



Original Article

A bibliographic analysis of publications on willingness to pay for organic food

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Abstract: Food safety and organic food consumption have been a major concern in recent years. More and more studies related to organic food consumption behavior have been published. Thus, a bibliographic analysis of these publications can provide broad insights and identify future research trends. The study analyzed 528 articles with 2,698 keywords related to the topic of willingness to pay for organic food by VOSviewer software. The results identified 6 main keyword categories affecting willingness to pay: product quality, origin, organic production methods - organic certification, environmental concerns and price.

Keywords: Organic food, bibliographic analysis, VOSviewer, willingness to pay.

1. Introduction

In recent years, with food scandals constantly occurring, consumers have become increasingly suspicious of their food choices. At the same time, public opinion often encounters people's harsh reflections on product quality and health safety. A recent emerging consumer trend is organic food. Consumers are looking for clean, safe products that are produced organically. This has attracted great attention from many scholars around the world recently,

and more and more studies related to the willingness to pay (WTP) for organic products have been published. The most popular are European studies such as those by Denver et al. (2019), Kokthi et al. (2021), Mazzocchi et al. (2019), followed by studies in the Americas such as Cai et al. (2019), Smith et al. (2021), and even in African countries such as the study by Adams et al. (2018) and in Asia, Bhattarai (2019), and Wang et al. (2019). Theoretical frameworks of consumer behavior combined with quantitative methods are used in a variety of ways, especially

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the Choice Experiment model (CE), such as the studies of Smith et al. (2021); Cai et al. (2019); Denver et al. (2019); Mazzocchi et al. (2019); and the Contingent Valuation Method (CVM), like the studies of Kokthi et al. (2021) and Bhattarai (2019), which is based on the theoretical foundation of Random Utility Theory (RUT) or Random Utility Maximization (RUM). Meanwhile, in a country with an emerging economy like Vietnam, studies on WTP for organic food are limited, and have not received deep attention from researchers, and it is rare to see research in this field published in prestigious international journals.

Recently, some studies were conducted by analyzing the references of previous studies in the field of WTP for organic food, such as Lee et al. (2020) and Katt and Meixner (2020). However, there are rarely studies that apply the bibliometric method combined with VOSviewer software to systematize theory and statistics to describe the properties of published scientific documents. Therefore, this study is expected to be one of the reference studies that provide trends on hot topics being discussed to guide future research related to the field of organic food.

VOSviewer is software for building and visualizing relatively reliable bibliographic networks, developed by Van Eck and Waltman, (2013). VOSviewer allows the analysis of a large number of studies, helping to quickly orientate the categories of research on topics that are of interest to the scientific community in the field, thereby predicting research gaps.

Stemming from the above reasons, we carried out a bibliographic analysis of publications related to the topic of organic food WTP using VOSviewer software to provide a broad understanding of this field.

2. Analysis methods

2.1. Willingness to pay

There are many different approaches to the concept of WTP. According to Davcik and Sharma (2015), WTP is a concept that evaluates a person's perception of the value and quality of a brand because higher prices reflect higher

value and better quality; or, in other words, the ability to pay more for a particular brand or product compared to other alternative brands or products (Netemeyer et al., 2004). With the above role, WTP is commonly used in research on consumer behavior and demand for products with environmentally friendly features or good health attributes (Krystallis et al., 2006). In a general way, WTP is part of customers' behavioral intentions (Zeithaml et al., 1996).

2.2. Data sources and search methods

The scope of the research is articles, conference papers, reviews, and book chapters published from 2005 to 2021. The range of source types of research includes journals, conference proceedings, books, book series, and trade journals. Specialized journals belonging to three main search fields were selected: "Business, Management, and Accounting" "Economics, Econometrics, and Finance" and "Agricultural and Biological Sciences". We have excluded documents that do not directly address the topic or are unreliable. In addition, the study also excluded or edited irrelevant, incorrect, and synonymous keywords directly from the VOSviewer software before analysis.

Bibliometric analysis is used to measure influence and identify research trends based on data sets, and systematically explore related knowledge. Regarding analytical tools, the study uses the built-in analysis tools available from Scopus databases for descriptive statistics and combines with VOSviewer to analyze the relationship between key words.

The study carried out two search steps. The first step was the phrase "Organic food consumption behavior" to review research trends related to organic food consumption behavior and related underlying theories. For the second step, the phrase "Willingness to pay organic" was searched to review relevant empirical studies in the subject field (title, summary, or keyword) in reputable journals from Scopus databases. The purpose of determining the main key phrases related to the WTP for organic products is analyzed by interested scholars, thereby identifying relevant empirical studies as the basis for the next steps of analysis.

3. Results and discussion

The results of the first step with the search keyword “Organic food consumption behavior” show that the dataset has 649 research articles searched from the database. The thesis analyzes a total of 2,065 keywords and was set to filter the minimum number of occurrences to 10 from the data set based on the number of co-occurrences of the keyword and the number of publications in it. Keywords appear together in the title, summary, or keyword list. The colored area in Figure 1 shows us the co-occurrence of important terms in the food willingness-to-pay

field, organic. The strength of a link can indicate the number of cited references that two publications have in common or the number of publications where the two terms appear together. The larger the size of the nodes (color circles) indicates the most commonly used term; the more occurrences of the keywords are emphasized; and the thicker the network link, the more obvious the association. The results show three groups of topics that are popular and closely related to each other (respectively, the three different colors of red, green, and blue) in the field of organic food consumption behavior.

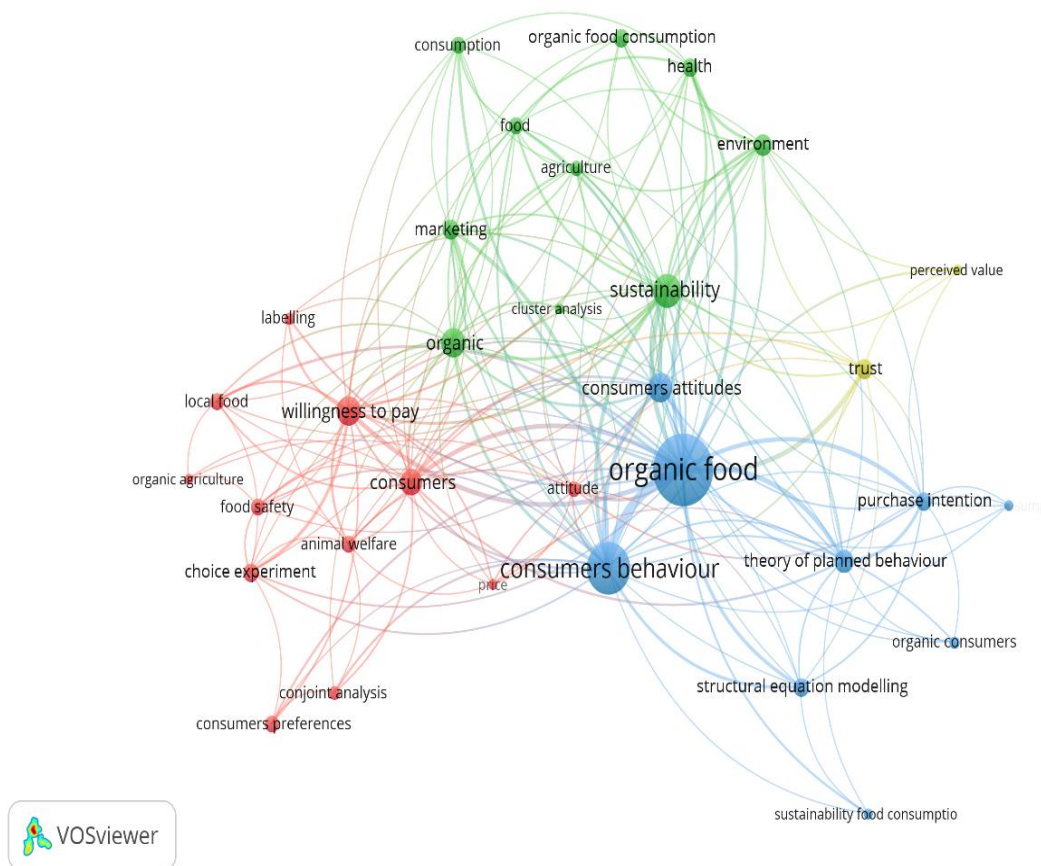


Figure 1: Network of main topics related to organic food consumption behavior
Source: Results by VOSviewer software.

The red cluster is characterized by WTP-related studies to assess consumer preferences. Commonly used methods are choice models (CM) such as CE and Conjoin, with the theory of choice behavior by Louviere et al. (2000) based on the theory of consumer behavior by Lancasters (1966) and the random utility theory of Thurstone (1927).

The green cluster is characterized by research related to sustainable consumption behavior. The issues of consuming organic agricultural products related to health and safety and especially the impact on the surrounding environment are interesting and are being analyzed by scholars.

The blue cluster is characterized by studies linking consumer purchase intention with the commonly used underlying theory, the theory of planned behavior (TPB) by Icek (1991). The most commonly used analytical method is structural equation modeling (SEM), which is a technique developed to analyze multidimensional relationships between many variables in a model.

In general, the behavioral manifestations of organic food consumption are diverse and abundant. Each scholar is interested in different aspects of consumer behavior, such as purchase intention, preference, sustainable consumption behavior, attitude, or WTP.

For step two, the search results for the keyword “Willingness to pay organic” showed that the data set had 528 analytical articles related to the research topic searched from the database. The study analyzed a total of 2,698 keywords and was set to filter the minimum number of occurrences to 10 from the data set based on the number of keyword co-occurrences, which is the number of publications in it. Keywords appearing together in the title,

summary, or keyword list indicate that there are three main keyword categories that are closely related to the WTP research topic for organic products, detailed in Table 1, Figure 2, and Figure 3.

Table 1: Keyword groups in publications on WTP for organic food from VOSviewer analysis

Cluster	Keywords
Category 1. Red	Food safety, environmental impact, eco-label, consumer awareness, organic certifications, product origin, sustainable consumption, organic agriculture.
Category 2. Green	Animal welfare, organic production methods, product quality (smell, taste), consumer attitudes, issues related to product labels, some demographic characteristics (age, sex), agriculture
Category 3. Blue	Organic food, marketing factors especially price

Source: Results by VOSviewer software.

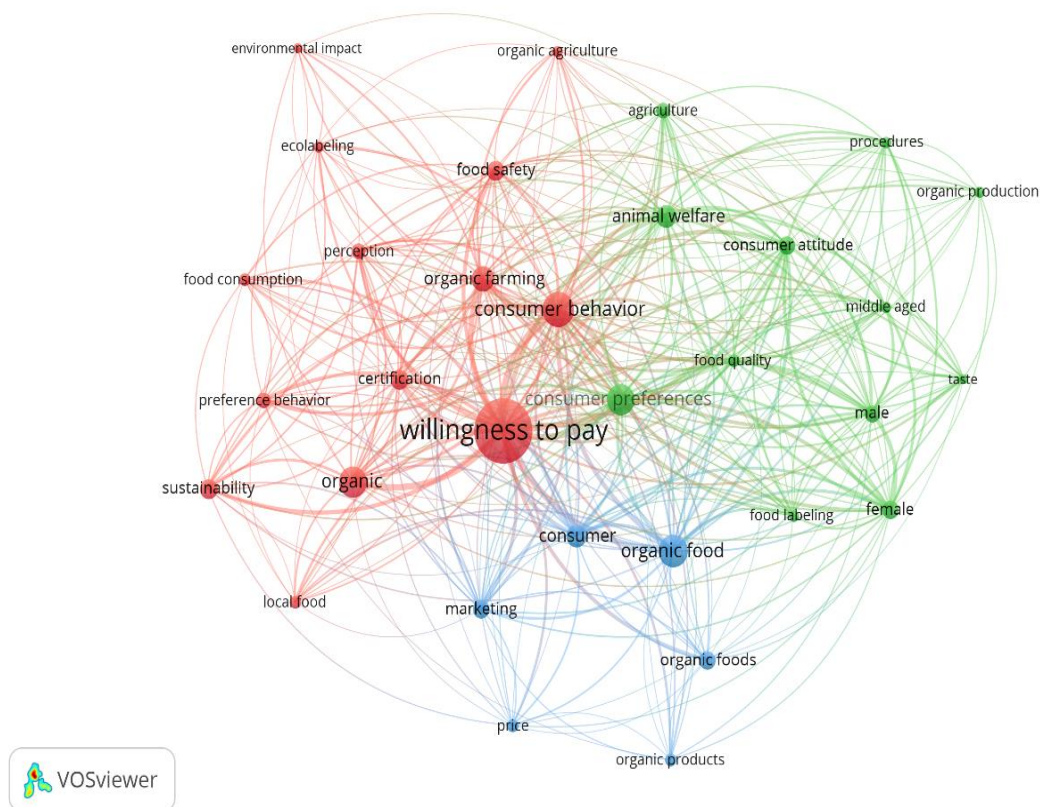


Figure 2: Co-occurring keyword cluster grouping network

Source: Results by VOS viewer software.

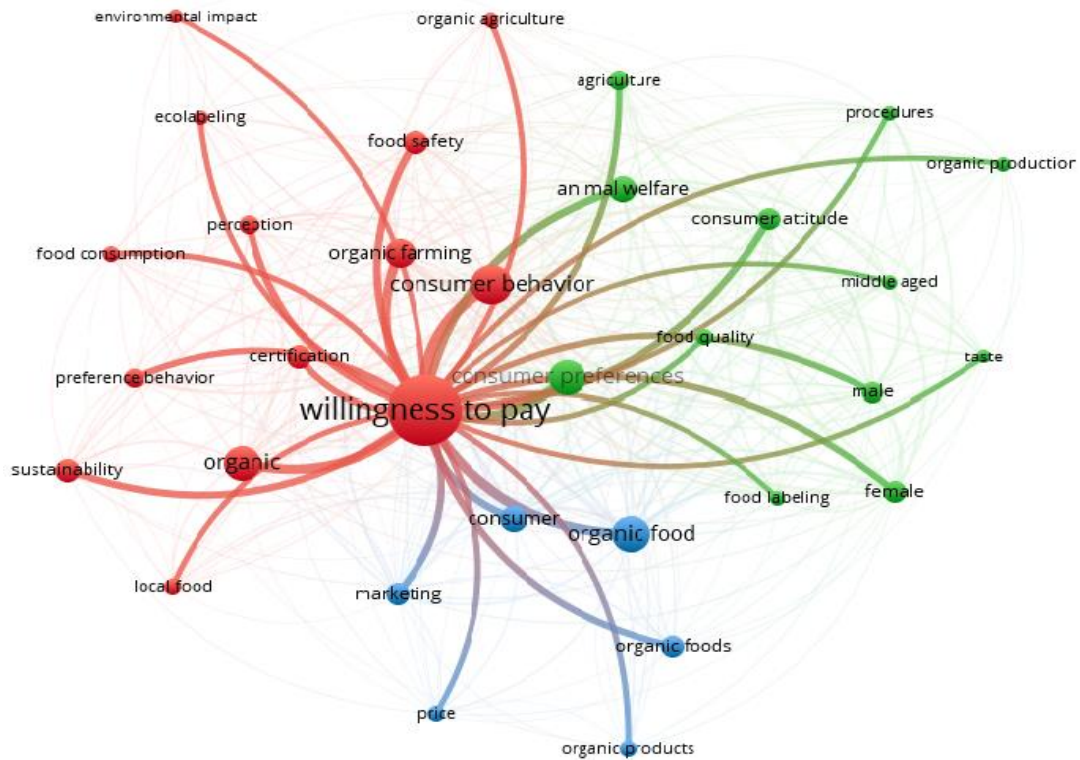


Figure 3: Network of related keywords willing to pay for organic products
Source: Results by VOSviewer software.

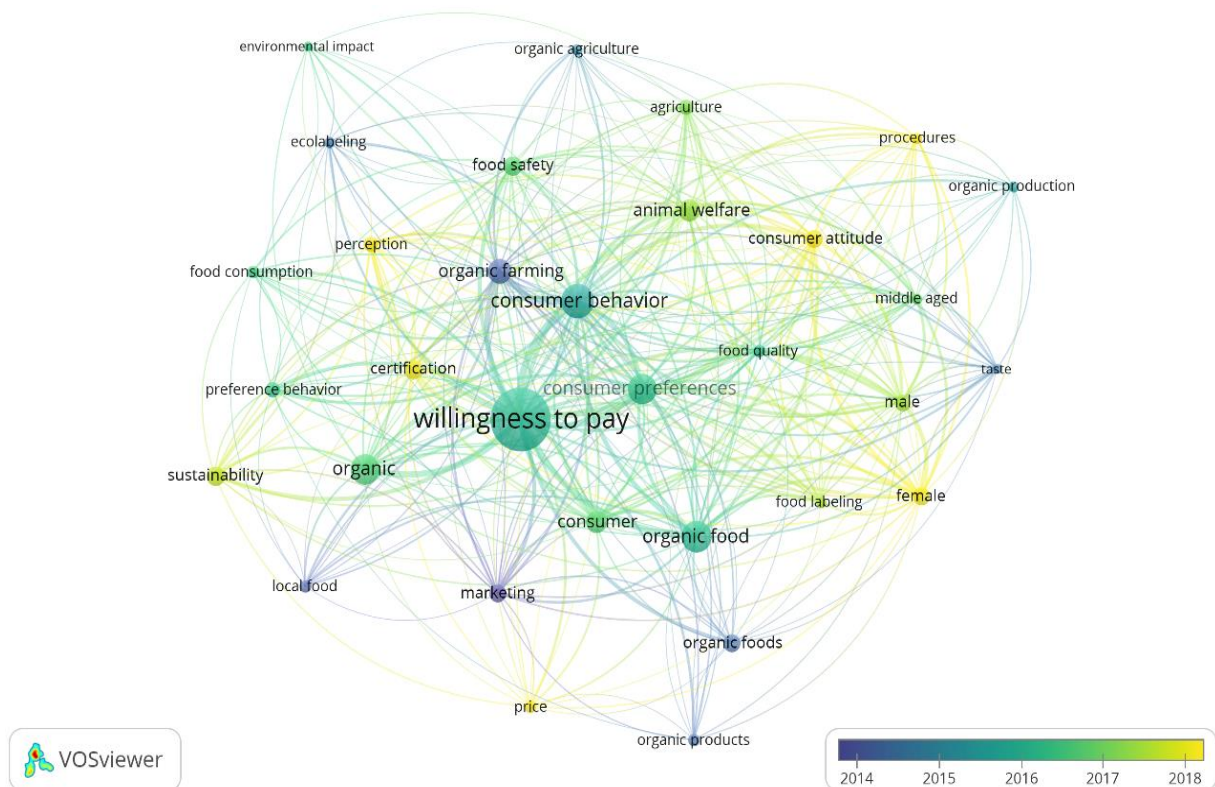


Figure 4. Keywords network presented by publication year
Source: Results by VOSviewer software.

The results of Figure 4 show that WTP research for organic products and related terms has appeared quite popular since 2016 until now. In general, recent studies are concerned with issues of price, certification, consumers' perceptions, attitudes, and characteristics, organic production methods, sustainable consumption (concern for the environment and animal welfare, etc.), food safety, and product label-related issues when studying the WTP for organic agricultural products. In theory and methods, the theories of planned consumer behavior (TPB), choice behavior, contingent valuation methods (CVM), and especially choice modeling (CM) are commonly used in this field.

Based on the results of the bibliometric analysis, we carefully combed the titles, abstracts, and keywords to eliminate duplicate articles and studies that are not related to the research topic or published in journals in other fields. As a result, we have selected 33 empirical studies related to WTP for organic food. Based on these articles, we conducted a meta-analysis. From there, we identified theories related to WTP and reviewed the empirical evidence provided up to now.

WTP is a commonly used concept in the study of consumer behavior and intentions towards the food sector. In recent years, many studies have been published on consumer WTP for organic food in various markets and regions.

Over the decades, there have been numerous studies abroad that provide empirical evidence on the most important factors in buying organic products. However, models with different influencing factors are used depending on product characteristics and the study area because food consumption choice is a complex issue. In general, the scales are basically valid, but the structure of the components and the weights of the components have different variations.

Table 3 shows that the results of the WTP brief analysis lead to the formation of six main research categories: [1] Variables related to product quality; [2] Variables related to origin; [3] Variables related to organic production methods and organic certification, food safety concerns, and related health issues; [4] Environmentally related variables; [5] Relating to consumer characteristics; [6] Relating to product prices. In addition, a number of other variables that are not commonly cited are:

frequency of purchase, place of purchase, trust with sellers, product variety, and manufacturer brands and logos.

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Table 2: Statistics of reviewed articles by journal

Journal	Quantity
Journal of Cleaner Production	1
Agroforestry Systems	1
Wine Economics and Policy	1
Journal of Agricultural Economics	2
Food Quality and Preference	3
American Journal of Agricultural Economics	1
Food Policy	2
HortScience	2
Livestock Science	1
Economics and Sociology	1
Journal of Food Products Marketing	3
International Journal of Environmental Research and Public Health	1
Organic Agriculture	1
British Food Journal	1
International Journal of Consumer Studies	1
International Food and Agribusiness Management Review	2
Journal of International Food and Agribusiness Marketing	1
Economia Agro-Alimentare	1
Spanish Journal of Agricultural Research	3
Acta Horticulturae	1
Journal of Food Security	1
Journal of Agricultural and Applied Economics	1
Middle East Journal of Scientific Research	1
Total	33

Source: Authors.

Table 3: Statistics of main variables of organic food WTP studies

Category	Sources
1. Variables related to product quality Product quality (variety, taste, shape, color, nutritional value, etc.)	Smith et al. (2021); Kokthi et al. (2021); Mazzocchi et al. (2019); Wang et al. (2019); Nandi et al. (2017); Gerini et al. (2016); Palma et al. (2016); Nguyen et al. (2015); Meas et al. (2015); Wahida et al. (2013); Shi et al. (2013); Rousseau and Vranken (2013); Owusu and Anifori (2013); Dinis et al. (2011); Olesen et al. (2010)
2. Variables related to product origin Origin, traceability label	Kokthi et al. (2021); Cai et al. (2019); Denver et al. (2019); Skreli et al. (2017); Hempel and Hamm (2016); Palma et al. (2016); Nguyen et al. (2015); Meas et al. (2015); Shi et al. (2013); Rousseau and Vranken (2013); Dinis et al. (2011); Wang et al. (2010); Olesen et al. (2010); Yue and Tong (2009); Loureiro and Umberger (2007)
3. Variables related to organic production methods and organic certification create beliefs about food safety and related health issues	
Certified Organic	Mazzocchi et al. (2019); Wang et al. (2019); Jin et al. (2017); Meas et al. (2015); Kai et al. (2013); Wahida et al. (2013); Rousseau and Vranken, (2013); Janssen and Hamm (2012); Van Loo et al. (2011); Akgüngör et al. (2010); Wang et al. (2010); Olesen et al. (2010); Loureiro and Umberger, (2007)
Care about health, food safety	Kokthi et al. (2021); Bhattarai (2019); Wang et al. (2019); Adams et al. (2018); Nandi et al. (2017); Skreli et al. (2017); Kai et al. (2013); Wahida et al. (2013); Shi et al. (2013); Akgüngör et al. (2010); Yue and Tong (2009); Mollá-Bauzá et al. (2005)
Organic production methods avoiding risks from pesticides and chemicals that adversely affect consumers' health.	Bhattarai (2019); Cai et al. (2019); Denver et al. (2019); Adams et al. (2018); Kvakkestad et al. (2018); Hempel and Hamm (2016); Gerini et al. (2016); Palma et al. (2016); Kai et al. (2013); Wahida et al. (2013); Shi et al. (2013); Haghiri et al. (2009)
4. Variables related to environmental issues Environmental impact, eco-label	Smith et al. (2021); Mazzocchi et al. (2019); Maples et al. (2018); Kvakkestad et al. (2018); Nandi et al. (2017); Jin et al. (2017); Kai et al., (2013); Mollá-Bauzá et al. (2005)
5. Variables related to consumer characteristics	Bhattarai (2019); Mazzocchi et al. (2019); Wang et al. (2019); Adams et al. (2018); Kvakkestad et al. (2018); Nandi et al. (2017); Jin et al. (2017); Hempel and Hamm (2016); Wahida et al. (2013); Shi et al. (2013); Owusu and Anifori (2013); Yue and Tong (2009); Haghiri et al. (2009)
6. Variables related to price issue	Bhattarai (2019); Cai et al. (2019); Denver et al. (2019); Mazzocchi et al. (2019); Wang et al. (2019); Maples et al. (2018); Kvakkestad et al. (2018); Jin et al. (2017); Skreli et al. (2017); Hempel and Hamm (2016); Gerini et al. (2016); Palma et al. (2016); Nguyen et al. (2015); Meas et al. (2015); Kai et al. (2013); Rousseau and Vranken (2013); Owusu and Anifori (2013); Van Loo et al. (2011); Akgüngör et al. (2010); Wang et al. (2010); Yue and Tong (2009); Loureiro and Umberger (2007)
Other related variables	
Company/farm size	Denver et al. (2019); Meas et al. (2015)
Place of sale/place of purchase	Denver et al. (2019); Yue and Tong (2009)
Distance from the place of production to the place of consumption	Maples et al. (2018)
Frequency of buying/having bought organic products	Kvakkestad et al. (2018); Wahida et al. (2013); Janssen and Hamm (2012); Haghiri et al. (2009)
Availability of organic products	Nandi et al. (2017)
Trust in retailers	Nandi et al. (2017)
Product variety	Jin et al. (2017); Palma et al. (2016)
Product brand/logo	Meas et al. (2015); Wahida et al. (2013)

Source: Compiled from analysis of 33 empirical studies.

Firstly, studies have demonstrated that organic product attributes related to product quality such as palatability, taste, appearance, nutrition, color, packaging, and size, are the main factors creating the value of using organic products (16 studies mentioned). Overall, the results of studies show that taste (the palatability of the product) strongly influences consumer preferences (Cai et al., 2019; Kokthi et al., 2021; Smith et al., 2021; Wang et al., 2019). High WTP for organic produce is related to freshness (Gerini et al., 2016), high nutritional value (Kokthi et al., 2021; Wang et al., 2019) and product appearance (Gerini et al., 2016; Wang et al., 2019); or the decision to buy organic products is heavily influenced by indications product quality (Mazzocchi et al., 2019).

Secondly, in the list of experimental studies on organic food WTP presented, there are 15 studies that are interested in product origin or seed origin. These studies focus on analyzing consumers' preferences for products of local origin or originating from other regions. Most studies show that when it comes to organic food consumption, consumers prefer locally or domestically produced products to products originating from other regions or imported, and that the WTP is higher for locally produced and domestic products (Cai et al., 2019; Denver et al., 2019; Smith et al., 2021). This can be explained by geographical proximity being more significant to consumers. Value can be added to food production by highlighting geographical features in the marketing of products. Organic products (Denver et al., 2019) or a known region of origin for the product is also a very important quality indicator when choosing to buy organic products (Skreli et al., 2017).

Besides, the traditional origin of the region-specific varieties also positively affects the WTP (Dinis et al., 2011). Moreover, some studies show that origin is a signal related to food quality and safety; consumers are willing to pay higher prices for products of clear origin (Cai et al., 2019; Smith et al., 2021), and it seems that consumers not only prefer to consume domestically produced products to stimulate the development of local producers, but they also take into account the impacts of the negative externalities of transport upon production which may affect their consumption decisions (Rousseau & Vranken, 2013). Products

produced close to home are perceived of better quality, safer, and more transparent (Hempel & Hamm, 2016). It can be understood that the further away the product is produced geographically, the more consumers perceive risks in the product supply chain, such as damage in transportation, storage, and sales.

Third, the relationship between health concerns, food safety, organic production methods, organic certification, and WTP. Increased risk perception or health concerns will drive demands for food safety (Lagerkvist, 2013; Lim et al., 2014). Several empirical studies (12 studies mentioned) have demonstrated that food safety and health concerns affect WTP for organic foods (Adams et al., 2018; Bhattarai, 2019; Kokthi et al., 2021). According to this argument, health-conscious consumers perceive organic products as safe, and they accept higher prices. In addition, a number of other studies (13 mentioned) approach determining the reasons why consumers come to organic products because of the perception of the use of pesticides and chemicals that ensure food safety. Standards of organic production will avoid adverse health effects, and knowledge of pesticide and chemical residues in products will also positively affect WTP (Bhattarai, 2019; Cai et al., 2019; Denver et al., 2019).

In particular, a number of studies (13 studies mentioned) focused on considering that the appearance of organic certification labels on products is one of the important factors that consumers care about when buying organic products. Organic products, that is, products that have been recognized as organic by reputable specialist organizations, increase consumer confidence, preference, and WTP (Mazzocchi et al., 2019).

Fourth, when learning about people who buy organic food for reasons of concern for the environment and animal welfare, in recent years, many researchers interested in clarifying this issue have also admitted that non-use value factors such as environmental awareness also affect consumers' WTP of organic products (08 studies mentioned). Integrated pest management programs and biodiversity conservation activities to minimize adverse environmental impacts have a positive impact on awareness and WTP (Mazzocchi et al., 2019; Smith et al., 2021). Several other studies show that

environmental concerns are an important reason to buy organic products. Consumers claim that conventional production methods with the use of pesticides and chemicals are harmful to the environment and have a desire for healthier and more natural foods grown in an environmentally friendly manner (Kvakkestad et al., 2018; Maples et al., 2018). In addition, some studies show that the role of the eco-label (certification of the manufacturer's products as environmentally friendly products) has a positive effect on the WTP of organic products (Jin et al., 2017).

Fifth, a number of studies interested in the impact of consumer characteristics have found that factors such as gender, age, education level, income, family size, presence of children in the family, place of residence, skin color, occupation, and marital status also influence their choice and WTP for organic food (16 studies mentioned). In general, the majority of studies using the contingent valuation method (CVM) consider consumer characteristics as the main variable affecting WTP (Bhattarai, 2019; Wang et al., 2019). According to the CM model, in addition to testing the direct effects of consumer characteristics variables, these factors are also used as interaction variables to test the relationships between consumers' relationship with WTP to assess different individual responses to the same stimulus (Kvakkestad et al., 2018; Mazzocchi et al., 2019).

Sixth, the price is the monetary expression of the value of the good, that is, the amount of money to be paid for the good. The price variable is of interest to the majority of studies (23 studies mentioned) looking at its influence on WTP. High product prices may make consumers consider more when making purchasing decisions, and vice versa. All studies confirm the importance of this factor, which is an important variable to estimate WTP for organic products. Many studies have confirmed that price increases are an important reason to reduce the probability of WTP or price negatively

impacting consumers' WTP for organic products (Bhattarai, 2019; Cai et al., 2019; Mazzocchi et al., 2019; Wang et al., 2019).

From the above arguments, the study proposes the research hypotheses and research model for the study of WTP for organic food as follows:

H1.1: Product quality class positively affects consumers' WTP for organic food.

H1.2: Locally produced organic food positively affects consumers' WTP for organic food.

H1.3: Product traceability labels positively affect consumers' WTP for organic food.

H1.4: Organic certification labeling positively affects consumers' WTP for organic food.

H1.5: The organic content of the product positively affects consumers' WTP for organic food.

H1.6: The green certification label (Ecolabel) positively affects consumers' WTP for organic food.

H1.7: Price negatively affects consumers' WTP for organic food.

Besides, the group of hypotheses related to food safety perception, the environment, and the socio-economic characteristics of consumers should also be considered.

H2.1: Income positively affects consumers' WTP for organic food.

H2.2: Dependent person¹ positively affects consumers' WTP for organic food.

H2.3: Age positively affects consumers' WTP for organic food.

H2.4: Education positively affects consumers' WTP for organic food.

H2.5: Family size² negatively affects consumers' WTP for organic food.

H2.6: Health risk awareness positively affects consumers' WTP for organic food.

H2.7: Environmental awareness positively affects consumers' WTP for organic food.

¹ Dependent person: presence of elders and children in the household.

² Family size: total number of members in the household.

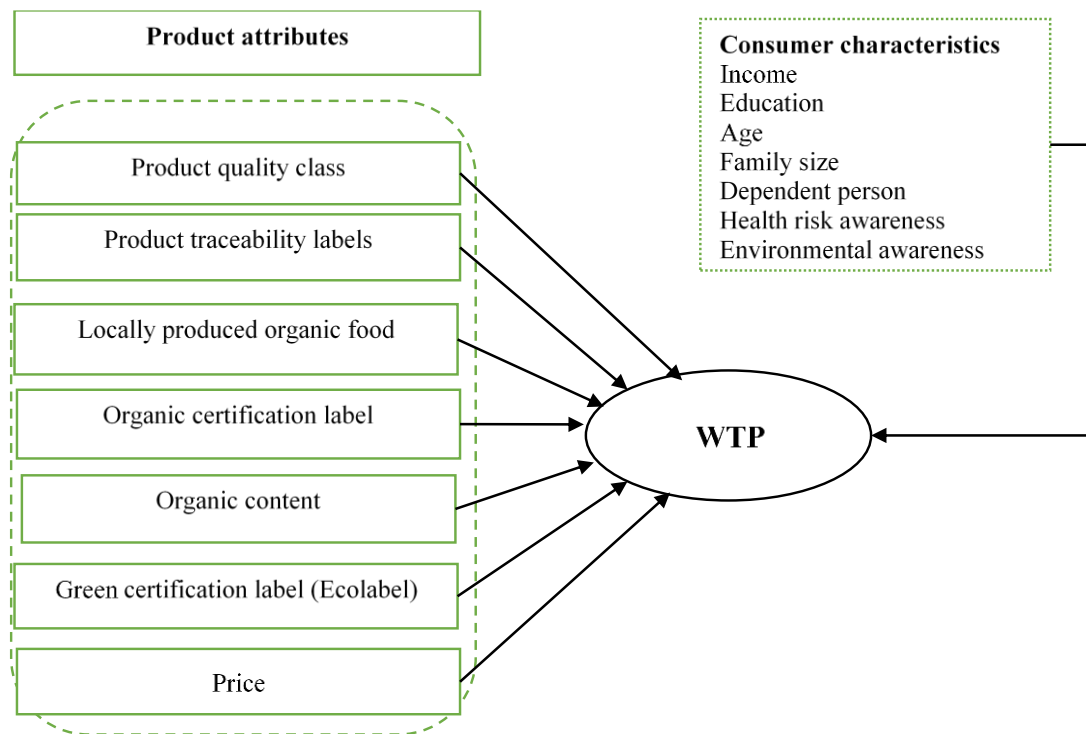


Figure 5. Proposed research model

Source: Authors.

4. Conclusion

Through the literature review, the study found that, up until now, there have been three important issues in the literature related to WTP for organic food.

Firstly, studies analyzing WTP for organic food often pass estimates for attributes such as “product quality”, “origin”, “traceability labeling”, “organic certification label”, “eco-label”, “organic content in the product” and “price”. In addition, a number of studies focus on analyzing the influence of cognitive factors and socioeconomic characteristics on consumers.

Second, according to Lee and Yun (2015), organic food research has so far lacked solid theoretical foundations. Much research on organic foods is more exploratory than theoretical in order to explain consumer decision-making (e.g., Essoussi & Zahaf, 2008; Tsakiridou et al., 2008). Although very little theoretical frameworking is used in organic food research, the theories that researchers have used to study organic food consumption are attitude-behavioral models such as the theory of rational action (TRA)

and the theory of planned behavior (TPB) (e.g., Chen, 2007; Tarkiainen & Sundqvist, 2005; Zagata, 2012). TRA and TPB have been used in many consumer studies. One of the main assumptions of TRA and TPB is that people are rational in their decision-making processes and actions, hence the methods. Cognitive approaches can be used to predict behavior (Icek, 1991).

Thirdly, most of the studies on intention to buy safe food use multivariable regression models or structural equation modeling (SEM) to analyze and evaluate the impact of factors on buying behavior. However, according to some scholars, although SEM is a suitable structural equation model to analyze the causal and complex relationships between individual structures, it is only suitable for analyzing the influence of factors on WTP, not the amount of WTP expressed in numbers or monetary value. If the focus of the study is on the amount of WTP, then auction or CM would be more appropriate methods (Eichhorn & Meixner, 2020).

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