

EWELINA SOBOTKO

ewelina.sobotko@uwm.edu.pl

University of Warmia and Mazury in Olsztyn,

ul. Oczapowskiego 2, 10-719 Olsztyn, Poland

ORCID ID: <https://orcid.org/0000-0001-6786-7731>

*Willingness to pay for consumer food products  
in scientific research*

**Keywords:** WTP; consumer decisions; economic value

**JEL:** D01; D46; L10

**How to quote this paper:** Sobotko, E. (2019). Willingness to pay for consumer food products in scientific research. *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia*, Vol. 53, No. 2.

**Abstract**

**Theoretical background:** The basis for developing a company's pricing strategy is information on consumers' willingness to pay (WTP). In order to properly estimate the demand for the products offered, it is necessary to understand the reactions of consumers to different price levels of goods. Research on WTP has been developing dynamically in the international arena for over a decade. The concept of WTP as presented in the article, a concept which may support decisions concerning pricing policy and influence the earnings of entrepreneurs, is rarely discussed in Polish publications.

**Purpose of the article:** Based on the analysis of the literature, the article attempts to answer the question of whether, if buyers are willing to pay a higher price for certain characteristics of food products, WTP is an important predictor of consumers' purchase decisions.

**Research methods:** The article contains studies of Polish and world literature in the field of the development and application of WTP in the context of food consumer products.

**Main findings:** Consumers will most likely accept a higher price if they perceive that the value of a particular characteristic of the product distinguishes it from conventional goods. This means that it is not the price but the WTP that determines the decision to buy a food product. The relationship between value and price, and thus WTP, is crucial in the process of forecasting consumer choices.

## Introduction

Prices are one of the most important elements of the marketing mix. In addition, they are a revenue-generating component of the mix. Other components, such as promotion, distribution and product involve expenditure. As a result, the price decisions faced by the producer of the manufactured goods are complicated and difficult, yet also crucial for the company. When developing a pricing strategy, cost-based pricing errors can occur without considering the attractiveness of the product as perceived by the relevant consumer groups. The modification of products according to the specific needs of segments requires the application of a strategy based on the customers' perception of the value of the good (Kotler & Armstrong, 2001, p. 371).

Value is one of the basic economic categories. Economic science content indicates that value should be expressed at market prices. With this reasoning in mind, it should be stressed that it is linked to the usefulness of food products, i.e. the benefits that the consumer receives in the process of consuming goods. According to the direction indicated by the neoclassical economy, the value of a good is the result of market forces both on the demand and supply side. This means that there is a combination of objectivization of value, which is determined by supply-side factors, and subjective value, which is determined by consumers who are driven by their needs (Giza, 2016, p. 50). On the food market, there is no shortage of situations where the good in question exceeds the satisfaction of the basic needs of the consumer alone. This is usually done by extending its additional utility, which may result in a marginal increase in the price of the good, which determines the price premium that the consumer is willing to pay, depending on which attribute of the product is relevant to it (Ogbeide, 2015, p. 47).

The concept of willingness to pay (WTP) presented in the article is one that has been extremely well studied empirically in a variety of international settings, while in Poland, its study is relatively poor (Sajdakowska et al., 2014, p. 28). On the basis of the literature analysis, this article attempts to answer the question of whether, if buyers are willing to pay a higher price for certain characteristics of food products, WTP is an important predictor of consumers' purchase decisions. The article contains studies of Polish and world literature in the field of the development and application of WTP in the context of food consumer products.

## Concept of willingness to pay

In the scientific literature, there are two different concepts that describe how much the consumer is willing to pay for goods or services: *reservation price* and *maximum price*. The consumer's behaviour when choosing one of the similar products offered at different prices varies according to which of the presented approaches they apply (Breidert, 2007, p. 25).

The reservation price is defined as the highest price at which the consumer is still interested in buying the product. To put it another way, it is the amount of money

that does not influence the consumer's willingness to purchase certain goods, while any sum higher than the reservation price will discourage the customer (Varian, 2006, p. 136). If the consumer buys the goods at a price lower than the reservation price, they are aware of the *consumer surplus*. Consumer surplus is defined as the difference between the market price and the highest price a consumer is willing to pay for a good. Reservation price is defined as the amount at which buyers compare the product price offered. Every person who wants to buy a specific good has a reservation price they are willing to pay and will compare this amount with the price of any similar product. The maximum price of a product is the sum of the price of the best alternative for the customer and the value of what distinguishes this offer from another choice (Kalish & Nelson, 1991, p. 328).

The difference can be seen in the circumstances in which the product is offered. They influence how much the customer is willing to pay for the product. The amount of the price that determines how much a person wants to pay depends on the perception of the economic value of product (PEVP) and on the utility of the good (Kozłowski et al., 2018, p. 74). These values can be used to determine whether the price the consumer is willing to pay is the reservation price or the maximum price. When a person does not see an alternative offer, the maximum amount at which they wish to purchase the good will be equal to the usefulness of the product for the consumer and the reservation price will be set. However, if alternative offers with an economic value below usability are perceived, the price rate setting a maximum threshold at which the consumer purchases the product will be exactly the same as PEVP and will be the maximum price (Breidert, 2007, p. 25).

WTP is, therefore, a measure of the value the consumer attributes to the benefits of consuming a particular good, expressed in monetary units. It refers both to the assessment of the willingness to pay a certain premium for a product and to the setting of the highest price that the consumer accepts to buy it (Wang et al., 2007, p. 201).

For many alternatives, WTP will be a measure proportional to the subjective value the consumer attributes to a particular product. The buyer will want to purchase this good from the collection of goods for which their WTP will exceed the purchase price to the greatest extent (Wertenbroch & Skiera, 2002, p. 228).

The likelihood of a purchase by a consumer depends on a certain price range. The WTP will depend on whether the amount of the price of the good is equal to and below or above the level which is set by the reservation or maximum price (Breidert, 2007, p. 25).

### **WTP measurement methods**

On the basis of the literature review, it is clear that many methods of WTP measurement have been used to study both public and private goods. In the marketing literature, they have also found a wide application, e.g. in areas such as advertising

(Kalra & Goodstein, 1998), consumer patterns (Krishna, 1991) or test markets (Cameron & James, 1987). The three basic methods of estimating WTP are Experiment, Conjoint Analysis and Contingent Valuation (Grunert et al., 2009, p. 607).

In the literature, there are two types of experiments: laboratory and field. Both can be used to determine the level of WTP. Laboratory experiments are carried out in designated places after allocating a sum of money to respondents, which they will exchange in whole or in part for a specific product or set of products. With the use of the laboratory choice experiment method, there are some irregularities in measurement, which are due to the fact that the subjects are aware of the experimental situation. Respondents in the decision-making process may be more rational than in a standard purchasing situation, and each choice in laboratory conditions may be considered in a different way or last longer. Another example refers to the money itself, which did not belong to the budgets of the entities but was given back to them (Braidert, 2007, p. 50, 44).

Experiments in the field, on the other hand, eliminate the problem with artificial purchasing conditions because they take place in a real environment, usually inside a shop where a specific good is available. Respondents may or may not be aware of participating in the survey.

Auctions, which can be carried out as laboratory or field experiments, are the special application of experiments. Examples of such methods are Vickrey Auctions and BDM Lotteries (Werthenbroch & Skiera, 2002, pp. 228–229). In the first case, all bids are collected, and the person with the highest bid is obliged to buy the goods sold at the price equal to the second highest declared amount. This method suffers from the problem of involving only those consumers whose bids are close to the level of the second price in the auction. Other respondents may be discouraged from participating and deliberately underestimate their prices, anticipating a low chance of winning. In the case of BDM lotteries, named after the authors G.M. Becker, M.H. DeGroot and J. Marschak, buyers are directly asked to specify the maximum amount for which they are willing to buy the product. Once all price data have been compiled, a draw is made. If the price is lower or equal to the consumer's offer, the consumer is obliged to purchase the goods at the indicated rate. If the amount exceeds the amount of money declared by the respondent, the transaction cannot be finalised (Voelckner, 2006, p. 138).

Conjoint Analysis (CA) uses attribute sets and product profiles. They are presented to the respondent who assesses them according to perceived values, usually by assigning rank in relation to the degree of preference. The CA method urges the respondent to make decisions in the same manner as occurs in the market, i.e. with the existence of alternatives. The preferences regarding the product offer depend on what is important for the respondent. With the help of the collected data, it is possible to make conclusions regarding evaluations of product characteristics. Variance is the main feature of the CA method; by combining separate values provided by a particular attribute, the overall value of a given product is assessed (Braidert,

2007, p. 50). Therefore, the purpose of CA is to determine which combination of levels of different attributes of a given product has the greatest impact on consumer purchasing decisions.

Contingent Valuation (CV) is most often used to analyse preferences for public goods and environmental goods. Under these conditions, respondents were informed about public goods measures and then determined how much they would be willing to pay for certain improvements. Due to the fact that CV is widely used in situations where there are no available market data about the product (Grunert et al., 2009, p. 608), it has also been included in marketing research. CV has proved to be useful in planning pricing strategies for new products that were not yet on the market, as well as in the case of food products (Grunert et al., 2009; Gil et al., 2000).

### **WTP for food products**

The food market is characterised by a large number of buyers and low price elasticity of demand. Food goods have a limited possibility of postponing their consumption, which means that there are hardly any shifts in demand in this market due to price or utility expectations. When analysing the market, the ratchet effect is also notable (Kowalczyk & Maciąg, 2017, pp. 204–205). The continuing process of globalisation is constantly changing both the international and the Polish food market. The growing interest of purchasers in alternative food products is driving entrepreneurs to produce in line with new expectations.

With regard to scientific literature dedicated to the consideration of consumers' WTP for food products, the development of the WTP concept has inspired research such as measurement in shops' online auctions or products with quality labels (Werthenbroch & Skiera, 2002). In Poland, it is still a concept whose scientific development has been limited but one which has been gaining in popularity in recent years (Olewnik-Mikołajewska et al., 2016; Kaczorowska et al., 2018).

According to research, health, which is related to the value of safety, is the strongest motivation to buy organic food (Gil et al., 2000; Alphonse & Alfnes, 2017). The buyer's motive to buy a product affects the consumer's involvement in the good. Magnusson et al. (2001) claimed that taste was the most important purchasing factor for Swedish consumers when buying edible organic products. Stobbelaar et al. (2007) pointed out that for the Dutch and the Swedes, this is the most important motive for eating organic products, whereas social values, such as prestige, were recorded for the consumption of organic wine in Switzerland.

The WTP of higher food prices differs in the studies cited depending on the type of good, the country of data collection and the measurement method used (Table 1).

**Table 1.** Selected studies on WTP from the perspective of consumer food products

No.	Author (year)	Country	Method	Category of food products	Main results
1.	Remaud et al. (2008)	Australia	Experiment	Wine	Wine made from organic grapes is not particularly appreciated by Australians. However, consumers of organic wine are willing to pay more for this product
2.	Mørkbak, Nordström (2009)	Denmark	Experiment	Poultry meat	Danish consumers are willing to pay more for poultry meat containing information that it does not contain campylobacter compared to poultry meat without such information
3.	Angulo et al. (2005)	Spain	CV	Beef	Most consumers are not willing to pay a price premium for labelled beef
4.	Krystallis et al. (2006)	Greece	CA	Organic products: olive oil, bread, oranges, wine	Buyers of organic products are willing to pay more money in return for organic products
5.	Gil et al. (2000)	Spain	CV	Organic products: vegetables, fruits, flakes, eggs, meat	Consumers interested in organic food suggested a higher WTP than those who were uninterested
6.	Stefani et al. (2005)	Italy	Experiment	Boiled spelt	The region from which the spelt originated influenced the level of WTP
7.	Kaczorowska et al. (2018)	Poland	Experiment	Fruit	The certificate of organic farming leads to the purchase of fruit at a higher than average price
8.	Kozłowski et al. (2018)	Poland	Experiment	Socially responsible products: Laundry detergent and ice cream	WTP for socially responsible products is higher for altruistic buyers
9.	Lusk et al. (2003)	France, Germany, the UK, the USA	CA	Beef	European consumers attribute a higher value than US consumers to beef from cattle that have not been fed GM maize
10.	Sundström, Andersson (2009)	Sweden	CV	Chicken	Swedes are willing to pay a price premium between SEK 14-42 for chicken that meets food safety standards, to avoid the risk of salmonellosis
11.	Alphonse, Alfnes (2017)	African countries	Experiments (BDM and others)	Organic product: tomatoes	Consumers are willing to pay a premium for organic and food security-controlled tomatoes
12.	Miškolci (2011)	the Czech Republic	CV	Organic, regional products	Most respondents were willing to pay a price premium to ensure the required food quality
13.	De Pelsmacker et al. (2005)	Belgium	CA	Coffee	The average price premium consumers were willing to pay for coffee with the "fair trade" label was 10%.
14.	Olewnik-Mikołajewska et al. (2016)	Poland	CV	Products of animal origin	Polish consumers are willing to pay more for products with a high health value than for specific products with "increased nutritional value"

Source: Author's own study based on literature review.

In the light of the aforementioned research, it should also be stated that achieving maximum benefits from the use of WTP by entrepreneurs depends on socio-demographic features such as age, sex, education, household size or income. It is also important that the customer favours the brand and the product itself (its attributes and type).

Evidence demonstrates that the higher the income of consumers, the greater the WTP for food products (Kiesel & Villas-Boas, 2007). Wang et al. (2007) stated that consumers are less sensitive to the price of organic products and are more willing to pay an additional 5–30% of the price.

## Conclusions

WTP is the measure of the value that a person attributes to the experience of consuming or using a particular good, expressed in monetary units. In the light of the literature, it can be concluded that the examples of methods of calculating WTP may become useful instruments for determining the level of willingness of consumers to pay higher prices for food products. Therefore, the concept of WTP should be used by both business practitioners and researchers.

When the consumer chooses a food product, an important determining factor is its characteristics (attributes). Studies indicate that price is the biggest barrier to the purchase of food products (Gleim & Lawson, 2014). However, buyers have to accept a higher price if they perceive the value of a particular characteristic of the product which distinguishes it from conventional goods. This means that it is not the price but the WTP that determines the decision to buy a food product. The relationship between value and price, and thus WTP, is crucial in the process of forecasting consumer choices.

## References

- Alphonse, R., & Alfnes, F. (2017). Eliciting consumer WTP for food characteristics in a developing context: Application of four valuation methods in an African market. *Journal of Agricultural Economics*, 68(1), 123–142. DOI: <https://doi.org/10.1111/1477-9552.12170>.
- Angulo, A.M., Gil, J.M., & Tamburo, L. (2005). Food safety and consumers' willingness to pay for labelled beef in Spain. *Journal of Food Products Marketing*, 11(3), 89–105.  
DOI: [https://doi.org/10.1300/J038v11n03\\_06](https://doi.org/10.1300/J038v11n03_06).
- Breidert, C. (2007). *Estimation of Willingness-to-Pay: Theory, Measurement, Application*. Berlin: Springer Science & Business Media.
- Camron, T.A., & James, M.D. (1987). Estimating willingness to pay from survey data: An alternative pre-test-market evaluation procedure. *Journal of Marketing Research*, 24(4).
- De Pelsmacker, P., Driesen, L., & Rayp, G. (2005). Do consumers care about ethics? Willingness to pay for fair-trade coffee. *Journal of Consumer Affairs*, 39(2), 363–385.  
DOI: <https://doi.org/10.1111/j.1745-6606.2005.00019.x>.

- Gil, J.M., Gracia, A., & Sanchez, M. (2000). Market segmentation and willingness to pay for organic products in Spain. *The International Food and Agribusiness Management Review*, 3(2), 207–226. DOI: [https://doi.org/10.1016/S1096-7508\(01\)00040-4](https://doi.org/10.1016/S1096-7508(01)00040-4).
- Giza, W. (2016). O ewolucji ekonomicznej teorii wartości. *Studia Ekonomiczne*, 259, 49–59.
- Gleim, M., & Lawson, S.J. (2014). Spanning the gap: an examination of the factors leading to the green gap. *Journal of Consumer Marketing*, 31(6/7). DOI: <https://doi.org/10.1108/JCM-05-2014-0988>.
- Grunert, K.G. et al. (2009). Comparing methods for measuring consumer willingness to pay for a basic and an improved ready-made soup product. *Food Quality and Preference*, 20, 607–619. DOI: <https://doi.org/10.1016/j.foodqual.2009.07.006>.
- Kaczorowska, J., Rejman, K., & Halicka, E. (2018). Wpływ certyfikatu rolnictwa ekologicznego na gotowość konsumentów do zapłaty wyższej ceny za owoce. *Handel Wewnętrzny*, 3(374), 197–207.
- Kalish, S., & Nelson, P. (1991). A comparison of ranking, rating and reservation price measurement in conjoint analysis. *Marketing Letters*, 2(4), 327–335.
- Kalra, A., & Goodstein, R.C. (1998). The impact of advertising positioning strategies on consumer price sensitivity. *Journal of Marketing Research*, 35(2), 210–224.
- Kiesel, K., & Villas-Boas, S.B. (2007). Got organic milk? Consumer valuations of milk labels after the implementation of the USDA organic seal. *Journal of Agricultural & Food Industrial Organization*, 5(1). DOI: [10.2202/1542-0485.1152](https://doi.org/10.2202/1542-0485.1152).
- Kotler, P., & Armstrong, G. (2001). *Principles of Marketing*. Upper Saddle River: Prentice Hall.
- Kowalczyk, I., & Maciąg, A. (2017). Wpływ poziomu cen i strategii cenowych na zachowania konsumentów na rynku żywności. *Handel Wewnętrzny*, 1(366), 203–215.
- Kozłowski, W., Sobotko, E., & Rutkowska, A. (2018). Skłonność do płacenia za produkty społecznie odpowiedzialne i postrzeganie ich wartości – wpływ postaw i znaczenia sprawy społecznej. *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia*, 52(3), 73–81.
- Krishna, A. (1991). Effect of dealing patters on consumer perceptions of deal frequency and willingness to pay. *Journal of Marketing Research*, 28, 441–451.
- Krystallis, A., Fotopoulos, C., & Zotos, Y. (2006). Organic consumers' profile and their willingness to pay (WTP) for selected organic food products in Greece. *Journal of International Consumer Marketing*, 19(1), 81–106. DOI: [10.1300/J046v19n01\\_05](https://doi.org/10.1300/J046v19n01_05).
- Lusk, J.L., Roosen, J., & Fox, J.A. (2003). Demand for beef from cattle administered growth hormones or fed genetically modified corn: A comparison of consumers in France, Germany, the United Kingdom, and the United States. *American Journal of Agricultural Economics*, 85(1), 16–29.
- Magnusson, M.K. et al. (2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal*, 103(3), 209–226. DOI: <https://doi.org/10.1108/00070700110386755>.
- Miśkolci, S. (2014). Consumer preferences and willingness to pay for the health aspects of food. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 59(4), 167–176. DOI: [10.11118/actaun201159040167](https://doi.org/10.11118/actaun201159040167).
- Mørkbak, M.R., & Nordström, J. (2009). The impact of information on consumer preferences for different animal food production methods. *Journal of Consumer Policy*, 32(4), 313–331.
- Ogbeide, O.A. (2015). Consumer willingness to pay a premium for organic wine: discriminant analysis. *Journal of Agribusiness*, 1(1).
- Olewnik-Mikołajewska, A. et al. (2016). Wpływ podwyższonej wartości odżywczej na skłonność do płacenia wyższej ceny za produkty pochodzenia zwierzęcego. *Zeszyty Naukowe SGGW w Warszawie. Ekonomika i Organizacja Gospodarki Żywnościowej*, 114, 157–167.
- Remaud, H. et al. (2008). *Do Australian wine consumers value organic wine?* 4<sup>th</sup> International Conference of the Academy of Wine Business Research, Siena 17–19 July.
- Sajdakowska, M., Gutkowska, K., & Żakowska-Biemans, S. (2014). Skłonność konsumentów do płacenia wyższej ceny za innowacyjne produkty żywnościowe w kontekście metodologii WTP. *Marketing i Rynek*, 10, 27–32.



- Stefani, G., Romano, D., & Cavicchi, A. (2006). Consumer expectations, liking and willingness to pay for specialty foods: Do sensory characteristics tell the whole story? *Food Quality and Preference*, 17(1–2), 53–62. DOI: <https://doi.org/10.1016/j.foodqual.2005.07.010>.
- Stobbelaar, D.J. et al. (2007). Adolescents' attitudes towards organic food: a survey of 15- to 16-year old school children. *International Journal of Consumer Studies*, 31(4), 349–356.  
DOI: <https://doi.org/10.1111/j.1470-6431.2006.00560.x>.
- Sundström, K., & Andersson, H. (2009). *Swedish consumers' willingness to pay for food safety: a contingent valuation study on salmonella risk*. Working Papers 2009:2, Swedish National Road & Transport Research Institute (VTI).
- Varian, H.R. (2006). *Mikroekonomia. Kurs średni. Ujęcie nowoczesne*. Warszawa: Wydawnictwo Naukowe PWN.
- Voelckner, F. (2006). An empirical comparison of methods for measuring consumers' willingness to pay. *Marketing Letters*, 17(2), 137–149.
- Wang, T., Venkatesh, R., & Chatterjee, R. (2007). Reservation price as a range: An incentive-compatible measurement approach. *Journal of Marketing Research*, 44(2).
- Wertenbroch, K., & Skiera, B. (2002). Measuring consumers' willingness to pay at the point of purchase. *Journal of Marketing Research*, 39(2). DOI: [10.1509/jmkr.39.2.228.19086](https://doi.org/10.1509/jmkr.39.2.228.19086).