceries online in the future.

5.3. The 40s Age Group

There were eight male consumers ($n = 8$) in this study for 40s represented. Participants in this age group did not demonstrate a clearly defined grocery-shopping frequency pattern. Instead, they reported purchasing groceries as needed, either daily or once a week. This group reported the second-highest mean score for enjoyment of online grocery shopping ($M = 4.75$) and a relatively high mean score for perceived usefulness ($M = 5.38$). These findings suggest that participants generally recognized online grocery shopping as a useful method for purchasing groceries. However, their mean enjoyment score was below 5.00 on the 7-point Likert scale, indicating that they may have viewed online grocery shopping as useful without necessarily finding the experience highly enjoyable. When purchasing groceries online, price was the primary consideration for participants in this age group. This finding suggests that economic factors, particularly product prices and overall cost, may play an important role in the online grocery-shopping deci-

sions of male consumers in their 40s.

Participants in 40s reported that social influences from people of family members, neighborhood and friends had relatively little influence on their online grocery-shopping decisions. This age group had the third-highest mean scores for OPO1 (M = 4.50) and OPO2 (M = 4.75). However, participants agreed more strongly that online grocery shopping could help reduce impulsive purchases of food items, as indicated by the mean score for OPO3 (M = 5.63). One possible explanation is that these consumers may shop online with a planned list of grocery items, which could reduce unplanned purchases. However, the use of shopping lists was not directly measured in this study and should therefore be interpreted cautiously.

Another interesting finding was that participants in their 40s did not appear to use online grocery shopping as frequently at present, yet they reported relatively strong intentions to continue or increase their use of online grocery shopping in the future. This age group had the second-highest mean scores for online grocery-shopping intentions: OGSI1 (M = 5.63), OGSI2 (M = 5.75), OGSI3 (M = 5.88), and OGSI4 (M = 5.63). These findings suggest that although participants in their 40s currently appeared to use both online and in-store grocery-shopping channels, they may become more likely to use online grocery-shopping methods in the future.

5.4. The 50s Age Group

Male consumers in their 50s represented the smallest age group in this study (n = 6). Participants in this age group generally preferred to purchase groceries once a week. They reported the lowest mean score for perceived usefulness of online grocery shopping (M = 4.83) and a relatively low mean score for enjoyment (M = 4.33). These findings suggest that although participants in their 50s generally recognized online grocery shopping as a useful method of purchasing food, they did not find the experience particularly enjoyable. One possible explanation is that participants in this age group may have been less comfortable viewing and selecting grocery products through computers or other electronic devices. They may have preferred to examine certain grocery items in person, particularly to evaluate characteristics such as freshness. Freshness was the primary consideration for participants in this age group when purchasing groceries online. In addition, participants identified additional service costs, particularly tipping expenses, as a disadvantage of online grocery shopping.

Social influences appeared to have relatively little effect on the online grocery-shopping decisions of participants in their 50s. This age group reported the lowest mean scores for OPO1 (M = 4.17) and OPO2 (M = 4.00). Because these scores were close to the midpoint of 4.00 on the 7-point Likert scale, the findings suggest that family members, friends, neighbors, or other people close to them may have had only limited influence on their online grocery-shopping decisions. Participants also reported a mean score of 4.00 for OPO3 (M = 4.00). If OPO3 measures

the extent to which online grocery shopping helps reduce impulsive purchases, this score suggests that participants were generally neutral regarding this potential benefit rather than strongly agreeing that online grocery shopping reduced their impulsive purchasing behavior.

Male participants in their 50s reported the lowest mean scores for future online grocery-shopping intentions: OGSI1 (M = 4.17), OGSI2 (M = 4.00), OGSI3 (M = 4.50), and OGSI4 (M = 3.83). These findings suggest that participants in this age group had relatively limited intentions to rely primarily on online grocery shopping in the future. Instead, they may be more likely to maintain a traditional grocery shopping pattern, while also using online grocery services when needed. Although participants in their 50s did not appear to strongly prefer online grocery shopping, they may still use online grocery services when convenience or specific circumstances make them useful. One possible explanation is that consumers in this age group may prefer traditional grocery stores because in-store shopping allows them to physically examine products, evaluate freshness, and make purchasing decisions based on sensory information. They may also value the social interaction associated with shopping in physical grocery stores.

6. Conclusion

This study examined the grocery-shopping behaviors and future online grocery-shopping intentions of male consumers across different age groups. The results show that most participants preferred to purchase groceries once a week and generally viewed online grocery shopping as a useful alternative method of purchasing food. Many participants also reported positive levels of enjoyment with online grocery shopping. Food price was identified as an important consideration when purchasing groceries online. Male consumers in their 20s and 30s appeared to be more influenced by family members, friends, neighbors, and other people close to them when making online grocery-shopping decisions. In contrast, male consumers in their 50s appeared to be less influenced by others.

An interesting finding was the male consumers in their 20s, 30s, and 40s reported relatively strong intensions to continue purchasing groceries online in the future. In contrast, participants in their 50s reported the lowest future online grocery-shopping intentions, suggesting that they may be more likely to continue using traditional grocery stores or combine in-store and online grocery-shopping methods depending on their needs. Overall, the findings highlight meaningful age-related differences in male consumers' online grocery-shopping behaviors and provide useful insights for retailers seeking to better understand and serve male grocery shoppers.

7. Implications

The findings contribute to a better understanding of male consumers' online grocery-shopping behaviors and provide valuable insights for retailers and marketers seeking to develop effective strategies for the future online grocery retail

market. To attract and retain younger male consumers, online grocery retailers should clearly communicate competitive food prices on their websites and provide transparent information about delivery times, return policies, customer service, and shipping and handling charges. Providing clear and easily accessible information about these factors may help consumers' online grocery-shopping experiences.

To encourage greater use of online grocery shopping among older consumers, retailers should develop easy-to-use applications and websites with clear navigation and product information. In addition, retailers may need to provide more detailed information about the freshness of grocery items on their websites. For example, they could display information such as the date products were stocked, packaged, or expected to expire, when applicable. Providing this type of information may help older consumers feel more confident when evaluating grocery products online and may encourage greater use of online grocery-shopping services.

8. Limitations and Recommendations for Future Research

This study has several limitations that should be considered for the future research. First, the survey data were collected from male consumers in the United States through Amazon Mechanical Turk (MTurk), an online panel platform. Therefore, the findings may not fully represent consumers who would participate in-person surveys or interviews. Future research could involve incorporate in-person surveys, interviews, or mixed-method approaches to gain a deeper understanding of online grocery shopping behaviors of both male and female consumers. Second, this study included substantially unequal sample sizes across the age groups. In particular, the numbers of participants in their 40s and 50s were relatively small. Future research should recruit larger and more balanced samples, especially among consumers in their 40s and 50s, to improve the reliability and generalizability of age-group comparisons. Third, this study did not examine several demographic and household, and residential locations. Future research should consider these factors to better understand how household composition, income, and living environment may influence consumers' online grocery shopping decisions and purchasing patterns. Forth, this study did not examine the use of Artificial Intelligence (AI) assistants or the role of customer service interactions in consumers' online grocery-shopping experiences. Future research should investigate how AI-based assistance and customer service interactions influence consumers' satisfaction, trust, and future intentions to use online grocery-shopping services.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author and should not be construed to represent any official USDA or U.S. Government determination or policy.

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