

# **DETERMINANTS OF WILLINGNESS TO PAY FOR ORGANIC FOODS: EVIDENCE FROM A PRIMARY SURVEY OF CONVENTIONAL CONSUMERS**

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## ***ABSTRACT***

This study explores why conventional consumers choose to pay premium prices for organic foods. A structured interview was conducted with 750 randomly selected shoppers to collect consumers' perception, purchasing decision and WTP for organic foods. Results suggest that the perception, purchase decision and WTP are highly related. Common attributes motivating consumers to pay higher prices are: organic foods are healthier, tastier, better quality and have more human touch than conventional foods. These variables are important as a group and not as an individual as these are linked in consumer's perception, purchasing decision and WTP.

Key words: Organic food, willingness to pay, consumer behavior

## **INTRODUCTION**

The market value of organic foods in Canada increases from \$1.0 billion in 2005 to \$4.7 billion in 2015, nearly a five-fold in 10 years (COTA, 2017). The picture is similar in most countries of the world although some counties have experienced slower growth during the financial crisis in 2008 (Lernoud and Willer, 2017). The share of organic food sales continues to increase in all over the world although the proportion remains small. Denmark has the largest share of retail sales value (8.4 percent) followed by Luxembourg (7.5 percent) and Sweden (7.3 percent) (Lernoud and Willer, 2017). Organic food production and consumption, once confined within a small and isolated group of people, have now become main-stream and nearly every large commercial producer, distributor and retailer has become involved. Majority of organic food sales are now done through conventional retail stores. Today, the organic food industry continues to increase in nearly all continents although with varying intensities. Europe and Australia are leading the growth followed by North America and other parts of the world. The rapid growth of organic food market primarily comes form the demand side. The increase in market size is the response of consumers to producers, distributors and retailers. Therefore, it is important for producers, distributors and retailers to develop complete understanding on the consumer behavior related to organic foods. What are the primary motivating factors for purchasing organic food? Why do consumers pay premium price? How much premium are they willing to pay? What factors contribute to willingness to pay (WTP)? These and many more related questions need to be answered for a complete understanding of consumer behavior.

Researchers from around the world made concerted effort to find answers to these questions, however, with mixed results. Some recent examples of studying why consumers buy organic foods and why do they pay premium prices for organic foods are: Lockie (2006) in Australia, Sawyer et al (2006), Anders and Moeser (2008) and Cranfield et al (2009) in Canada, Kresic and Susic (2010) in Croatia, Krystallis et al (2008) in Germany, United Kingdom, Denmark and Spain, Canavari et al (2005) and Gracia and Magistris (2008) in Italy, Briz and Ward (2009) in Spain, Tranter et al (2009) in European Union, Monier et al (2009) in France, Wier et al (2008) in United Kingdom and Denmark, Roitner-Schobesberger et al (2007) in Thailand, Thompson (1998), Oberholtzer et al (2005, 2006), Batte, et al (2007), Hsieh et al (2009), and OTA (2010, 2011) in the US. More recently, Aschemann-Witzel and Zielke (2017) reviewed available literature and tried to answer five questions: (1) how important is price as barrier to organic food choice, (2) what role income plays, (3) how knowledgeable consumers are on organic food prices, (4) how much premium consumers' WTP, and (5) how consumers react to price changes.

The general perceptions for buying organic food vary, and different people may buy organic foods for different reasons. This may also differ by localities or geographical regions, age, sex or ethnic groups and many others. Research results are mixed in this. Several studies (Botonaki et al, 2006; Kihlberg and Risvik, 2007; Zhao et al, 2007) have focused on the characteristics of foods and found that consumers preference for buying organic food is associated with taste, freshness, quality, safety and health conditions. Prentice et al (2017) in a recent study divided organic food characteristics into two categories, observation traits, which can easily be observed (appearance, smell, texture etc.) and reflection traits which cannot be observed from the product itself but are artificially created to distinguish from conventional foods (organic logo, packaging, etc.). These latter traits offer consumers a variety. Others (Thogerson and Olander, 2006; Onyango et al, 2007; Zhao et al, 2007) have focused more on the personal and demographic characteristics of consumers and found positive association of buying organic foods with education, income level and urban living. Cranfield et al (2009) concluded that pesticide free was the principal reason to buy organic. The two questions, why consumers buy organic foods and why consumers are willing to pay premium price for organic foods should offer the same or symmetric answer. However, that is not necessarily the case.

Price premiums for organic foods primarily come from consumers' demand. Over the last decade, higher price for organic foods compared to their conventional counterparts have contributed to the growth of certified organic farmland and the expansion of organic food industry. Part of the price premium can be cycled back to the requirement of higher cost of production of organic foods. Whichever side the price premium is coming from, it resulted an increased variety of organic foods for consumers and a larger profit share for all participants contributing to both sides of the market, and eventually expanding the industry further (Oberholtzer, et al., 2005). Although this is apparent, a formal proof of such anecdotal evidence is difficult due to the lack of systematic collection of price data on organic foods. Only recently, some efforts have been made to collect price data (Glaser and Thompson, 2000; Streff and Dobbs, 2004; Oberholtzer et al, 2005), which are primarily based on either farm gate or wholesale prices. Studies on price premium at the retail level remain scanty. It is also likely that the price premium at retail level would be higher than wholesale or farm gate level. Over two decades ago, Thompson (1998) rightfully concluded that insufficient data on the retail price levels of organic foods limits the estimation of price elasticities of organic food items. It is important to collect retail price data on organic foods along with comparable conventional foods to find out the actual price premium paid by the consumers as the entire organic industry is driven primarily by the demand side of the market (Islam, 2014).

Why consumers pay premium prices for organic foods was a classic question and a perceived answer is that organic foods are better than conventional foods and, as a result, consumers agree to pay more for organics. For the last two decades, Hartman Group (2002) has been trying to

examine possible reasons for paying premium prices for organic foods, but their results change over time. In 1980s and 1990s, environmental concern was the principal motivation for purchasing organic foods. Results of a similar survey a decade later, however, paint a different picture. Oberholtzer et al (2005) found that a clear majority (66%) cited health concern followed by taste (38%) and food safety (30%) as principal factors for buying organic. Environmental concerns took a back seat trailing down to only 26 percent. Another survey conducted by Whole Foods (2004), however, reports environmental concerns (58%) and support to small and local farmers (57%) as the principal motivation for buying organic foods. Dimitri and Oberholtzer (2009) in a recent study in US found that education (irrespective of age, race or ethnicity) is a consistent influencer of buying organic foods although Stevens-Garmon et al (2007) observed that Asian and African Americans are more likely to buy organic foods. Thus, factors, such as race, education, presence of children in the household, and income do not show a consistent effect on the likelihood of buying organic foods. Hence the cause of buying organic food remains elusive. For organic consumers in France, a marginal reduction in price does not make any impact on purchasing decisions (Monier, et al., 2009). However, people purchasing organic foods on a regular basis are price sensitive and make choices within the organic food items based, at least to some extent, on price levels (Rodiger and Hamm, 2015; Liang, 2016; Aschemann-Witzel and Zielke, 2017). However, questions remain for those consumers who do not buy organic on a regular basis or do not shop at specialty organic stores, rather shop at conventional stores and buy organic foods on occasions. Those consumers, though buy only a portion of organic, contribute vastly to the organic market due to their sheer number. The behaviour of those consumers is not well understood – neither in terms of their food choice nor in terms of their WTP. This study is expected to address the behaviour of those consumers with an objective to find out how much organic foods conventional consumers buy, what characteristics of organic foods they value more, how much premium price they are willing to pay, and why they are willing to pay premium price for organic foods. This will also allow us to identify the knowledge of conventional consumers on organic food attributes and benefits.

## **CONCEPTUAL FRAMEWORK**

Organic foods are often sold at much higher prices – from as low as 10% to as high as 150% price premiums – although a slightly lower price for some organic foods compared to conventional foods are also found on rare occasions (Islam, 2014; USDA, 2016). Several possible reasons preferring organic over conventional foods have been identified among which concerns about human, animal and environmental health is the foremost credited (Hutchins and Greenhalgh 1995; Davis et al. 1995; Williams and Hammitt, 2001; Bourn and Prescott, 2002; Fotopoulos and Krystallis, 2002; Makatouni, 2002; Zanolli and Naspetti, 2002); Lea and Worsley, 2005; Smith and Paladino, 2010). Ozguven (2012) tested four motivation factors for buying organic foods – food quality motive, price motive, health motive and food safety motive – and found all of those are statistically significant contributors towards buying organic foods. Aside from all characteristics, easy availability through conventional retail stores is considered an important reason for the rapid growth of organic foods (Hartman Group, 2008; Bezawada and Pauwels, 2013; Trauger and Murphy, 2013). It also makes information on organic foods easily available to the entire consumer pool, especially through large scale promotional influence. Since the increase in market size is primarily demand driven, conventionalization must receive credits for promoting among conventional consumers. It is an undisputable fact that clear majority of organic foods are now promoted and sold through conventional supermarkets and grocery stores, and the proportion is likely to continue to increase (Islam and Manaloor, 2017).

Consumers WTP premium price for organic foods depends on consumers' preference over conventional foods, which can be thought of as a function of characteristics of organic foods and as such can be expressed as:

$$WTP = f(X),$$

where, WTP is the premium price to pay and  $X$  is a vector of characteristics. Such characteristics include, for example, (1) organic foods are healthier than conventional foods, (2) organic foods have better nutritional value, (3) organic foods are chemical-free and safer to eat, (4) organic foods are more tasty than conventional foods, (5) organic foods are fresh, (6) organic foods are better quality as they are not artificial, (7) organic foods are superior as they come from nature, (8) organic foods are environmentally friendly, (9) organic foods do not pollute environment, (10) buying organic foods support the industry, (11) organic foods provide more human touch, (12) organic foods have longer shelf life, and (13) buying organic is supporting local and small farmers. If these characteristics are truly understood then consumers purchasing decision are influenced by these characteristics. Not all consumers equally value all characteristics nor they would have equal WTP. However, if a consumer is influenced by these factors to pay premium price, ideally, the same consumers purchasing behaviour would be equally influenced by these characteristics and the consumers perception of organic foods is to be expressed by these characteristics. Yadav and Pathak (2016) observed that attitude towards organic foods and perceived behavioral control significantly influence Indian consumers' purchasing decision of organic foods. Rana and Paul (2017) also conclude that attitude is the most important predictor of intention of buying organic foods. So,

$$WTP = f(X_{wtp}) = f(X_{pd}) = f(X_p)$$

Where,  $X_{wtp}$  is the vector of characteristics for which consumers' WTP depends,  $X_{pd}$  is the vector of the same characteristics on which consumers purchasing decision depends, and  $X_p$  is the vector of characteristics on which consumers perception of organic foods as better than conventional foods depends. In a world of perfect information and complete consumers knowledge, estimated coefficients of respective characteristics should be identical.

## METHODOLOGY

A detailed questionnaire was developed and pre-tested to collect numerical data to address the questions posed in the first section. The questionnaire was filled up through interviewing randomly selected shoppers on three different conventional retail stores in South Edmonton – Sobeys, Save-on-Foods and Superstore – following similar approach of Cranfield et al (2009) in Canada, Batte et al (2007) in US and Canavari et al (2005) in Italy. The survey form consisted of three sections. The first section included general introduction of organic food, consumers shopping habits in relation to organic food items, perception about organic foods and reasons for preferring organic over conventional food items. Although a myriad of organic products is now available, this study considered five broad categories of organic foods, (a) fresh fruits and vegetables, (b) dairy, (c) breads, grains and cereal products, (d) packaged and prepared foods, and (e) fresh meat/fish/poultry. The second section focused on measuring WTP premium price for organic foods over conventional foods. A double bound dichotomous choice (closed-ended iterative bidding process) of contingent valuation technique was employed to identify perceived WTP maximum premium price for organic foods over conventional foods. Such discrete-choice format was strongly recommended by NOAA (Arrow et al, 1993), which proposed a bid and then solicited the answer of 'Yes' or 'No'. Although this is relatively simple, it has obvious problems– coming up with an initial bid is arbitrary or be inherently biased and it is not statistically sound as it provides only dichotomous choice. A refinement of this method was originally proposed by Hanemann (1985) and Carson (1985) by adding subsequent questions using a higher (or lower) bid level after a positive (or negative) initial response. Repeating subsequent questions until an opposite answer is obtained, one can identify the maximum WTP. In double bound dichotomous choice, respondents are asked whether they are willing to pay or not a certain amount of premium. If the answer is 'Yes', the respondent is asked for a higher amount and this process is repeated until the answer becomes 'no'. In such a situation, the highest amount for 'Yes' answer is considered the maximum WTP for the respondent. If the respondent answers 'No', the respondent is then asked for a lower

amount and the process is repeated until the answer becomes 'Yes'. In this case, the amount the respondent first answers 'Yes' is considered the maximum WTP for that respondent. This format generates a closed-ended iterative bidding process and allows the researcher to come up with a nearly continuous data points that can be effectively used for statistical analysis. Indeed, Hanemann et al (1991) and Carson et al (1999) showed that the confidence intervals around point estimates are substantially reduced. The third section of the questionnaire collects demographic information, including age, education, ethnic background, income level, marital status, presence of children in the household, etc.

Five conventional grocery stores – Sobeys, Save-On Foods, Superstores, Safeway and Wal-Mart – were approached for allowing us to interview their customers in their premises and to record weekly prices of certain food items. Costco was not approached as it has only a few items of organic foods and even those are not available always, and it is a member-only store. All retail grocery stores were assured that the raw prices or comparative prices among different stores and different times would not be published or disclosed to anyone. Only the normalized and aggregate prices of different food groups would be reported. After repeated requests and with sufficient assurance that the findings would only be used for research purposes and would not be disclosed to anyone, Safeway and Wal-Mart refused to give us access to their stores for our intended purposes. Sobeys, Save-On Foods and Superstores allowed us to record their weekly prices as well as to interview their customers in their respective premises. Individual shoppers were provided with sufficient information on the purpose and the procedure of these data collections. The interviewer, a Research Assistant for the project, has signed a confidentiality agreement with the Investigator that he will not disclose any information to anyone without prior permission of the Investigator. The appeal used in the cover letter was altruistic in nature. The respondents were reminded that their participation in this interview process would make a significant contribution to this research project. They were also assured that they would remain anonymous as no personal information would be asked. The project received approval from MacEwan University Research Ethics Board and the contact information of the Chair was included in the cover letter. The interviewer carried an identity card containing the contact information of the Investigator. The respondents were also told that their participation was completely voluntary and could withdraw at any time they feel necessary. At the very end of the interview process, they were thanked for their participation, and as an incentive, they were asked to provide their names and telephone numbers on a card to enter a draw for a dinner for two (a \$60.00 gift certificate) at a local area restaurant. The odds of winning were one in one hundred.

Respondent's perception about organic foods was recorded in a Likert scale from 1 to 10 for every potential characteristics, which include: organic foods are healthier than conventional foods, have better nutritional value, are chemical-free and safer to eat, are more tasty than conventional foods, are fresh, are better quality as they are not artificial, are superior as they come from nature, are environmentally friendly, do not pollute environment, buying organic support the industry, provide more human touch, have longer shelf life, and support local and small farmers. These same characteristics were also used to examine consumers' response on their purchase decision and WTP premium prices using the same Likert scale.

Data from primary survey often have problems and this data-set was not an exception. Information from filled-out questionnaires was incorporated into Excel spreadsheet. Before proceeding for any analysis, the data set was visually inspected for erroneous input and missing observations. Questionnaires with substantial missing observations were omitted and as such, four out of 750 filled out questionnaires were eliminated. Upon careful examinations for missing values, only 482 observations became fully useable.

Given the characteristics of organic foods, the base regression models we estimated is:

$$WTP_i = a + b_1Health_i + b_2Nutr_i + b_3Chemf_i + b_4Tasty_i + b_5Fresh_i + b_6Quality_i + b_7Nature_i +$$

$$b_8EnvFr_i + b_9NPoll_i + b_{10}Industry_i + b_{11}Human_i + b_{12}ShelfL_i + b_{13}Local_i + e_i$$

where,  $WTP_i$  is WTP premium price for respondent  $i$  obtained through the dichotomous choice iterative bidding process,  $Health$  represents the response on organic foods are healthier than conventional food in a 10-point Likert scale,  $Nutr$  represents organic foods have better nutritional value,  $Chemf$  represents organic foods are chemical-free and safe to eat,  $Tasty$  represents organic foods are more tasty than conventional foods,  $Fresh$  represents organic foods are fresh,  $Quality$  represents organic foods are of better quality as they are not artificial,  $Nature$  represents organic foods are superior as they come from nature,  $EnvFr$  represents organic foods are environmentally friendly,  $NPoll$  represents organic foods do not pollute environment,  $Industry$  represents buying organic foods supports the industry,  $Human$  represents organic foods provide more human touch,  $ShelfL$  represents organic foods have longer shelf life and  $Local$  represents buying organic foods is supporting local and small farmers.

The above equation was estimated under three base models with independent variables remaining the same but coming from the answer of three different questions. Model 1 uses answer from the question was ‘What is your perception of organic foods?’ Model 2 uses answers from the question ‘How important are these characters in making purchasing decision of organic foods?’ Model 3 uses answers from the question ‘How important are these characteristics as reasons for paying premium price for organic foods?’ Since WTP premium price may also depend on consumers’ recognition of and confidence on organic foods through labelling and on their demographic characteristics, three additional regression models (Model 4, 5 and 6) were estimated adding consumers’ perceptions on labeling and demographic characters on the three respective base models. The labelling variables were  $L-Inform$  representing labeling provides true information,  $L-Trust$  representing labeling is trustworthy,  $L-Suff$  representing labeling provides sufficient information,  $L-Orig$  representing labeling includes original production source,  $L-Nutr$  representing labeling includes nutritional content,  $L-LessT$  representing labeling should be less technical, and  $L-EasyR$  representing labeling should be easier to read. The demographic variables include  $FamS$  representing family size (number of individuals living in the household),  $U-18$  representing number of family members under 18 years of age in the household,  $Edn$  representing the level of education of the respondent in terms of years of schooling,  $Inc$  representing annual household income in thousands of dollars, and  $Age$  representing age of the respondent in years. Ethnic origins were recorded as dummy variables using Caucasian a default,  $Eth-1$  representing Canadian Indian,  $Eth-2$  representing Asian Canadian,  $Eth-3$  representing Hispanic Canadian, and  $Eth-4$  representing African Canadian. Recognizing the magnitude of coefficients, three more models (Model 7, 8 and 9) were run reducing some food characteristics variables and adding some interaction variables.

## RESULTS AND DISCUSSION

Results of the regression analysis are presented in Table 1. The first column shows consumers perception of different characteristics of organic foods toward WTP premium prices. The two variables consumers perceived as having significant contribution toward WTP premium prices are  $Health$  and  $Tasty$ . All other variables have some contributions but were statistically insignificant. It was observed that strong multicollinearity exists among variables and the application of exhaustive variable selection criteria indicated that only two variables,  $Health$  and  $Tasty$ , can effectively express nearly entire WTP premium prices for organic foods. The second column (Model 2) represents the regression coefficients of the same variables as how important those are for consumers to make buying decisions of organic foods. No pattern of relationship was observed between the coefficient estimates of Model 1 and Model 2. The third column reports coefficients of the same variables which are the results of a direct question on how important those

characteristics (variables) are to pay premium prices. The coefficients are like Model 1 indicating that consumers actual WTP depends on their perception. In both models, *Health* significantly contributes to WTP premium prices. This is in agreement with Rana and Paul (2017) who, upon reviewing 146 relevant published articles and agreeing with Michaelidou and Hassan(2008), conclude that health consciousness can be considered as the best indicator of consumer attitude and behaviour toward purchasing organic foods. One can also extrapolate that consumers WTP is directly influenced by their perception.

[Table 1 about here]

Several studies suggest that principal reasons for WTP premium price for organic foods are: tasty, fresh, better quality, safe, healthy, environmentally friendly, free from pesticides, more human touch and similar other reasons (Thompson, 1998; Canavari et al, 2005; Lockie, 2006; Sawyer et al, 2006, Batte et al, 2007; Anders and Moeser, 2008; Crafield, 2009; Kresic and Susic, 2010; Aschemann-Witzel and Zielke, 2017). However, nearly all such studies are based on data from respondents comprised of ‘organic consumers’ or from the population of commonly buying organic foods. In this study, we collected conventional consumers’ perception, purchasing decision and WTP for organic foods for 13 different reasons using a 10-point Likert scale. Before finalizing regression results, we tested different variables using residual vs fitted value plots, normal Q-Q plots, scale-location plots and residual vs leverage plots to identify outliers. Our results suggest that the perception, purchase decision and WTP are highly related confirming the rationality of consumers. Even though these consumers do not always buy organic, they have clear perception, decision and WTP although their WTP and their actual pay do not necessarily match. The other interesting finding is the misuse of the reasons for WTP. Identifying one reason and discounting other is problematic as in consumers’ mind, a food is healthier, tastier and chemical-free are the same thing meaning if a food is healthy then it is tasty as well as chemical free. In our micro-level observation, we find a strong correlation among all 13 characteristics under study. Consumers pay higher prices for a set of beneficial attributes of organic foods but their impacts are not additive and a straight multiple regression is not appropriate. Our study using various statistical technique suggests that only two independent variables, *Health* and *Tasty*, can explain nearly all variations in WTP premium prices. And as such, further analysis was done using only these two variables. Rodman et al (2014), upon studying the perception of healthy foods among supermarket shoppers in southwest Baltimore, a relatively underserved, low-income and predominantly black community, found that consumers equate organic food as healthy, tasty, natural and chemical-free. One-third of their respondents categorized organic foods a healthy.

[Table 2 about here]

Model 4, Model 5 and Model 6 are the same three base models with the addition of labeling and demographic variables. Among different characteristics of organic foods, *Health* still played a significant role. Among labelling variables, *L-Trust* and *L-LessT* are more important. Organic food labeling, though became standard, confusion among consumers remains due to different logos and certification agencies. Many of the organic foods in Canada are imported and labeling comes from all over the world. Even within country, there are various certification agencies using different

logos. Canadian Food Inspection Agency (CFIA) accepts organic certification by several dozen organizations in Canada and many others from abroad (CFIA, 2017). This creates confusions among consumers. In addition, Canadian organic logo can be used for products containing at least 95 percent organic and the use of logo is voluntary. How to measure the proportion of organic content remains a challenge. Canada also has equivalency agreements with Costa Rica, European Union, Japan, Switzerland and the United States meaning imported organic products certified in those countries are considered organic in Canada by CFIA.

Among different ethnic groups, the coefficient for Hispanic Canadians (*Eth-3*) is the highest but are not statistically significant. Although the coefficient estimates for Canadian Indians (*Eth-1*) and Asian Canadians (*Eth-2*) are lower, those are statistically significant indicating that, on average, Canadian Indians and Asian Canadians are ready to pay about two percent more than other ethnic groups. However, with globalization, it is hard to make a definite and generalized conclusion about WTP for organic foods for different ethnic groups. *Inc* has always thought to be an important factor although in our study it contributes little toward WTP premium price. Dimitri and Dettmann (2012) found that higher education and income contribute substantially toward the choice of organic foods but ethnicity was not important. On the other hand, Curl et al (2013) observed that age contributed negatively, education and income contributed positively toward choice of organic products.

The interaction effect, *Health\*Inc* was significant indicating that higher income consumers prefer healthy foods and are ready to pay premium prices. Previous studies suggest a positive impact of income on healthy and nutritious food choice (Richards and Sindelar, 2013; Hough and Sosa, 2015). Estimated coefficients of the interaction variables, *Inc\*Eth-2* and *Inc\*Eth-3*, are small but are statistically significant. They are also of opposite sign indicating that income of Asian Canadians contributes negatively toward WTP premium price for organic foods but income contributes positively for Hispanic Canadians. Curl et al (2013) observed more prevalence of buying organic among Hispanic consumers.

The findings of this study have limitations as any other survey studies. The adjusted R-square values remain low, around 0.3, indicating that the independent variables can only explain about 30 percent of the variability in the dependent variable, in this case WTP premium price. This also may have caused a larger error variance resulting many coefficients to be statistically insignificant. Nevertheless, this study adds a dimension in the literature, WTP for organic foods for conventional shoppers, which is missing and in that this study makes a positive contribution to the field of study.

## **CONCLUSION:**

The consumption of organic food is increasing continuously in all over the world and nearly all retail grocery chain stores have jumped into the bandwagon of selling organic foods. Consumers, in general, pay premium prices for organic foods. It is often thought that organic foods are consumed by selected consumers and only they have the WTP higher prices than conventional foods. This study challenges that common norm and examines that conventional shoppers also have preference toward organic foods and the WTP premium prices. It also further explores why conventional consumers choose to pay premium prices for organic foods. Several studies suggest that principal reasons for WTP premium price for organic foods are: tasty, fresh, better quality, safe, healthy, environmentally friendly, free from pesticides, more human touch and similar other reasons. Some researchers have also tried to relate the WTP premium price with demographics, income level, ethnicity and other human characteristics. However, nearly all such studies are based on data from respondents comprised of 'organic consumers' or from the population of commonly



buying organic foods. This study considered consumers' perception, purchasing decision and WTP premium for organic foods for 13 different reasons. This study tries to find out consumers' perception, purchasing decision and WTP premium prices as functions of all those factors along with additional variables on labeling and ethnicity.

Our results suggest that the perception, purchase decision and WTP are highly related confirming the rationality of consumers. Even though these conventional consumers do not always buy organic or all foods from organic sources, they have clear mind in their perception, decision and WTP although their WTP and their actual pay do not necessarily match. The other interesting finding is the misuse of the reasons for WTP. Identifying one reason and discounting other is problematic as in consumers' mind, a food is healthier, tastier and chemical-free are the same thing. In our micro-level observation, we find a strong correlation among the 13 characteristics under study. Consumers pay higher prices for a set of highly complementary beneficial attributes of organic foods. The two main attributes motivating them to pay higher prices are: organic foods are healthier and tastier. This does not, however, discount the other factors, i.e., better quality, have more human touch, chemical free, etc. These variables are important as a group and not as individual as these are linked in consumer's perception, purchasing decision and WTP.

## REFERENCES

- Anders, S. & Moeser, A. (2008). Assessing the demand for value-based organic meats in Canada: a combined retail and household scanner-data approach. *International Journal of Consumer Studies* 32:457-469.
- Arrow, K. J., R. Solow, P. Portney, E. Leamer, R. Radner, and H. Schuman. (1993). Report of the NOAA panel on contingent valuation. Technical Report 58:4601-4614, Federal Register.
- Aschemann-Witzel, J. and S. Zielke (2017). Can't buy me green? Review of consumer perceptions and behavior toward the price of organic food. *The Journal of Consumer Affairs* 51:211-251.
- Aygen, F. G. (2012). Attitudes and behavior of Turkish consumers with respect to organic foods. *International Journal of Business and Social Science* 3(18):263-73.
- Batte, M. T., Hooker, N. H., Haab, T. C. & Beaverson, J. (2007). Putting their money where their mouths are: consumer willingness to pay for multi-intergradient, processed organic food products. *Food Policy* 32:145-159.
- Bezawada, R. and K. Pauwels. (2013). "What is special about marketing organic products? How organic assortment, price, and promotions drive retailer performance." *Journal of Marketing*, 77: 31-51.
- Botonaki, A., Polymeros, K., Tsakiridou, E. & Mattas, K. (2006). The role of food quality certification on consumers' food choices. *British Food Journal* 108:77-90.
- Bourn, D. and J. Prescott. 2002. "A comparison of the nutritional value, sensory qualities and food safety of organically and conventionally produced foods." *Critical Reviews in Food Science and Nutrition*, 42(1): 1-34.
- Briz, T. & Ward, R. W. (2009). Consumer awareness of organic products in Spain: An application of multidimensional logit models, *Food Policy* 34:295-304.
- Canavari, M., Nocella, G. & Scarpa, R. (2005). Stated willingness-to-pay for organic fruit and pesticide ban: An evaluation using both web-based and face-to-face interviewing. *Journal of Food Products Marketing* 11(3):107-134.

- Carson, R. T. (1985). Three Essays on Contingent Valuation. PhD thesis, University of California, Berkeley.
- Carson, R., Groves, T., and Machina, M. (1999). Incentive and informational properties of preference questions. Plenary Address to the European Association of Resource and Environmental Economists, Oslo, Norway.
- CFIA. (2017) Organic Products. Canadian Food Inspection Agency. Government of Canada. <http://www.inspection.gc.ca/food/organic-products/eng/1300139461200/1300140373901>
- COTA. (2013). Canada's Organic Market: National Highlights, 2013. Canada Organic Trade Association. [http://www.ota.com/pics/media\\_photos.171.img\\_filename.pdf](http://www.ota.com/pics/media_photos.171.img_filename.pdf)
- COTA. (2017). The World of Organic Agriculture: Statistics and Emerging Trends 2017 (Eds. H. Willer and J. Lernoud). IFOAM Organics International and FiBL. 340 page.
- Cranfield, J., Deaton, B. J. & Shellikeri, S. (2009). Evaluating consumer preferences for organic food production standards, *Canadian Journal of Agricultural Economics* 57:99-117.
- Curl, C. L., S. A. A. Beresford, A. Hajat, J. D. Kaufman, K. Moore, I. A. Nettleton and A. B. Diez-Roux. (2013). Association of organic produce consumption with socioeconomic status and the local food environment: Multi-ethnic study of Atherosclerosis (MESA). *Plos ONE* 8(7):1-8. Doi: 10.1371/journal.pone.0069778.
- Davis, A., A. J. Titterington and C. Cochrane. (1995). "Who buys organic food? A profile of the purchasers of organic food in N. Ireland." *British Food Journal*, 97: 17-23.
- Dimitri, C. & Oberholtzer, L. (2009). Marketing U.S. Organic Foods: Recent trends from farms to consumers. USDA-ERS Economic Information Bulletin, September 2009. 27 pages.
- Dimitri, C. (2011). Use of local markets by organic producers. *American Journal of Agricultural Economics* 94(2):301-306.
- Dimitri, C. and R. L. Dettmann (2012). Organic food consumers: what do we really know about them? *British Food Journal* 114:1157-1183.
- Fotopoulos, C. and A. Krystallis. (2002). "Purchasing motives and profiles of the Greek organic consumer: A country survey." *British Food Journal*, 104(9): 730-65.
- Glaser, L. W. & Thompson, G. D. (2000). Demand for organic and conventional beverage milk. Paper presented in the Western Agricultural Economics Association Annual Meetings, Vancouver, British Columbia.
- Gracia, A. & Magistris, T. (2008). The demand for organic foods in the South of Italy: A discrete choice model. *Food Policy* 33:386-396.
- Grady, C. (2001). Money for research participants: does it jeopardize informed consent? *The American Journal of Bioethics* 1(2):40-44
- Hanemann, W. M. (1985). Some issues in continuous- and discrete-response contingent valuation studies. *Northeastern Journal of Agricultural and Resource Economics* 14:5.13.
- Hanemann, W. M. (1991). Willingness to pay and willingness to accept: How much can they differ? *American Economic Review* 81(3):635.647.
- Hanemann, W. M., Loomis, J., and Kanninen, B. J. (1991). Statistical efficiency of double-bounded dichotomous choice contingent valuation. *American Journal of Agricultural Economics* 73(4):1255.1263.

- Hartman Group. (2002). *Hartman Organic Research Review: A compilation of national organic research conducted by the Hartman Group*. Bellevue, WA.
- Hartman Group. (2008). *The Many Faces of Organic Goods*. The Hartman Group, Bellevue, WA, USA.
- Hsieh, Ming-Feng, Mitchell, P. D. & Stiegert, K. W. (2009). Potato demand in increasingly organic marketplace. *Agribusiness* 25(3): 369-94.
- Hughner, R. S., McDonagh, P., Prothero, A., Shultz II, C. J. & Stanton, J. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour* 6:94-110.
- Hutchins, R. K. and L. A. Greenhalgh. (1995). "Organic confusion: sustaining competitive advantage." *Nutrition and Food Science*, 6: 11-14.
- Islam, S. (2014). "Marketing organic foods through conventional retail outlets." *Journal of Marketing Development and Competitiveness*, 8: 98-112.
- Islam, S. and V. Manaloor. (2017). Selling organic foods through conventional retail stores. In: *Deciphering Organic Foods: A Comprehensive Guide to Organic Food Production, Consumption, and Promotion*. (I. Kareklas and D. D. Muehling Eds.). Nova Science Publishers. New York. pp: 105-149.
- Kihlberg, I. & Risvik, E. (2007). Consumers of organic foods – value segments and liking of bread. *Food Quality and Preference* 18:471-481.
- Kresic, G. & Sucic, M. (2010). Organic food in Croatia: Production principles and outlook, *Tourism and Hospitality Management* 16:63-74.
- Krystallis, A., Vassallo, M., Chryssohoidis, G. & Perrea, T. (2008). Societal and individualistic drivers as predictors of organic purchasing revealed through a portrait value questionnaire (PVQ)-based inventory. *Journal of Consumer Behaviour* 7:164-187.
- Lea, E. and T. Worsley. (2005). "Australians' organic food beliefs, demographics and values." *British Food Journal*, 107: 855-869.
- Lernoud, J. and H. Willer. 2017. The organic and Fairtrade market 2015. In: Willer, H. and Lernoud, J. (Eds.). *The World of Organic Agriculture Statistics and Emerging Trends*. FiBL & IFOAM – Organics International (2017): Frick and Bonn, 2017-02-20.
- Liang, R. (2016). Predicting intentions to purchase organic food: the moderating effects of organic food prices. *British Food Journal* 118:183-199.
- Lockie, S. (2006). Capturing the sustainability agenda: Organic foods and media discourses on food scares, environment, genetic engineering, and health, *Agriculture and Human Values* 23:313-23.
- Makatouni, A. (2002). "What motivates consumers to buy organic food in the UK? Results from a qualitative study." *British Food Journal*, 104(3-5): 345-52.
- Monier, S., D. Hassan, V. Nichele, and M. Simioni. 2009. Organic food consumption patterns, *Journal of Agricultural and Food Industrial Organization* 7(2):1-23.
- Oberholtzer, L., Greene, C. & Lopez, E. (2005). Price Premiums Hold on as U.S. Organic Produce Market Expands. USDA-Outlook Report from the Economic Research Service, May 2005. 22 pages.
- Onyango, B., Hallman, W. K. & Belows, A. C. Purchasing organic food in US food system: A study of attitudes and practice? *British Food Journal* 109:399-411.

- OTA. (2009). 2009 U.S. Families' Organic Attitude & Beliefs Study – Executive Summary. RMI Research and Consulting, LLC. 7 pages.
- OTA. (2010). Industry Statistics and Projected Growth. <http://www.ota.com/organic/mt/business.html>. Organic Trade Association.
- OTA. (2011). U.S. Organic Industry Overview <http://www.ota.com/pics/documents/2011OrganicIndustrySurvey.pdf>
- Ozguven, N. (2012). “Organic foods motivations factors for consumers.” *Procedia: Social and Behavioral Sciences*, 62: 661-665.
- Quah, S. & Tan, A. K. G. (2010). Consumer purchase decisions on organic food products: an ethnic analysis. *Journal of International Consumer Marketing* 22:47-58.
- Richards, M. R. and M. Sosa. (2015). Food choice in low income populations – A review. *Food Quality and Preference* 40:334-342.
- Rodiger, M. and U. Hamm. (2015). How are organic food prices affecting consumer behaviour? A review. *Food Quality and Preference* 43:10-20.
- Roitner-Schobesberger, B. R., Darnhofer, I., Somsook, S. & Vogel, C. R. (2008). Consumer perception of organic foods in Bangkok, Thailand, *Food Policy* 33:112-121.
- Sawyer, E. N., Kerr, W. A. & Hobbs, J. E. (2008). Consumer preferences and the international harmonization of organic standards. *Food Policy* 33:607-615.
- Schrock, R. (2012). The Organic Milk Market in Germany is Maturing: A Demand System Analysis of Organic and Conventional Fresh Milk Segmented by Consumer Groups. *Agribusiness: An International Journal* 28 (3) 274–292.
- Smith, S. and S. Paladino. (2010). “Eating clean and green? Investigating consumer motivations towards the purchase of organic food.” *Australian Marketing Journal*, 18(2): 93-104.
- Stevens-Garmon, J., Huang, D. L. & Lin, B. (2007). Organic demand: A profile of consumers in the fresh produce market. *CHOICES* 22(2):109-115.
- Streff, N. & Dobbs, T. (2004). ‘Organic’ and ‘Conventional’ grain and soybean prices in the Northern Great Plains and Upper Midwest: 1995 through 2003. Econ Pamphlet 2004-1. Economics Department, South Dakota State University, June 2004.
- Thøgersen, J. & Olander, F. (2006). To what degree are environmentally beneficial choices reflective of a general conservation stance? *Environment and Behavior* 38:550-569.
- Thompson, G. D. (1998). Consumer demand for organic foods: What we know and what we need to know. *American Journal of Agricultural Economics* 80:1113-18
- Tranter, R. B., Bennett, R. M., Costa, L., Cowan, C., Holt, G. C., Jones, P. J., Miele, M., Sottomayor, M., & Vestergaard, J. (2009). Consumers' willingness-to-pay for organic conversion-grade food: Evidence from five EU countries. *Food Policy* 34:287-294.
- Trauger, A. and A. Murphy. (2013). “On the moral equivalence of global commodities: Placing the production and consumption of organic bananas.” *International Journal of Society of Agriculture and Food*, 20: 197-217.
- USDA. (2016). “Organic Market Overview.” United States Department of Agriculture – Economic Research Service. Accessed June 11, 2016. <http://www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture/organic-market-overview.aspx>.

- Van Loo, Diem, E. J., Z. Pieniak, M. N. H., & Verbeke, W. (2013). Consumer attitudes, knowledge, and consumption of organic yogurt. *Journal of Dairy Science* 96:2118-2129.
- Whole Foods. (2004). Organic foods continue to grow in popularity according to Whole Foods Market Survey. [http://www.wholefoods.com/company/pr\\_10-21-04.html](http://www.wholefoods.com/company/pr_10-21-04.html).
- Wier, M.; Jensen, K. O., Anderson, L. M. & Millock, K. (2008). The character of demand in mature organic food markets: Great Britain and Denmark compared. *Food Policy* 33:406-421.
- Williams, P. R. and J. K. Hammitt. (2001). "Perceived risks of conventional and organic produce: pesticides, pathogens and natural toxins." *Risk Analysis*, 21: 319-330.
- Zanoli, R and S. Naspetti. (2002). "Consumer motivations in the purchase of organic food." *British Food Journal*, 104: 643-653.
- Zhao, X., Chambers, E., Matta, Z., Loughin, T. & Carey, E. (2007). Consumer sensory analysis of organically and conventionally grown vegetables. *Journal of Food Science* 72(Summer):87-91.

Table 1. Regression results: Perception of, purchasing decision on, and WTP premium prices for specific characteristics of organic foods

VARIABLE	MODEL 1	MODEL 2	MODEL 3
Intercept	-3.80	10.48	10.31
Health	1.08**	0.40	1.42**
Nutr	0.05	0.42	0.00
Chemf	0.11	0.21	0.95*
Tasty	0.66*	0.20	0.33
Fresh	0.13	0.08	0.05
Quality	0.22	1.23*	0.12
Nature	0.50	-0.92*	-0.28
EnvFr	0.10	0.37	-0.59
NPoll	-0.23	0.36	0.96
Industry	0.36	0.75	0.30
Human	0.23	-0.50	0.10
ShelfL	0.31	0.33	0.12
Local	0.06	-0.93*	-1.00*
Adj R-square	0.2988	0.2800	0.3181

Table 2: Addition of labeling, demographic and interaction variables on the base model

VARIABLE	MODEL 4	MODEL 5	MODEL 6	MODEL 7	MODEL 8	MODEL 9
Intercept	0.15	9.00	9.70	-1.07	-0.85	2.62
Health	0.66*	-0.012	1.07*	1.33***	1.48***	0.27
Nutri	-0.25	0.67	-0.10			
Chemf	0.24	0.21	1.04*			
Tasty	0.37	-0.57	-0.27	0.96***	0.97***	1.43***
Fresh	-0.14	-0.07	-0.20			
Quality	0.24	0.58	-0.03			
Nature	0.01	-0.81	-0.54			
EnvFr	0.26	0.80	0.17			
NPoll	-0.004	0.43	0.36			
Industry	0.11	0.39	-0.073			
Human	0.32	-0.60	0.12			
ShelfL	0.12	0.016	-0.23			
Local	0.007	-0.32	-0.46			
L-Inform	-0.44	-0.35	-0.44	-0.28		-0.13
L-Trust	0.66	0.93*	1.03**	0.66		0.54
L-Suff	0.03	0.062	0.050	0.078		0.086
L-Orig	0.23	0.11	0.092	0.19		0.31
L-Nutr	-0.48	-0.45	-0.43	-0.23		-0.32
L-LessT	-0.53*	-0.35	-0.38*	-0.54*		-0.61**
L-EasyR	0.36	0.32	0.29	0.39		0.38
Often	-0.58	0.28	0.010	0.057	0.24	-0.27
FamS	-0.51	-0.65	-0.61*	-0.22	-0.20	-0.14
U-18	0.12	0.00	0.069	0.098	0.051	0.073
Edn	-0.24	-0.24	-0.28	-0.065	0.018	-0.0696
Inc	6.9e-05	4.6e-05	1.39e-05	1.3e-05*	1.20e-05*	1.4e-05
Age	-0.005	-0.01	-0.008	-0.017	-0.019	-0.016
Eth-1	3.84	2.19	1.82**	1.19	2.27	0.02
Eth-2	2.23*	2.79*	2.92	0.56	1.14	4.478*
Eth-3	4.69	5.42	4.92	1.88	1.92	-8.843
Eth-4	-0.31	0.093	-0.53	-0.47	-1.29	1.032
Health*Inc						7.79e-06**
Tasty*Inc						-3.35e-06
Inc*Eth-1						-1.7e-04
Inc*Eth-2						-3.23e-04*
Inc*Eth-3						7.46e-04*
Inc*Eth-4						-1.19e-04
Adj R-square	0.3589	0.3462	0.3651	0.2778	0.2708	0.3014