Analytic Hierarchy Process as a Decision Tool for Operative Marketing

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INTRODUCTION

The Analytic Hierarchy Process (AHP) is a method that shows an approach and realistic assessment of the best decision in accordance to the boundary conditions of that specific moment. It includes certain subjective opinions on how the satisfaction and preference can be considered, due to the fact that human judgment is not always consistent (Crespo et al, 2012; Moreu et al., 2012).

The AHP has been applied to multiple situations in order to support decisions. In business, AHP has been mainly oriented for organization, structuring projects, resources allocation, prediction, etc. (González-Prida & Crespo, 2012). This article intends to synthesize in a simple way how the Analysis Hierarchical Process at a sales stage can help to make more appropriate decisions on marketing actions, including a dynamic view of the scenario due to the consideration of products with a technological planned obsolescence.

The research applies the AHP to four scenarios (introduction, growth, maturity and decline), depending on the moment of the product in the market, obtaining as a result an appropriate policy or guidance that should take the company under the five usual criteria from operational marketing: Product; Price; Place (or point of sale); Promotion and Public target (or target customers). These criteria have also sub-criteria whose weights also depend on the stage in which the product is found in the market. Besides these criteria, the proposed alternatives that are taken into account in the AHP will be: Focusing on production; Focusing on product; Focusing on sales and Focusing on marketing. In order to illustrate this application, a case study is included at the end of this article.

As it will be underlined throughout the document, it is important to highlight that this article is not intended to discuss marketing concepts, but to find a useful application of a multicriteria decision tool in a business management area such as marketing.

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BACKGROUND

On the AHP Methodology

The AHP is a methodology developed by Thomas Saaty in 1970, based on the understanding of a complex problem through a breakdown in parts hierarchically ranked and quantifying and comparing variables that facilitates the decision taking (Saaty, 1990). The process has been used to assist numerous decision problems (González-Prida et al., 2011), which decomposed into a hierarchy of criteria and alternatives, and resulting a decision matrix with elements compared in pairs.

As already mentioned, subjective values can be used. That makes necessary to measure the sensitivity in changes of parameters. To measure the reliability of the process, we use the ratio between consistency rate (*CR)* of a comparisons array into pairs, and the value of the same index of a comparison array into pairs randomly generated. Process reliability is sufficient if

CR is less than or equal to 0.10, otherwise, it must be reviewed to improve its consistency. AHP is orientated in this research to a continuous improvement (Harker & Vargas, 1990), taking also into account features described in references like Moffett et al., 2005 Dyer 1990, Arrow and Raynaud 1986, or Donegan et al., 1992 and Zanakis et al., 1998.

On the Technological and Social Obsolescence

Obsolescence is usually known as an object quality, which arises when the object usefulness has become insufficient or surpassed by another object (and not due to a malfunction).The obsolescence applied to industrial assets has been developed in references like Handfield and Pannesi, 1997, Bradley and Dawson 1998, and more recently by Gomez J. et al. (2012). The main causes of obsolescence have been usually analysed under different perspectives such as the use, the economy, the physical structure and the social factor (Golton, 1989; Lemer, 1996). This research is mainly focused on technological factors such as those ones referred to the current state of the art in comparison to new available alternatives in terms of efficiency. In a similar way, social, legal, ecological or cultural perspectives make a strong influence in preferences, recommendations, trends or obligations about changes or modifications on assets.

According to this, there are unclear factors that affect the asset obsolescence. They appear normally due to tendency changes in the market or subjective perspectives (Lee, 1998). In line with this, marketing activities are in this research linked to this kind of obsolescence (technological and social), considering therefore the technical development and the subjective perspective of the assets. Analysing the relationship between obsolescence and marketing we will focus on technological and social obsolescence in this article without considering the functional and economic obsolescence. Consequently, from technological and social perspectives, operative marketing has to assess the product comparing the current asset value in the market, with the value of a new substitute item immersed in the same market environment. Subsequently, in this study, we will apply AHP to decide the business policy to adopt, focusing on the market conditions which could accelerate the asset degradation from the technical obsolescence point of view.

MARKETING AND PRODUCT LIFE CYCLE

The main elements of a company that are usually considered as exclusive of the marketing area can be summarized in the commonly known five P's: Product, Price, Place, Promotion and Public Target (People). This is commonly known as the Marketing Mix whose components can change a firm's competitive position. However, the Marketing-Mix, as defined by McCarthy in the 60's, has 4 P's and currently there are other P's (like People, Politics, Performance, Personnel, Prosumers...).

Consequently, the 5 P's perspective or even 4 P's can be nowadays viewed as outdated to an extent, since the discussion is currently lead by topics such as business models that cover more aspects than the marketing mix and the "value chain," "partners" and "new revenue models," which are gaining a huge impact. In any case, the goal of this article is not to discuss about the new perspectives on marketing, but to apply a multicriteria decision tool in such a field of the business management.

Therefore, considering the five P's, other sub-elements can be unequivocally included and considered as criteria to take a decision on the business policy to apply.

Some examples are as follows (Philip Kotler, 2001):

A. Product
   - Phase of the product life cycle
   - Benefits of the product for the user
   - Differential characteristics of services
   - Quality, delivery, reliability...

B. Price
   - Method used for pricing
   - Costs, market competition
   - Perception of market prices
   - War pricing, pricing strategies
   - Price sensitivity …

C. Place
   - Number and size of distribution points
   - Direct and indirect distribution
   - Percentage of sales in units.
   - Number of sales channels
   - Average sales margin obtained by a salesman