Perceptual map design of Algerian mobile telephony market.

تصميم خريطة الإدراك الحسي لسوق الاتصالات المتنقلة في الجزائر.

BENALI Amina

Faculty of Economics, University of Bechar, (Algeria),

benali.amina@univ-bechar.dz

Abstract:

The aim of this study is to design a perceptual map of mobile telephony market in Algeria, according to the dimensions of the mental picture of three brands (MOBILIS, DJEZZY, and OOREDOO).

This study is based on the random sample method, where 175 samples distributed to mobile users in BECHAR (South-West of Algeria).

This study found that MOBILIS is the most anticipated sign of reliability and satisfaction compared to other competitors. But this brand does not have a high degree of loyalty. While there is a great convergence between the three brands in terms of the price perception and Service expansion.

Keywords: Brand; Mental picture;Perceptual map; Price perception; Services expansion .

JEL Classification Codes: M31, M37, M39.

ملخص:

تهدف هذه الدراسة إلى تصميم خريطة الادراك الحسي الخاصة بسوق الاتصالات المتنقلة في الجزائر وفقا لأبعاد الصورة الذهنية لثلاث علامات تجارية*MOBILIS،DJEZZY* و*OOREDOO*.

تم اختبار هذه الأبعاد على 175 شخصًاكعينة عشوائية من مستخدمي الهواتف المحمولة في ولاية بشار (جنوب غرب الجزائر). وباستخدام "نهج الخريطة الحسية"، وجد أن *MOBILIS* هي العلامة الأكثر موثوقية ورضا لدى الزبون النهائي مقارنة بالمنافسين الآخرين. لكن هذه العلامة التجارية لا تتمتع بدرجة عالية من الولاء مما يولد لها درجات محدودة من الخطورة. في حين هناك تقارب بين العلامات التجارية الثلاث من حيث الإدراك السعري للعلامة وتوسع الخدمة المقدمة.

Corresponding author: *BENALI Amina, e-mail:* amina22benaliste@yahoo.fr.

1. INTRODUCTION

One of the most important instrument of data collection to any marketer is the full knowledge of customers' awareness about the goods and services provided in the target market .In marketing science, especially in consumer behavior, there are many ways proposed by academics, to gather this data and they are not always effective at taking exactly how compare a brand to their competitors in the same industry .This is where perceptual mapping becomes such a valuable tool.

The importance and managerial use of perceptual maps to support product brand positioning and repositioning decisions is widely recognized and discussed in the marketing and business literature. The significance of its importance is more when the problems faced by transition economies are considered. (Rekettye & Liu, 2001, p. 241)

This paper has tried to draw the perceptual map of three brands in the telephony mobile market in Algeria. Knowing that in recent years, the telecommunications sector in Algeria has faced a fierce competition that has made the customer more able to impose his desires and choose alternatives suit his needs. And the most important ways that can meet this needs is to create a positive mental links with the brand and work on marketing tools development which follow effective methods to increase the brand equity, and thus to get the excellence and access to a positive mental picture and achieve the desired continuity. So This study proposes to answer the following question: How mobile users perceive the service provided? This question breaks down in the following sub question:

- What is the perceptual map and how can it used?

- How to design mental picture's criteria according to the dimension's perceptual map?

- What is the usefulness of the results given by the perceptual map in

the studied market?

In addition to trying to solve the problem described above, this study seeks to clarify the concepts of the perceptual mapping and develop indicators to measure the mental picture of users.

And in order to take note of the aspects of the subject of this paper, we will use the descriptive analytical method in this study in which we seek to answer the most important questions of the problem, using the perceptual maps.

2. The perceptual map: The concept.

Positioning is among a manager's greatest strategic responsibilities. Positioning assists to explain brand strengths among competitors and clarify potential challenges of similar brands and possible substitutability. Evaluation of positioning, from initial marketplace efforts to resources directed at modifications and re-positioning, are frequently assisted by the graphical representations of brands in multidimensional space. Such perceptual maps are constructed to reflect the closeness of brands and therefore the extent to which they are seen as interchangeable, versus distances between brands representing their relative positioning distinctiveness. (Iacobucc, Grisaffe, & DeSarbo, 2017, p. 81)

Perceptual maps are often used to discover accurate strategies. Bhatnagar and Ghose (2004) used perceptual maps to display the result of segmenting web shoppers' behaviors. Vanlaar employed a perceptual map to explain the public concerns about dangerous driving behaviors. (Vanlaar, Simpson, & Robertson, 2008) . Bose and Gupta (2013) utilized a perceptual map to present the experimental results based on ratings given by customers of three public sector banks and three new generation private banks. Also, Mclean used it to identify the most important attributes of museum's products . (Mclean, 2012).

All of these methods use a perceptual map to show the result obtained from questionnaires. (Lee, YANG, CHEN, Wang, & Sun, 2016).

Perceptual maps are developed through marketing research, which explores the image that consumers have of the various brands or products in the market and rates each competing brand on a series of attributes. (Hiltz, 2001, p. 741) .

The perceptual map is a highly utilized tool to analyze brand positioning. So it is included in marketing courses, both at undergraduate and postgraduate level. As such it is widely taught in academia and utilized in corporate marketing environments. (Chipoco Quevedo, 2016).

It is a two dimensional chart that can show up to a dozen or more brand attributes at a time, in a format that is equally suited for a seminar for statisticians or the cover page for a board of directors meeting (Karen G, 2004). Such perceptual maps may take various forms . for example, a two-dimensional perceptual maps depicting two continua as axes is often used .(Fig . 01) (Carson, Gilmore, Perry, & Gronhaug, 2005, p. 185) .Separate perceptual maps can be drawn for each market segment. A five or seven- points rating scale is constructed using bipolar adjectives that apply to the products benefits. (Mclean, 2012, p. 199).

Fig 1. Positioning map models.
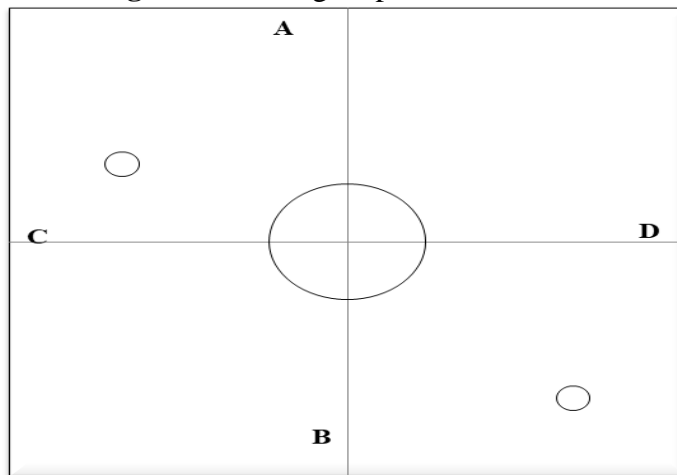
Source: Carson, Gilmore, Perry, & Gronhaug, 2005, p. 185.

Perceptual mapping is based on a variety of mathematical or qualitative approaches designed to place or describe consumers perceptions of brands or products on one or a series of "spatial maps". It is a means of visually depicting consumers' perceptions, showing the relative positioning of different brands or products (and thereby companies). The core attributes must be identified through consumer research, with follow –up confirmatory research identifying the relative positioning of the brands or companies to be plotted. (Dibb & Lyndon, 1996).

Perceptual map are also called positioning maps. They are graphs that

help to show the relationship between competitors' offerings and the criteria that consumers use when making purchase decisions. (Gbadamosi, 2013) . In addition, a positioning map allows companies and marketers to more easily see how consumers perceive their products and brands in relation to competitors ' brands on one on more relevant characteristics, also enable marketers to identify gaps in the market in which consumer needs are not being adequately met .Finally ,the positioning maps identify market opportunities to reposition an existing brand . however, positioning maps have some draw backs .

One of the main limitations is that this visual tool only has two axes, so only two attributes can be measured and analyzed at a time ; while there may be other important attributes ,and the only way marketers can determine what attributes are important to consumers is through market research . (Calvo Porral & John L , 2017, p. 73).

Moreover there is a significant risk for costly strategic positioning errors arising from imprecision or inaccuracy in map interpretation. Thus, for example, rather than estimating a descriptive technique to yield a perceptual map with point estimates, it should prove beneficial to utilize a statistical, inferential technique to obtain a perceptual map with point estimates contained in confidence intervals or regions. (Iacobucci & Grisaffe, 2018)

3. Methodology

3.1 Sampling

The sampling method used in this study was non-probability sampling, where it is difficult to find part of the population.

Specifically, this study used the appropriate sampling method, a sampling method that collects information from the part of the population (respondent) who intends to share the information requested.

This study was conducted in Bechar, with a cooperation of students who randomly received in public places such as the TAHRI University campus in Bechar and the squares and shops 8:00 to 18:00 to get a glimpse of heterogeneous mobile phone users using the convenience consumer sample. This research collected data from 200 participants, and 25 questionnaires were excluded as they did not meet the intent.

3.2 Questionnaire design

Variables used in this research were based on previous research. According to 6 previous research that also investigated the mobile market, 14 variables were summarized. These variables can be divided into two groups, namely the motives for excellence and price incentives. After that, many variables were chosen and sequenced to specific items of the question. In the end, there were four variables used in this research :
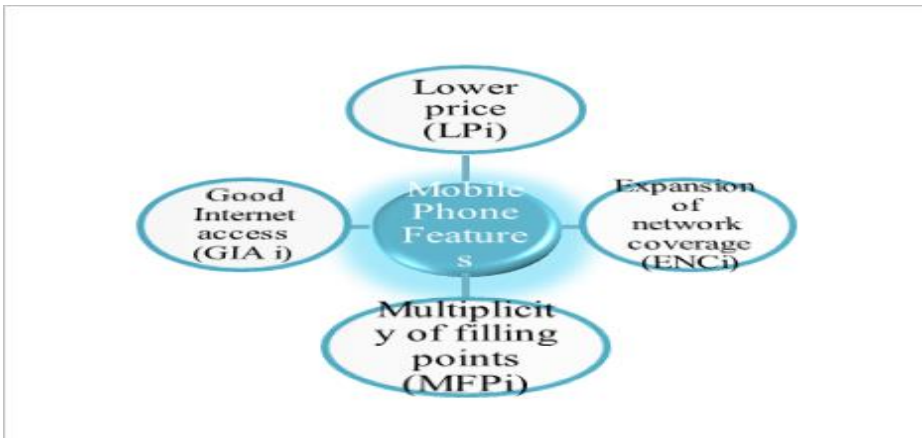
LPi :Lower price;

MFPi : Multiplicity of filling points;

ENCi : Expansion of network coverage;

GIAi : Good internet access .

Fig 2. Basic variables of the study.

Source: Elaborated by the author from previous research.

In the real case, the questionnaire was used in Arabic because the targeted respondents were Algerians. The questionnaire consists of three parts:

The first part: on the motives for using the brand;

The second part: on the preferences of the dealers on three signs displayed in Algeria;

The third part: Responder Profile;

The scale used was a separator scale, from 1 (strongly disagree) to 7 (strongly agree).

3.3 Data processing

There were several statistical tests used in this study, the validity test

using the Spearman Rank test, the Cronbach (a) reliability test, and factor analysis. All statistical tests were derived using SPSS 18.0. The number of groups was determined using self-organization maps (SOM), specifically using Clementine 12.0.

Input data used were data from part I of the questionnaire, is the motives for using the brand.

Responder preference for displayed tags was detected using perceptual map. The input data of this part comes from the second part of the main questionnaire and The tool used to obtain the perceptual map was the NEWMDSX program.

4. Results and discussion

4.1 Descriptive Analysis

The descriptive analysis showed that 58.3% of participants were female and 41.7 % male. The most were within the age group of [18-26] years old who were mostly students, with an average age of 38 year and a deviation standard of 21.05. The following table provides the complete details.

Table 1. Summary of descriptive analysis

Gender	Total(n)	%
Men	102	58,3
Women	73	41,7
Age		
18-26	89	50,9
27-36	53	30,3
36 years and more	33	18,9
Education		
Associate degree	25	14,3
Bachelor's degree	60	34,3
Master's/ doctoral degree	90	51,4
Martial status		
Single	128	73,1
Mariied	41	23,4
Divorced	5	2,9
Widowed	1	0,6

The following figure show that GIAi is associated with a high percentage of respondents (70%) who are familiar with Internet packages and services, so they are looking for a brand that allows them to speed download, speed of access, quality of electronic services .MEPi also deals with 65% of the sample who pay close attention to the points sale availability of, where they can recharging wherever they are and when they want. In addition, ENCi refers to customer perceptions of the level of conformity with network coverage. Finally ,LPi is referred to the information provided by the operator with respect to the information clarity about promotional activities, in particular about discounts and proper pricing offers.

Fig 3. Variables variation.
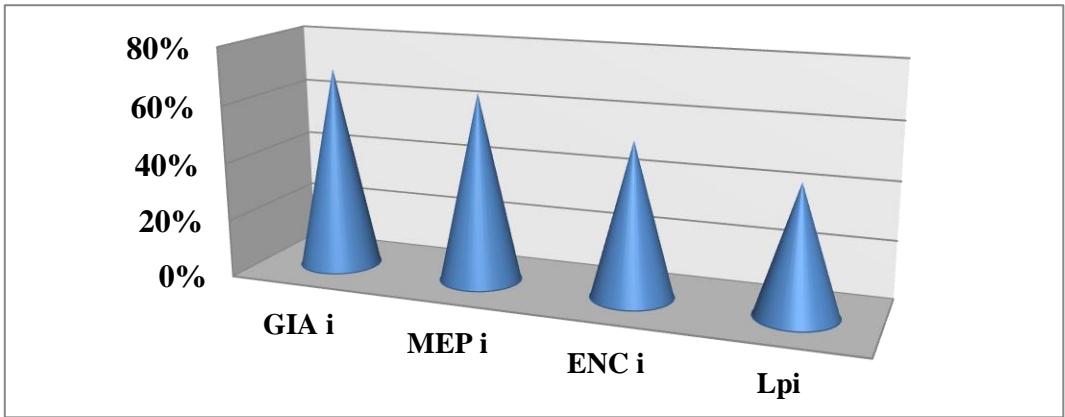
4.2 Perceptual map results

Indicator GIAi: From the first perceptual map, consumers had negative views about DJEZZY. This is because consumers are disappointed that there were not many exciting new features added to the web applications while maintaining very high expectations on both MOBILIS and OOREDOO. On the contrary, DJEZZY offers received more favorable views as both the MOBILIS and OOREDOO offerings were more priced. This may show that keeping customers informed constantly by adding a new cost and a distinct service is an important strategy to keep the customer.

MOBILIS has registered an absolute confidence (high GIAi variables) Compared to competitors. However, OOREDOO did not stray from it.

Since OOREDOO FORFAIT combines two Internet offerings at one price, while the other company's brands still use the same Internet offerings, OOREDOO meets the needs of customers more and needs more computing power in their applications.

Fig 4. GIAi perceptual map.
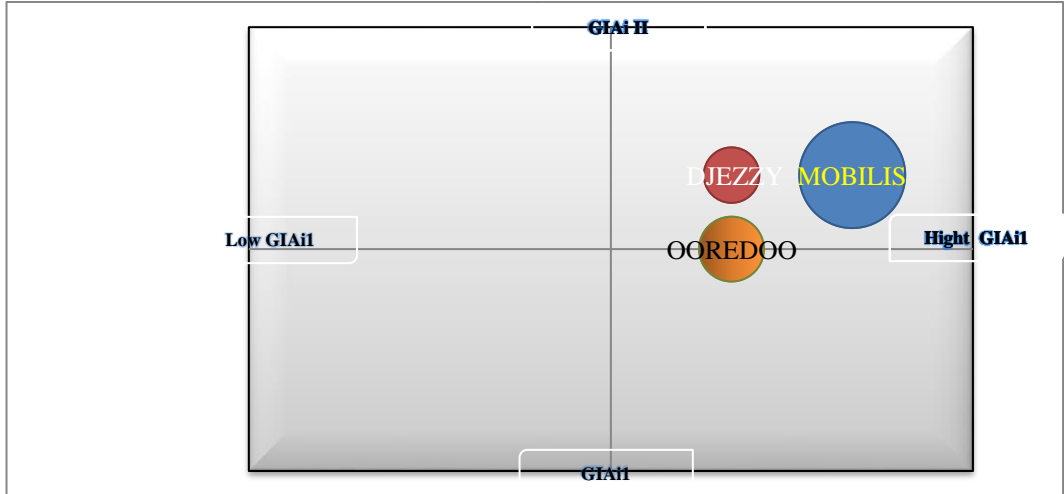
Source: Elaborated by the author, adapted from PMA.

Indicator ENCi: The second perceptual map shows two opposites directions compared to the first map.

The first trend: DJEZZY is showing a decline in ENCi, while OOREDOO has advanced.

Second trend: The second perceptual map shows that the feeling of the consumer's MOBILIS is gradually declining while slightly increasing for the competitors. However, there has registered no dissatisfaction about high prices at MOBILIS.

In fact, consumer's MOBILIS satisfied with the offers despite the high prices due to their good network coverage. Numerous national statistics and studies have confirmed that MOBILIS has become popular in terms of user satisfaction with network coverage and availability of points of sale compared to the other two brands. This confirmed by many of the studied respondents who use MOBILIS for a number of reasons, such as a good internet access system, availability of many packing points, and adoption of a good network coverage .

Fig 5. ENCi perceptual map
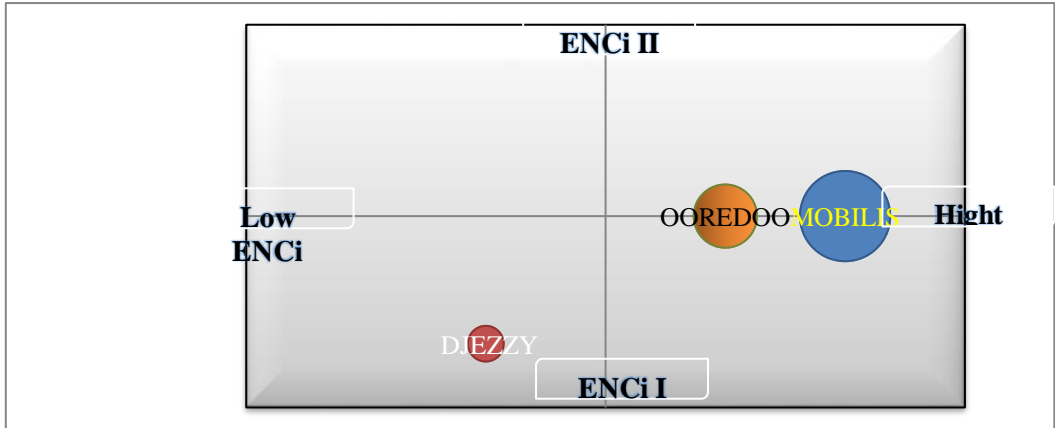
Source: Elaborated by the author, adapted from PMA.

Indicator LPi: In this section, we build aware maps by price. We divide the products into two groups by price. Low price products (less than 1000 Algerian Dinars) characterized by hollow patterns and products with high prices (not less than 1000 Algerian Dinars) characterized by solid patterns .Next, we select the most common product for each brand in each price range. Figure 5 shows that the price have a significant impact on sentiment. Consumers tend to have positive sentiment on high-priced products. In general, the results of high-priced products occupied a great positive odds .However, the price does not have the same effect on the degree of confidence in the brand. Which gave us a limited site for all the studied brands .

Fig 6. Perceptual map by price
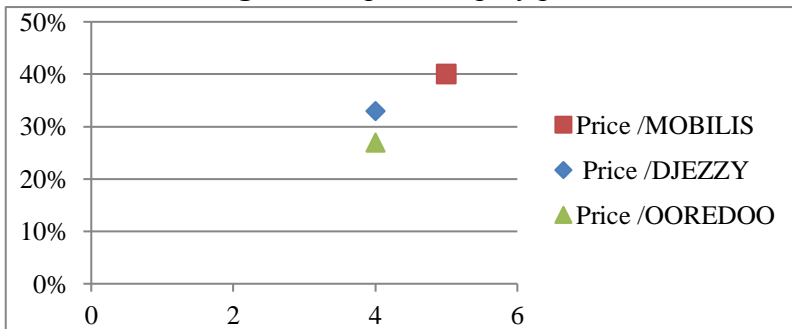
Source: Elaborated by the author, adapted from SPMA.

Indicator MEPi: According to this indicator, customers tend more to the packing centers in a nearby location. However, the map did not give a clear view of the influencing factor according to each marker. So HiCLUS is the

more method to complete this task (Chen & Chen, 2015, p. 149) .The study concluded in this context to two types of final results, which are :

- MOBILIS, DJEZZY, OOREDOO can classify in the same group for the MEPi indicator. Because recharge shops offer the same service for the three brands;

- Consumers rely on shops located in places with easy traffic for acquire a fast service ,and they marginalize the electronic recharging.

4.2 Discussion

Perceptual mapping shown to help generate insights on business initiatives in reviewing performance of their products with the products of their competitors.As MOBILIS is one of the largest mobile operators in Algeria, it attracted many of its competitors' eyes.Perceptual maps may show preferences of customers clearly where consumers are more dependent on the service advantage, the greater the confidence in the customer service features. It is the same as the result of Lee's study . (Lee, YANG, CHEN, Wang, & Sun, 2016) and Iacobucci's study (Iacobucci & Grisaffe, 2018) ; where there is a lot of research that studies show not only the ability for results analytics to produce insights on brands, but also their potential for understanding how brands are able to be differentiated in the minds of consumers. (Krawczyk & Xiang, 2015, p. 23)

The results of this study show that confidence scores may vary between data sets; however, most results are similar to each other. This demonstrates the power of insight as it indicates that the perceptual map is reliable to know the preferences of majority of customers that help to make a company decision. This result is contrary to an other studies results (John, Patrick J.F., MichelVan de , & Karen, 2014) .John and his colleagues found that the interpretation of a perceptual map is therefore often less straightforward than is suggested by its graphical format. (John, Patrick J.F., MichelVan de , & Karen, 2014, p. 61) .

In this study, we focus on customer comments for mobile operators. However, the perceptual map can easily be applied to analyze consumer ratings of other products in product development and marketing. What the perceptual map requires is a few predefined service or product features that are accessible and with reasonable effort.

In addition, we may verify the reliability of the results by comparing individual data sets.Therefore, the perceptual map can easily be generalized to analyze consumer ratings of other products and services .

5. Conclusion

This study has proposed a framework for measuring customer perceptions of mobile service brands based on customer review analysis. We have introduced two tag-mapping techniques, which require three main phases: data collection; pre-processing; and customer perception measurement .By incorporating the substitution force and the factors influencing it, the proposed approach measures customer perception by using actual customer reviews.

The results of an experimental case study on mobile phone services were presented to illustrate the effectiveness of the proposed approach. The contribution and potential benefit of this methodology were twofold:

First, customer perception is measured by using customer surveys. In collecting useful information, spends a lot of time and effort. To solve this problem, the proposed approach measures the level of customer perception almost automatically by using substitution maps according to the most influential factors;

The proposed approach can have similar effects to the customer survey that contains customer view because the review documents written by customers are used in this study. Thus, it can be the basis for further studies that use customer reviews to extract customer information.

Second, the study used the "perceptual maps approach" PMA, which can significantly consider several features at a time. In particular, a telecom company can provide information on customer satisfaction by considering maximum benefit group. This study is not limited to measuring customer satisfaction; instead, the proposed approach provides guidance on identifying areas of improvement in specific aspects of service operation.

Despite all the advantages and possibilities of the proposed approach, it contains many limitations that suggest avenues for our future research. First, this study used basic techniques to analyze perceptions in the formulation of the mental picture . Therefore, the proposed approach can and should be improved by integrating more advanced techniques for perceptual analysis

and consumer's satisfaction measurement. To this end, a comparative analysis should be conducted with other methods like NEW MCDM model (Muruganantham & Gandh, 2019). Finally, a type of case study conducted in this research should be conducted for additional mobile phone services as well.

6. Bibliography List

Calvo Porral, C., & John L , S. (2017). *Principles of marketing*. Madrid: ESIC Editorial.

Iacobucc, D., Grisaffe, D., & DeSarbo, W. (2017, Cecember). Statistical perceptual maps: using confidence region ellipses to enhance the interpretations of brand positions in multidimensional scaling. *Journal of Marketing Analytics*, pp. 81-98.

Iacobucci, D., & Grisaffe, D. (2018, Sebtember). Perceptual maps via enhanced correspondence analysis:representing confidence regions to clarify brand positions. *Journal of Marketing Analytics, 6*(3), pp. 72-83.

Krawczyk, M., & Xiang, Z. (2015, September 7). Perceptual mapping of hotel brands using online reviews: a text analytics approach. *Information Technology & Tourism*, pp. 23-43.

Rekettye, G., & Liu, J. (2001, February). egmenting the Hungarian automobile market brand using perceptual and value mapping. *Journal of Targeting, Measurement and Analysis for Marketing*, pp. 241-253.

Bhatnaga, A., & Ghose, S. (2004, july). A latent class segmentation analysis of e-shoppers. *Journal of Business Research, 57*(7), 758-767.

Bose, S., & Gupta, N. (2013). Customer Perception of Services Based on the SERVQUAL Dimensions: A Study of Indian Commercial Banks. *Services Marketing Quarterly, 34*(1), 49-66.

Carson, D., Gilmore, A., Perry, C., & Gronhaug, K. (2005). *Qualitative marketing research* . London: SAGE Publication.

Chen, C.-C., & Chen, M.-S. (2015). HiClus: Highly Scalable Density-based Clustering with. *Procedia Computer Science, 53*, 149-157.

Chipoco Quevedo, M. (2016, december). Perceptual map teaching strategy. *Revista Digital de Investigación en Docencia Universitaria, 10*(2), 83-91.

Dibb , S., & Lyndon, S. (1996). *The market segmentation workbook: target marketing for marketing managers.* London: Cengage Learning EMEA.

Gbadamosi, A. (2013). *Principles of marketing: A value-based approach.* Macmillan International Higher Education.

Hiltz, M. J. (2001). *The Marketer's Handbook: A Checklist Approach.* Markcheck Publishing.

John, G., Patrick J.F., G., MichelVan de , V., & Karen, V. (2014, September). Better perceptual maps: Introducing explanatory icons to facilitate interpretation. *Food Quality and Preference, 36*, 61-69.

Karen G, S. (2004). *Customer-centered telecommunications services marketing.* Boston , London: Artech House.

Lee, A., YANG, F.-C., CHEN, C.-H., Wang, C.-S., & Sun, C.-Y. (2016, February). Mining perceptual maps from consumer reviews. *Decision Support Systems, 82*, 12-25.

Mclean, D. F. (2012). *Marketing the Museum.* Routledge.

Muruganantham , A., & Gandh, G. (2019, april). Framework for Social Media Analytics based on Multi-Criteria Decision Making (MCDM) model. *Multimedia Tools and Applications*, pp. 1-15.

Vanlaar, W., Simpson, H., & Robertson, R. (2008, September). A perceptual map for understanding concern about unsafe driving behaviours. *Accident Analysis & Prevention, 40*(5), 1667-1673.