

Application of AHP and DEMATEL Procedure on Brand Experience

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Abstract: *Brand experience comprises of numerous dimensions, attributes, and intangible components which are difficult to measure accurately. Hence, this paper proposes a hybrid multi-criteria decision making procedure, combining the analytical hierarchy process (AHP) and decision making trial and evaluation laboratory (DEMATEL) method to serve the decision-makers with a quantitative means of assessing the brand experience. AHP & DEMATEL helps capture both subjective and objective appraisal methods, offering a useful tool for evaluating evaluation accuracy and alternatives, thus eliminating bias in decision-making. Furthermore, conducting a thorough assessment to clearly define and understand which of these dimensions and attributes most impacts the brand and business is at least half the battle. It will make the task of building actionable strategies all the more manageable and more successful outcomes. The outputs of AHP and DEMATEL will certainly facilitate the decision-makers to make better-informed decisions concerning the brand experience.*

Keywords: Brand experience, AHP, DEMATEL

1. Introduction

Brand experience (BE) is strongly significant in affecting consumer memory to encourages satisfaction (Oliver, 1997), loyalty (Sahin, Zehir & Kitapci, 2011) and building long term consumer-brand relationship (Khan and Rahman, 2015) by creating connections through an engaging, compelling and consistent context (Sahin et al., 2011). Through this emotional interaction and involvement in four different dimensions (i.e. sensory, affective, behavioral, and intellectual) will create a better understanding of BE and, the entire range of experiences evoked by brand-related stimuli could be understood (Brakus, Schmitt, and Zarantonello, 2009). With stiff competition where there are no real differences among the brand competitors, consumers begin to explore more experiential brands and this is where brand experience comes into marketing strategic consideration (Lada, Suki, and Sidin, 2014). Unfortunately, little attention has been given to better understand the precise performance measurement of brand experience as they have a significant contribution to strengthening products and brands. Therefore, this study proposed a methodology and procedure using AHP and DEMATEL to examine and develop the performance measure of the existing BE.

BE has gained attention among practitioners (Alloza, 2008; Coomber & Poore, 2013; Merrilees, 2016) and academics (Brakus et al., 2009; Shamim and Butt, 2013; Lada et. al., 2014; Jaakkola and Alexander, 2014) but the comprehensive study offering deeper

understanding of brand experience assessment and performance measures is still incomplete. To date, researchers have mainly focused on exploratory attempts to conceptualize and measure customer experience (Katherine and Peter, 2016). Although the investigation by Brakus et al. (2009) in the field of brand experience research was commendable, however, the direction in which brand experience research is now headed is unclear. Furthermore, the domain of brand experience is in the nascent stage (Schmitt, 2009), and frequent and honest reassessments are required (Cooper, 2010). Based on previous literature, the existing frameworks of BE are unable to measure the precise performance in the actual marketing activities. Brand experience consists of various dimensions, (i.e. sensory, affective, behavioral and intellectual) that make it difficult to measure and the choice of quantitative techniques introduced in past studies to evaluate brand experience appear to be limited. Earlier techniques failed to deliver some precise as well as useful extra information (e.g. the weights of the dimensions and the interrelationships between the attributes) that could be helpful for the decision-makers in making better decisions in strengthening their brand experience. Therefore, this study wishes to develop a brand experience assessment procedure based on AHP (Bhushan, Ria, 2004; Saaty, 2008) and DEMATEL (Shieh, Wu, and Huang, 2010). Besides, a primary contribution of this study is to empirically examine and develop the individual dimension performance of BE, which should facilitate brand positioning efforts. Focusing on the precise measurement of each dimension in BE is the right direction to build actionable strategies for BE.

2. Literature Review

Brand Experience and AHP

Brand experience is conceptualized as sensations, feelings, and cognitions and behavioral evoked by brand-related stimuli (Brakus et al., 2009) and it is created through consumer usage, seeking out more information related to the brand (Ambler, 2002). Based on Brakus et al., (2009) the interaction between an individual and a tangible or intangible brand can refer to brand experiences that are more personal and implies customer involvement in four different dimensions that include sensory, affective, behavioral and intellectual emotion. The two prominent methods of brand experience are Pine and Gilmore (1999) and Brakus et al. (2009). However, the Brakus et al. (2009) method to brand experience seems the most analytical and is the one we adopt here. In practice, sensory experience is referred to as sight, sound, touch, taste, and smell. Meanwhile, affective experience refers to feel, consumer's emotions and inner feeling toward brands (Shamim and Butt, 2013). According to Richins, (1997) behavioral refer to activities related to behavioral experiences that are created by brand-related stimulation based on the product design and identity, packaging, communication, and environment. Meanwhile, the intellectual dimension is referred to as consumer knowledge.

Concerning the processes of developing actionable strategies for BE, Chen et al. (2012) address issues related to experience sharing as a creative effort for the benefit of others. Meanwhile, Pine and Gilmore (1998) specifically address the importance of experiences in today's society and the opportunities for firms to benefit from creating strong and enduring customer experiences. The increasing focus on customer experience arises because customers now interact with firms through numerous touchpoints in multiple channels and media, resulting in more complex customer journeys (Katherine and Peter, 2016). Overall, we thus conclude that customer experience is a multidimensional construct (refer to Table 1) focusing on a customer's sensory, affective, behavioral, and intellectual responses to a firm's offerings during the customer's entire purchase journey. The AHP applied in particular to support

multi-level decisions involving a number of response criteria. It should, therefore, make it possible to assess preferences in the context of its consumer choice.

Table 1: Brand Experience Dimension and Attribute

Author	Dimensions	Attributes	No. of Items
Brakus et al., (2009)	Sensory	<ul style="list-style-type: none"> • This brand makes a strong impression on my visual sense or other senses. • I find this brand interesting in a sensory way. • This brand does not appeal to my senses. 	3
	Affective	<ul style="list-style-type: none"> • This brand induces feelings and sentiments • I do not have strong emotions for this brand • This brand is emotional 	3
	Behavioral	<ul style="list-style-type: none"> • I engage in physical actions and behaviors when I use this brand. • This brand results in bodily experiences. • This brand is not action-oriented. 	3
	Intellectual	<ul style="list-style-type: none"> • I engage in a lot of thinking when I encounter this brand. • This brand does not make me think. • This brand stimulates my curiosity and problem-solving. 	3
Total			12

Analytical Hierarchy Process (AHP)

The AHP introduced by Saaty (1980) and AHP was developed to optimize decision making relates to a mix of qualitative, quantitative and related to conflicting attributes that are taken into consideration. AHP is designed for making complicated decisions and takes the judgments of decision-makers to form a decomposition of problems into hierarchies. The hierarchy is used to derive ratio-scaled measures for decision alternatives and determines the relative value alternatives have against organizational goals and project risks. Most researchers use AHP as a means to prioritize assets of independent attributes of factors involved in a multi-criteria decision-making problem (Albayrak and Erensal, 2004). The AHP approach is gaining popularity because of its comprehensibility and ease of implementation. AHP has been widely used in a number of fields such as biomedical, energy systems and industrial applications [Al-Oqla and Hayajneh, 2007; Dalalah, Al-Oqla and Hayajneh, 2010] as well as in social, economic, agricultural, ecological and biological fields (Dalalah et al., 2010; Buchholz, Rametsteiner, Volk and Luzadis, 2009). Unlike conventional methods, AHP uses pair-wise comparisons that allow for verbal judgments that enhance the accuracy of the findings and further allow for accurate ratio and scale priorities. However, AHP requires critical steps and procedures to be followed. The basic steps and the process (refer to Table 2 and Figure 1) of deriving the weights of attributes using AHP can be illustrated as follows:

Table 2. The process of the AHP method.

Step	Description
One	The relative importance between the factors or attributes is compared pair wisely where the preferences can be indicated or expressed by adhering to a predetermined judgment scale.
Two	The weights or priorities of the factors or attributes in the pair-wise matrix are identified through the commonly used eigenvalue method (Dong, Zhang, Hong and Xu, 2010).

Three	The consistency of the pairwise matrix is measured to verify whether the weights are derived from a consistent pairwise matrix. If the pair-wise matrix is found to be highly inconsistent, a re-evaluation on the pairwise matrix would be required (Ho, 2008).
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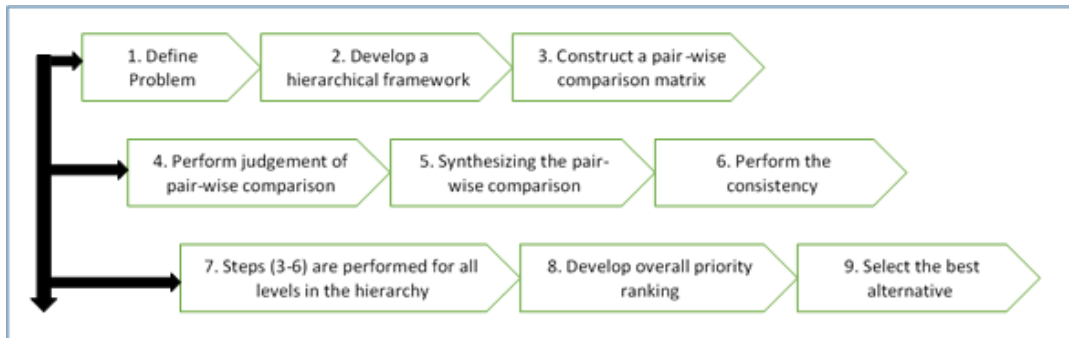


Figure 1. The process of the AHP method.

Decision Making Trial and Evaluation Laboratory (DEMATEL)

Decision-making trial and evaluation laboratory (DEMATEL) method (Fontela & Gabus, 1976) is introduced to build the structure of relationship map for clarifying the interrelations among sub-criteria of a criterion, as well as to visualize the causal relationship of sub-systems through a causal diagram (refer to Figure 2). The original DEMATEL was aiming at searching the fragmented and antagonistic phenomena of world societies for integrated solutions. It has been widely accepted as one of the best tools to solve the cause and effect relationship among the evaluation criteria (Wu and Lee, 2007, Lin and Tzeng, 2009). This method is applied to analyze and form the relationship of cause and effect among evaluation criteria (Yang et al., 2008) or to derive interrelationship among factors (Lin and Tzeng, 2009). The DEMATEL method is based upon graph theory, enabling us to plan and solve problems visually, so that we may divide multiple criteria into a cause-and-effect group, to better understand causal relationships to plot a network relationship map.

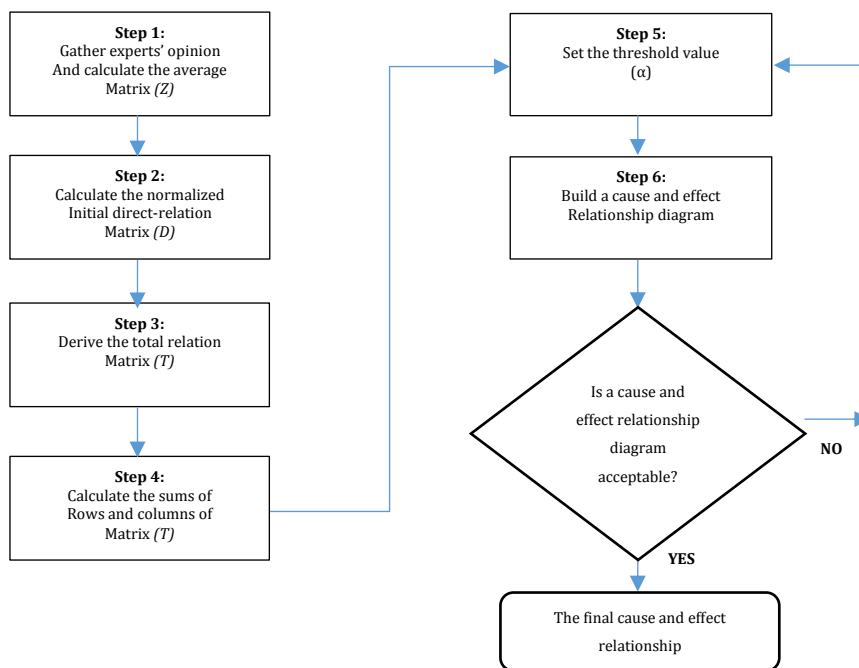


Figure 2. The process of the DEMATEL method.

3. Methodology

The developing procedure of this study consists of several processes as shown in Figure 2. The process starts to identify the brand experience dimension and attributes that customers consider the most important. Then when constructing the hierarchical structure of evaluation have been done the second process is to calculate the weight of each independent dimension by applying the analytical hierarchy process (AHP) methods. In the third process, the causal-effect relations between the interactive attributes of each dimension are identified using DEMATEL. The outputs of AHP and DEMATEL can then be used by the decision-makers to develop the right, effective strategies to improve their brand experience.

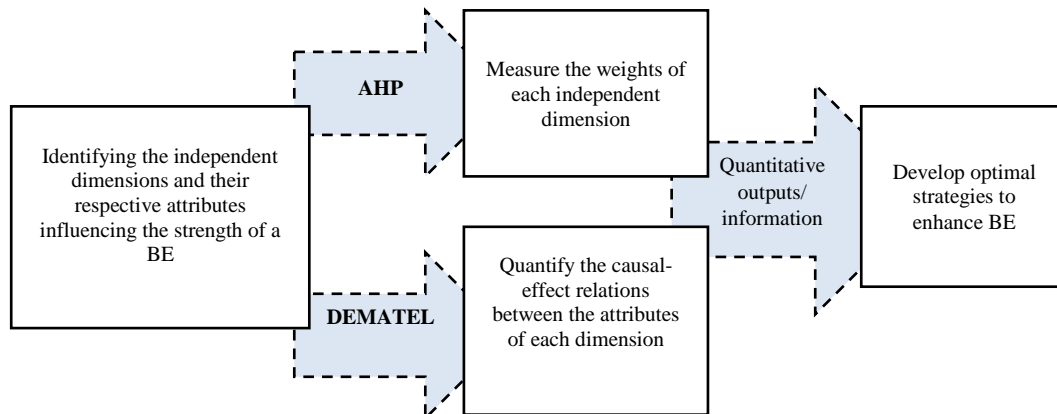


Figure 2. The framework of developing brand experience (BE) measures.

4. Conclusion

Overall, the study will present a practical example of the application of the MCDA method, to the implementation of the measure of brand experience in Sabah, Malaysia. The analysis was based on the Analytical Hierarchy Process (AHP) and the Decision Making Trial and Evaluation Laboratory Method (DEMATEL) which are well-known approaches to multi-criteria problem-solving. In view of the high complexity of these steps, as well as the varied and often contradictory preferences of customer reactions, the decision-making process in this field has become difficult. As a consequence, the use of MCDA approach is the best way to find solutions that are optimal from all alternatives. Using the Analytical Hierarchy Process provides a powerful tool for analyzing the problems and outcomes of decision-making models that are quite reliable. The above implementation of the AHP theory is a step towards the removal of bias or prejudice in the expert's decision since the steps leading to the judgment are made explicit through a relational evaluation. This also helps to uncover any gap in the expert's thinking regarding qualitative factors in the selection of items and variables that may not have been considered.

This study represents a dual interest in academic (methodology) and managerial fields. Firstly, clarifying the concept and attributes of BE, and secondly, developing performance measures for each dimension and attributes by AHP and DEMATEL method. This study attempt to optimize decision making relate with a mix of qualitative, quantitative and related to conflicting attributes in BE. This study extends the current knowledge of BE by filling research gaps in existing BE literature. From a managerial perspective, developing an accurate performance measure for BE is an important concept which companies should take into account to develop and better manage their brand. Indeed, the existence of BE

measurement provides marketing executives with the opportunity to have a strategic tool, which enables them to improve or strengthen the mapping of their brands.

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