Development of a Methodology for Modelling Consumers' Low Input Food Purchases

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Key words: Low input products, Customer loyalty, structural equation model

Abstract

This paper explains the development of a methodology to model consumers' purchases of low input and organic foods. The focus of the research design is the need to create value and satisfaction that exceeds consumers' expectations and induces loyalty. The adopted analytical framework adopts a structural equation model (SEM) in the context of consumer loyalty research to explore the determinants of consumer loyalty in terms of constructs of perceived quality, perceived risk, sacrifice, perceived value and satisfaction. A General Model is proposed that permits the specification of nested models and hence, tests for the suitability of preferred models. The primary research instrument is a questionnaire applied to four products in five countries. The questionnaire collects data to inform the SEM and in addition, includes measures of attitudes to foods in general, and attitudes to, and beliefs about organic food.

Introduction

This paper explains the development of the methodology to model consumers' purchases of low input and organic foods which underlies workpackages 1.1.3 and 1.1.4. The workpackages involve the design of a questionnaire to measure consumers' perceptions of, and attitudes to, low input foods with respect to intrinsic, extrinsic and credence quality cues, and subsequently, to analyse the data within a model framework.

The structure of the paper is as follows. The next section discusses the development of the analytical framework that establishes the foundation for the questionnaire design. This is followed by a section concerning the methodology adopted. The final section outlines the statistical analysis that will be conducted to satisfy the research objectives of the associated workpackages.

Methodology

The theoretical framework concerns the determinants of customer loyalty. Marketing emphasises building long-term relationships with customers that encourages loyalty and repeat purchase. Loyalty is determined by delivery of quality, value, and satisfaction and confers the benefit of competitive advantage (Kotler *et al*., 2001). Furthermore loyalty enhances profitability and hence, the long-term profitability through, *inter alia*, an increase in the scale and scope of activity, lower customer recruitment costs, and reduced customer price sensitivity (Hallowell, 1996).

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Within this general framework, consumers adopt the objective of maximising value, the difference between the benefits conferred relative to costs of acquisition in terms of time, money and the effort invested in product acquisition.

From the perspective of producers and supply chain agents the delivery of value is related to the value chain, which emphasises that value is not just delivered by products but also through primary activities and support activities (Porter, 2004). This carries implications for the delivery of value within the supply chain for low input products

The proposed approach is to identify how organic and low input food products deliver perceived quality (percqual), perceived value (percval) and satisfaction (sat), and consequently, how these determine behavioural intentions (behint).In addition to these main constructs the model also integrates constructs of sacrifice (sac) and perceived risk (prisk).

Sacrifice is defined as the as what is given up in the process of acquiring a product or service (Zeithaml, 1988). Within the study it is considered in terms of monetary cost, shopping effort and where appropriate, preparation. Perceived risk is defined as the subjective evaluation of a loss (Stone and Gronhaug, 1993). The approach used in this study is to consider perceived risk in the context of concern about certain product features associated with intensive farming and food production methods. Several studies have found that higher perceived product quality leads to more positive repurchase intentions (Kaplan and Norton, 1996; Bou-Llusar et al, 2001; Rust and Oliver, 1994; Keillor et al, 2004). The measures used for this construct are the importance of indicators of intrinsic, extrinsic and credence quality cues associated with the specific food product. Satisfaction of consumers' needs is defined as an overall evaluation of the purchase and consumption experience (Johnson and Gustafsson, 2000), the degree of fulfilment of some need, desire, goal, or other pleasurable end (Olsen, 2002). Value is regarded as a key determinant of loyalty (Sweeney and Soutar, 2001). Zeithaml (1988) conceives value from four perspectives: value as price; value as want fulfilment; value as a price-quality trade-off; and, value as the culmination of what is obtained and what is given up. Given the relative low involvement in the purchase decision for the specific products, value is based on the concept of want fulfilment. Behavioural intention is a measure of loyalty. This is the most commonly used in marketing literature (Bloemer and Kasper, 1995; Bloemer and de Ruyter, 1998) because it is easy and possible to ask customers whether they have intentions to repurchase a product or service.

In particular the approach is to model the influence of these constructs on behavioural intentions using a structural equation model (SEM), which means that it is necessary to research the nature of the interactive links between the constructs. The value of this approach is that supply chain agents can better understand how to enhance loyalty to low input products, including organic products. The model structure is adapted from Cronin et al. (2000). Role of perceived risk in all models follows Sweeney et al. (1999). A General Model is adapted from three models within the Quality-Value-Satisfaction literature that incorporates three models: Indirect, Satisfaction and Research models respectively. A further model, the Value Model is also adapted from Cronin et al. (2000)

In General Model (Figure 1) the respective constructs of sacrifice (sac) and perceived risk (prisk) affect perceived quality. Perceived quality (percqual) has a direct effect on behavioural intentions (behint). It also has direct effects on perceived value (percval) and satisfaction (sat). Construct percval has a direct effect on sat and behint.

Construct sat influences behint directly. The model also demonstrates indirect effects. For example perqual effects behint indirectly via its respective direct influences on percval and sat (percqual→percval→behint, percqual→percval→sat→behint, and percqual→sat→behint). In addition, percval has an indirect influence on behint through the mediating effect of sat (percval→sat→behint).

Imposing constraints on specific path coefficients in the General Model permits the specification of alternative models: The Satisfaction Model (a_qb=0 and a_vb=0); The Indirect Model (a_qs = 0 and a_qb = 0); and, The Research Model (a_vs = 0).

Figure 1. The General Model
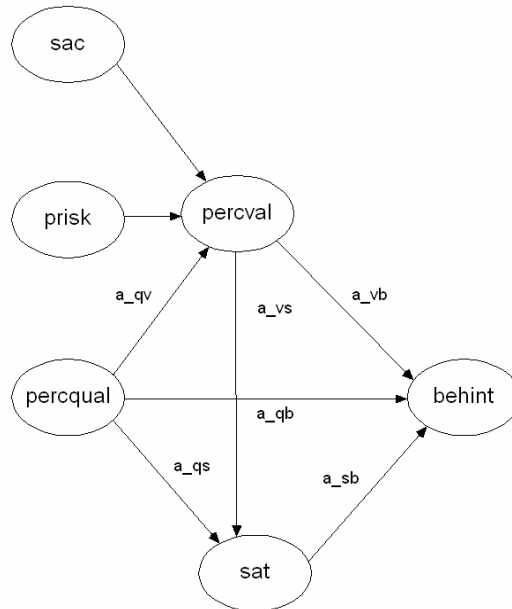
The Value Model is treated as a separate model because of the difference in the in the direction of the sequential links between percval and sat. According to the Value Model perceived quality (percqual) and satisfaction (sat) have direct effects on perceived value (percval) and in turn percval has a direct effect on behint. Hence the respective impacts of percqual and sat on behint is through the mediating influence of percval (percqual→percval→behint, and satl→percval→behint).

The primary research instrument is a questionnaire administered in France, Germany, Italy, Switzerland and the United Kingdom for bread, eggs, tomatoes and yoghurt. The questionnaire was developed in the University of Newcastle and further improved in consultation with SP1 partners.

The questionnaire is organised in four thematic sections. The first section concerns consumer behaviour with respect to the specific food product that is usually eaten in the household. It contains a nominal multiple response measure of the outlet where

the product is obtained, and measures for the constructs of satisfaction, likelihood of re-purchase, perceived value, sacrifice, importance of quality cues, and perceived risk. The second section concerns food in general. It consists of a single construct with eleven measures of the importance of food attributes that are related to the wider implications of food choice that may be defined as issues concerning the consumer as a citizen. The third section deals with organic food. It consist of measures relating to the frequency of organic food purchase for eight product categories, future purchase intentions for the same product categories, and a comparative measure of organic and non-organic foods with respect to attributes that were also the subject of the measures of quality employed in the section on the specific food product. Finally, the fourth section concerns socio-demographic characteristics of respondents. It contains nominal measures of the presence of children in specific age categories in the household, education level, area of residence, and annual household income.

The initial questionnaire was designed as a generic instrument to apply to all four products. Following discussion with SP1 partners, it was decided to include product specific measures for the constructs concerned with satisfaction and quality within the specific product section. Furthermore a construct concerned with perceived risk was added for each product. The English version of the questionnaire was pre-tested using a sample of 30 respondents for each of the four products.

The survey was undertaken by a single market research agency employing a computer-assisted telephone survey from a single location. The use of a single agency conferred other benefits that included a facility to translate the questionnaire into several languages, to generate representative samples using in-house software related to the telephone survey method, and to impose required quotas. The respondents were recruited according to the criteria that they were adult shoppers who regularly purchased one of the specified products. A quota of 250 was specified for each for each product type, and additional quotas were specified for age, region, and gender.

Discussion

The survey will generate rich data that provide for a wide variety of analyses including descriptive analysis, and multivariate analysis, in addition to the estimation and testing of the structural equation model. The discussion that follows focuses on the analysis using the structural equation model (SEM).

The procedure for SEM will involve:

- Tests of measures for each construct for reliability using Cronbach's alpha
- Estimation of measurement models for constructs
- Estimation of specific models for country and product
- Evaluation of model fit
- Testing alternative models

The General model forms the basis from which alternative models can be tested. Under the assumption that the General Model is correct, the tests would compare:

- General Model vs Value Model
- General Model vs Satisfaction Model
- General Model vs Indirect Model

General Model vs Research Model

The results of the tests will provide for a preferred model to be identified in various contexts of application; for product and country models, aggregate product models, and aggregate country models.

Acknowledgments

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