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S-shape relationship between customer satisfaction and willingness to pay premium prices for high quality cured pork products in Spain

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ABSTRACT

This paper explores 2 different probabilistic models explaining willingness to pay premium prices for high-quality cured products from the swine industry. Seven cured pork products (sausage, fuet, ham, loin, shoulder, salami and pepperoni) were studied in 9 food-stores in Valladolid, Spain. Consumers of the products were interviewed (686 completed surveys). It was found by using mixed effect statistical models that the relationship between willingness to pay a premium price and customer satisfaction had nonlinear behavior, following an S-shape with inverted slope which was the first empirical evidence of this type of behavior in meat products in real market conditions. It was also established that the interaction between satisfaction and current expenditure on the product was significant and indispensable for explaining consumers' willingness to pay premium price for cured pork products.

1. Introduction

Particularly now, the meat industry's viability depends on its ability to develop quality products and perception that consumers have toward them (Troy & Kerry, 2010). So, Verbeke, Pérez-Cueto, de Barcellos, Krystallis, and Grunert (2010) studied about impact of Q-PorkChains and ProSafeBeef projects in Europe and they found that developing high quality products and listening to the consumer's voice were fundamental conditions to competitiveness of meat agribusiness chains. Others researchers go further and suggest that in the future it will be necessary for the meat industry to develop truly innovative products (Arihara, 2006; de Vuyst, Falony, & Leroy, 2008; Dragsted, 2010; Martínez-Michel, Punter, & Wismer, 2011; Zhang, Xiao, Samaraweera, Lee, & Ahn, 2010). However, it is always going to be necessary for products to have higher quality, because that best quality perception combined with customer satisfaction may be able to determine the price that the consumer considers fair pay by these technological developments. In addition, Ngapo et al. (2004) found that the price is a very important factor for the pork meat purchasing decision. In turn, Gao and Schroeder (2009) asserted that consumer willingness to pay for quality food products is not only an indicator of their perception of the products currently being offered by a particular brand but also implies their anticipation of changes in the demand for food products, which can guide companies' business strategies.

On the other hand, Anderson, Fornell, and Rust (1997), Reichheld and Sasser (1990), Rust and Zahorik (1993) found that business performance relates positively to the level of customer satisfaction with a particular product or service. Other researchers (Anderson & Sullivan, 1993; Fornell, 1992; Reichheld & Teal, 1996) reported that a high level of satisfaction leads to greater product loyalty and consequently produces a higher return for the company. Mooradian and Olver (1997) reported that the level of satisfaction increases customers' positive feedback or word of mouth (WOM) regarding a particular product, which ultimately benefits a company's profitability. Homburg, Koschate, and Hoyer (2005) also emphasized the importance of the relationship between customer satisfaction and WTP, because price is a key element in any company's profitability equation. In marketing literature, satisfaction appears according to two perspectives. The first (specific satisfaction) is the value a consumer perceives after receiving a specific service or having completed a specific business transaction (Olsen & Johnson, 2003). The second (cumulative satisfaction) is a consumer's overall assessment of a good or service after repeatedly buying it (Johnson, Anderson, & Fornell, 1995).

Anderson and Mittal (2000), Mittal, Ross, and Baldasare (1998) and Oliver (1995) researched nonlinear relationships between levels of consumer satisfaction and other marketing-mix variables; two theoretical developments justify this kind of relationship. The theory of disappointment (Loomes & Sudgen, 1986), supplemented by research by Oliver (1993), Oliver, Rust, and Varki (1997), deals with the emotions involved in customer satisfaction. Empirical evidence suggests that positive or negative feelings of dissatisfaction regarding an expected situation are more emotionally intense than a simple sense of conformity. A positive

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feeling of discomfort is associated with emotions of delight or joy (Oliver et al., 1997; Rust & Oliver, 2000) while negative emotion leads to disappointment (Oliver & DeSarbo, 1988; Oliver & Westbrook, 1993; Westbrook & Oliver, 1991.) Conversely, confirming expectation generates hardly any emotion when consuming or using a product (Oliver, 1997), described by some as "*cool satisfaction*" (Woodruff, Cadotte, & Jenkins, 1983). The theory of disappointment is thus part of the field of behavioral decision theory, incorporating emotions of disappointment or joy into utility theory (Bell, 1985; Inman, Dyer, & Jia, 1997; Loomes & Sudgen, 1986). Thus, feelings of joy produce an increase in the value of a good or service while a sense of disappointment would produce the opposite effect. A crucial aspect of this theory is that both kinds of feeling would increase their impact on extreme values which would produce a convex curve for the feelings of joy and a concave one for disappointment (Loomes & Sudgen, 1986).

Prospect theory (Kahneman & Tversky, 1979) is the second theory on which nonlinear models regarding consumer behavior can be based on; it is opposed to the theory of disappointment because it proposes an S-shaped curve which is quite high in the middle and flattened at the ends. Homburg et al. (2005) mentioned that two considerations are important here. The benchmark should be the level of satisfaction expected by a client; satisfying values above this point would thus be considered as earnings while values below expectations would be considered as loss. The second point is that it is expected that outlying gain or loss values decrease in size as satisfaction or dissatisfaction values become increased (i.e., the gap between expectation and current satisfaction level decreases towards the ends of the curve). In response, this research aims to determine the effect of customers' satisfaction on their willingness to pay (WTP) premium prices for high-quality cured pork products.

2. Materials and methods

We showed each respondent a list of the cured pork products marketed in Spain currently; we asked them to identify which of these cured pork products they had consumed in the greatest quantity during the previous year. Answers included sausage, fuet (a type of thin Catalan sausage), ham, loin, shoulder, salami, and pepperoni. Accordingly, we studied consumers' attitudes toward these seven cured pork products conducting surveys in Spain, one of the greatest consumers of cured pork products of Europe and ,according to Resano, Sanjuán, Cilla, Roncalés, and Albisu (2010), the main producer and consumer of dry-cured ham in the world.

The interviews themselves were conducted in nine stores in Valladolid, Spain, which offers representative characteristics for Spain in terms of its medium size, income per capita, and consumer habits (Torres, 2009). The nine stores selected were the most representative food retailers in the city (Alimarket, 2007). All surveys were conducted in stores, near each establishments' cured-product section, and only people who had placed a cured pork product in their shopping cart and who usually bought such products to take home were interviewed; thus, the respondents should have high knowledge about cured products.

Because we focus on cumulative satisfaction, independent of the products in their shopping carts, we asked each respondent about of the cured pork products he or she consumed most in the previous year. Thus, there should not be any seasonal effect, nor time of day effects regarding when surveys were collected. If the shopper ultimately did not purchase the cured product in his or her shopping cart, this choice also should not have any effect on the variables studied. However, we take into account current expenses per purchase of the most consumed cured product, because it may have had some anchor effect on WTP (Nunes & Boatwright, 2004). Six hundred eighty-six valid surveys were thus obtained and statistically analyzed.

Three questions proposed by Fornell, Johnson, Anderson, Cha, and Bryant (1996) were applied to estimate customer satisfaction rate: (1) What is your overall level of satisfaction with the product? (2) How would you rate this product have exceeded their initial expectations? and (3) How would you rate this product in relation to what you consider as the ideal product? To reduce the statistical concern of extreme skewness (Andrews, 1984), we used 10-point rating scale (1 = minimum, 10 = maximum) to enable customers to make better discriminations.

An open contingent valuation method was applied to measure WTP, as has been used by other researchers (e.g., Carmon & Ariely, 2000; Homburg et al., 2005; Jones, 1975; Kalish & Nelson, 1991; Krishna, 1991). Similar to price comparison studies reported in decision theory (Tversky, Slovic, & Kahneman, 1990), this approach consisted of asking a consumer two questions: (1) How much money do you usually spend on this product per purchase? (in euros) and (2) Taking into account this value, how much money you would be willing to spend if you were going to buy a premium product? (in euros).

A linear mixed effects model was initially applied as choice of establishment in the Valladolid market was a random variable and the 7 products studied were the main customer consumption alternatives within a wider range of cured pork products. Thus:

$$\mathbf{y} = \mathbf{1}\mu + \mathbf{X}\beta + \mathbf{Z_1}\varphi + \mathbf{Z_2}\lambda + \mathbf{e}$$

where $\mathbf{y}$ was the vector of total number of observations of WTP amount for a higher quality cured pork product; $\mathbf{1}$ and μ were, respectively, the vector of ones and the intercept; $\mathbf{X}$ and β were, respectively, the design matrix and vector of fixed effect which include satisfaction level ($\mathbf{s}$), current expenditure per each purchase of cured product ($\mathbf{m}$), and interaction effects ($\mathbf{s}\times\mathbf{m}$); $\mathbf{Z_1}$ and φ were, respectively, the design matrix and vector of store's random effect, $\mathbf{Z_2}$ and λ were, respectively, the design matrix and vector of cured product's random effect; and $\mathbf{e} = [\mathbf{e}^{T}_{1},\ldots, \mathbf{e}^{T}_{k}]^{T}$ was the vector of residual effects which assumed heterogeneity among stores (k), where "T" means transposition operation for vector or matrix. Random effects were considered normally distributed, with a zero mean and variances equal to σ^2_{φ}, σ^2_{λ}, and ξ^2_{k} for store, cured product, and residual effect, respectively.

For a cubic relationship, the fixed effect on the model mentioned before was modified in order to consider a polynomial effect of satisfaction level. Orthogonal polynomials were used for predicting functions to control nonlinear regression models' multicollinearity (Homburg et al., 2005; Kleinbaum, Kupper, Muller, & Nizam, 1998). The orthogonal polynomial variables were used in the interactive matrix language in SAS version 9.2 (SAS, 2008). Premium and current expenses regarding the cured products were centered and standardized as well as WTP variable.

3. Results and discussion

We collected some demographic variables: household size, income, buyer education level, and gender. However, the initial analyses indicated that none of these variables had any effect on WTP, so we dropped them from further analysis. Homburg et al. (2005) similarly found no effect of demographic characteristics on WTP. Table 1 shows the linear relationship between consumer satisfaction regarding cured pork and premium WTP.

The simple linear effect of satisfaction on WTP for cured pork products was not statistically significant ($p = 0.1234$), but much of its variance can be explained by current expenditures on the cured product, which had significant, positive effects ($p < 0.0001$). This was an important element because it provided us with the basis for believing that satisfaction and WTP for cured pork products had nonlinear behavior. In addition, σ^2_{φ}, and σ^2_{λ} were not significant, so WTP did not vary notably across stores or kinds of cured product. The results shown in Table 2 were obtained when a cubic relationship