


## Article

# Investigating the Drivers of Sustainable Consumption and Their Impact on Online Purchase Intentions for Agricultural Products

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**Abstract:** This research is an attempt to explore the drivers of sustainable consumption and their impact on online purchase intentions (OPI) for agricultural products. To this aim, social influence (SI) and quality assurance (QA) were identified as the drivers of sustainable consumption leading to the formation of OPI. The input from the technology acceptance model (TAM) and unified theory of acceptance and use of technology (UTAUT) has been incorporated to develop a model that explains the formation of OPI. Primary data were collected from 612 respondents and subjected to partial least square (PLS) analysis. The impact of SI and QA on OPI was found to be positively significant. Furthermore, the influence of perceived value (PV) as a mediator for the SI–OPI relationship has been discovered to be positively significant. This shows that as the PV increases, the influence of SI also increases. However, when the perceived risk (PR) was introduced as a mediator for the QA–OPI relationship, the influence of QA on OPI became insignificant. SI and QA impacts are the most important aspects that influence OPI according to this study, which is useful information for agricultural enterprises and online vendors. It is proposed that the SI and QA impacts might be exploited as a new tool to influence customers’ OPI for agricultural firms and online sellers. Therefore, managers must work to produce greater levels of PV in online purchases and reduce the PR in order to develop OPI for sustainable consumption.

**Keywords:** sustainable consumption; social influence; quality assurance; perceived value; perceived risk; agricultural products; online purchase intentions



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## 1. Introduction

The purpose of this study is to investigate the factors that influence sustainable consumption and their impact on online purchase intentions (OPI) for agricultural products. In order to achieve this goal, the idea of sustainability in regard to consumption behavior was explored, and the determinants influencing OPI were discovered. The impact of two variables (purchase value (PV) and purchase risk (PR)) in the social influence (SI)–OPI and quality assurance (QA)–OPI relationships related to agricultural products was investigated using mediation analysis.

Sustainability is widely regarded to have three main goals (social, environmental, and economic), and achieving all three goals at the same time is a challenging task. Every act of purchase has repercussions in terms of ethics, resources, waste, and community effect. When people think about adopting sustainable lives, they have to go through a more complicated decision-making process. These daily decisions related to the practical environmental or ethical solutions frequently result in trade-offs between competing concerns, resulting in the motivational and practical complexity of sustainable consumption [1]. Organizations make trade-offs between these sustainable goals, resulting in the achievement of one and

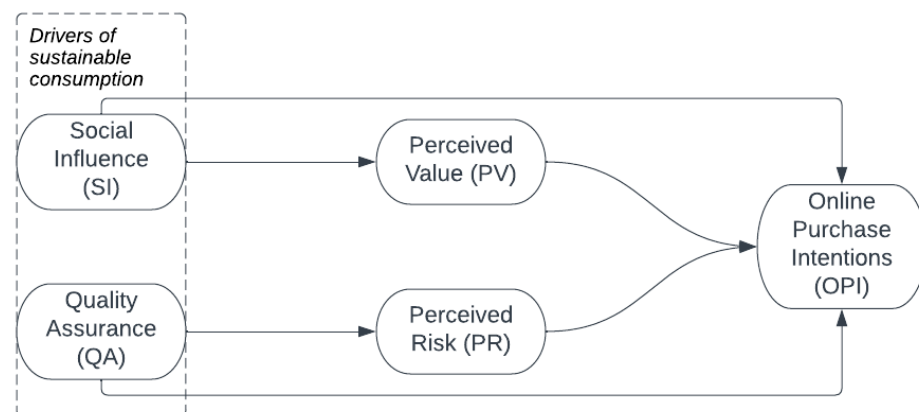
leaving the others unfulfilled. The development of sustainable consumption necessitates the achievement of certain sustainability objectives. Around the world, the agricultural and food industry is a critical component of any economy since it affects a community's existential potential by meeting the basic needs of humans. Agriculture accounts for a major portion of every economy's overall gross domestic product (GDP), and in the case of emerging countries, it even exceeds the halfway point. Agriculture's percentage of GDP and capacity to provide jobs is declining as the economy advances, making it less appealing as an economic sector. Agriculture has new issues as an economic sector, such as biodiversity conservation, broad-based cultural landscape preservation, rural development, including employment creation and preservation, and the concept of regional goods as cultural assets, as well as the impact of climate change [2].

In 1987, the Brundtland Commission reported in "Our Common Future" the concept of sustainable consumption [3]. Sustainable consumption is described as the use of goods and services that meet fundamental requirements and improve the quality of life while reducing the wastage of natural resources, reducing harmful materials, and waste and pollution emissions across the life cycle so as not to threaten future generations' needs [4]. Multiple issues are affecting the agricultural and food industries across the world. Despite significant increases in the food supply, as well as natural resources such as fresh water and fertile, arable land, the world continues to face famine and poverty. More productive, efficient, sustainable, inclusive, transparent, and resilient food systems are necessary to achieve the United Nations Sustainable Development Goal of a "world without hunger" by 2030 [5,6]. Online access to markets for agricultural products is the road to sustainable consumption, and this necessitates a change in the present agricultural food system. It is high time to look into consumer need and understand why consumers are not purchasing agricultural products online. Secondly, there is a need to know how SI and QA influence the OPI for agricultural products.

How do sustainable consumption drivers impact the OPI for agricultural products? Despite the widespread use of the internet and the convenience with which they can be purchased, online shopping for agricultural products has not gained much popularity throughout the world. SI and quality assurance (QA) are considered to be the drivers for the sustainable consumption, and the SI is perceived to influence consumer behavior on one hand, and QA motivates consumers to go for online purchases. Online purchases have increasingly become a very important vehicle for customers to obtain agricultural products due to the rapid rise of the internet and e-commerce over the previous two decades. However, online agricultural product purchases do not account for a significant portion of overall agricultural product sales worldwide [7,8]. Consumers are thought to be inconsistent in their online purchases of agricultural products. SI and QA are considered the drivers for sustainable consumption forming OPI for agricultural products. Henceforth, sustainable consumption for agricultural products is a major issue for marketers and retailers all over the world. It has been found that purchasing agricultural products online is not a regular phenomenon.

Despite the significant rise in e-commerce in Saudi Arabia, the agricultural product buying system is still in its early stages. Multiple considerations, such as immature online purchasing systems, as well as logistical and security concerns, have caused many customers to be hesitant to opt for online purchases. Many agricultural businesses are still unable to properly comprehend various aspects that impact customers' OPI, resulting in a lack of appropriate and effective marketing tools and approaches. Sustainable consumption has two drivers (SI and QA) and two mediators (PV and PR) for the development of OPI. Retailers in Saudi Arabia are working to enhance farmers' earnings through the use of digital technologies in agriculture by developing sustainable consumption for online purchasing. Sustainable consumption and distribution systems are becoming increasingly important all around the world. Online commercializing of agricultural output is a cost-effective approach to raise income and aid the rural economy, all of which contribute to long-term sustainability [8,9].

In order to understand the theoretical underpinning related to a technological adaptation, a modified theoretical model (Figure 1) has been developed. The TAM is a theoretical framework that accurately anticipates buyers' intents to buy online [10]. The technology acceptance model (TAM) is commonly used to investigate the adaptation of technology (such as online purchasing) in diverse situations. Since sustainable consumption drivers include SI and QA, which were previously discovered variables influencing the development of consumer intents, these variables were adopted for this study as well. In addition, the unified theory of acceptance and use of technology (UTAUT) [11] was applied to determine the actual use of technology in this paper, which is defined as OPI. The TAM and UTAUT explain why individuals accept or reject various technologies and how technology design might help to enhance user acceptability. To develop OPI, the proposed model portrays the role of SI and QA through PV and PR, and thus sustainable consumption behavior may be understood. Using SI and QA as independent factors, PV and PR as mediating variables, and OPI as the dependent variable, our study suggests and evaluates a relationship model. Specifically, this research tests the influence of SI and QA on the OPI of agricultural products in particular. However, most studies today focus on general commerce such as apparel, books, digital products, and so on, with agricultural products receiving less attention. As a result, there is a pressing need to look into the OPI of agricultural products. The current study will fill this gap in the literature by examining SI and QA as drivers of sustainable consumption that lead to the formation of OPI for agricultural products.



**Figure 1.** Theoretical model.

The suggested model can help e-retailers to develop effective e-marketing strategies, making it an important addition to academics and the e-retailers paradigm. To begin, this paper summarizes the major findings about the drivers of sustainable consumption and their influence on OPI. According to this result, SI and QA are the primary drivers of sustainable consumption, and if the importance of SI and QA for agricultural products is recognized, merchants and e-marketers may effectively impact SI and QA in order to improve OPI. Second, this study investigates the role of PV and RV as a moderator between the drivers of sustainable consumption and OPI. Knowing the moderating effect of PV and PR may help e-retailers and e-marketers to manage agricultural product e-marketing in a better way.

## 2. Literature Review and Hypothesis Development

In technology acceptance research, the TAM and UTAUT models have been widely created and empirically tested to emphasize the aspects that impact consumers' willingness to use technology. The TAM is one of the most prominent theories of technological adaptation [12] which is tailored to explain technology acceptance. The UTAUT aims to explain how users want to use an information system as well as how they actually do so. The UTAUT, which was designed as a technology acceptance model, is another key theory for technology adoption [11]. The UTAUT model has been used and verified by many

researchers in a variety of studies [13–15]. Several researchers have combined the TAM and UTAUT in the past to fit this study [16,17]. Both the TAM and the UTAUT discuss the creation of behavioral intents, which are the OPI in this study. Similarly, the same ideas were used to calculate the OPI for agricultural items in this study. Variables from the TAM and UTAUT were adapted to fit in this context for use in the integrated model. To fit the current research setting, QA is derived from the TAM, while SI is derived from the UTAUT. The two mediation variables were added to see the changes in the relationship of drivers of sustainable consumption and the OPI for agricultural products.

### 2.1. Relationship of SI, PV, and OPI

Consumers are not self-driven toward sustainable consumption, and there has to be some driving force for sustainable behavior leading to the formation of OPI. Several researchers have looked at the OPI from the standpoint of SI. Some studies have concluded that SI has a large impact on OPI, while others have found that it has an impact but does not lead to real purchases. Change in an individual's beliefs, feelings, attitudes, or actions as a consequence of interaction with another individual or a group is referred to as SI [18]. It is considered the process through which people's feelings and actions change as a result of interacting with others who are regarded to be similar, desirable, or knowledgeable. Individuals are also affected by the majority, and if a large amount of SI shares a specific viewpoint [19], it is possible that the individual will adopt it as well. Individuals may also alter their minds under the influence of someone who is believed to be an expert on the subject. Some studies have concluded that SI has a large impact on OPI [20], while others have found that it has an impact but does not lead to real purchases [21]. In the case of agricultural products, the role of SI is even more intense [22], as consumers are not behaviorally going to purchase agricultural products online.

PV is a consumer's total evaluation of a product's usefulness based on what is received and given [23,24]. The concept of PV is directly associated with SI [25]. These factors are interconnected, and product knowledge or consumption experiences from family, friends, coworkers, or celebrities can influence one's view of a product [26,27]. Consumers, on the other hand, are frequently affected by members of their own group and those they desire to be like. PV is a critical component affecting customers' views regarding a product and, as a result, their purchase decisions [28]. PV has been found to be a strong predictor for online purchases, which influences buyers' OPI toward internet sales in a positive way [29,30]. Hence, to investigate the impact of SI on the OPI and the mediating role of PV for agricultural products, the following hypotheses are proposed:

**Hypotheses 1 (H1).** *SI has a positive impact on customers' OPI.*

**Hypotheses 2 (H2).** *In the presence of PV as mediator, SI has a positive impact on customers' OPI.*

**Hypotheses 3 (H3).** *SI has a positive impact on PV.*

**Hypotheses 4 (H4).** *PV has a positive impact on OPI.*

### 2.2. Relationship of QA, PR, and OPI

The presence of QA is seen to be a key driver for sustainable consumption, particularly for agricultural goods. In general, there will be no development of OPI if there is no QA. The concept of QA is related to the delivery of the same product as promised [31]. To this aim, online retailers opt for quality control labeling and a branding mechanism [32] to standardize the quality of perishable products. It is believed that consumers are reluctant to purchase products online due to a lack of QA and authenticity [33,34]. All these things lead to an unwillingness to engage in online shopping for agricultural products.

The unwilling behavior aroused by the PR has a significant impact on the OPI [27,34,35]. When it comes to online transactions, PR is regarded as a barrier to successful transactions, and it has a negative influence on consumers' online surfing frequency, online purchase spending, and OPI [36,37]. It is seen that if the PR is minimized, it may result in higher

levels of OPI. PR is the anticipation of losses, and consumers will perceive a higher level of risk if their loss expectations are higher [38]. Consumer buying intentions are heavily influenced by their perceptions of risk. Consumers' risk perceptions are critical in affecting their ratings and purchase decisions [36]. Opposed to buying in a physical store, consumers perceive a larger level of risk when shopping online. Consumers who perceive higher risks are less likely to buy online items or services [35,39]. It may be argued that consumers' PR has a detrimental impact on OPI, and the higher the PR of buying at online stores, the lower the consumers' OPI are [35,39,40]. Consumer OPI is negatively impacted by PR according to some studies, and customers are less inclined to purchase online when PR is strong. Past results indicate that PR is negatively related to online purchase intentions [34,41]. Hence, to test the impact of QA on the OPI and the mediating role of PR for agricultural products, the following hypotheses are proposed:

**Hypotheses 5 (H5).** *QA has a positive impact on customers' OPI.*

**Hypotheses 6 (H6).** *In the presence of PR as mediator, QA has a positive impact on customers' OPI.*

**Hypotheses 7 (H7).** *QA has a positive impact on PR.*

**Hypotheses 8 (H8).** *PR has a positive impact on OPI.*

### 2.3. Mediation Analysis

Sustainable consumption calls for the development of OPI, and these intentions are affected by PV and PR in various proportions. It has been found that their impact decides the formation of OPI for all types of products, including agricultural products. Consumers will opt to shop online if they find value in their transactions, and value can be in the form of ease of use [10,34], financial benefit, [42] etc. Food safety is a key worry when customers buy agricultural products online, since they are extremely perishable food items with a limited shelf life [43]. This is especially true when there is no method to check for the level of freshness, color, shine, or some pesticide residues [7,44]. Furthermore, agricultural product quality standards are poor, and the quality control system for agricultural products is not standardized [45]. This results in a significant level of food safety risk, and much previous research has found that customer concerns about food safety are a significant factor influencing their OPI. Therefore, to test the mediating effect of PV and PR on the relationships of SI-OPI and QA-OPI, the following hypotheses are proposed:

**Hypotheses 9 (H9).** *PV positively mediates the impact of SI on customers' OPI.*

**Hypotheses 10 (H10).** *PR positively mediates the impact of QA on customers' OPI.*

## 3. Materials and Methods

### 3.1. Research Context

In order to ensure sustainable consumption, the current study looked at the influence of SI and QA on customers' OPI for agricultural products. SI and QA are treated as independent variables in the study model (Figure 1), whereas PV and PR are treated as mediators for OPI, which is a dependent variable.

### 3.2. Data Collection and Sample Response Rate

Consumers who buy agricultural products online were included in this study's population. A structured questionnaire was used to collect data for this purpose. The questionnaire was distributed using a Google form. The items of the questionnaire were derived from past studies, and proper reliability and validity of the questionnaire was ensured before including it in this study. The authors created the demographic profile questions for the responders. The detailed validity and reliability statistics are discussed in the Section 4 (measurement model) of this paper. As this research was focused on the online purchasing of agricultural products (fresh vegetables and fruits) in Al-baha, only the data from consumers from this region of Saudi Arabia were obtained. Customers who had experience

with online purchases were included for the data collection. This information was gathered in Arabic throughout the months of February and April 2022. The reverse translation method was used to confirm the questionnaire's validity. A total of 612 questionnaires were used in the study, which were then processed and verified before being analyzed. The questionnaire was constructed on a five-point Likert scale because of its relevance in social science research. According to the descriptive analysis, the sample had more males (68.13%) than females (31.86%). In terms of marital status, 60.62 percent of those surveyed were single, while 39.37 percent were married. The 20–30-year-old age group had the highest percentage (33.33%), followed by the 30–40-year-old age group (Table 1).

**Table 1.** Demographic characteristics of the sample.

Characteristics	Category	N	%
Gender	Male	417	68.13
	Female	195	31.86
Marital Status	Married	371	60.62
	Unmarried	241	39.37
Education	Below Graduation	497	81.20
	Above Graduation	115	18.79
Age	≤20	97	15.84
	>20 to ≤30	204	33.33
	>30 to ≤40	152	24.83
	>40 to ≤50	105	17.15
	>50	54	08.82

### 3.3. Variables and Measurement Scale

The questionnaire had a total of 25 items and was based on previous research (Appendix A). Finally, only 21 items were included in the questionnaire, with 4 items each for SI, PV, PV, and OPI and 5 items for QA. Four items (QA3, PV1, PV3, and OPI2) were removed after the factor loading analysis because their loadings were less than 0.5 [46].

## 4. Results

### 4.1. Measurement Model

Because the data was only gathered once from respondents, there was a risk of common method bias (CMB), and hence Harman's single-factor test was employed to identify and validate this issue. The findings show that the first element accounted for 17% of the total variance, which was less than the 50% threshold [47]. As a result, the data in the research were free of CMB. The measurement model defines the rigorous techniques used to analyze the projected model, including the assessment of reliability and validity (convergent and discriminant) of first-order components [48]. To confirm convergent validity, the values of Cronbach's alpha, composite reliability (CR), VIF, loading, roh, and average variance extracted (AVE) were investigated (Table 2). The VIF, Cronbach's alpha, roh, CR, and AVE values were all determined to be within the acceptable limits [46,48].

To check the discriminant validity, three tests were conducted. First, the Fornell–Larcker (1981) [49] test was conducted, where the square root of the AVE placed diagonally should be greater than the corresponding correlation values, which was achieved (Table 3). Secondly, the cross-loadings were where the loadings on the related construct were required to be larger than others, and this was ensured for all the constructs. Thirdly, the HTMT values were evaluated, where the threshold discriminant validity values for the HTMT ratios should have been less than 0.90 [46], and this was fulfilled.

**Table 2.** Measurement model output.

Construct	Items	Loading	VIF	Cronbach's Alpha	roh_A	CR	AVE
SI	SI1	0.931	1.554	0.808	0.837	0.801	0.511
	SI2	0.692	2.184				
	SI3	0.625	2.153				
	SI4	0.558	1.553				
QA	QA1	0.780	2.632	0.833	0.854	0.839	0.516
	QA2	0.541	1.443				
	QA4	0.615	1.361				
	QA5	0.802	2.220				
	QA6	0.811	2.070				
PV	PV2	0.867	1.516	0.866	0.873	0.863	0.614
	PV4	0.701	2.398				
	PV5	0.864	3.323				
	PV6	0.684	2.530				
PR	PR1	0.811	2.893	0.883	0.890	0.882	0.653
	PR2	0.879	2.523				
	PR3	0.668	2.572				
	PR4	0.858	2.398				
OPI	OPI1	0.839	1.841	0.824	0.834	0.819	0.536
	OPI3	0.563	1.896				
	OPI4	0.728	1.896				
	OPI5	0.770	2.015				

**Table 3.** Discriminant validity using Fornell–Larcker criterion.

Constructs	SI	QA	PV	PR	OPI
SI	<b>0.715</b>				
QA	0.313	<b>0.718</b>			
PV	0.466	0.410	<b>0.784</b>		
PR	0.202	0.650	0.437	<b>0.808</b>	
OPI	0.591	0.500	0.629	0.482	<b>0.732</b>

Note: The square root of AVE is represented by the diagonals (in bold), and the correlations are represented by the other entries.

#### 4.2. Structural Model Analysis

Smart PLS3 software was used to test the paths in the structural model. The outcomes were assessed at several levels. To begin, the impact of SI and QA on OPI was assessed without the use of mediators, and it was discovered that SI ( $\beta = 0.477$ ,  $p = 0.002$ ) and QA ( $\beta = 0.362$ ,  $p = 0.000$ ) positively influenced OPI (Figure 2). Secondly, all the relationships were measured in the presence of mediators (Figure 3), and it was found that SI ( $\beta = 0.302$ ,  $p = 0.004$ ), PV ( $\beta = 0.481$ ,  $p = 0.000$ ), and QA ( $\beta = 0.123$ ,  $p = 0.394$ ) positively influenced the OPI, but the influences of QA and PR were insignificant. Furthermore, the influences of SI on PV ( $\beta = 0.466$ ,  $p = 0.000$ ) and QA on PR ( $\beta = 0.650$ ,  $p = 0.000$ ) were significant and positive (Table 4). The  $R^2$  value for OPI was 0.653, which means that 65.3% of the variance in the OPI was explained by SI and AQ combined together.

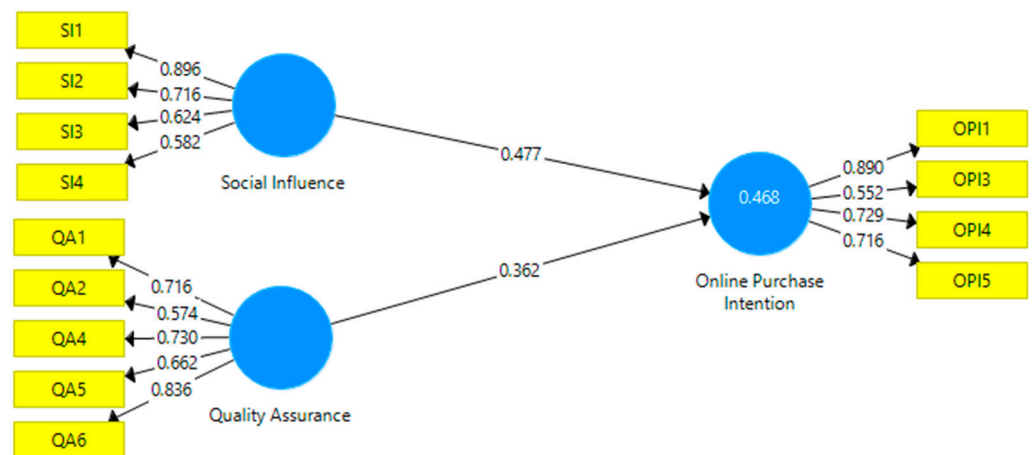


Figure 2. Impact of SI and QA on OPI (direct impact).

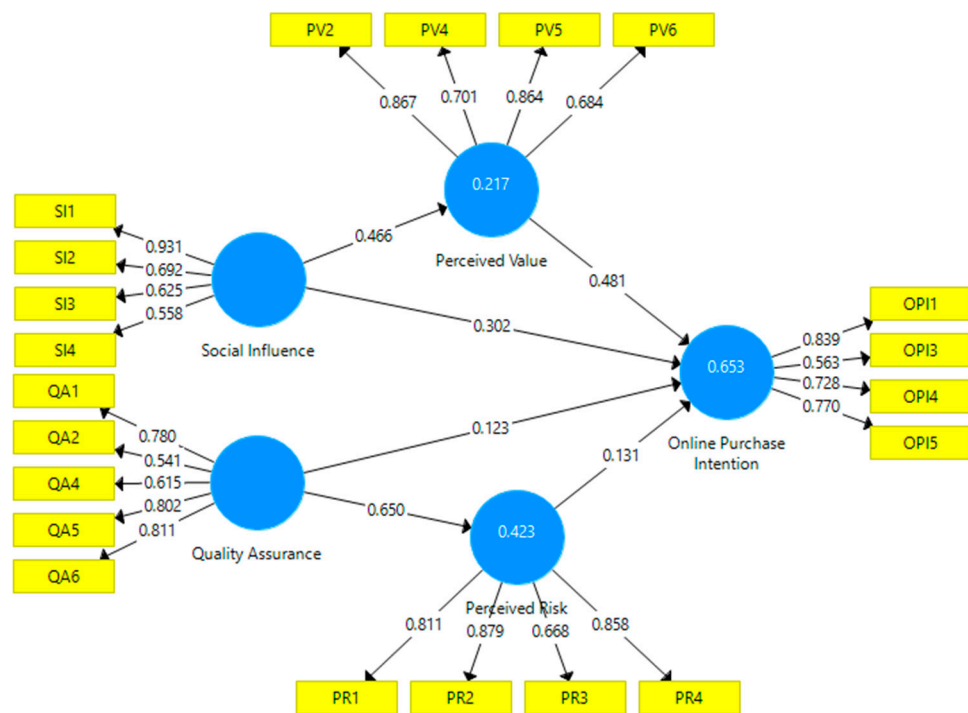


Figure 3. Impact of SI and QA on OPI (indirect impact).

Table 4. Results of hypothesis testing.

Mode of Analysis	Hypothesis	Variables	Original Sample (O)	Sample Mean (M)	STDEV	T-Stat. (O/St. Dev.)	p-Value	Results
Direct impact	H1	SI→OPI	0.477	0.482	0.116	4.103	0.000	Approved
	H5	QA→OPI	0.362	0.378	0.118	3.064	0.002	Approved
Indirect impact	H2	SI→OPI	0.302	0.303	0.103	2.917	0.004	Approved
	H3	SI→PV	0.466	0.477	0.090	5.182	0.000	Approved
	H4	PV→OPI	0.481	0.474	0.135	3.556	0.000	Approved
	H6	QA→OPI	0.123	0.129	0.144	0.853	0.394	Not approved
	H7	QA→PR	0.650	0.656	0.069	9.482	0.000	Approved
	H8	PR→OPI	0.131	0.134	0.139	0.943	0.346	Not approved
Mediation or interaction	H9	SI→PV→OPI	0.224	0.223	0.070	3.189	0.002	Approved
	H10	QA→PR→OPI	0.085	0.087	0.093	0.918	0.359	Not approved



Bootstrapping was used to determine the level of importance of these relationships. Therefore, this technique of bootstrapping was employed to determine the significance of the path coefficient values, and hence it was performed twice in this study. First, the direct impact, or the direct influence of SI and QA on OPI, was evaluated (Figure 4). Then, the indirect impact of SI and QA on OPI was determined (Figure 5). The results revealed that for SI and QA, the values obtained without the mediators were significant. When mediators were inserted, however, the path coefficient values for QA on OPI and PR on OPI were insignificant, but the remaining path coefficient values for SI on PV, SI on OPI, and QA on PR were significant.

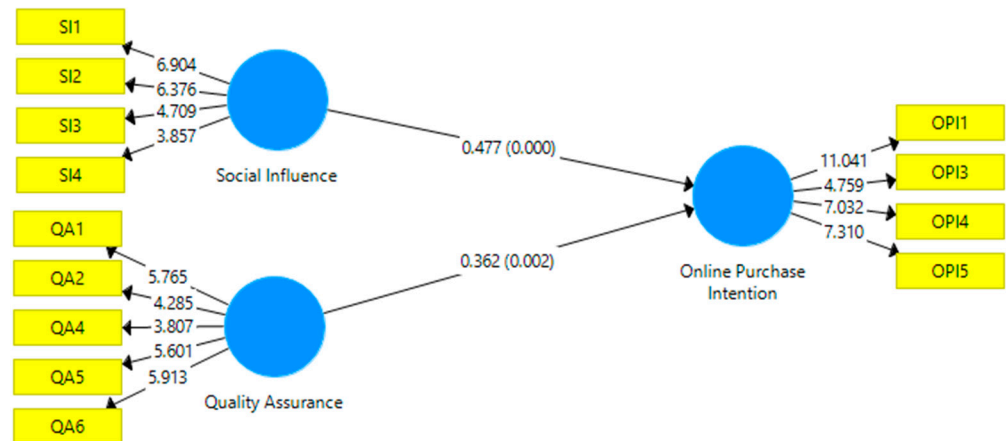


Figure 4. Bootstrapping results (direct impact).

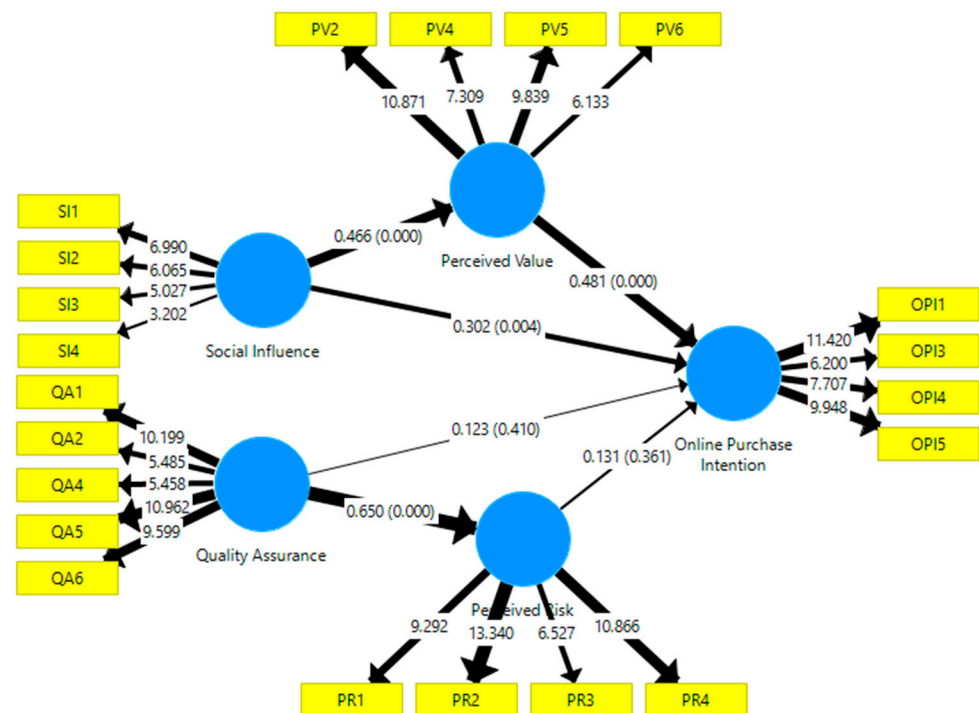


Figure 5. Bootstrapping results (indirect impact).

The SRMR is the difference between the observed correlation and the model-indicated correlation matrix. As a consequence, the average magnitude of the actual and projected correlation differences may be used as an absolute measure of (model) fit. Furthermore, this model’s SRMR scores were 0.091 for direct impact and 0.081 for indirect impact, which is considered a good match in both circumstances (indirect or direct impact). Henseler

(2017) [50] proposed the SRMR as a PLS-SEM goodness of fit metric that may be used to avoid model misspecification, with an SRMR value less than 0.10 considered a good fit, and in our model, the values were within an acceptable range.

The F-square is the change in R-square when an exogenous variable is removed from the model. The F-square is a statistical value that assesses the size of an effect, with values  $\geq 0.02$  suggesting little effect,  $\geq 0.15$  indicating a medium effect, and  $\geq 0.35$  indicating a large effect [51]. In this study, the direct effect size of SI (0.385) and PV (0.437) was high, whereas for QA (0.222) and PR (0.027), it was medium. On the other hand, the indirect effect size for SI (0.198) was marginally small, and for QA (0.023), it was medium for the OPI. The effect size of SI (0.277) was medium for PV, and the effect size of QA (0.733) was high for PR (Table 5).

**Table 5.** Effect size ( $f^2$ ).

Construct	Effect Size
SI → OPI	0.198
SI → PV	0.277
PV → OPI	0.437
QA → OPI	0.023
QA → PR	0.733
PR → OPI	0.027
SI → OPI *	0.385
QA → OPI *	0.222

\* Without interaction.

#### 4.3. Mediation Analysis of PV and PR

The mediation effect was tested at two stages: first for PV between SI and OPI and secondly for PR between QA and OPI. It was observed that PV significantly mediated the effect of SI on the OPI ( $t = 3.189$ ,  $p = 0.002$ ), whereas no significant mediation of PR was observed between QA and OPI ( $t = 0.918$ ,  $p = 0.359$ ).

## 5. Discussions

### 5.1. Major Findings

This section summarizes the findings of the empirical data study, as well as how they compare to previous OPI studies. Through the mediation effect of PV and PR, this study aimed to determine the influence of drivers of sustainable consumption behavior on the OPI. It was discovered that sustainable consumption necessitates the formation of positive OPI. Consumers do not want to buy agricultural products from internet markets because of their behavior. As a result, the impact of SI and QA on OPI was investigated first through direct influence. To this aim, SI and QA were analyzed, and it was found that both of these factors had a considerable positive impact on OPI. Hence, H1 and H5 were proven. This shows that SI and QA are important elements in determining OPI and that positive SI and QA may have a significant influence on OPI for agricultural products. These results are in congruence with past studies, where the researchers found a positive significant impact of SI on OPI [52,53] and similarly QA on OPI [33,54].

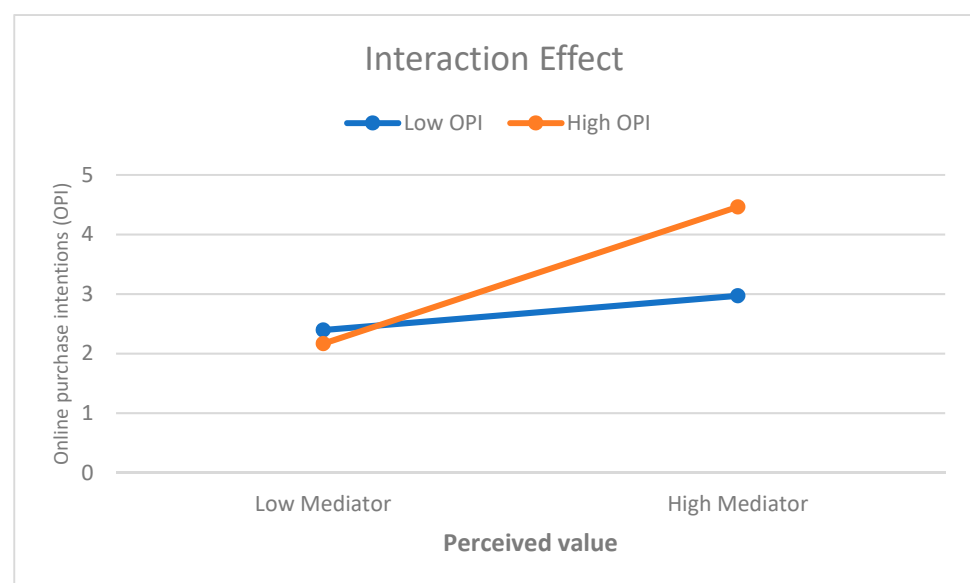
Secondly, PV as the mediator for SI and PR as the mediator for QA were introduced to test their influence on OPI (H2 and H6). The influence of PV as a mediator for the SI–OPI relationship was discovered to be positive and significant. However, when PR was included as a mediator for the QA–OPI relationship, the influence of QA on OPI became insignificant. This indicates that after PR is introduced, QA will play a smaller role, and the impact will be insignificant. This demonstrates that consumers are willing to make an online purchase if they do not perceive a risk associated with doing so. Consumers, on the other hand, prefer to buy online if there is a social recommendation in the form of SI. This behavior is unaffected by the inclusion of the value component, and customers are still influenced by SI whether or not the acquired item has PV associated to it. This is

an important finding for this study, since it allows marketers to comprehend the minimal influence of value addition and the substantial effect of SI on the OPI.

Furthermore, it was hypothesized that SI has a favorable influence on PV (H3), and the results of the analysis show that SI had a significant positive impact on PV. These results are in line with the previous research, where a significant positive impact of SI on PV was observed [34,55]. On the other hand, PV is thought to have a positive effect on OPI (H4). Previous research has shown that PV plays an important role in online purchases [39] and that in developing nations with strong internet penetration, value associated with online purchases creates a positive OPI [41,56]. As a result, our research has discovered that PV has a considerable good influence on OPI, and this H4 is accepted, in addition to the prior findings.

Similarly, H7 was formed to test the impact of QA on PR. Because the data showed that QA had a considerable positive impact on PR, this hypothesis was proven. An imperial analysis was conducted to determine the influence of PR on OPI, and the results show that PR had a negligible impact on OPI. Hence, H8 was not proven. These results contradicted the previous findings, where researchers documented the significant impact of PR on OPI [34,57,58]. This demonstrates that advances in internet technology adaptation and user-friendliness connected to online transactions have reduced the impact of risk on customers' perceptions. This is conceivable because agricultural products are often low-cost items with minimal financial risk, and thus customers may not think about risk while making online purchases.

The interaction effect of PV between SI and OPI was significant. H9 was developed to see if PV may mediate the impact of SI on OPI. The findings show that PV had a strong positive mediation effect. As a result, H9 was proven, since PV had the ability to alter the effect of SI on OPI. The coefficient value of interaction term between SI and OPI was positive. This demonstrates that PV strengthened the positive effect of SI on OPI (Figure 6). These findings corroborate the important insights of the researchers, who found a strong positive mediation from PV for the formation of OPI [27,34]. The interaction effect of PR between QA and OPI was insignificant. H10 was developed to see if PR may mediate the impact of QA on OPI. The findings show that PR had an insignificant mediation effect. As a result, H10 was not proven, since PR had no ability to alter the effect of QA on OPI. These findings are in contrast to earlier studies, in which researchers discovered a substantial detrimental influence from PR on OPI [27,34,59].



**Figure 6.** Interaction effect of perceived value as mediator.

## 5.2. Implications

The conclusions of this study have theoretical as well as practical implications. The work has theoretically enhanced existing knowledge in the domain of OPI, where the effect of SI and QA has been assessed and the mediation of PV and PR is present. Furthermore, we provide a theoretical model to define OPI of agricultural products from the perspectives of SI and QA, relying on the TAM and UTAUT as theoretical foundations (Figure 1). In this study, the influence of these two variables on the OPI for agricultural products was proven. For two relationships, the mediation was put to the test. The relationship between SI and OPI was first studied for the mediation of PV. Second, the relationship between QA and OPI was examined using PR mediation. There have been no previous research works that examined the mediation of PV and PR in one model, let alone for the online purchase of agricultural products. The integration of the TAM and UTAUT to examine the interaction of sustainable consumption drivers (SI and QA) with OPI in the context of agricultural products is novel. Second, no previous research has examined the impact of PV and PR on such relationships in the agricultural products paradigm.

The findings also have some practical implications. First, according to the present research, the impact of SI on OPI and the impact of SI on PV are significantly positive, and thus H1, H2, and H3 were proven. This demonstrates the significance of SI for OPI, implying that if a significant group of friends, family members, or others endorses the value associated with an online transaction, customers believe them and accept their advice. This finding demonstrates the significance of SI in decision making, as well as how customers' future intentions are formed. Similarly, PV had a strong positive impact on OPI, indicating that if customers value agricultural products, they will develop OPI. This is a key finding for managers, because if they want customers to build OPI, they must work to generate greater levels of value in online purchases. Fast delivery, same-day delivery, discounts, and other such sweeteners can be used to entice people to buy agricultural products online. Similarly, paying close attention to SI and QA is the key to success, where agricultural businesses and internet sellers can firmly maintain existing customers and encourage them to refer the company's goods to others in their lives such as family members, common friends, and workers in order to improve their OPI, which enhances the PV of customers on a regular basis. Consumer decision making is primarily a value-seeking activity. In order to enhance OPI, agricultural companies and online retailers must locate the right target customers, learn about consumer psychology, and provide them with unique products. To cater to consumers' needs for entertaining and emotional experiences, they should boost the engagement and enjoyment of their website, develop membership forums, and construct exchange platforms on microblogs, Twitter, and other social media. They should also make a concerted effort to conduct regular consumer surveys, listen to their opinions on product pricing, calculate their expected prices, and persuade them of the benefits of buying agricultural products online by comparing offline and online prices, discount rates, and savings, thereby increasing consumers' PV. Finally, they should strive to improve QA and service efficiency in order to obtain consumer recognition and appreciation, resulting in ongoing increases in consumer PV.

Furthermore, the influence of QA on OPI was found to be insignificant, and with the emergence of PR as a mediator, marketers should endeavor to comprehend the significance of PR and strive toward minimizing it as much as possible. If marketing managers want to improve OPI, they should try to lessen the influence of PR. It was also found that when PR was not used as a mediator, the influence of QA was positively significant before becoming insignificant once PR was included. Policies such as cash on delivery, online sellers' no-payment-until-delivered and pay later policies, and guaranteed purchase can lower the PR of online purchases, increasing OPI.

## 6. Conclusions

From a practical standpoint, our research shows that if online retailers want to have sustainable consumption for online purchasing of agricultural products, they must pay

close attention to SI and QA. For interventions, they should consider PV and PR, which can mediate their impact on the development of OPI. The key to developing sustainable consumption for online purchases is to constantly improve consumers' PV. Consumer decision making is fundamentally a value-seeking process. Online retailers must find the correct target audiences, gain insight into consumer psychology, and provide consumers with distinct items in order to improve OPI. They should improve the engagement and enjoyment of their website, create membership forums, and build up exchange platforms on microblogs and other social media platforms to suit consumers' desires for amusing and emotive experiences.

Furthermore, the impact of QA on OPI is positively significant, but the mediation and impact of PR is insignificant. This, as discussed in the previous section and results, shows that due to the low financial cost attached to agricultural products, consumers might not pay attention to the risk associated with them. Still, retailers can adapt new strategies such as QA of products delivered at home before payment is complete to make them satisfied and sustainable consumption for online purchasing of agricultural products. For example, consumers might refuse to pay if they are dissatisfied with what they see or feel after checking the supplied items, and as a consequence, there is inherently less of an effect by PR on OPI. In such circumstances, QA is more likely to have a role in improving customers' OPI.

## 7. Limitations and Future Research Directions

Despite the fact that our findings are valuable for sustainable consumption for online purchasing of agricultural products, there are certain limitations to our study that need be addressed in future studies. To begin with, only SI and QA were used as indicators of sustainable consumption behavior for online purchasing of agricultural products. Researchers might look at further aspects that may have a role in the production of OPI in future studies. Future studies might look at the negative effects of SI and QA to examine how they differ. Subsequently, in this study research paradigm, PV and PR were the only mediators. A further insight and explanation of the influencing relationship between SI, QA, and OPI may be included in future research, as well as other elements such as trust, attitude, and others. Furthermore, the sample was drawn from internet users in Saudi Arabia's Albaha region, which may limit the generalizability of the findings. In the future, other varied geographic locations may be studied. This paper included more male respondents than females, which may have influenced the results. Consequently, gender bias concerns should be addressed in future studies. Furthermore, this study defined agricultural products as fruits and vegetables. In future studies, researchers can extend this classification to other agricultural products such as fish, poultry, and others to have a deeper understanding of OPI. Lastly, researchers can choose perishable and non-perishable agricultural product classification and understand sustainable consumption and OPI.

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## Appendix A

Constructs	Items	Adapted from
Social Influence (SI)		
SI1	When I buy agricultural items online, I frequently follow the advice of family members.	
SI2	When it comes to purchasing agricultural products online, I regularly seek the advice of friends.	[60–62]
SI3	I regularly follow the recommendations of my coworkers while purchasing agricultural products from the internet.	
SI4	I regularly follow the recommendations of web celebrities while purchasing agricultural products online.	
Quality Assurance (QA)		
QA1	When purchasing agricultural items online, I pay careful attention to positive internet opinions.	
QA2	When buying agricultural items online, I frequently check internet reviews.	
QA3	<i>I frequently come across excellent online reviews of agricultural items marketed on the internet.</i>	[32,63–65]
QA4	I am more confident in buying agricultural items online because of internet recommendations and favorable feedback.	
QA5	I believe only in the reputed brands related to agricultural products.	
QA6	I prefer to purchase agricultural products online only when there are discounts and offers.	New
Perceived Value (PV)		
PV1	<i>Buying agricultural products online, in my opinion, increases the efficiency of the transaction.</i>	
PV2	The quality of agricultural products purchased online, in my opinion, is acceptable.	[27,33,34]
PV3	<i>Purchasing agricultural products online, I feel, would be cost-effective.</i>	
PV4	Purchasing agricultural items via the internet is a great experience in my opinion.	
PV5	Purchasing agricultural items online, in my opinion, is quite simple.	
PV6	I believe that buying agricultural items online earns me appreciation from others.	
Perceived Risk (PR)		
PR1	I am concerned about the validity of agriculture-related websites.	
PR2	I am concerned about the after-sale support for agricultural items acquired online.	
PR3	I am worried that the actual things I buy online will not match the online photographs and descriptions.	[2,27,32,34–36]
PR4	I am afraid that the internet discount on agricultural items is a scam.	
PR5	<i>When I buy agricultural items online, I am concerned that my personal information will be shared with other firms without my permission.</i>	

Constructs	Items	Adapted from
Online Purchase Intention (OPI)		
OPI1	In the future, I plan to buy agricultural products online.	
OPI2	<i>When I need agricultural products, I am delighted to order them online.</i>	[33,66,67]
OPI3	I will propose that others buy agricultural products on the internet.	
OPI4	Online purchases of agricultural products are satisfactory.	
OPI5	I am willing to accept online offers for agricultural products.	

Note: The items in italics were deleted and not included in the final analysis.

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