

# Measuring the Moderating Effect of Gender on Organic Food Purchase Intentions in China based on Theory of Planned Behavior

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## Abstract

The study is to identify the factors influencing Chinese consumers' intentions to purchase organic food based on Theory of Planned Behavior (TPB) model. This research concentrates on the moderating effect of gender during the process. An offline investigation was used for the research purpose. Data for the study was gathered from February to March 2018. The total of 260 valid responses was used for this analysis. An online questionnaire was distributed through Email to Chinese consumers living in major cities of China and abroad to collect the data. Multi group analysis and model comparison were conducted to examine the moderating effect of gender. Our results support previous researches suggesting that gender moderates the relationship between attitude and behavioral intention. However, surprisingly, no significant moderating effect of gender on the relationship between subjective norms and behavioral intention was found. This paper revisited TPB antecedents and the moderating effect of gender focusing on Chinese organic food markets. The findings provide essential managerial implications to the marketers in this industry. Further research could examine whether TPB model can be applied to other potential purchasing groups.

**Keywords:** Organic Food, China, Theory of Planned Behavior, Moderator, Moderating Effect.

## 1. Introduction

Organic market is growing considerably in recent years due to the rapid economic growth. Although organic market and production in China is largely export-oriented, domestic demand has increased significantly in the past decade, which brought about a growing industry. This huge potentiality makes China the fourth place in world ranking of organic market.

Organic food known as natural, free from contamination, and carrying no additional risk of food poisoning, have captured increased attention in China. Organic fruits and vegetables were chosen as topic of the questionnaire survey due to the investigation we conducted among 260 Chinese consumers in Organic Food Zone of a supermarket in Jinan, the capital city of Shandong province in China. These respondents were relatively familiar with organic food and had previous experience of purchasing organic food. 39% of the respondents chose organic vegetables as the category they intended to purchase the most, followed by organic fruits, which accounted for 17% of the responses.

The purpose of this research is to investigate purchase intentions toward organic food in China, with a focus on the moderating effect of gender, based on a general theoretical framework - the theory of planned behavior (TPB). This article provides novel insights by examining the moderating effect of gender between three TPB antecedents and purchase intentions of organic food. In line with previous research, we demonstrate that gender moderates the relationship between attitude and behavioral intention.

This research is structured as follows: first, prior research related to TPB model and its antecedents are briefly reviewed, followed by the hypotheses of this research. After collecting data, we subsequently test our hypotheses using structural equation model (SEM) method. In the last part, conclusion and limitations are presented to end this research.

## 2. Literature Review

The theory of planned behavior (TPB) developed from Theory of Reasoned Action (TRA), is a prevalent theory that explains the motivational influences on individual behavior. This approach has been widely used to predict the behavioral intentions and actual behavior of a person (Ajzen & Fishbein, 1980; Madden et al., 1992). Both of TPB and TRA assume the causal relationships in which two antecedents- attitude toward the behavior and subjective norms affect behavioral intentions. The difference between the two models is that TPB further expands TRA by considering the independent factor of Perceived Behavioral Control, in addition to individual attitude toward particular behavior and the subjective norms of social pressure with regard to that behavior (Ajzen & Fishbein, 1980). TPB has been widely applied in the research area of consumer behavior.

TPB was found to be a prevailing model by many researches in a variety of settings including food-related behavior (Sparks et al., 1995). According to Casper (2007), when applied in a continuing education setting, the theory of planned behavior can modify people's practice behavior much like it does people's behavior in other settings. The theory of planned behavior can improve and may be well suited to continuing education in that area. In the context of organic food, Arvola et al. (2008) used TPB to predict intention to purchase organic food, and their findings suggested that attitude and subjective norms are able to explain variance in purchase intention. An empirical research by Vermeir and Verbeke (2008) applied TPB in investigating the determinants of sustainable food consumption intentions among young adults in Belgium. They found that about 50% of the variance in consumers' purchase intention was explained by TPB.

The reason why we chose Theory of Planned Behavior (TPB) model as the theoretical basis is that TPB model is one of the most widespread theories in explaining and predicting the behavioral intentions and actual behavior of a person (Ajzen & Fishbein, 1980; Madden et al., 1992). The robustness of TPB model in predicting consumer behavior in various studies (Kalafatis et al., 1999) has been previously tested. TPB further expands the original TRA model by considering the factor of Perceived Behavioral Control, in addition to individual attitude toward behavior and the subjective norms of social pressure regarding that specific behavior (Ajzen & Fishbein, 1980).

In general, the positive relationship between TPB antecedents and purchasing intention or organic food has been tested theoretically and empirically. Therefore, the focus of this research is to investigate the moderating effect of gender between TPB antecedents and behavioral intention in organic food consumption scenario.

The results of most studies provided evidences to support that female has higher organic food consumption attitude and intention than male, and food consumption is often regarded as a behavior dominated by female (Hoyer & Macinnis, 2000). However, there are also contractionary findings showing that there is no difference of gender in the attitude and intention to consume organic food (Tsakiridou et al., 2007). In general, overall research review indicates that attitude and intention to consume organic food tends to be different between male and female. Yiridoe et al. (2005)'s research suggesting women are more health conscious about the implications of chemical residues and preservatives in products. Therefore, their study suggested women tend to consume more organic products than men. it must be not only 'favorable and possible but also wanted and triggered' (2008, p.38)".

TPB is chosen as the theoretical basis in this study due to its robustness in predicting consumer behavior in various studies (Kalafatis et al., 1999). TPB has received extensive support from many empirical studies for explaining consumer behavior in a variety of settings. Evidence from meta-analysis research proposes that TPB model explains about 41% to 50% of the variance in intention, and 28% to 34% of the variance in behavior. Although TPB model has proved to have substantial predictive power, there is a large section of variance in intention and behavior that cannot be fully explained in the TPB model. As a consequence, more relevant moderating variables are required to explain the additional variance in applicational literature of TPB model (Morris et al., 2005).

## 2.1. Gender

Gender, as one of the most prevalent ways of marketing segmentation (Putrevu, 2001), has yielded a vast number of literatures in this area, specifically, in gender-related

advertising research, the findings confirmed the existence of gender differences in advertising responses (Wolin, 2003). In addition, gender has also been used as an important key moderator in consumer behavior literature frequently (Bendall-Lyon and Powers, 2002). For example, a consistent finding in the literature is that women hold stronger values and attitudes toward environment, and participate more actively in the pro-environmental behaviors than do men (Pirani & Secondi, 2011; Strapko, Hempel, MacIlroy, & Smith, 2016; Gifford & Nilsson, 2014).

In the following section, three predictors of behavioral intention - attitude (ATT), subjective norms (SN), perceived behavioral control (PBC) based on TPB are discussed below.

## 2.2. Attitude (ATT)

According to Ajzen and Fishbein (1980), people are more likely to engage in that behavior when a person's attitude towards a particular behavior is favorable. Many studies indicated that the more favorable the attitude, the greater the purchase intention (Van Loo et al., 2013; Kim & Chung, 2011; Tarkiainen & Sundqvist, 2005). For example, Tarkiainen and Sundqvist (2005) proved that consumers' attitude could predict intentions to buy organic food using a modified TPB model. Another study by Van Loo et al. (2013) also showed a positive association between attitude and the frequency of purchasing and consuming organic yogurt. Therefore, we hypothesize the following relationship between attitude and intention to purchase organic food as follow:

**H1:** Attitude towards organic food positively influences Chinese consumers' intentions to purchase organic food. Gender has a moderating effect in the relationship.

## 2.3. Subjective norms (SN)

Subjective norms are associated with one's perceived social pressure to engage in particular behavior (Ajzen & Fishbein, 1980). In other words, consumers' behaviors and intentions may be influenced by their family, friends, and other people's beliefs towards certain behavior. In this study, people's intentions to purchase organic food tend to be influenced by others approve or disapprove of purchasing organic food. Teng and Wang (2015) suggested that consumers tend to have positive purchase intentions of a product if they perceive that people who are important to them have positive attitudes and opinions on this product. Tarkiainen and Sundqvist (2005) also emphasized the importance of subjective norms in predicting repurchase intentions. According to Griskeicius et al. (2010), social status was found to be the most important factor influencing environmentally friendly purchases. Previous studies have also identified that subjective norms have a significant positive relationship with organic food purchasing intention (Al-Swidi et al., 2014; Chen, 2007; Smith & Paladino, 2010). According to gender role theory, which suggests that women tend to value and respond to the requests and opinions of their social group more than men do, prior literature also suggests that these differences will be more apparent in decision making process of consumers.

**H2:** Subjective norms positively influence Chinese consumers' intentions to purchase organic food. Gender has a moderating effect in the relationship.

## 2.4. Perceived behavioral control (PBC)

Perceived behavioral control refers to one's perceived ease or difficulty of performing the particular behavior. (Ajzen, 1991) It is assumed that perceived behavioral control is determined by the total set of accessible control beliefs. This factor also tends to affect the actual behavior directly, not only behavioral intentions (Ajzen & Fishbein, 1980). Madden et al. (1992) also assumed that perceived behavioral control motivates an individual's behavioral intentions and actual behavior as well. Ajzen (1991) suggested that behavioral intention is the immediate

determinant of actual behavior, and when an appropriate measure of intention is achieved, it will provide the most accurate prediction of behavior. This indicates that behavioral intention is to some extent more strongly related to the determinants than actual behavior. Furthermore, the measurement of the level of actual behavior is somewhat difficult to achieve. (Schuitema et al. 2013). Therefore, the present study applies behavioral intention to predict Chinese consumers' actual purchasing behavior.

Taylor and Todd (1995) suggested support for a positive relationship between control and behavioral intentions. Past researchers have found that perceived behavioral control significantly influences the purchase intention of organic products (Chen, 2007; Gracia and de Magistris, 2008; Kim & Chung, 2011). To summarize, the relationship between the role of perceived behavioral control and behavioral intention has been tested theoretically and empirically.

**H3:** Perceived behavioral control positively influences Chinese consumers' intentions to purchase organic food. Gender has a moderating effect in the relationship.

### 3. Research Methods

#### 3.1. Data collection

Data was collected through a questionnaire survey method to test the above hypotheses. The online questionnaire was distributed to Chinese consumers in major cities of China and abroad through Email. The respondents may be appropriate for this study because respondents can represent a diverse Chinese population across demographic and socioeconomic strata. Data for the study was gathered from February 10 to March 21, 2018. Respondents were asked to fill out a questionnaire voluntarily and send it back by Email. In total, 400 questionnaires were distributed through Email, after data screening for missing values, incomplete observations and outliers, 265 valid responses were used for this analysis. All survey questions were originally written in English and translated into Chinese. The translation and back-translation method were utilized to ensure the accuracy of translation. The majority of respondents are females, which is consistent with Yiridoe et al. (2005)'s research suggesting women are more health conscious about the implications of chemical residues and preservatives in products. Therefore, women tend to consume more organic products than men.

#### 3.2. Measures

The total of four factors were measured using measurement items, which were adapted from previous researches. Attitude towards purchasing organic food was measured with five items from Bansal and Taylor (2002). Subjective norms were measured through items from Chen (2007); Teng and Wang (2015). The measurement items for perceived behavioral control were derived from Chen (2007). The items used to test Chinese consumers' behavioral intentions to purchase organic food were derived from Bredahl (2001) and Davidow (2003). Five-point Likert scales (1=strongly disagree to 5=strongly agree) were used to measure the items.

#### 3.3. Measurement model

Composite reliability (CR) was calculated using the procedures provided by Fornell and Larcker (1981). All the values of CR were above the threshold of 0.70 (Chin, 1998). They were in the range of 0.789 to 0.933, demonstrating a high level of internal consistency of items. An average variance extracted (AVE) value of at least 0.50 indicates that a latent variable is on average able to explain more than half of the variance of its indicators (Hair et al., 2014). The values of average variance extracted (AVE) ranged from 0.562(perceived behavioral control) 48 to 0.776(Attitude), all of them are above 0.50. Therefore, the measurement model achieved an adequate and satisfactory convergent validity. Discriminant validity was examined according to Fornell and Larcker (1981). All Square roots of the AVE were greater than correlations between constructs, demonstrating that discriminant validity

was achieved because each reflective construct related more strongly and closely to its own indicators than to others. This indicates a satisfactory level of discriminant validity. Next, the structural model assessment was discussed.

#### 4. Results

To examine the above hypotheses, structural equation model (SEM) on purchasing organic food was tested using the software package SPSS and AMOS. To follow the two-stage analytical procedures recommended by Anderson and Gerbing (1988), in the first stage, the measurement model was evaluated to assess the convergent validity and discriminant validity. Next, the structural model was evaluated to test the hypotheses.

Following multigroup analysis, the data sample is divided into two groups in SPSS 24, and then the same structural model is run at the same time for both male and female group. It is then followed by pairwise comparison in path coefficients across the two groups (male group N=81 vs. female group N=179). The research model provided an acceptable to good fit to the data. (ML Chi-sqr =143.882; DF=59; Normed Chi-sqr=2.438; GFI=0.919; AGFI=0.876; RMSEA=0.075; TLI=0.958; CFI=0.968.) Table 1 shows the results of important of the Model comparison and hypotheses testing.

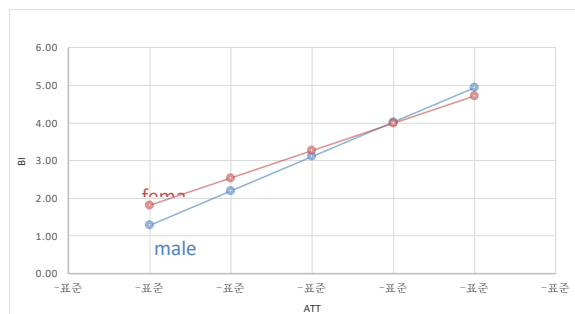
**Table 1:** Model comparison and hypotheses testing

<i>Model</i>	<i>DF</i>	<i>CMIN</i>	<i>P</i>	<i>NFI</i>	<i>IFI</i>	<i>RFI</i>	<i>TLI</i>	<i>Hypo.</i>	<i>Result</i>
ATT	1	4.828	0.028	Delta-1 0.003	Delta-2 0.003	rho-1 0.003	rho2 0.003	H1	Supported
SN	1	0.355	0.551	0	0	-0.002	-0.002	H2	Rejected
PBC	1	1.674	0.196	0.002	0.002	-0.003	-0.003	H3	Rejected

Note: \*MacKinnon (1996) one-sided  $p < 0.05$ -values.

We also conducted one-tail Fisher Z test of the correlation difference on the subgroups, the result indicated that there is significant different between male group and female group ( $Z=2.054 > 1.96$ ). Next, model comparison with Amos 22 was conducted to test the hypotheses. As shown in Table 1, the results of model comparison between default model and test model (female=male) indicated that gender does have a moderating effect on the relationship between attitude and behavioral intention. Therefore, H1 was supported. However, according to the results, gender was proved to have no significant moderating effect toward the relationship between subjective norms and behavioral intention. The role of gender on the relationship between perceived behavioral control and behavioral intention was also calculated as insignificant. Therefore, H2 and H3 were rejected in this case.

Their dynamic relations as Figure 1 provides intuitive explanation for moderating effect of gender in ATT-BI relationship, which suggests that when attitudes of both genders are at a relatively low level, women are more willing to purchase organic fruits and vegetables than men. However, when attitudes of both genders are at a relatively high level, men are slightly more likely to purchase than women.



**Figure 1:** Moderating effect of gender in ATT-BI relationship

## 5. Results

This research utilizes TPB model as the theoretical framework to predict the organic food purchase intentions in China and further tests gender as moderator role.

This study is consistent with prior researches indicating that female has higher organic food consumption attitude and intention than male (Magnusson, et al., 2001; Rimal, et al., 2005; Padel and Foster, 2005; Radman, 2005). Although empirical support is received for the first hypothesis in this study, some surprising findings are also revealed. In particular, gender was proved to have no significant moderating effect toward the relationship between subjective norms and behavioral intention. The role of gender on the relationship between perceived behavioral control and behavioral intention was also insignificant.

The present study has several limitations. First, the sample of this study is urban population living in major cities of China, South Korea and the United States. The reason for choosing this group of people is that consumer segment in the organic market is dominated by the urban population as the major target group. Therefore, in this study, people from rural area of China are not included in the sample. Additionally, more than half of the sample respondents have achieved more than bachelor's degree, which indicates that sample respondents represent high-educated level's opinions towards purchasing organic food. It is very possible that people with lower educational background may have different perspectives. Further research could examine whether TPB model can be applied to other potential purchasing groups.

This article provides novel insights by examining the moderating effect of gender between TPB antecedents and purchasing intentions of organic fruits and vegetables. In line with previous research, we demonstrate that gender moderates the relationship between attitude and behavioral intention. Additionally, this research improves understanding of the role of gender in attitude-intention relationship. According to the results, compared to male, female is more likely to buy when the attitude levels are relatively low. When attitude levels are high, there is a higher tendency for male to purchase than women. Marketers could utilize the research findings to cope with different situations. Our results support previous researches suggesting that gender moderates the relationship between attitude and behavioral intention. However, surprisingly, no significant moderating effect of gender on the relationship between subjective norms and behavioral intention was found. Gender was also proved to have no significant moderating effect toward the relationship between perceived behavioral control and behavioral intention. The findings provide essential managerial implications to the marketers in this industry.

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