

ANALYSIS OF INFANT MILK FORMULA IN MANADO USING PERCEPTUAL MAPPING

by:

Monica Sharen Mononimbar¹**Maria V.J. Tielung²**Faculty of Economics and Business,
International Business Administration (IBA) Program

University of Sam Ratulangi Manado

email : 1inkamono@gmail.com2mariatielung@gmail.com**ABSTRACT**

Positioning is a fundamental component of marketing planning and business strategies making. Product positioning is the process marketers use to determine how to best communicate their products attributes to their target customers based on customer needs, competitive pressures, available communication channels and carefully crafted key messages. Indonesia population growth rate is at one percent by 2013 est. Nutritional scientists and pediatricians recommend that infants should consume milk or formula. Infant formula is the substitute product to breastfeeding, and in the market industry of infant formulas there are many brands competing in the industry. The purpose of this research are to determine and show the brand positioning of each brand of infant formulas that exist in the market in Manado by using perceptual mapping which contain multidimensional scaling and correspondence analysis method with 100 respondents as sample of the research. SGM, Lactogen, Nutrilon, Enfagrow, S26 and Nan are the infant formulas brands that are studied. Price and Quality are the attributes used in studying infant formula brand in this research. Based on Perceptual Mapping, demographics of age and occupation correlate with customer perception of the brands. Different age and different occupation may perceive different preferences and perception on the infant formula brands / products.

Keywords: *consumer perception, perceived price, perceived quality.*

INTRODUCTION

Indonesia is the fourth largest country regarding to population size, with a population totaling around 240 million individuals. According to indexmundi.com, Indonesia population growth rate is at 0.99% by 2013 est. With birthrate 17.38 births/1.000 population. Meaning there is more than 4 million newborn infant per year. Nutritional scientists recommend that should consume milk or formula. Infant formula product is defined as a product based on milk or other edible food constituents of animal or plant origin which is nutritionally adequate to serve as the principal liquid source of nourishment for infants. It is a synthetic version of breast milk and can be classified as a main substitute for breast feeding.

Infant formula industry is highly increasing in sales on the market because of the emotional behavior of parents towards this product. Many mother choose formula for a variety of reason, for example it is more convenient, formula fed-babies or infants can be fed anytime by anyone, scheduling feeding can be easier because formulas are digested slower, so formula fed babies or infants don't need to eat as often, especially in the first few months, and they don't have to worry about what they eat because women whom breastfeed can pass what they eat through breastfeeding to the infants Because of this reasons, for parents it is very important need to decide which product or brands of infant formulas that can bring the best quality and benefit for their children. There are plenty of infant formula products or brands in Manado market to choose from such as SGM, Lactogen, Nutrilon, Enfagrow, S26 and Nan for example. Not just those brands but also there are many new companies with new brands and products emerging into this market of infant formula. This number of new competitors popping up with a new marketing strategy will make the competition gets tougher and harder in infant formula industry.

A company can be a winner in the competition if the company is able to attract consumers as much as possible. So for the company to gain reasonable profit in this industry it is important for the companies that produce infant formula products to remain competitive. Today in the competition for all industries, in order for the companies to compete for consumers are no longer limited to the functional attributes of the product such as the usefulness of the product, but has been associated with a brand that is able to give a special image for the consumer, in other words the role of shifting brand.

Research Objectives

This research has two points of objectives which is;

1. To analyze the positioning of brands of baby formulas products (SGM, Lactogen, Nutrilon, Enfagrow, S26 and Nan) in Manado based on consumer perception by perceptual mapping to understand how this brands perceived in a whole by consumers.
2. To know the positioning of this brands in the market, for the result can be used to develop better positioning strategies for this brands to compete in the market. And to contribute as a scientific work about the perceptual mapping of infant formula brands in Manado.

THEORETICAL REVIEW

Market Positioning

Market positioning is about arranging a product to occupy a clear, distinctive a desirable place relative to competing products in the minds of target consumers (Kotler, 2011:89). Formulate a competitive positioning for a product and a detailed marketing mix.

Product Position

Product position is the way the product is defined by consumers on important attributes—the place the product occupies in consumers' minds relative to competing products (Kotler, et. al, 2008:283). Product positioning of perceptual mapping, that explains the conceptual foundation, and compares three widely used techniques; factor analysis, discriminant analysis, and multidimensional scaling. (Kohli & Leuthesser, 2009:39-49).

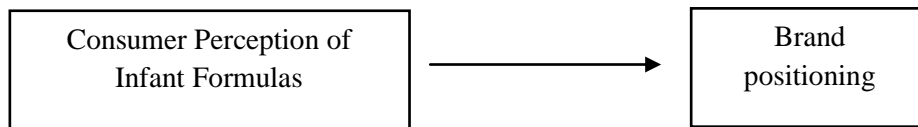
Consumer Perception

Perception is our sensory experience of the world around us and involves both the recognition of environmental stimuli and actions in response to these stimuli. Perception not only creates our experience of the world around us; it allows us to act within our environment. (Cherry, 2001:54). The concepts of price, quality and value from the consumer perception and developing propositions about the concepts, examining the available evidence in support of the propositions and suggesting areas where research is needed (Zeithmal, 1988:5-10).

Brand

Ghodeswar (2008:443) explains “brand is an identifying feature that distinguishes one product from another. More specifically, any name, term, symbol, sign or design, or a unifying combination of these”.

CONCEPTUAL FRAMEWORK



RESEARCH METHOD

Research Design

The purpose of this research is to analyze the brands positioning of infant formula brands in Manado by how consumer perceive them (consumer perception). This research use perceptual mapping with multidimensional scaling and correspondence analysis method. This is a qualitative research since using questionnaire as a tool to gather data and analysis.

Place and Time of Research

This research will occur for parents in Manado that know, buy and use infant formulas for their children. The study conducted in Manado between May – July 2014.

Research Procedure

Diagram below depicts relation/ correlation of consumer perception and infant formulas (milk for 0-12 month's children).

Population and Sample

Population is the entire group of people, events, of things of interest that the researcher wishes to investigate (Sekaran and Bougie, 2009:262-263). The populations in this research are all the parents / mothers that buy and use the infant formula for their children in Manado.

Data Analysis Method

The index of fit (R-square)

The index of fit or *R-square* is a squared correlation index that indicates the proportion of variance of the optimally scaled data that can be accounted for by the MDS procedure. Values of 0.60 or better are considered acceptable. It also can be acceptable if it's less than 0.60 if the Scatterplot of Linear Fit shows similarity attitude of respondents in giving their judgments to the products.

Stress Values

Stress values are also indicative of the quality of MDS solutions. While *R-square* is a measure of goodness of fit, stress measures badness of fit, or the proportion of variance of the optimally scaled data that is not accounted for by the MDS model. Stress values of less than 10% are considered acceptable.

Multi-Dimensional Scaling Analysis

The concept, Multi-Dimensional Scaling enables us to map objects (brands) spatially, such that the relative positions in the mapped space reflect the degree of perceived similarity between the objects (the closer in space, the more similar the brands). When the map has been generated, the relative positioning of the brands, together with knowledge of the general characteristics of the brands, allow the analyst to infer the underlying dimensions of the map. Input data, respondents evaluate brands in pairs, judging the overall similarity between the paired brands. Respondents may either rate (metric scaling) or rank-order (non-metric scaling) the similarity for each pairing of brands. For each product pair they are asked to rate similarity (usually on a 7 point Likert

scale from very similar to very dissimilar). The number of questions is a 3 function of the number of brands and can be calculated as $Q = N(N - 1) / 2$ where Q is the number of questions and N is the number of brands. The data collected than will be put in a similarity matrix to be analyzed.

Correspondence Analysis

Correspondence Analysis (CA) is an exploratory method of data analysis that visually displays relationships between categorical variables. In the social science context where the method originated, CA is typically applied to a cross tabulation, or contingency table, between two or more categorical variables based on a random sample of respondents. For example, the respondents could be cross-classified according to a demographic variable such as age or occupation as well as the categories of response to a survey question (Abdi & Valentin, 2007:5-6).

Data Requirements in Correspondence Analysis

The Cross tabulation is a rectangular data matrix that consists of rows and columns. Positioning a product or brand to differentiate it in the minds of target customers can be accomplished in various ways: positioning by attribute or benefit, positioning by quality/price, positioning by use or user, and poitioning by competition according to Keegan & Green (2011). The rows below provide 2 consumer perceptions (Price and Quality and the columns provide the 6 types of brands of infant formulas SGM, Lactogen, Nutrilon, Enfagrow, S26 and Nan). The cells inside the data matrix provide information of the frequencies of image being chosen by respondents that correspond to the region (Gallivan, 2008). In acquiring data, the method of pick-any is used. So this table is the summarizing of data.

Table 1. Perceived Price Table

Brands	Cheap	Normal	Expensive
SGM			
Lactogen			
Nutrilon			
Enfagrow			
S26			
Nan			

Table 2. Perceived Quality Table

Brands	Bad	Normal	Good
SGM			
Lactogen			
Nutrilon			
Enfagrow			
S26			
Nan			

RESULT AND DISCUSSION

Perceptual Map Generated by Multidimensional Scaling Analysis of Infant Formula Brands

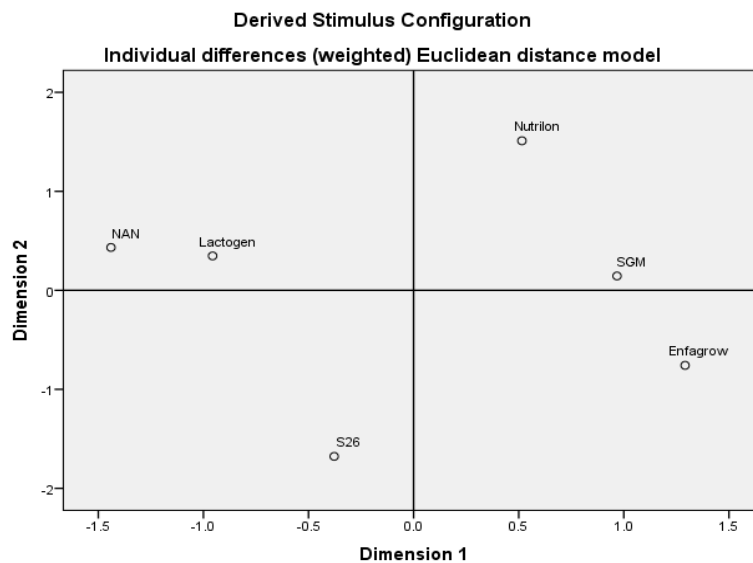


Figure 1. Perceptual Map Generated by Multidimensional Scaling Analysis of Infant Formula Brands

Source: Data Processed, 2014

This is the perceptual map resulted by Multidimensional scaling ALSCAL analysis using SPSS 20. The vicinity rate of each brand on the map shows the rate of similarity of each brand. This map shows that LACTOGEN actually had similarity with NAN because the two of them are on the same quadrant and very near. And SGM and NUTRILON also can be considered the same because the two brands got on the same quadrant. S26 is located very far from other brands on the map, being on a different quadrant shows that S26 are very dissimilar with the other brands. This also goes for ENFAGROW which also located far from S26 and NAN and Lactogen, shows that ENFAGROW are very dissimilar with the three brands.

Notice the analysis of corner of dimension 1 (axis X) and dimension 2 (axis Y) :

1. Dimension 1. From the map generated shows that the value of dimension 1 getting bigger as it goes to the right corner. The map shows that Enfagrow is located nearest on the biggest value of axis X (on the right corner of the axis). This means that Enfagrow have the factors on the dimension 1 that distinguish itself from others brands on the map.
2. Dimension 2. From the map generated shows that the value of dimension 2 getting bigger as it goes to the upper left corner. The map shows that NAN and Lactogen are being on the nearest value on the biggest value of axis Y (on the upper left corner of the axis). This means that NAN and Lactogen have the factors on the dimension 2 that distinguish both brands from others on the map.

Knowing the result, can be considered alternatives as follow:

1. NAN and Lactogen are not supposed to compete, because in the perceptions of the respondents these two brands are similar. If the two brands are placed in far locations in the map, than a competition is irrelevant.
2. Nutrilon and SGM are not supposed to compete, because in the perceptions of the respondents of this two brands are similar. If the two brands are placed in far locations in the map, than a competition is irrelevant.

Scatterplot of Linear Fit

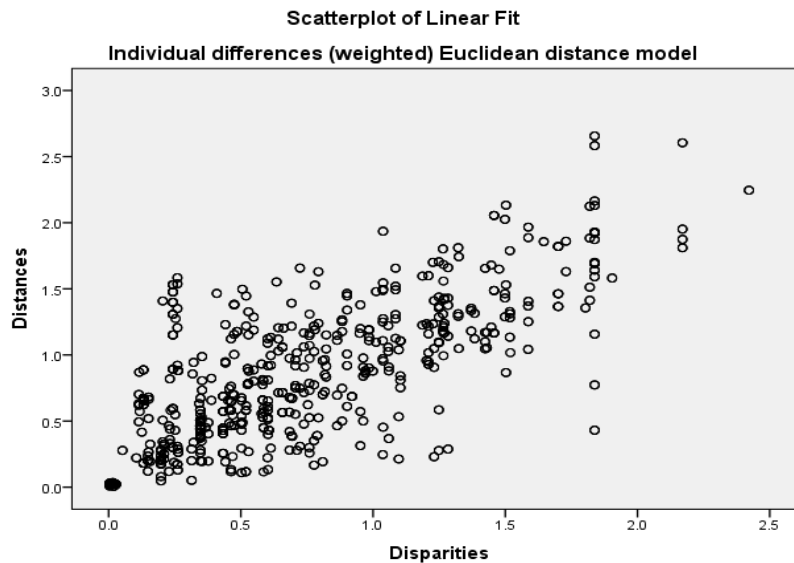


Figure 2 Scatterplot of Linear Fit

Source: Data Processed, 2014

On the graphic above, shows the positions of 100 respondents making a major line from center to the bottom left. This proves the consistency of the respondents on giving their judgment to the similarity and dissimilarity scale of the 15 pair of infant formula brands. On the graph that contains the coordinates, it is shown that each point do not form too many independents groups but relatively grouped on the center to the left bottom, this proves the attitude similarity of the respondents.

Consumer Perception on Infant Formula Brands by Price & Quality

Price perception is the process by which consumers translate price into meaningful cognitions. Consumers want to get highest utility from a brand, which they purchase by sacrificing money and benefit from other competitive brands. Indeed, the main effects of price appear to be more clearly associated with quality perception of a brand. Perceived price is a good proxy variable for perceived quality. Quality is the ability of a product to satisfy a consumer's needs and requirements. Perceived quality can be defined as the perception of a consumer about the overall excellence and superiority of a brand, which is directly related to his/her satisfaction. Quality is the best indicator of the product's durability, reliability, precision, and other valued attributes. It provides added value and constructive perception on a brand to affect consumers' brand evaluation. The high quality perception often depends on consumers' distinct liking and beliefs toward the brand.

1. Based on Age

Age <21 perceived all the infant formula brands as expensive; this could be happen because they didn't yet have occupation that makes income. Meanwhile, age 21 to 29 perceived SGM as the product with the cheapest price and NAN as the most expensive and then Age > 29 perceived all the brands are in cheap price except for NAN which perceived normal.

2. Based on Occupation

Student perception of the entire products price is expensive. It is followed by civil servant and entrepreneur perception of SGM price is normal and college student, private employee and other perception of price of SGM is cheap. Civil servant, other and entrepreneur perception of Lactogen price is cheap and college student and private employee perception of price of Lactogen is normal. College student, civil servant, and private employee perception of price of Nutrilon is normal and entrepreneur and others perception of price of Nutrilon is cheap. College student, private employee and civil servant perception of NAN price is expensive,

it is followed by entrepreneur and other perception of price of NAN is normal. College student, private employee, civil servant and entrepreneur perception of price of Enfagrow is normal and other perception of price of Enfagrow is cheap. it is followed by college student, private employee, civil servant and other perception of price of S26 is normal and entrepreneur perception of price of S26 is cheap.

3. Based on Age

All between the ages of <21, 21 to 29 and > 29 are perceived NAN as the product with the good quality and SGM as the one with bad quality by mostly.

4. Based on Occupation

All range of occupations perceived NAN as the product with the good quality and SGM as the one with bad quality by mostly.

CONCLUSION AND RECOMMENDATION

This chapter consists of the conclusion and recommendation that can be concluded from the overall researcher doing of the time.

Conclusions

There are four different positions of infant formula brands on Multidimensional Scaling Analysis, which is: (1) Lactogen and NAN are perceived similar because located on the same position based on the respondents' perception, (2) SGM and NUTRILON also can be considered on the same position since the two brands are on the same quadrant, (3) S26 is located very far from other brands on the map, being on a different quadrant shows that S26 is very dissimilar with the other brands, (4) Enfagrow position is located far from the other brands. Meaning Enfagrow is different from the other brands. On Correspondence Analysis Price and Quality are most preferred as high priority of choosing infant formulas brands as always consumer consider in Manado. Based on Perceptual Mapping, demographics of age and occupation correlate with customer perception of infant formula brands. Different age and different occupation of mother can perceive different preferences and perception on the infant formula brands.

Recommendation

There are two practical recommendations that can be concluded from the overall result in this research, which are listed as follow: (1) to face tight competition in this market of infant formula industry, positioning always needs to be developed and always needs to be relevant to change. All the brands of infant formulas in Manado (SGM, Lactogen, Nutrilon, Enfagrow, S26 and Nan) need to be critical, innovative and always make improvement to their product to be different from other products. Attributes also in price and quality need to be considered, SGM and Lactogen need to improve their quality of product, and NAN need to lower their price of their products to reach more consumers, (2) For further study it is encouraged to examine the other factors or attributes that affect consumer perception of product similarity and dissimilarity.

REFERENCES

- Abdi, Herve and Dominique, Valentin. 2007. Correspondence Analysis Encyclopedia of Measurement and Statistics 2007. Available at http://www.utdallas.edu/~herve/Herve_Abdi-SPISE07-DISTATIS.pdf. Retrieved on August 4th. Pp 5-6.
- Cherry, Kendra. 2011. The Science of Consumer Behavior. Available at <https://www.google.com/search?client=firefox-a&hs=0AZ&rls=org.mozilla%3AenUS%3Aofficial&channel=np&scient=psyab&q=the+science+of+consumer+behavior+kendra+cherry+pdf&btnG>. Retrieved on August 8th Pp. 54.
- Ghodewsar, Bhimrao M. 2008. Building Brand Identity in Competitive Markets: a Conceptual Model *Journal of Product & Brand Management* 17/1. Available at [www.iei.liu.se/fek/svp/.../1.../ Building_Brand.pdf](http://www.iei.liu.se/fek/svp/.../1.../Building_Brand.pdf) Retrieved on August 5th, Pp. 4-12.
- Gallivan, Mike. 2008. *Multidimensional Scaling (MDS) – Method Review*. Georgia State University. Georgia.
- Keegan, J Warren. & Green, C Mark. 2011. *Global Marketing : Sixth edition*, Pearson, New Jersey.
- Kohli S, Chiranjeev & Leuthesser, Lance. 2009. *Product Positioning: a comparison of perceptual mapping techniques*. Available at http://www.researchgate.net/publication/247619829_Product_Positioning_A_Comparison_of_Perceptual_Mapping_Techniques Retrieved on August 5th Pp. 39-49.
- Kotler, Philip. & Kevin Lane Keller. 2008. *Marketing Management: 13th edition*. Pearson, Prentice Hall 2008.
- Kotler, Philip. & Gary Armstrong. 2011. *Principle of Marketing: 15th edition*. Available at <http://mbapediasa.files.wordpress.com/2012/04/mba1-marketing-management-january-2011.pdf> Retrieved on August 7th. Pp. 89.
- Sekaran U and Bougie, Rouger. 2009. *Research Methods for Business. Fifth edition*. Wiley, United Kingdom.
- Zeithaml, A. Valeria. 1988. Consumer Perception of Price, Quality and Value: A Means-End model and Synthesis of Evidence. Available at <http://areas.kenanflagler.unc.edu/Marketing/FacultyStaff/zeithaml/Selected%20Publications/Consumer%20Perceptions%20of%20Price,%20Quality%20and%20Value%20A%20MeansEnd%20Model%20and%20Sntesis%20of%20Evidence.pdf> Retrieved on August 20th. Pp 5-10.