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Model of Simulation for Optimizing Marketing Mix Through Conjoint Analysis Case Study: Launching a Product on a New Market

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This paper applies conjoint analysis approach to simulate and determine the optimal marketing mix for a Romanian company that struggles to face the market higher competition. The company intends to launch its product into a new market and surveys the likelihood of getting international. The survey helps the company to gather information from clients regarding product characteristics, price, method of distribution, and promotion, according to customer preferences. Having these data, it is made a marketing simulation using conjoint analysis in order to get the optimal marketing mix in launching the product on a new market. The optimal marketing mix is given by the highest mix of utility for the clients, but sometimes the marketing manager would choose a little bit lower utility mix, forced by the company restrictions.

Keywords: marketing simulation, marketing mix, conjoint analysis, launching a product on a new market

Introduction

The article's aim is to show how to use marketing simulation, more precisely conjoint analysis, in evaluating the market conditions when launching a new product on a new market. This article describes a case study of a Romanian company that, after a market research using Lime Survey, had gathered information regarding clients preferences on product characteristics, price, distribution, and promotion. This simulation helps the marketing manager to take scientifically based decisions, in the first stage, regarding the highest utility from the client view point. In the second stage, it can be added the company restrictions, that cloud lower a bit this utility, but it goes on the principle win-win (both, the client and the company wins).

Conjoint Analysis—Method of Marketing Simulation

Conjoint analysis, a preference measurement method typical in marketing research, has gradually expanded to other disciplines (Halme, 2011). In marketing filed, conjoint analysis is used to analyze and forecast consumer behavior in relation to new products to be launched on the market or enhancements to existing products. Conjoint analysis group client prefers products and services, having a criteria of the attributes of the product/service. The groups obtained can recombine to predict customer preferences for any combination

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of attribute values.

Conjoint analysis is a stated-preference survey method that can be used to elicit responses that reveal preferences, priorities, and the relative importance of individual features associated with health care interventions or services. Conjoint analysis methods, particularly discrete choice experiments (DCEs), have been increasingly used to quantify preferences of patients, caregivers, physicians, and other stakeholders (Hauber, 2016).

Conjugate analysis is used to predict possible market share or profits generated by the introduction of a new product in a market where competitor's products are present.

Conjugate analysis is used to design an optimal product concept and to identify market segments that would appreciate the product.

Designing a joint analysis involves three steps: (1) design data collection tool, (2) data collection from consumers, (3) data analysis and simulation market response.

Research Methodology

The company intends to launch a baby's jumpsuit into new market, too. The Romanian company applied an online survey, using Lime Survey on a sample of 1,200 potential customers (parents with children), whom they were addressed four questions relating to variations of marketing mix (product type, price, distribution, promotion) designed by the company to launch successful on the market.

Design a Study of Conjoint Analysis

At this stage, attributes are set the products attributes that are taking into account the products classification to achieve a set of packages of products for which the marketing manager can get customers overall assessment. Each client expresses a preference for each attribute of the product, giving it a proper quote.

The baby jumpsuit has four attributes, each with three variants, reaching 34 = 81 possible combinations (different products): (1) type of product: VP1—100% cotton, VP2—100% polyester, VP3—50% polyester and 50% cotton; (2) options price: P1—15 RON, P2—10 RON, P3—20 RON; (3) distribution methods: D1—online, D2—hypermarkets, D3—Mall; (4) techniques of promotion: PR1—online coupons, PR2—loyalty cards, PR3—seasonal discounts or other occasions discounts. Most times it is difficult to assess the usefulness of each different product and product choice with maximum utility. In these cases are selected representative samples.

The literature states that an average of 16 product profiles to obtain sufficient participant evaluations. For each product, you can set the minimum value for the utility (e.g., 0) and maximum (e.g., 100). In some cases obtained products may be unrealistic, and would be replaced with other combinations (e.g., 100% cotton jumpsuit to have the lower price).

To make a conjoint analysis may use different data collection tools, such as:

- Customers will rank each product type within a range of 0 to 100, to reflect their preference for that product (instrument used in the case study below).
- Customers will sort a set of cards, each containing a description of a product.
- Presentation of a product sequence, two at a time. Customers will be awarded 100 points differential between these two products.
- Providing a set of products, some customers will choose one product.

Each of these methods of data collection has an associated set of costs and benefits.

Simulation: Optimizing Marketing Mix Using Conjoint Analysis

The possible clients had to express their preferences regarding the product characteristics, price, distribution, and promotion. Analyzing data collected from the survey, 40% of clients preferred the jumpsuit to be 100% made of cotton, 38% preferred the jumpsuit to be 100% made of polyester, and 22% preferred the jumpsuit to be 50% made of cotton, 50% of polyester (Figure 1). The clients' preferences regarding product price, distribution, and promotion are presented in Figure 1.

The marketing specialist uses conjoint analysis to measure the relative weights of attributes, and to handle the inclusion of a none-option (Arenoe, 2015).

The variants of marketing mix are presented below (Tonis 2014):

(1) Types of product

The respondents have been presented three product models:

VP1—jumpsuit made of 100% cotton and available in different colors and models, which was preferred by 40% of respondents. Customers who prefer this type of jumpsuit stated that the products of 100% cotton provide comfort in use, especially for sensitive skin of babies.

VP2—jumpsuit made of 100% polyester, available in different colors and designs preferred by 38% of potential customers. Customers stated that they are much easier to use (washing, ironing, last longer over time, etc.).

VP3—jumpsuit made of polyester fabric 50% and 50% cotton, available in various colors and designs preferred by 22% of respondents. Customers say that this type of jumpsuit is happy combination of the two types of material, offering product strength on long term, without affecting comfort baby.

(2) Types of price

The respondents have been presented three variants of price:

P1—a sale price of 15 RON, considered an average price chosen by 25% of respondents.

P2—a sale price of 10 RON, which seeks to attract price-sensitive customers, chosen by 55% of respondents.

P3—a sale price of 20 RON, aiming at attracting high-income customers, who associate the BabyBoo brand with high quality products, chosen by 20% of respondents.

(3) Ways of distribution

The respondents have presented three distribution methods:

D1—the product is presented and sold online, it is provided at client's home. It gives customers a high degree of comfort in purchasing. By this method, the customer saves time: do not go to the store, can make comparisons between a huge range of products and prices, from any geographical area. Customer also saves money: the route producer—client does not interpose intermediaries to raise the product price, but it pays transportation. This version is preferred by 37% of potential customers.

D2—the product is presented and sold in hypermarket networks (ex: METRO, Carrefour, Cora, etc.), preferred by 22% of respondents. Customers in this category do not trust the security of online payments and want to touch the product before buying. They also consider that they save time, buying the product along with other food items.

D3—the product is presented and sold in shopping mall, preferred by 41% of respondents. Product choice

is a pleasant way of leisure customers with this option.

(4) Techniques of promotion

The respondents have presented three methods of promotion:

PR1—the opportunity to purchase the product online at preferential prices using Groupon coupons type, Vulping, etc. Paying in anticipation a small amount for a coupon, the client will receive discounts of up to 75% of the product price. This method is valued by 35% of respondents.

PR2—offering customer loyalty cards, especially for networks hypermarkets. These cards allow the accumulation of points which then can be converted into money or the client can choose other products with equivalent points. This method is valued by 38% of respondents.

PR3—seasonal or other occasions discounts (celebration of a certain number of years from the opening of the store, removing product from the market, etc.), preferred by 27% of those questioned.

Research Results

Table 1

Determination of the Optimal Marketing Mix

No.	Code of product	Code of price	Code of distribution	Code of promotion	Type of product	Type of price	Type of distribution	Type of promotion	Overall utility
51	vp3	p2	d3	pr2	0.40	0.55	0.41	0.38	0.0343
24	vp3	p2	d3	pr1	0.40	0.55	0.41	0.35	0.0316
78	vp3	p2	d3	pr3	0.40	0.55	0.41	0.27	0.0244
33	vp3	p2	d1	pr2	0.40	0.55	0.37	0.38	0.0309
6	vp3	p2	d1	pr1	0.40	0.55	0.37	0.35	0.0285
60	vp3	p2	d1	pr3	0.40	0.55	0.37	0.27	0.0220
42	vp3	p2	d2	pr2	0.40	0.55	0.22	0.38	0.0184
15	vp3	p2	d2	pr1	0.40	0.55	0.22	0.35	0.0169
69	vp3	p2	d2	pr3	0.40	0.55	0.22	0.27	0.0131
49	vp1	p2	d3	pr2	0.38	0.55	0.41	0.38	0.0326

Conjoint analysis method involves selecting a representative sample of the total number of possible combinations, in this case 81 (3*3*3*3). Being only 81 possible combinations the case can be solved using Ms. Excel sheet. It had been calculated the overall utility of each individual utilities multiplying combinations of the four variables mix.

Table 1 presents the first 10 combinations from the total of 81 possible combinations criteria ordered by highest price, then by product, then by distribution and promotion. This table provides the calculation results utilities by multiplying the four variants of probabilities.

These values are ordered by highest four criteria, price being considered the most important by customers, the material from which it is made the jumpsuit, how distribution is made and finally promotional technique.

Discussion

Theoretically optimal marketing mix is given by the highest mix of utility (preferred by most of those interviewed). Marketing mix for the global utility is the highest (0.0343) for 51st alternative (VP3, P2, D3, PR2), meaning the type of jumpsuit made of equal proportions of cotton and polyester, the price of 10 RON sold by stores Mall and using as a means of promoting loyalty card. However this marketing mix can not be considered optimal because it involves quite high costs regarding sale in stores like Mall (distribution, rent,

wages sellers, etc.).

A possible optimal variant marketing mix is 33rd alternative (VP3, P2, D1, PR2), meaning the type of jumpsuit made of equal proportions of cotton and polyester, the lowest price of RON 10, sold online and using as a way to promote card reliability. In this case, the overall utility is 0.0309 and the company removes some of the distribution costs and offers large discounts.

It can also be considered the 6th alternative (VP3, P2, D1, PR1), where the promotion is through coupons that offer customers the opportunity to buy BabyBoo branded products at the lowest price because the route producer—client does not interpose intermediaries to retain additional costs. Overall usefulness in this case reaches 0.0285, but the costs of its stores can reduce profits.

Conclusions

The article presents a model of simulation for optimizing the marketing mix. In the paper case study were presented many decisional alternatives, as a result of the calculations made. The final choice belongs to the marketing specialist department, after determining the costs of each variant of the marketing mix. The choice will be submitted for approval to the general manager. Using this model, any SMEs can find a proper solution for his marketing strategy.

Further Research

For the forecast in operations management and marketing contexts, it has been designed new techniques that simultaneously identify consumer preferences and the most relevant attributes have been developed. It obtains a more parsimonious representation of consumer preferences than traditional models. Advanced machine learning techniques enhance conjoint analysis capabilities to better identify consumer preferences (Maldonado, 2015). In the near future, it has to be developed a model of simulation, based on the new techniques of conjoint analysis.

References

Arenoe, B., Rest, I., Van Der, J. P., & Kattuman, P. (2015). Game theoretic pricing models in hotel revenue management: An equilibrium choice-based conjoint analysis approach. *Tourism Management, 51*, 96-102.

Bucea-Manea-Tonis, R. (2014). *Simulari de Marketing*, Bucuresti (Ed.). Fundatiei Romania de Maine.

Halme, M., & Kallio, M. (2011). Estimation methods for choice-based conjoint analysis of consumer preferences. *European Journal of Operational Research, 214*(1), 160-167.

Hauber, A. B., Gonzales, J. M., Groothuis-Oudshoorn, C. G. M., Prior, T., Marshall, D., Cunningham, A. C., Jzerman, M. J. I., & Bridges, J. F. P. (2016). Statistical methods for the analysis of discrete choice experiments: A report of the ISPOR conjoint analysis good research practices task force. *Value in Health.* In Press.

Maldonado, S., Montoya, R., & Weber, R. (2015). Advanced conjoint analysis using feature selection via support vector machines. *European Journal of Operational Research, 241*(2), 564-574.