British Journal of Marketing Studies
Vol.2, No.2 pp.27- 36, June 2014
Published by European Centre for research Training and development (www-ea-journals.org)

# CONFIRMATION THEORETICAL MODEL OF SUSTAINABLE CONSUMPTION

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**ABSTRACT :***The organic food and product market is a reality in more than 130 countries, including Mexico. The aim of this research was to identify if sustainable consumption may be explained by three factors: Marketing Strategies, Consumer Behavior and Demographics data. In this study, the test designed by Salgado-Beltrán and Beltrán-Morales (2011) consisting of 10 questions with a Likert scaling was replicated. The statistical technique to test whether the proposed theoretical model fits the data was structural equations due to its potential to further develop the theory. The result show that the hypothetical model fits the data very well, as shown by the CFI (0.970) and RMSEA (0.071) values.*

**KEYWORDS: Organic Food, Marketing Strategies, Consumer Behavior and Demographics data.**

## INTRODUCTION

Nowaday, the market of organic foods and products is a reality in over 130 countries around the world including Mexico. However, it is threatened by not having a promotion policy that will help strengthen the sale of such products, even if there is a global trend toward the production and marketing of this product type as a response mechanism toward sustainability (Gomez, L, Gomez, C, and Schwentesius, 2002).

It is important to note what is the meant by organic products, namely: "products that have been grown without the presence of chemicals, sewage or radiation" (Gomez and Gomez, 2004). These products according to the discussion in the work of Kremen (2004) cited in Gómez (2004), are consumed by people who see therein, the benefits these have towards health and the environment, creating a new type of consumer, namely, the green consumer.

Salgado et al (2009) in his article "Organic Consumption and Consumer Environmental Awareness" refers: *an ecological consumer can be distinguished as one who expresses his concern about the environment in their purchasing behavior, favoring primarily to the products which are perceived as less impact on the environment."* In this regard, Ruchinski and Brandenburg (2002, cited by De Oliveira and Gosling, 2014) report that consumers of organic food are in favor of ecology and are also aware of preserving the environment.

Demand for organic food is increasing for several reasons: a) a large part of society is currently focused on acquiring healthy foods, b) agriculture is following rules of sustainable production and marketing. c) the new generations are living a culture of sustainability. Therefore, managers of these foods processing companies have suggested that consumers are now willing to pay a premium for organic food.

The abovementioned has led to set the standard for the creation of new market segments and to consumers, to be more aware of their purchasing decisions. The aim of this research was to identify if sustainable consumption may be explained by three factors: Marketing Strategies, Consumer Behavior and Demographics data. According to the theoretical model of Salgado *et al* (2011) s (figure 1).

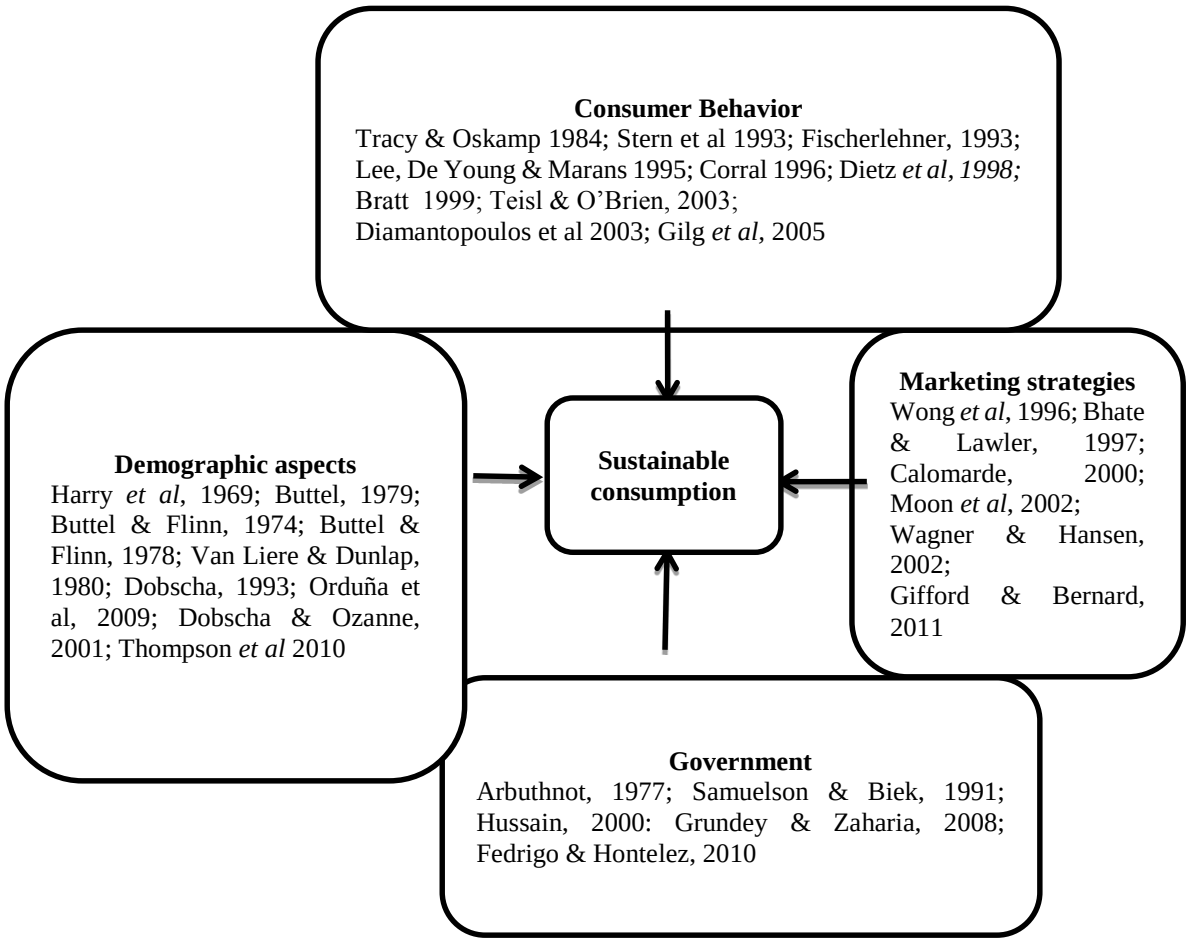



**Figure 1** Theoretical Model of Sustainable consumption. Taken from Salgado *et al* (2011)

## THEORICAL MODEL

Salgado and Beltran in 2011 have proposed a theoretical model which allows making inferences about the factors involved in sustainable consumption. An outline of the model is shown in Figure 1. Faced with this new scenario, in this study we will try to identify whether sustainable consumption in organic products could be explained by three factors; Marketing Strategies, Consumer Behavior, and Demographics.

Regarding the demographic aspects some authors (Gil *et al*, 2000; Jain and Kaur, 2006, Honkanen and Olsen 2009,. Yue *et al*, 2010) report that women are more interested than men in the consumption of organic products. Women are known for inspiring and promoting environmental commitment within the home, especially with regard to organic food and waste disposal.

Regarding education, Gil *et al*, 2000; Tivadar and Luthar, 2005; Jain and Kaur, 2006; Bernabeu *et al*, 2008; Honkanen and Olsen, 2009; Yue *et al*, 2010 have demonstrated that there is a significant difference between the level of education. People who have higher level of education show a positive effect on knowledge and environmental behavior; with regard to age Gil *et al*, (2000); Saba and Messina (2003); Jain and Kaur (2006); Bernabeu *et al*, (2008); Yue *et al*. (2010) found that there was a significant difference between groups.

Keeping with the construct of marketing strategy, it is important to note that this market niche product type is internal. Some authors (Okologisk Landsforening, 2002) mention that approximately 60 to 80% of organic products are sold on the domestic market; a low percentage is sold abroad. This shows that the main market niche is internal as well; marketing strategies should be focused on this segment.

The organic food strategy, implemented in 1993 through the reduction of retail prices and the expansion of the product range at the point of sale, has created a strategic organic food product and has become an area of competition within the retail sector. These conditions have proven to be strong price competition, the demand for continuous renewal of variety, and strong demands for billing for one-meter shelving in supermarkets. An intensification of price competition has made supermarkets reduce their assortment of organic food in some cases.

Living conditions of many busy consumers seem to make the situation worse. Some consumers will buy the corresponding conventional product, because they have no time to search for the product in another shop, if they do not find the organic product at their usual supermarket (Økologisk Landsforening, 2002).

In this regard, Yin *et al* (2010) provide evidence which suggests that purchase intention towards organic products is affected greatly by factors such as income, confidence level toward the product, the price and the benefit that they provide to health. For their part, Hsieh and Stiegert (2011) in the U.S., have demonstrated that organic consumers are on the lookout for price changes in these products. Also, a few of the managers from the processing companies of these foods have indicated that consumers are now willing to pay a premium for organic food. However another group surveyed --by supermarket chains-- have commented that even though demand for organic foods are growing, research and experience suggests that consumers are not willing to pay the premium price. Furthermore, they said that it has not been possible to introduce organic food at competitive prices due to high wholesale prices and low volume of sales.

Several studies carried out by Shepherd *et al*. (2005), Aertsens *et al*. (2011), Hsieh and Stiegert (2011) have demonstrated that consumers have a positive attitude toward organic products. However, even when consumers are aware that these foods are healthier, because they are produced without pesticides and chemical fertilizers, and they are worried about the quality of food, there is no evidence that allows us suppose that a positive attitude affects the purchase itself.

Recent studies in the U.S. and the United Kingdom suggest that customers observe whether organizations behave in an environmentally responsible way and if these observations have

influence on their purchasing decisions. Dietz *et al* (1998) have found strong associations between ecological awareness and psychological variables such as attitudes.

Thus Fischerlehner (1993) cited by Salgado and Morales (2010) notes that there is a relationship between the emotional toward nature such as love, or the desire to preserve it and to protect it through sustainable consumption. Furthermore, Horrigan *et al.* (2002) cited by Salgado and Morales (2010) have linked human diseases to consumption of products with pesticides with the environment, extracting as a benefit, increased sustainable consumption in the study conducted

## METHODOLOGY

This study is non-experimental, cross-sectional and confirmatory. It is non-experimental, because independent variables are not manipulated. Hence, the effects (dependent variables) are not conditioned toward a certain result. It is a cross-sectional type, considering that data collection, in-field application of the instrument, analysis and interpretation are carried out at the same moment.

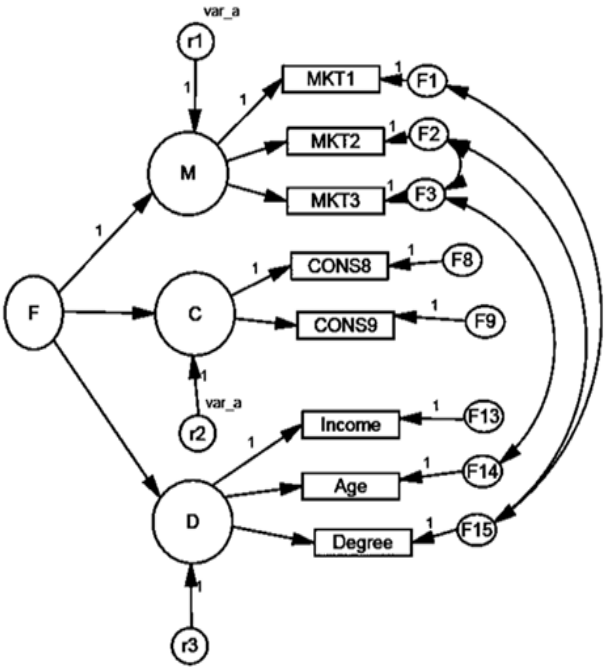
For this research, the instrument designed by Salgado-Beltran and Beltran-Morales (2011) which consists of 10 questions with a Likert scaling, (where 5 is strongly agree and 1 strongly disagree) was used. The above, given that it is a survey which seeks to identify the relevance of the variables: Consumer Behavior, Marketing Strategies and demographics, which are considered by Salgado-Beltrán *et al*, in the proposed theoretical model which explains sustainable consumption.

The instrument was applied to 200 consumers of Wal-Mart in the *Jardines de Virginia* area of *Boca del Rio, Veracruz, México.* For data processing, the software AMOS v 21 was used. The statistical technique used to check whether the proposed theoretical model fits the data was Structural Equations, due to its great potential to further develop the theory.

The hypothetical model was assessed by several goodness of fit measures, all this, in order to evaluate the degree in which data support the theoretical model. Also utilized in the study were the following adjustment measures: The likelihood ratio chi-square ($X^2$), the Root Mean Square Error of Approximation (RMSEA), the Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI) and the Comparative fit index (CFI) (Hair, et al. 1998).

### Hypothetical model

The theoretical model of sustainable consumption may be explained by three factors of first order: Marketing strategies, consumer behavior and demographics data, and a second order factor of sustainable consumption. The graphical representation of the model is shown in Figure 2.




Where:

M = Marketing strategies.
C = Consumer behavior
D = Demographics data
F = Sustainable consumption

Figure 2
Consumption sustainable model by Salgado and Morales (2010)

## RESULTS

Firstly, an *a priori* study was performed to determine the identification status of the model. The second-order hierarchical model is identifiable and appropiate, because it has six pieces of information in the model of first order and six pieces of information of the residuals. This problem was solved by placing equality restrictions of the estimates that we want to know (Figure 1). Moreover, in order to be approximately the same magnitude, the residual parameters were estimated (Byrne, 2009). Residual values; 1, 2 and 3 are par_9; par_10 and par_11respectively, which are high. Meanwhile, the value between residual 1 and residual 2 is 3.877 and the residual value 2 and residual value 3 is -4.987, indicating that the two first candidates for applying equality constraints correspond to consumer behavior and demographic aspects or demographic data.

### Evaluation of Model

When reviewing the statistics for goodness of fit, it can be seen in Table l that the hypothetical model fits the data very well, evidence of this are the values for CFI (0.970) and RMSEA (0.071).

**Table 1.** Adjusted model index of second order

| CMIN | | | | | |
|---|---|---|---|---|---|
| Model | NPAR | CMIN | DF | P | CMIN/DF |
| 1 | 14 | 14.040 | 7 | .050 | 2.00 |
| **Baseline Comparisons** | | | | | |
| Model | NFI | RFI | IF | TLI | CFI |
| 1 | .943 | .878 | .971 | .935 | .970 |
| **RMSEA** | | | | | |
| Model | RMSEA | LO 90 | HI 90 | PCLOSE | |
| 1 | .071 | .000 | .125 | .222 | |

Source: own

Where:
CMNI = Chi-square statistic comparing; NPAR = Number of parameters; DF = Degree of freedom; P = p-value; CMIN/DF = Chi-square/ degree of freedom; NFI= Normed fit index; TLI = Turkey Lewis Index; CFI = Comparative fit index; RMSEA= Root Means Square Error of Aproximattion; LO =low; HI=high; PCLOSE= Test of Close fit RFI= Relative Adjustment Index ; IFI= Incremental Fit Index

## Model Maximun Likelihood (ML) Estimates

As may be seen in Table 2 all the estimates have a critical value (CR) greater than 1.96, which suggests which are statistically significant.

**Table 2. Regression weights and estimations**

| Regression Weights | | | | | | | |
|---|---|---|---|---|---|---|---|
| Variables | | | Estimate | S.E. | C.R. | P | Label |
| M | <--- | F | 1.000 | | | | |
| D | <--- | F | 10.179 | 1.815 | 5.607 | *** | par_5 |
| C | <--- | F | 1.181 | .213 | 5.541 | *** | par_6 |
| MKT1 | <--- | M | 1.000 | | | | |
| MKT2 | <--- | M | 1.215 | .205 | 5.923 | *** | par_2 |
| CONS8 | <--- | C | 1.000 | | | | |
| CONS9 | <--- | C | .809 | .146 | 5.545 | *** | par_3 |
| Age | <--- | D | 1.000 | | | | |
| Degree | <--- | D | .198 | .032 | 6.236 | *** | par_4 |
| **Variance** | | | | | | | |
| F | | | .212 | .055 | 3.847 | *** | par_7 |
| r2 | | | .187 | .082 | 2.293 | .022 | var_a |
| r3 | | | .187 | .082 | 2.293 | .022 | var_a |
| r1 | | | .030 | .041 | .747 | .455 | par_8 |
| F1 | | | .352 | .052 | 6.724 | *** | par_9 |
| F2 | | | .683 | .089 | 7.657 | *** | par_10 |
| F8 | | | .487 | .094 | 5.192 | *** | par_11 |
| F9 | | | .568 | .077 | 7.341 | *** | par_12 |
| F14 | | | 48.765 | 5.786 | 8.429 | *** | par_13 |
| F15 | | | .791 | .129 | 6.121 | *** | par_14 |

M = Marketing strategies.
C = Consumer behavior
D = Demographics data
F = Sustainable consumption
$MKT_1$= Similar price among organic and conventional products
$MKT_2$ = Higher price for an organic product than a conventional one.
CONS8 = Purchase products mainly for health.
CONS9= Spending a lot of time with nature causes affection.

Source: own

Finally, in Table 2.1 standardized estimates of each variable comprising the constructs are shown.

**Table 2.1.** Standardized Regression Weights

| Variables | | | Estimates |
|---|---|---|---|
| M | <--- | F | .885 |
| D | <--- | F | .586 |
| C | <--- | F | .930 |
| MKT1 | <--- | M | .685 |
| MKT2 | <--- | M | .546 |
| MKT3 | <--- | M | .372 |
| CONS8 | <--- | C | .675 |
| CONS9 | <--- | C | .596 |
| Income | <--- | D | .977 |
| Age | <--- | D | .681 |
| Degree | <--- | D | .763 |

Source: own

Having accepted the model as a whole, we proceeded to assess the construct, the above in order to check the internal consistency of all indicators to measure the concept. The results in Table 3 show the value of the reliability of each construct, although higher than 0.500 reliability model is lower than the recommended value (0.70), indicating that the indicators are not enough to represent each of the dimensions.

Table 3 **Reliability and extracted variance**

| Indicators | Reliability | Extracted Variance Mean |
|---|---|---|
| Marketing strategies | 0.5554 | 0.3752 |
| Consumer behavior | 0.5336 | 0.4280 |
| Demographics data | 0.5381 | 0.4176 |

Source: own

In Table 3 the extracted variance is also shown, which must be higher than 0.50. In this case, the value is less than 0.5, which means that more than half of the variance of the indicators is ignored for the construct. Furthermore, the discriminant validity is evaluated, which allows checking that a particular construct measures a different concept than another construct (Hair, *et al*, 1999).Table 4 shows the values corresponding to each construct:

Table 4 Discriminant Validity

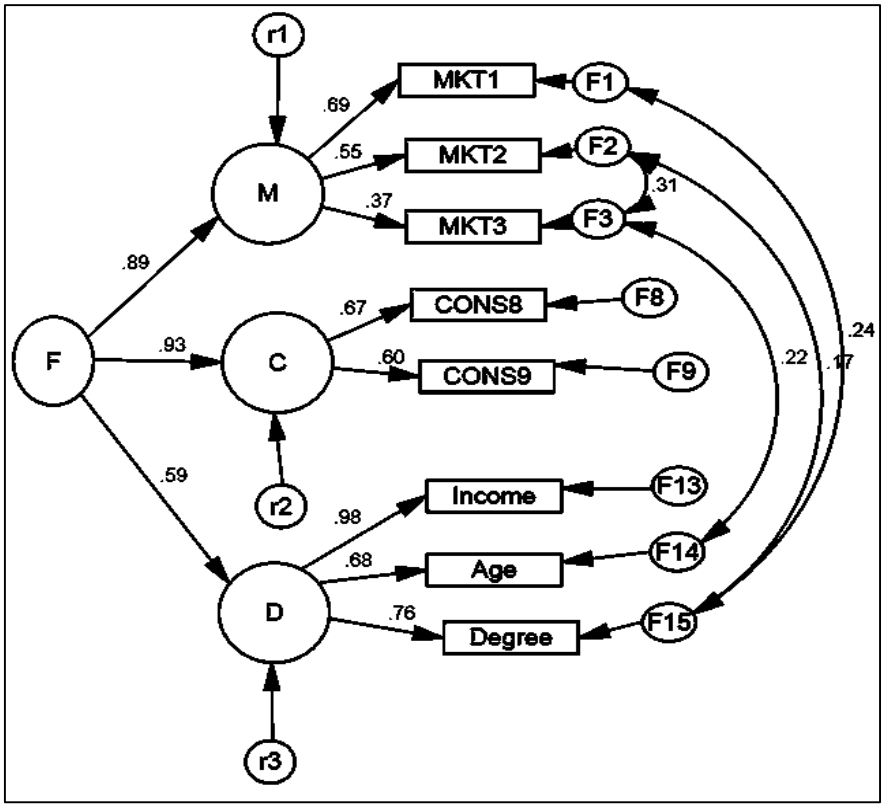
| | **M** | **C** | **D** |
|---|---|---|---|
| M | **0.6126** | | |
| C | 0.63520 | **0.7970** | |
| D | 0.33292 | 0.25401 | **0.5040** |

M = Marketing Strategies.
C = Consumer behavior
D = Demographics Data

Source: own

Fornell and Larcker (1981) mentions that for discriminant validity to be met, the correlations among the constructs should be lower than the square root of average variance extracted

(AVE). However, the construct "marketing strategies and consumer behavior" is higher (0.6352) than discriminant validity (0.6126).




M = Marketing strategies.
C = Consumer behavior
D = Demographics data
F = Sustainable consumption

Figure 3. Sustainable Consumption Model Causal of the second order

## CONCLUSION

This research examined if sustainable consumption may be explain by three factors: 1) consumer features, 2) Marketing strategies and 3) Demographics data. The result has been demonstrated through a confirmatory factorial analysis that the model fits the 3 factors: marketing strategies (0.89), consumer behavior (0.93) and Demographics characteristics (0.59) reported in the proposed model by ( Salgado et al ,2011) using the modification index as a guide.

However, the items which constitute each factor differs from the proposed model. Regarding marketing strategies, it is considered that strategies 1, 2 and 3 correspond to: buy an organic product if I had a similar conventional price, buy an organic product if I had a higher price than conventional and finally the consumption of organic products is a question of attitude. Regarding the consumer behavior construct, the items that make up this factor are: consuming organic products is a question of trends and buying products mainly for health. Regarding demographic characteristics the items which are hosted in this construct are: age, income and education.

This reduction could be involved in the fast and affordable application for determining and explaining sustainable consumption, without having an assumption of a loss of validity and reliability in any of their constructs.

Furthermore, the results of the discriminant validity suggest that there is little differentiation among the constructs: marketing strategies and consumer behavior, ie, the dimensions that make up each construct (marketing strategies and consumer behavior) were not different from each other for measuring sustainable consumption. It could be considered only one dimension formed by the two constructs.

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**ACKNOWLEDGES**

The authors are very grateful to the anonymous blind-reviewer for all suggestions, to the Universidad Autónoma de San Luis Potosí, Universidad Cristóbal Colón and Universidad Autónoma de Aguascalientes for all their help and support. Also, in a very special way our gratitude goes to Dra. Dixie Santana Villegas for all her suggestions in the grammatical review process.