Prapaipanich, International Journal of Applied Economics, 14(2), September 2017, 71-86

An Exploratory Study of the Relationship between Organic Products and Individuals' Subjective Well-being*

Nattaya Prapaipanich

Faculty of Economics**,** Srinakharinwirot University, Bangkok, Thailand.

Abstract: Empirical evidence of the relationship between organic products and subjective well-being (SWB) is limited and ambiguous. Nowadays, consumption patterns are becoming more in tune with nature and the public are purchasing increasing amounts of organic produce. As such, this means that they are receiving healthier, better quality, safer, cleaner, and more environmentally-friendly products. The objective of this paper is to study the linkages between organic consumption and individuals' SWB. Also, the paper aims to explore the relationship between the knowledge influencing organic consumption and SWB. Organic consumption has been the subject of little investigation and not much is known about its relationship with SWB, especially in a developing country context. Cross-sectional data were collected in May 2016 using quota sampling. Both ordinary least square and ordered logistic regression results revealed that consuming organic products was strongly and positively related with SWB. The regression results also showed that knowledge and awareness of organic products (with regard to health, the environment, taste, packaging, labelling, certification, brand, and worth) was positive and statistically significant when associated with SWB.

Keywords: Consumption; Happiness Economics; Organic Products; Subjective Well-being; Thailand

JEL Classification: D12, I31

1. Introduction

As individuals are increasingly concerned with pursuing better lifestyles, subjective well-being (SWB) was chosen as the key phrase in this study. The term "SWB" has been defined as the ability to solve problems in life and the capability to improve oneself to have good quality of life (Kahneman & Deaton, 2010). Previous research has used the SWB term interchangeably with happiness (Deleire & Kalil, 2010; Diener, 2009). Many studies on happiness economics have come to the conclusion that only income does not substantially affect individual happiness. The relationship between consumption and happiness has not been explored much, especially in Thailand, even though it is critical. Therefore, this is what this paper aims to focus on. As demand for organic products in Thailand has significantly increased, researchers have become increasingly interested in organic products and aim to examine SWB in contemporary society. The main research question raised is, "Does consumption of organic products increase an individual's SWB?" This focus is not only on the relationship between consumption of organic products and individuals' SWB, but also on the linkage between having organic knowledge and individuals' SWB. Consequently, the factors which contribute to SWB can be observed directly.

2. Literature Survey

In the field of economics of happiness, most economists have been interested in determinants of SWB, and use econometric techniques to explain and to analyse the relationship between SWB and its determinants. Some of the literature has confirmed that happiness is measurable and comparable with validity and reliability (Easterlin, 2003; Layard, 2005; Frey & Stutzer, 2007; Diener, 2009; Powdthavee, 2009).

2.1 Subjective Well-Being Overview

SWB was typically elicited through global self-reports using single-item and/or multi-item measures. For example, the World Values Survey used the following single-item question: "*Taking all things together, would you say you are very happy, rather happy, not very happy, or not at all happy*?" Nevertheless, multi-item measures were considered more reliable than single-item measures (OECD 2013). Thailand had multi-item questions to measure mental health, called the Thai Mental Health Indicators (TMHI), and a short version of it containing 15 questions (TMHI-15) was studied. This study found a strong link between mental health, and happiness and life satisfaction, by carrying out the survey on a cohort of 60,569 Thai distance-learning adults. The determinants of SWB have been well established in the literature and comprehensive reviews of related literature have been published (Frey & Stutzer, 2002; Dolan, Peasgood, & White, 2008). Dolan, Peasgood, & White (2008) grouped the factors that are associated with SWB into seven categories, namely income, personal characteristics (i.e. age, gender, ethnicity, and personality), socially-developed characteristics (i.e. education, health, type of work, and unemployment), use of time (i.e. work hours, commute, caring for others, community involvement, exercise, and religious activities), attitudes and beliefs (i.e. attitudes towards one's own circumstances, such as financial circumstances (e.g. debt), trust, political persuasion, and religion), relationships (i.e. marriage and intimate relationships, having children, and seeing family and friends), and the wider economic, social, and political environment. The authors concluded that poor health, separation, unemployment, and lack of social contact negatively affected SWB and that the evidence as regards to several variables was ambiguous. According to them, it could be concluded that this SWB research did not aim to compare an individual's SWB at absolute levels but rather genuinely aimed to look for the determinants that brought about an individual's happiness (Frey & Stutzer, 2002; Dolan, Peasgood, & White, 2008).

2.2 Subjective Well-Being and Organic Products

Consumption of goods and services appears to contribute to an individual's SWB because it indicates economic well-being and a high standard of living. Diener & Biswas-Diener (2002) suggested that the way individuals spend their income, with regard to each aspect of consumption, was just as important as total consumption expenditure. Since consumption can be divided into meaningful consumption categories, the relationships between types of consumption and SWB can be examined. Meyer & Sullivan (2003) supported the fact that the well-being of an individual could be measured directly, by examining expenditures in essential consumption categories, such as food, and individual income allocation across consumption categories. Moreover, some studies related consumption expenditures on various forms of consumption to individuals' SWB, and revealed that consumption of goods led individuals to have greater SWB only when they were satisfied with those goods (Deleire & Kalil, 2010; Blanchflower, Oswald, & Stewart-Brown, 2013). These days, consumers are putting more emphasis on fresh and high quality ingredients, good nutrition, and healthy lifestyle-driven

choices, which has led sales of organic products to continually and rapidly increase (Manarungsan, 2002; Dabbert, 2003; Liebhardt, 2003; Wood et al., 2005; Sununtapongsak, 2006). In this study, "organic products" is defined in terms of products that are free from all chemicals that spoil the environment and the human body, such as fertilizers, pesticides, and any additives used from start to end (from farm to the end user). Likewise, organically raised animals are neither given antibiotics nor growth hormones, nor are they fed animal by-products (Pieniak, Aertsens, & Verbeke, 2010; Khai 2015; Oyawole, Akerele, & Dipeolu, 2015). Interesting factors of this topic include the key purchasing motives with regard to organic products, including a higher awareness and knowledge about health and food safety; such as nutritive value (Jitsanguan, 2001; Sununtapongsak, 2006; Aryal et al., 2009; Zepeda & Deal, 2009; Sangkumchaliang & Huang, 2012); environment, in a sense that organic products are produced using methods that do not involve any high-tech or modern synthetic inputs (Sujatha, Devi & Krishnakumari, 2013; Yu et al., 2014; Posri, Shankar, & Chadbunchachai, 2015); and the fact that organically grown foods generally taste better because nourished, well-balanced soil produces healthy and solid plants (Jitsanguan, 2001; Sununtapongsak, 2006; Sangkumchaliang & Huang, 2012). Interestingly, Lynn & Liselot (2011) revealed that some individuals, who were concerned about their health and the environment, and had a positive attitude toward organic products, were prone to have high SWB. Previous studies suggested that along with several other product characteristics, the package, label, certificate, brand, and worth also play a pivotal role in knowledge enrichment, and influence the purchase of organic products (Schobesberger et al., 2008; Tranter et al., 2009; Probst et al., 2012; Somsak & Blut, 2012; Rungsrisawat, 2014). Pleasant, organic products need high-quality packaging since they have a special characteristic in that they are preservative-free. Therefore, packaging for organic products needs to include barrier properties to protect against product degradation. At the same time, packaging manufacturers who are choosing materials should try to balance the consumer's desire for earth-friendly packaging with the need for convenience. (Sangkumchaliang & Huang, 2012). For organic products that are not sensitive to light, glass is often the packaging material of choice instead of plastic. For organic beverages and wet products, another metal, or glass, is typically used for containers instead of aluminium. Some consumers chose to purchase organic products because their labels, which include descriptions and identifications, are clear and attractive (Wynen, 2003; Pattanapant & Shivakoti, 2009). The label should include all the necessary information and consumers should not be confused by the technical terms placed on the label. Since label information seemed to affect consumers' purchasing decisions, the information appearing on product package labels should be unambiguous (Baltas, 2001; Janssen & Hamm, 2012). Some consumers chose to purchase an organic food because of the brand's reputation and trust in its certification. (Wynen, 2003; Pattanapant & Shivakoti, 2009). Certification of organic products is to guarantee the organic origin based on reliable analysis, in a sense that it guarantees that the organic regulations are being followed with verification, inspection, and record keeping. To sum up, certification encouraged consumer confidence and trust. Branding is another of the important factors which respondents consider (Zepeda& Deal, 2009). Even though there is an increasing variety of organic products to choose from, the decision to purchase will most likely be based on prior experiences with a specific product. Baltas (2001) stated that consumers made their selection based on their expectations, which had been formed by considering several decision-making factors; awareness, interest, desire, and satisfaction. Many studies have suggested that "worth" was another issue that consumers were concerned with when purchasing organic products. To be precise, the safer, the kinder to the environment, and the healthier the organic product, the more it was worth purchasing compared to the conventionally grown alternatives (Manarungsan, 2002; Dabbert, 2003; Liebhardt, 2003; Wood et al., 2005; Halberg et al., 2006; Sununtapongsak, 2006).

3. Theoretical Model

Two alternative proxies for measuring SWB were used, namely the TMHI and the global well-being question (WVS). The TMHI's method of defining collective SWB was by using summated scores. Positive items were scored from 1 (not at all) to 4 (the most), whereas negative items were scored reversely. On the other hand, the WVS SWB ratings were on an ordinal scale and categories were based on ranking with respect to one another. Since there were two independent variables, two different regression methods were applied. Linear regression (OLS) was used for TMHI and ordered logistic regression was used for WVS.

Applied hierarchical regression models, which had been adopted from previous studies, were applied (Zimmermann 2014; Perez-Truglia 2013; Linssen et al. 2011; Sabatini 2011; Deleire and Kalil 2010; Powdthavee 2005). The independent variables were added to the regression values in different steps. The significance levels associated with each independent variable were then able to be observed.

First, SWB is regressed on personal factors

$$SWB_i = \boldsymbol{X}_i \beta + \varepsilon_i$$

where

i is an individual; i = (1,…,500)

SWB_i is the measured subjective well-being for the individual (i)

X_i is a set of personal factors, including gender, age, marital status, education, employment, relative income, health, and personality, and

ε_i is an error term that subsumes the inability of human beings to communicate their true well-being levels accurately.

Second, SWB is regressed on personal factors and organic consumption

$$SWB_i = \boldsymbol{X}_i \beta + ConsumeOrganic_i \alpha + v_i$$

where

$ConsumeOrganic_i$ is the organic consumption for the individual (i).

Third, SWB is regressed on personal factors and a health issue

$$SWB_i = \boldsymbol{X}_i \beta + HealthIssue_i \lambda + \phi_i$$

where

$HealthIssue_i$ is the individual's (i) level of agreement with the fact that organic products are healthier than conventionally produced alternatives.

Fourth, SWB is regressed on personal factors and an environment issue

$$SWB_i = \boldsymbol{X}_i \beta + EnvironmentIssue_i \Theta + \sigma_i$$

where

$EnvironmentIssue_i$ is the individual's (i) level of agreement with the fact that organic products are environmental friendly.

Fifth, SWB is regressed on personal factors and a taste issue

$$SWB_i = \boldsymbol{X}_i \beta + TasteIssue_i \Omega + \tau_i$$

where

$TasteIssue_i$ is the individual's (i) level of agreement with the fact that organic products taste better than conventionally produced alternatives.

Sixth, SWB is regressed on personal factors and a package issue

$$SWB_i = \boldsymbol{X}_i \beta + PackageIssue_i \mathrm{t} + q_i$$

where

PackageIssue$_i$ is the individual's (i) level of agreement with the fact that organic products are in high quality packaging.

Seventh, SWB is regressed on personal factors and a label issue

$$SWB_i = \boldsymbol{X}_i \beta + LabelIssue_i + r_i$$

where

LabelIssue$_i$ is the individual's (i) level of agreement with the fact that organic products are attractive because of their label.

Eighth, SWB is regressed on personal factors and a certificate issue

$$SWB_i = \boldsymbol{X}_i \beta + CertificateIssue_i + s_i$$

where

CertificateIssue$_i$ is the individual's (i) level of agreement with the fact that organic products are purchased because of certification.

Ninth, SWB is regressed on personal factors and a brand issue

$$SWB_i = \boldsymbol{X}_i \beta + BrandIssue_i + t_i$$

where

BrandIssue$_i$ is the individual's (i) level of agreement with the fact that organic products are purchased because of their brand name.

Tenth, SWB is regressed on personal factors and an issue of worth.

$$SWB_i = \boldsymbol{X}_i \beta + WorthIssue_i + u_i$$

where

WorthIssue$_i$ is the individual's (i) level of agreement with the fact that consuming organic products is worth it.

Since the structure of the SWB model is a qualitative dependent-variable model in the form of ordered responses, an ordered probit or an ordered logit is an appropriate choice of tool for estimating such ordered categorical data in a single-item survey such as WVS. The ordered logit is similar to the ordered probit approach. However, the ordered logit assumes a slightly different (fatter-tailed) distribution of the latent SWB in the population. In accordance with the literature, the ordered probit model is used for estimating an individual's SWB. For example, Winkelmann (2005) uses an ordered probit model to estimate the intra-family correlation of happiness. Tsou and Liu (2001) also apply an ordered probit model to identify the happiness determinants in Taiwan. It can be stated that an ordered probit model is commonly used in many studies worldwide, such as Powdthavee (2005); Luttmer (2005); Dorn, Fischer, Kirchgassner, and Sousa-Poza (2007); Pholphirul and Rukumnuaykit (2008).

The ordered choice model is given by

$$Pr(SWB_i \leq y \mid Z_i ; \phi) = \Psi(-Z_i'\phi) \qquad y = 1,\ldots,J\text{-}1$$

where

Pr(SWB$_i$*)* is the probability of SWB taking on a certain value, conditional on the independent variables, Z_i.

ϕ is the corresponding coefficients vector.

Ψ is the cumulative density of the standard normal distribution.

J is the number of outcomes that the dependent variable (SWB) can take on.

The ordered probit coefficients can only be used to interpret the sign and the significance. The magnitude of the coefficient (ϕ) does not reveal the effect of the independent variables Z_i. Nevertheless, the marginal effect (ME) can be computed. MEs are the partial effects of each explanatory variable on the probability of the observed dependent variable (Sabatini 2011).
The assumption of proportional odds was tested and the Brant test results showed that the assumption was violated. Therefore, as with alternative dependent variables, TMHI scores in the study were rearranged into 3 groups according to Mongkol et al. (2009), which were 3 = better than average mental health, 2 = average mental health, and 1 = below average mental health. A high score (51-60) means less mental distress and better mental health. A score of 44-50 means normal mental health. A low score (below ≤ 43) means more mental distress and worse mental health (Mongkol et al., 2004). The assumption of proportional odds was tested once again and the Brant test results showed that the assumption was not violated.

4. Data Sources and Empirical Results

The linkages among SWB and organic products consumption were analyzed, using individual-level data. The survey used a self-administered questionnaire.

4.1 Data Sources

This study used cross-sectional data from a survey in Bangkok. The survey was carried out in May 2016 by quota sampling, and used a self-administered questionnaire. The questionnaire had three parts, which were (1) socio-demographic and socio-economic characteristics, (2) SWB, for which two alternative proxies were used, (i) the World Values Survey (WVS) single-item question and (ii) a short version of the Thai Mental Health Indicators survey with 15 questions (TMHI-15), and (3) awareness and knowledge of organic products. The participants were Thai individuals who had physically resided in Bangkok for at least six consecutive months. Yamane's simplified formula determined the sample size as 400 individuals (Yamane, 1967). A pilot survey conducted in April 2016, inter alia, revealed that survey respondents in urban areas were difficult to approach and easily distracted from answering questions. Therefore, 25 percent of the sample size were added for inconsistent responses. A quota sampling was employed in five main areas of Bangkok. Respondents were surveyed at supermarkets in a number of large shopping malls; Siam Paragon (Central Bangkok), Central Ladprao (North Bangkok), Central Praram II (South Bangkok), Central Plaza Bangna (East Bangkok), and The Mall Bangkae (West Bangkok). The questionnaires were continuously distributed until 100 questionnaires had been completed at each place. A total of 713 individuals were approached, but 213 questionnaires were discarded because they were incomplete. Respondents typically took approximately 10 to 15 minutes to complete the questionnaire. In addition, the respondents had their blood pressure taken and they were asked about activities that they had performed (i.e. exercise and consumption of nicotine, alcohol, or caffeine) in the 30 minutes prior to the blood pressure measurement.

A total of 500 completed questionnaires were collected in May 2016. Three outliers were detected and replaced by other observations. The survey showed that 19.2 percent of respondents had better than average mental health, 59.6 percent had average mental health, and 21.2 percent had below average mental health, indicating that the sample respondents' mental health was quite in line with the latest mental health data published by the National Statistical Office of Thailand (2012) for the year 2011, according to which, 29 percent had above average

mental health, 50 percent had average mental health, and 21 percent of people in the Bangkok Metropolis had below average mental health. The summary statistics also revealed that the number of males was less than the number of females. Male and female respondents accounted for 46.4 percent and 53.6 percent, respectively. The average age of respondents was approximately 42 years (SD = 12.96). The minimum age of the respondents was 17 years, and the maximum was 74 years. More than half of the respondents were married (57.8 percent). 66.6 percent of respondents had a bachelor's degree or higher. The majority of the respondents (95.8 percent) were either in work (full-time and part-time employment) or studying. The survey also showed that 35.8 percent of respondents had an average monthly personal income which exceeded THB 60,000 (high-income status), while 2.6 percent of respondents had an average monthly personal income of less than THB 15,000 (low-income status). With regard to health, the data revealed that 86 respondents (17.2 percent) had chronic disease, 52 respondents (10.4 percent) had high blood pressure, and 26 (5.2 percent) respondents had low blood pressure. This showed that most of the respondents were healthy. About one third of the respondents (35.8 percent) had an agreeable personality. Respondents were asked if they consumed organic products and the results showed that nearly half the respondents (46.4 percent) consumed them. Furthermore, the respondents realized that organic products were healthier (12.6 percent), more environmentally friendly (13.2 percent), more nutritious (9 percent), better tasting (7.6 percent), and had higher quality packaging (5.6 percent) than conventionally produced alternatives. Some respondents totally agreed that organic products were attractive because of their label (6.2 percent), certification (7.8 percent), brand name (5.4 percent), and worth (5.8 percent).

The results from estimating ordinary least square regressions are shown in table 2. First, a base model was estimated, in which TMHI was regressed on standard controls only (model 1). Second, organic products consumption was included as an additional independent variable (model 2). This dummy variable took a value of 1 if respondents purchased any organic products, or 0 otherwise. In addition, awareness and knowledge which influenced the purchases of organic products was studied. This included awareness and knowledge of health benefits (model 3), the environment (model 4), taste (model 5), packaging (model 6), labels (model 7), certificates (model 8), brands (model 9), and worth (model 10). Each issue was added to models 3 to 10 respectively. The dummy variable took a value of 1 if respondents totally agreed that they purchased any organic products because of this issue, and 0 otherwise.

4.2 Empirical Results: Base Model

The results in tables 2 and 3 showed that females were associated with positive SWB and the coefficient was statistically significant in both OLS and ordered logistic regression. This finding was in line with other studies which found that women were happier than men (Alesina, Di Tella, & MacCulloch, 2004; Blanchflower & Oswald, 2004a). However, the findings in the literature were still inconsistent (Frey & Stutzer, 2002). Yiengprugsawan, Somboonsook, Seubsman, & Sleigh (2012) reported slightly lower average TMHI-15 scores for females, which was confirmed by the National Statistical Office of Thailand (2012) 2011 data. The relationship between age and SWB was negative and statistically significant, which was in line with Helliwell (2003). In general, the empirical evidence in the literature with respect to age was rather ambiguous, although there was some support for a U-shaped relationship between age and happiness (Blanchflower & Oswald, 2004a). The fact that individuals became happier as they got older might have been because older people adapt to changing circumstances more easily (Frey & Stutzer, 2002). Being married decreased the coefficient of the model. The result was statistically significant in the OLS regression, whereas it was statistically insignificant in

ordered logistic regression. Education was positively related to SWB and statistically significant, although the coefficient was only significant in the OLS regression. This may be due to the fact that individuals educated to a higher level might be more able to deal with life's challenges. Furthermore, the positive relationship between education and SWB was in accordance with the findings in, for example, Blanchflower & Oswald (2004a) and Ferrer-i-Carbonell & Gowdy (2007). The results showed a clear relationship between employment status and SWB, the coefficient of the employment variable was positively and statistically significant. Several studies have found that relative income strongly affects SWB due to the effects of social comparison (Luttmer, 2005; Ferrer-i-Carbonell & Gowdy, 2007; Ball & Chernova, 2008; Oshio, Nozaki, & Kobayashi, 2011). Respondents with an average monthly personal income of below THB 15,000, which was well below the average monthly household income in the Bangkok Metropolis (THB 41,002), reduced the SWB with statistical significance. On the other hand, the results indicated a strong and statistically-significant relationship between an average monthly personal income of above THB 60,000, which was well above the average monthly household income in the Bangkok Metropolis, and SWB. These results were confirmed if relative income was proxied using an average monthly household income below THB 15,000 or above THB 60,000, instead of average monthly personal income. As seen in Dolan, Peasgood, & White (2008), there was consistent evidence of a strong and positive relationship between health and SWB, which was confirmed by the results in table 2. Respondents with no chronic disease had higher SWB. Another variable that has performed robustly in the literature is personality. This finding was particularly interesting in the context of the Asian preference for non-confrontation and conformity, which can lead to an agreeable personality. Individuals who had this personality were kind, sympathetic, cooperative, and warm. Therefore, these individuals tended to get along well with others and had many friends, which was confirmed by a strong and positive result between a self-reported agreeable personality and SWB.

4.3 Empirical Results: Organic Issues

The results of the regressions, which included consumption of organic products and knowledge of organic products in addition to standard controls as explanatory variables, are also shown in tables 2 and 3. As expected, consumption of organic products increased SWB in a statistically significant way. The positive effects of consuming organic products on SWB might result from the respondents' good perspectives toward their lives and society. In effect, the decision to purchase organic products is a decision to put the health of oneself and the planet first, in a sense that health- and environment-conscious individuals care about the desired state of well-being. Specifically, the respondents might be concerned about their health and environment issues, which leads them to have a good life. Therefore, the reason behind the purchases of organic products were studied and the results from both the OLS and ordered logistic regression confirm a strong and statistically significant relationship between health and environment issues, and SWB. The results were in line with the studies of Sagiv & Schwartz (2000) and Lynn & Liselot (2011), which supported the fact that the pursuit of healthy values leads to perceptions, attitudes or behaviours that, in turn, increase individuals' well-being. Similarly, several studies in Thailand suggested that Thai people are increasingly consuming organic food because they have started to believe that nowadays, non-organic food is contaminated with chemicals, degrades the environment, and increases health risks (Jitsanguan, 2001; Sununtapongsak, 2006; Sangkumchaliang & Huang, 2012). The results showed that respondents who totally agreed that organically grown products taste better than alternative products had positive and statistically significant correlation with SWB. Respondents who purchased organic products because they believed in the high-quality packaging for these

preservative-free items showed increased SWB in a statistically significant way. The organic products' labels (especially for food, where they show the ingredient lists and the nutritional information) led to an expectation of more nutrition in organic foods than in their conventionally grown counterparts (Baltas, 2001). Those reasons might support the clear relationship between labels and SWB, where the coefficient of the variable was positively and statistically significant in both OLS and ordered logistic regression. Each and every time respondents purchased an organic product from supermarket or elsewhere, the certificate could have made them certain that the products had been produced according to strict rules aimed at respecting the environment and animal welfare. Organic certification might describe strict limitations on the use of chemical pesticides and fertilizers so that organic products are kinder to the environment. This certificate issue increased the coefficient of SWB and the result was statistically significant. The reason might be because respondents had a higher SWB as they were concerned about the environment or other things more than themselves. Some respondents decided to purchase an organic product because of the trust in its brand and their good experiences with a specific product. This trust and belief has created brand loyalty. Having bonds of trust might lead respondents to gain higher SWB and the regression results supported the positive influence that brand loyalty seemed to hold. Some respondents felt that purchasing organic products was something worth doing. The rationale behind selecting an organic product seemed to be comprised of three frequently cited reasons, which were that organic products are safer, more environmentally friendly, and healthier than conventionally produced alternatives. The result confirmed that the perceived worth of purchasing organic products increased SWB in a statistically significant way, in both OLS and ordered logistic regression. The results of the control variables were in line with those obtained from estimating the base model.

5. Conclusion

Empirical evidence of the relationship between organic products and SWB is limited and ambiguous. The objective of this paper is to examine the relationship between the purchase of organic products and SWB**.** Using a quota sampling design, 500 questionnaires were collected in May 2016, in Bangkok. The cross-sectional data were analysed using standard descriptive statistics, and estimations of ordinary least square and ordered logistic regressions. The key finding was that consuming organic products increased individuals' SWB. Among the control variables, it was noteworthy that elderly respondents had low SWB. Female respondents and respondents with a higher level of education, better employment, a relatively high personal monthly income, and no chronic disease exhibited high SWB. Respondents whose personality could best be characterized as "agreeable", also had higher SWB because this personality trait might make them get along well with others and have many friends. The respondents who had knowledge regarding the benefits of organic products showed positive and statistically significant SWB for all the hypothesized issues (i.e. health, environment, taste, package, label, certificate, brand, and worth). As this study used a cross-sectional dataset, causality could not be established. Nevertheless, the results presented in this study were promising and a useful first step in understanding the relationship between organic products and SWB. Government policy should be to impart knowledge of organic products and make consumers aware of their benefits. For example, it could be shown that organics don't have residues, since the production methods don't allow them; they offer additional health benefits; they lessen the environmental impact; and they benefit small or local farmers. Furthermore, to be able to convince potential consumers, it may be necessary to clearly state the position that organic products are distinct from others (Pattanapant & Shivakoti, 2009; Sangkumchaliang & Huang, 2012). These approaches could help the private sector to increase their market share of organic products,

such as by increasing the purchasing frequency among organic consumers and encouraging the non-purchasers of organics to try organic products (Sangkumchaliang & Huang, 2012). It may be interesting to see in future surveys if the findings would hold for a sample of respondents from the rural areas, where higher poverty rates have prevailed. These issues are left for future research.

Acknowledgements

I would like to acknowledge financial support from Faculty of Economics, Srinakharinwirot University for collecting the data.

References

Alesina, A., R. D. Tellab, and R. MacCulloch. 2004. "Inequality and happiness: are Europeans and Americans different?," *Journal of Public Economics*, 88(9), 2009-2042.

Aryal, K. P., P. Chaudhary, S. Pandit, and G. Sharma. 2009. "Consumers' Willingness to Pay Organic Products: A Case from Kathmandu Valley," *The Journal of Agriculture and Environment*, 10, 15-26.

Basarir, A. and M. S. Gheblawi. 2012. " Analyzing demand and consumers' willingness to pay for organic fruits and vegetables," *Journal of Food, Agriculture & Environment*, 10(3&4), 86-91.

Baltas, G. 2001. "Nutrition labeling: issues and policies," *European Journal of Marketing*, 35 (5), 708-721.

Bhatta, G. D., W. Doppler, and K. Bahadur. 2009. "Consumers' willingness and preference towards organic vegetables: A conjoint approach," *Paper presented at the Conference on International Research on Food Security, Natural Resource Management and Rural Development*. Hamburg, Germany.

Blanchflower, D. G. and A. J. Oswald. 2004." Money, sex and happiness: An empirical study," *The Scandinavian Journal of Economics*, 106(3), 393-415.

Blanchflower, D. G., A. J. Oswald, and S. S.-Brown. 2013. "Is psychological well-being linked to the consumption of fruit and vegetables?," *Social indicators research*, 114(3), 785-801.

Dabbert, S. 2003. "Organic agriculture and sustainability: environmental aspects, In Kristiansen, P., A. Taji, and J. Reganold. (Eds.)," *Organic Agriculture: Sustainability, Markets and Policies*, 51-64. Wellingford: CABI Publishing.

DeLeire, T. and A. Kalil. 2010. "Does consumption buy happiness? Evidence from the United States," *International Review of Economics*, 57(2), 163-176.

Diener, E. 2009. "The science of well-being: The collected works of Ed Diener," *Champaign: Springer Science & Business Media.*

Diener, E. and R. B.-Diener. 2002. "Will money increase subjective well-being?," *Social indicators research*, 57(2), 119-169.

Dolan, P., T. Peasgood, and M. White. 2008. "Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being," *Journal of Economic Psychology*, 29(1), 94-122.

Easterlin, R. A. 2003. "Explaining happiness," *Proceedings of the National Academy of Sciences*, 100(19), 11176-11183.

F**errer-i-Carbonell, A. and J. M. Gowdy.** 2007. "Environmental degradation and happiness," *Ecological Economics*, 60(3), 509-516.

Frey, B. S. and A. Stutzer. 2002. *Happiness and economics: How the economy and institutions affect human well-being*.: Princeton University Press.

Frey, B. S. and A. Stutzer. 2007. *Economics and psychology: a promising new cross-disciplinary field*.: MIT Press.

Halberg, N., T. B. Sulser., H. H. Jensen., M. W. Rosegrant, and M. T. Knudsen. 2006." The impact of organic farming on food security in a regional and global perspective," In N. Halberg et al. (Eds.), *Global Development of Organic Agriculture: Challenges and Prospects*, 277-322. Oxfordshire: CABI publishing.

Helliwell, J. F. 2003. "How's life? Combining individual and national variables to explain subjective well-being," *Economic Modelling*, 20(2), 331-360.

Janssen, M. and U. Hamm. 2012. "Product labelling in the market for organic food: Consumer preferences and willingness-to-pay for different organic certification logos," *Food Quality and Preference*, 25, 9-22.

Jitsanguan, T. 2001. "Development of Sustainable Agriculture," *Paper presented at the Policy Meeting of Ministry of Agricultural and Cooperatives*, Office of Agricultural Economics, Bangkok.

Kahneman, D. and A. Deaton. 2010. "High income improves evaluation of life but not emotional well-being," *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 16489–16493. Washington DC: National Academy of Sciences of the United States of America.

Khai, H. V. 2015. "Assessing Consumer Preferences for Organic Vegetables: A Case Study in the Mekong Delta, Vietnam," *Information Management and Business Review*, 7(1), 41-47.

Layard, R. 2005. "Happiness: lessons form a New Science," London: Allen Lane.

Liebhardt, W. 2003. "What is organic agriculture? What I learned from my transition," In Kristiansen, P., A. Taji, and J. Reganold. (Eds.), *Organic Agriculture: Sustainability, Markets and Policies* (pp. 31-45). Wellingford: CABI Publishing.

Lynn, D. V. and H. Liselot. 2011. "How 'Green' Buying Affects How We Feel: A Study on the Impact of Green Purchases on An Individual's Subjective Well-being," Belgium: Ghent University.

Manarungsan, S. 2002. "Development of the agricultural sector and its impacts on Thai farmers: World War II – 1993," *Asia-Pacific Development Journal*, 16(1), 118-148.

Meyer, B. D. and J. X. Sullivan. 2003. "Measuring the well-being of the poor using income and consumption," *National Bureau of Economic Research*.

Mongkol, A., Y. Vongpiromsan., T. Tangseree., W. Huttapanom., P. Romsai, and W. Chutha. 2009. "The development and testing of Thai mental health indicator version 2007," *Journal of the Psychiatric Association of Thailand*, 54(3), 299-316.

OECD. 2013. "Methodological considerations in the measurement of subjective well-being," Retrieved June 10, 2016, from OECD Guidelines on Measuring Subjective Well-being : http://www.oecd-ilibrary.org/economics/oecd-guidelines-on-measuring-subjective-well-being_9789264191655-en

Oyawole, F. P., D. Akerele, and A. O. Dipeolu. 2015. "Factors Influencing Willingness to Pay For Organic Vegetables Among Civil Servants in a Developing Country," *International Journal of Vegetable Science.*

Pattanapant, A. and G. P. Shivakoti. 2009. "Opportunities and constraints of organic Agriculture in chiang mai province, Thailand," *Asia-Pacific Development Journal*, 16(1), 115-147.

Pieniak, Z., J. Aertsens, and W. Verbeke. 2010. "Subjective and objective knowledge as determinants of organic vegetables consumption," *Food Quality and Preference*, 21, 581-588.

Posri, W., B. Shankar, and S. Chadbunchachai. 2015. "Consumer Attitudes Towards and Willingness to Pay for Pesticide Residue Limit Compliant "Safe" Vegetables in Northeast Thailand," *Journal of International Food & Agribusiness Marketing,* 19(1), 81-101.

Powdthavee, N. 2009. "How important is rank to individual perception of economic standing? A within-community analysis," *The Journal of Economic Inequality*, 7(3), 225-248.

Probst, L., E. Houedjofonon., H. M. Ayerakwa, and R. Haas. 2012. "Will they buy it? The potential for marketing organic vegetables in the food vending sector to strengthen vegetable safety: A choice experiment study in three West African cities," *Food Policy,* 37, 296-308.

Rungsrisawat, S. 2014. "An Evaluation of Buying Behaviors and Perceptions of Organic Vegetable Consumers in Chiang Mai Province," *International Journal of Social, Education, Economics and Management Engineering,* 8(9), 3013-3017.

Sagiv, L. and S. H. Schwartz. 2000. "Value priorities and subjective well-being: Direct relations and congruity effects," *European Journal of Social Psychology*, 30, 177–198.

Sangkumchaliang, P. and W. C. Huang. 2012. "Consumers' Perceptions and Attitudes of Organic Food Products in Northern Thailand," *International Food and Agribusiness Management Review*, 15(1).

Schobesberger, B. R., I. Darnhofer., S. Somsook, and C. R. Vogl. 2008. "Consumer perceptions of organic foods in Bangkok, Thailand," **Food Policy**, 33, 112-121.

Somsak, P. and M. Blut. 2012. "An Evaluation of Buying Behaviors and Perception of Organic Vegetable Consumer in Chiang Mai Province," The Asian Business and Management Conference 2012. Osaka, Japan.

Sununtapongsak, W. 2006. "Organic agriculture in Thailand, Bangkok: Thai Ministry of National Development," Retrieved July 29, 2016 from http://www.ldd.go.th/pldweb /tech/meet7/book1/ f7.doc.

Sujatha, S., N. Y. Devi, and R. Krishnakumari. 2013. "Consumers' willingness towards expending premium price for organic food products in Coimbatore district," *Indian Journal of Applied Research*, 3(12), 327-329.

Tranter, R. B., R. M. Bennett., L. Costa., C. Cowan., G. C. Holt., P. J. Jones, and J. Vestergaard. 2009. "Consumers' willingness-to-pay for organic conversion-grade food: Evidence from five EU countries," *Food Policy*, 34, 287-294.

Wood, R., M. Lenzen., C. Dey, and S. Lundie. 2005. "A comparative study of some environmental impacts of conventional and organic farming in Australia," *Agricultural Systems*, 89(2-3), 324-348.

Wynen, E. 2003. What are the key issues faced by organic producers?," In Kristiansen, P., A. Taji, and J. Reganold. (Eds.), *Organic Agriculture: Sustainability, Markets and Policies* ,207-220.Wellingford: CABI Publishing.

Yamane , T. 1967. *Statistics: an introductory analysis (2nd ed.).* New York: Harper and Row.

Yu, X., Z. Gao, and Y. Zeng. 2014. "Willingness to pay for the ‘‘Green Food’’ in China," *Food Policy*, 45, 80-87.

Zepeda, L. and D. Deal. 2009. "Organic and local food consumer behaviour: Alphabet Theory," *International Journal of Consumer Studies*, 33, 697-705.

Prapaipanich, International Journal of Applied Economics, 14(2), September 2017, 71-86

Appendix A.

A summary of variables included in the study is presented in Table1. Sample weights were constructed and used to account for unequal probabilities of selection.

Table 1 Variables included in the study

Dependent Variables	Description
TMHI-15	Summated scores, the higher scores the higher SWB.
TMHI-15 (group)	Ordinal rating scales, 3 = better than average mental health, 2 = average mental health, 1 = below average mental health
Independent Variables	**Description**
Female	1 = female, 0 = male
Age	Years
Married	1 = married, 0 = otherwise
Education	1 = bachelor or master or higher than master, 0 =otherwise
Employment	1 = full-time employment, student, part-time employment, 0 = otherwise
Low Income	1 = average monthly own income is less than THB 15,000, 0 = otherwise
High Income	1 = average monthly own income exceeds THB 60,000, 0 = otherwise
Health	1 = no chronic disease, 0 = have chronic disease
Personality	1 = self-reported agreeableness personality, 0 = other self-reported personality
Consume Organic	1 = the respondent consumed any organic product, 0 = otherwise
Health Issue	1 = the totally agreed opinion that organic products are healthier than conventionally produced alternatives, 0 = otherwise
Environ. Issue	1 = the totally agreed opinion that organic products are environmental friendly, 0 = otherwise
Taste Issue	1 = the totally agreed opinion that organic products are more tasty than conventionally produced alternatives, 0 = otherwise
Package Issue	1 = the totally agreed opinion that organic products are in high quality packaging , 0 = otherwise
Label Issue	1 = the totally agreed opinion that organic products are attractive because of their label , 0 = otherwise
Certificate Issue	1 = the totally agreed opinion that organic products are purchased because of certification, 0 = otherwise
Brand Issue	1 = the totally agreed opinion that organic products are purchased because of its brand name , 0 = otherwise
Worth Issue	1 = the totally agreed opinion that consuming organic products are worth , 0 = otherwise

Table 2 Ordinary least square regression results

VARIABLES	model 1	model 2	model 3	model 4	model 5	model 6	model 7	model 8	model 9	model 10
Female	2.072***	2.032***	1.861***	1.936***	1.915***	2.050***	2.102***	2.191***	1.982***	2.117***
	(0.514)	(0.465)	(0.505)	(0.507)	(0.515)	(0.509)	(0.500)	(0.497)	(0.506)	(0.506)
Age	-0.0737***	-0.0637***	-0.0629**	-0.0676***	-0.0756***	-0.0662***	-0.0629**	-0.0583**	-0.0669***	-0.0750***
	(0.0256)	(0.0231)	(0.0252)	(0.0252)	(0.0255)	(0.0255)	(0.0250)	(0.0249)	(0.0252)	(0.0252)
Married	-1.830***	-1.798***	-1.666***	-1.653***	-1.801***	-1.682***	-1.534**	-1.619***	-1.759***	-1.662***
	(0.636)	(0.574)	(0.623)	(0.626)	(0.632)	(0.631)	(0.621)	(0.615)	(0.625)	(0.626)
Education	1.197**	1.197**	1.184**	1.119**	1.111*	1.293**	1.357**	1.299**	1.239**	1.011*
	(0.572)	(0.516)	(0.560)	(0.562)	(0.569)	(0.567)	(0.557)	(0.553)	(0.562)	(0.564)
Employment	2.622**	2.673***	2.332**	2.787**	2.638**	2.772**	2.540**	2.710**	2.388**	2.579**
	(1.100)	(0.994)	(1.079)	(1.083)	(1.094)	(1.090)	(1.071)	(1.064)	(1.083)	(1.082)
Low Income	-2.707*	-1.898	-2.055	-2.415	-2.507	-2.540*	-2.430	-2.337	-2.653*	-2.458
	(1.555)	(1.407)	(1.528)	(1.530)	(1.547)	(1.540)	(1.514)	(1.504)	(1.528)	(1.529)
High Income	1.595***	1.254**	1.524***	1.485***	1.682***	1.650***	1.689***	1.676***	1.649***	1.678***
	(0.550)	(0.498)	(0.539)	(0.542)	(0.548)	(0.545)	(0.535)	(0.532)	(0.541)	(0.541)
Health	4.730***	3.742***	5.141***	4.815***	4.740***	4.667***	4.780***	4.814***	4.841***	4.747***
	(0.647)	(0.592)	(0.639)	(0.637)	(0.643)	(0.641)	(0.630)	(0.626)	(0.637)	(0.636)
Agreeableness	0.998**	0.834*	0.879*	0.805	0.904*	0.950*	1.076**	0.968**	0.956*	0.943*
	(0.506)	(0.457)	(0.496)	(0.499)	(0.504)	(0.501)	(0.492)	(0.489)	(0.497)	(0.497)
Consume Organic		4.645***								
		(0.440)								
Health Issue			3.462***							
			(0.730)							
Environ. Issue				2.989***						
				(0.709)						
Taste Issue					2.391***					
					(0.906)					
Package Issue						3.446***				
						(1.048)				
Label Issue							5.250***			
							(0.980)			
Certificate Issue								5.207***		
								(0.874)		
Brand Issue									4.468***	
									(1.048)	
Worth Issue										4.315***
										(1.008)
Constant	40.11***	38.47***	39.24***	39.36***	40.10***	39.37***	39.01***	38.63***	39.69***	39.93***
	(1.639)	(1.489)	(1.615)	(1.621)	(1.629)	(1.638)	(1.608)	(1.603)	(1.614)	(1.611)
Observations	500	500	500	500	500	500	500	500	500	500
R-squared	0.302	0.432	0.333	0.327	0.312	0.317	0.341	0.349	0.327	0.327

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3 Ordered logit regression results

VARIABLES	model 1 mfx	model 2 mfx	model 3 mfx	model 4 mfx	model 5 mfx	model 6 mfx	model 7 mfx	model 8 mfx	model 9 mfx	model 10 mfx
Female	0.0596**	0.0492**	0.0511**	0.0547**	0.0541**	0.0583**	0.0578**	0.0625**	0.0551**	0.0596**
	(0.0259)	(0.0211)	(0.0261)	(0.0260)	(0.0263)	(0.0260)	(0.0257)	(0.0257)	(0.0260)	(0.0259)
Age	-0.00356***	-0.00254**	-0.00321**	-0.00328**	-0.00362***	-0.00325**	-0.00313**	-0.00286**	-0.00335**	-0.00356***
	(0.00135)	(0.00108)	(0.00135)	(0.00135)	(0.00137)	(0.00136)	(0.00133)	(0.00133)	(0.00135)	(0.00135)
Married	-0.0399	-0.0394	-0.0390	-0.0394	-0.0448	-0.0396	-0.0339	-0.0374	-0.0413	-0.0399
	(0.0338)	(0.0277)	(0.0340)	(0.0339)	(0.0342)	(0.0340)	(0.0334)	(0.0335)	(0.0340)	(0.0338)
Education	0.0174	0.0194	0.0233	0.0222	0.0207	0.0262	0.0296	0.0298	0.0255	0.0174
	(0.0282)	(0.0223)	(0.0280)	(0.0281)	(0.0284)	(0.0279)	(0.0273)	(0.0273)	(0.0279)	(0.0282)
Employment	0.0818**	0.0748***	0.0765**	0.0875***	0.0846**	0.0873***	0.0812**	0.0867***	0.0772**	0.0818**
	(0.0337)	(0.0234)	(0.0355)	(0.0323)	(0.0338)	(0.0325)	(0.0331)	(0.0315)	(0.0353)	(0.0337)
Low Income	-0.109***	-0.0790***	-0.104***	-0.109***	-0.111***	-0.111***	-0.108***	-0.106***	-0.113***	-0.109***
	(0.0311)	(0.0267)	(0.0335)	(0.0314)	(0.0312)	(0.0308)	(0.0301)	(0.0310)	(0.0295)	(0.0311)
High Income	0.101***	0.0703***	0.0930***	0.0919***	0.0997***	0.1000***	0.102***	0.0996***	0.0990***	0.101***
	(0.0328)	(0.0267)	(0.0326)	(0.0324)	(0.0329)	(0.0328)	(0.0326)	(0.0325)	(0.0328)	(0.0328)
Health	0.138***	0.0908***	0.147***	0.140***	0.140***	0.137***	0.137***	0.138***	0.140***	0.138***
	(0.0200)	(0.0180)	(0.0200)	(0.0200)	(0.0202)	(0.0201)	(0.0198)	(0.0198)	(0.0200)	(0.0200)
Agreeableness	0.0495*	0.0396*	0.0473*	0.0438	0.0476*	0.0491*	0.0530*	0.0509*	0.0499*	0.0495*
	(0.0275)	(0.0226)	(0.0276)	(0.0274)	(0.0277)	(0.0276)	(0.0275)	(0.0274)	(0.0276)	(0.0275)
Consume Organic		0.220***								
		(0.0277)								
Health Issue			0.174***							
			(0.0604)							
Environ. Issue				0.127**						
				(0.0522)						
Taste Issue					0.102					
					(0.0668)					
Package Issue						0.166*				
						(0.0865)				
Label Issue							0.317***			
							(0.0947)			
Certificate Issue								0.311***		
								(0.0860)		
Brand Issue									0.243**	
									(0.0987)	
Worth Issue										0.208**
										(0.0884)
Observations	500	500	500	500	500	500	500	500	500	500

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1