IMPACT OF SHAPES IN PACKAGING DESIGN ON CONSUMER BEHAVIOUR IN THE LENS OF KANO'S ATTRACTIVE QUALITY THEORY

Abbas Dadras

PhD Commerce Student, Gaduate School, University of Santo Thomas, Espana, Manila, 1015 Philippines, Thomas Aquinas Research Complex Espana

ABSTRACT:

Packaging is one of the tools that can severely affect consumer satisfaction and their buying decision because it is a powerful marketing tool to communicate directly, conveying the message of the product and creating added value to the consumer. Packaging design elements can be classified into two main groups: structural elements (ex; size, shape and etc.) and graphic elements (ex; color, typography and etc.). Shapes are one of the structural elements in packaging, which has always been a design element of much interest to scholars throughout history. Nowadays, consumers desire products that match their own attitude toward design and function. In this case, demographic factors are very important, because consumers have varied preference (interests and tastes) of the packaging appearance design approach due to the difference in quality of demographic factors. By changing in quality of demographic factors such as changes in household size, changes in the quality of the population, changes in the gender composition of the population, etc., designers are convinced to react to the dynamics of demographic factors in product packaging design. In the present study due to the importance of shapes in package design, the researcher deals to the impact of package shape on attracting consumers, their preferences and ultimately satisfaction. This can be achieved by considering to the consumers' demographic factors and also by using Kano's attractive quality theory.

KEYWORDS: Demographic factors, Packaging design, Shapes, Consumer preferences, Kano's attractive quality theory.

I.   INTRODUCTION

This is a study of shapes of the rice packaging design as a means for market promotion of rice as a commodity preferred by consumers in Tehran, Republic of Iran. The research is focused on finding scientific and feasible measures for improving the current context of rice packaging in order to enhance the quality and profitability of rice as a business product line and as a commodity.

Packaging as a powerful communication tool is an element of the buying experience (Qing H. et al, 2012). Moreover, in today's competitive market packaging design is a tool that enables consumers to identify some of the iconic landmarks that differentiate the product from competitors. As a result, it's the key component of successful sales.

Shapes are important visual stimulus elements of marketing strategies, and they are essential features of packages and marketing strategies (Goncalves 2008). Schrijver (2013) mentioned that the visual aesthetics of a product and its packaging are important because they are the first aspect of a product that comes in contact with the consumer. Moreover, according to Rusko, Heiniö & Korhonen (2011), package shape is also regarded as one of the most important factors in package communication. Noble & Kumar (2010), state that the design should ensure that the product arrives in good shape, in a package that the consumer finds attractive.

Some researchers argue that package shape is one of the important criteria for consumer assessment and the effect on consumer decisions (Silayoi&Speece 2004; Ritnamkam&Sahachaisaeree 2012; Schrijver 2013; Karimi, Mahdieh&Rahmani 2013). According to Jafari S. et al. (2013) package shape is one of the important criteria for consumer evaluation on after-the-purchase activities. Various shapes of the package, considering the demands and conditions of the product, can play an important role in this stage. But in the research which is carried out by Ares G. et al. (2010) about consumer attitudes toward food packaging design features, they concluded that the shape of the package does not significantly influence consumers' willingness to purchase.

Silayoi & Speece (2004) found that shape is much related to usability. While consumers thought of product pictures and graphics as a means of communication, discussion about shape focused more on packages being convenient to use and carry. According to them, consumers appeared to use package shape as simplifying visual heuristics to make volume judgments of product and value for money. Also, shape should not be too fancy because it seems consumers rely on traditional shapes that they are familiar with them (Silayoi&Speece 2007).

Silayoi & Speece (2004) and Sioutis (2011) study result also show that shape as a visual element, positively influence choice more in the low involvement situation. Nayyar's (2012) study result shows that the majority of the respondents feel that shape is the most preferred aesthetic component after color.

Thus, packaging designers must have complete knowledge of the interests and tastes of consumers. They need to know how the various design elements of packaging can affect consumer preferences and influence their buying decision (Dadras, 2015).

In this case, demographic factors are very important because consumers have varied preference (interests and tastes) of the packaging appearance design approach due to the difference in the quality of demographic factors. Demographic factors (sometimes called personal factors) are about population features (Dadras, 2015).

In the present study, the most important population features in the study include: age, gender, marital status, family size, education level and income level. Also, the following shapes based on material are intended for packing rice:

1) Jute Bags   2) Cotton Bags   3) Paper Bags   4) Plastic Gallon
5) Plastic Jars   6) Plastic Bags   7) Metal Cans   8) Polypropylene (PP) Bags

The main objective of this research is to answer these questions that "What correlation is there between demographic factors and shapes of packaging design elements? And "What is the most preferred shapes of the rice package for consumers?" and "how it affects on consumer purchasing decision and satisfaction?" Definitely the answer while respecting to the consumer rights can lead to greater consumer satisfaction.

The present study after describing the theory of attractive quality is organized in three parts: material and methods (including the study location, population and sample, questionnaire), result and discussion and finally, conclusions.

I.I. The Theory of Attractive Quality

Inspired by Herzberg's M-H theory in behavioral science, Kano and his coworkers developed the theory of attractive quality. The theory of attractive quality is useful to better understand different aspects of how customers evaluate a product or offering (Gustafsson 1998). Over the past two decades, this theory has gained exposure and acceptance through articles in various marketing, quality, and operations management journals. The theory of attractive quality has been applied in strategic thinking, business planning, and product development to demonstrate lessons learned in innovation, competitive- ness, and product compliance (Watson 2003).

According to Kano (2001), the theory of attractive quality originated because of the lack of explanatory power of a one-dimensional recognition of quality. For instance, people are satisfied if the packaging of rice has cooking instructions and dissatisfied if the packaging does not have cooking instructions. For a quality attribute such as religious symbols & images, people are not satisfied if the package does not religious symbols & images, but they are very dissatisfied if it does. To understand the role of quality attributes, Kano et al. (1984) present a model that evaluates patterns of quality,

based on customers' satisfaction with specific quality attributes and their degree of sufficiency. On the horizontal axis in the Kano diagram (Fig1) the physical sufficiency of a certain quality attribute is displayed. The vertical axis shows satisfaction with a certain quality attribute (Kano et al. 1984). The theory explains how the relationship between the degree of sufficiency and customer satisfaction with a quality attribute can be classified into five categories of perceived quality. According to Kano et al. (1984), their ideas are similar to quality theories suggested by Mizuno and Ishikawa. But instead of only providing general concepts and nomenclature, Kano and his coworkers provide a methodology to use.

The categories of perceived quality are:

Attractive quality. Attractive quality attributes can be described as a surprise and delight attributes; they provide satisfaction when achieved fully, but do not cause dissatisfaction when not fulfilled (Kano et al. 1984). These are attributes that are not normally expected, for example, a maintenance instructions on a package of rice showing the better storage of the rice. Since these types of quality attributes often unexpectedly delight customers, they are often unspoken. An example of this is W. Edwards Deming's rather bantered statement: "The customer never asked Mr. Edison for a light bulb" (Watson 2003). Researchers have emphasized the importance of attractive quality creation (Kano 2001) since this dimension has been somewhat neglected by quality specialists, who have tended to focus on how to eliminate things gone wrong (Kano 2001). In a similar sense, Cole (2001) suggests that the understanding of continuous improvement should be widened to continuous innovation and include concepts such as exploration and discontinuous innovation.

One-dimensional quality. One-dimensional quality attributes result in satisfaction when fulfilled and dissatisfaction when not fulfilled (Kano et al. 1984). These attributes are spoken and are those with which companies compete (Gustafsson 1998). For example, providing rice in "Metal Cans" is likely to result in customer satisfaction, but if there is not, it is likely that the customer will feel misled, which results in dissatisfaction.

Must-be quality. Must-be quality attributes are taken for granted when fulfilled, but result in dissatisfaction when not fulfilled (Kano et al. 1984). For example, consumers are dissatisfied when the rice package is not in "Cotton Bag", but when it's designed the result is not increased customer satisfaction. Since customers expect these attributes and views them as basic, it is unlikely that they are going to tell the company about them when asked about quality attributes. They assume that companies understand these product design fundamentals (Watson 2003).

Indifferent quality. Indifferent quality refers to aspects that are neither good nor bad, and, consequently, they do not result in either customer satisfaction or customer dissatisfaction.

Reverse quality. Reverse quality refers to a high degree of achievement resulting in dissatisfaction (and vice versa, a low degree of achievement resulting in satisfaction) and to the fact that not all customers are alike.

II.   MATERIAL AND METHODS

II. I Study location

This study was conducted in three shopping centers in Tehran. Shopping centers include: Shahrvand Shopping Centers, Refah Shopping Centers and Hyper Star Markets.

II. II Population and Sample

Data were collected through a questionnaire that was implemented in person through interviews with 600 consumers to randomly chosen ages 20 to 65 at the place where they buy rice and asking them about their experiences of packaging in everyday commodities. The sample was calculated according to the Cochran formula.

$$n = \frac{Z^2 pq N}{d^2(N-1) + Z^2\, pq}$$

N = Statistical population size in East Tehran = 2,800,000
N = Statistical population size in Quezon city, Manila, Philippines = 2,800,000
Z = Confidence Level= 95%
p = Ratio of a trait in the population = 50%

q = Percentage of those without that trait in the population (q = 1-p)
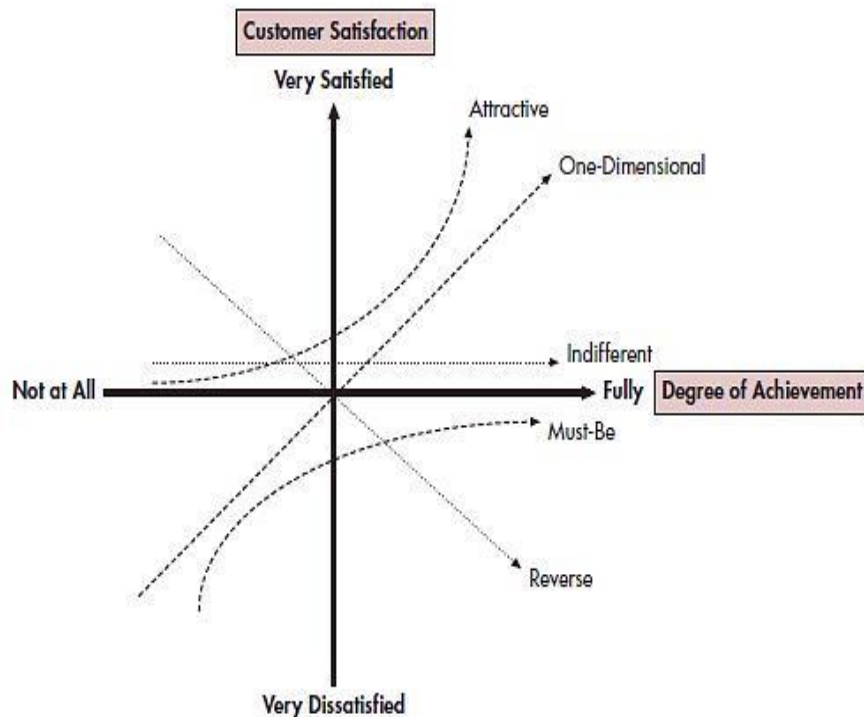d = Acceptable margin of error = 4%
n = Sample size in Tehran = 600

Figure 1   An Overview of the Theory of Attractive Quality.

II. III Questionnaire

The questionnaire was divided into two parts: background questions (gender, age, education, and so on). Kano pair questions. In addition to the questionnaire, a letter that explained the purpose of the survey was included. The Kano questionnaire contained pairs of customer requirement questions (Berger et al. 1993; Kano et al. 1984). Each question had two parts:

- "How do you feel if that feature is present in the product?" (This is the functional form of the question.)
- "How do you feel if that feature is not present in the product?" (This is the dysfunctional form of the question.) (Berger et al. 1993).

Each part of the question, the customer could answer chosen one of five alternatives exemplified in (Fig 2). According to Berger et al. (1993), the wording of the alternatives is the most critical choice made in the Kano methodology. The chosen wording of the alternatives adapted from Berger et al. (1993) (that is, "I like it that way," "It must be that way," "I am neutral," "I can live with it that way," "I dislike it that way") is similar to the Japanese version suggested by Kano et al. (1984).

The classification of attributes described previously is made based on the pair questions. Each quality attributes can be classified into one of the six categories shown in (Fig 3).

The category "questionable" contains skeptical answers, and it is debatable whether the respondent has understood the question (Kano et al. 1984). It was suggested by Berger et al. (1993) that cells 2-2 and 4-4 in the Kano evaluation table be changed from "I" to "Q," since they believe, for example, that a requirement that is rated as must-be functional cannot simultaneously be rated as must-be dysfunctional. Lee and Newcomb (1997) classify five combinations of the 25 options as questionable (cell 1-1, 1-2, 2-1,2-2, and 5-5).

In the last section of the questionnaire, the quality of all the attributes identified and classified, then by using Kendall tau to test its effect on customer satisfaction and buying decisions are evaluated.

| How do you feel if the rice is presented packed in "Metal Cans"? | 1. I like it that way. 2. It must be that way. 3. I am neutral. 4. I can live with it that way. 5. I dislike it that way. |
| How do you feel if the rice is NOT presented packed in "Metal Cans"? | 1. I like it that way. 2. It must be that way. 3. I am neutral. 4. I can live with it that way. 5. I dislike it that way. |

Figure 2   A pair of Consumer Requirement Questions in a Kano Questionnaire

Quality attributes		Dysfunction				
		1. like	2. must - be	3. neutral	4. live with	5. dislike
Function	1. like	Q	A	A	A	O
	2. must - be	R	I	I	I	M
	3. neutral	R	I	I	I	M
	4. live with	R	I	I	I	M
	5. dislike	R	R	R	R	M

A: Attractive   **O**: One-dimensional   **M**: Must-be
I: Indifferent   **R**: Revers   **Q**: Questionable

Figure 3   Kano Evaluation Table (adapted from Berger et al. (1993)).

III.   RESULT AND DISCUSSION

The first part of the analysis was concerned with classifying the religious symbols & image quality attributes according to the theory of attractive quality. Each quality attribute was classified according to the evaluation table into either attractive (A), one-dimensional (O), must-be (M), indifferent (I), reverse (R), or questionable (Q). Lee and Newcomb (1997) introduced two measurements to aid in the classification of quality attributes: category strength and total strength. Category strength is defined as the percent difference of the highest category above the next-highest category. Total strength is defined as the total percentage of attractive, one-dimensional, and must-be responses.

A calculation of an average (better and worse), without losing the quality dimension's attractive, one-dimensional, and must-be attributes, was performed as suggested by Berger et al. (1993). These averages state whether customer satisfaction can be increased by meeting a certain quality attribute or whether fulfilling this quality attribute merely prevents the customer from being dissatisfied (Berger et al. 1993).

$$B = \frac{A + O}{A + O + M + I} \qquad W = \frac{O + M}{A + O + M + I}$$

The positive better numbers indicate that customer satisfaction will increase by providing a quality attribute and the negative worse numbers indicate that customer satisfaction will decrease by not providing a quality attribute (Berger et al. 1993). The maximum value of better and worse is 1. The closer the value is to 1, the greater the influence on customer satisfaction. A value of about 0 signifies that a certain quality attribute has little influence on customer satisfaction (Matzler et al. 1996).

In the analysis, a Kano variable containing the classification of quality attributes was used as a dependent variable, while the demographic variables, such as gender, age, and family, were used as independent variables. The below table 1 shows an overview of the religious symbols & image quality attributes of packaging design. Furthermore, table 2 shows the correlation between demographic factors with religious symbols & image quality attributes as a graphical design elements based on Kendall's tau test.

Table 1. An Overview of Shape Quality Attributes in Packaging Design

Quality Attributes	Classification Category strength	Classification agreement Category strength	Classification Total strength	Classification agreement Total strength	Better	Worse
Variations in size	Indifferent	116.17%	-	-		
Multiple of 3kg	-	-	Indifferent	43.17	0.26	0.30
Multiple of 4kg	-	-	Indifferent	43.84	0.28	0.34
Multiple of 5kg	-	-	Indifferent	29.16	0.51	0.45
Variation in shape	Reverse	231.99%	-	-		
Jute Bags	-	-	Reverse	45.67%	0.43	0.44
Cotton Bags	-	-	Indifferent	35.67%	0.45	0.33
Paper Bags	-	-	Attractive	35%	0.60	0.27
Plastic Gallon	-	-	Reverse	69.67%	0.26	0.26
Plastic Jars	-	-	Must-be	28%	0.45	0.61
Plastic Bags	-	-	Indifferent	33.17%	0.46	0.26
Metal Cans	-	-	Indifferent	31.84%	0.47	0.24
Polypropylene Bags	-	-	One dimensional	25.9%	0.50	0.54

Table 2. An Overview of Kendall's tau Correlation Coefficient Between Demographic Factors and Shapes in Packaging Design.

Structural Elements	Demographic Factors										
	Age		Gender		HH size		Educational level		Income level		Marital status
Jute Bags	-.060	.058	-.036	.009	-.011	.047	-.028	.061*	-.042	-.001	-.032	.021
Cotton Bags	-.045	.128	-.063*	.052	-.067*	.034	.004	.013	-.067*	.034	.022	.028
Paper Bags	.126	-.006	-.009	.001	.019	-.039	.001	-.058	.019	-.039	.025	-.076*
Plastic Gallon	-.023	.071*	.005	-.011	.015	.005	.104	-.091	.015	.005	-.037	.103
Plastic Jars	-.037	.080*	-.050	.059	.061*	-.032	.011	-.014	-.051	.032	.064*	.049
Plastic Bags	.060	-.005	-.017	.006	.020	.018	.070*	-.056	.081*	.001	.019	.008
Metal Cans	.035	.026	.056	-.044	.039	-.071*	.012	-.131	.006	-.099	.021	.071*
Polypropylene Bags	-.016	.040	.026	.032	.021	-.042	.016	-.096	.004	-.006	-.027	.046

* Correlation is significant at the 0.05 level (1-tailed).

The Kendall's tau findings, describes the significant correlation between demographic factors with shapes for rice packaging design as follows:

Age vs. Shapes. Younger consumers do not prefer to package the rice in "Plastic Gallon" and "Plastic Jars".

Gender vs. Shapes. Muslim "Male" consumers prefer to design the rice in "Cotton Bags".

Household Size vs. Shapes. Smaller households do not prefer to package the rice in "Cotton Bags" but, they prefer to package the rice in "Metal Cans". Furthermore, larger households prefer to package the rice in "Plastic Jars".

Educational Level vs. Shapes. Consumers with higher levels of education do not prefer to design the rice packaging in "Jute Bags" but they prefer to provide the rice in "Plastic Bags".

Income Level vs. Shapes. Consumers with higher income levels prefer to package the rice in "Plastic Bags" and consumers with lower income levels do not prefer to design the rice in "Cotton Bags".

Age vs. Shapes. Married consumers prefer to have rice in "Plastic Jars" and they do not prefer to have rice in "Metal Cans". In addition, single consumers prefer to have rice in "Paper bags".

There is not more significant correlation between the various shapes of rice packaging and consumers demographic factors.

Moreover, the bellow Fig. 4 shows the consumer evaluation in the packaging durability of rice in various shapes.
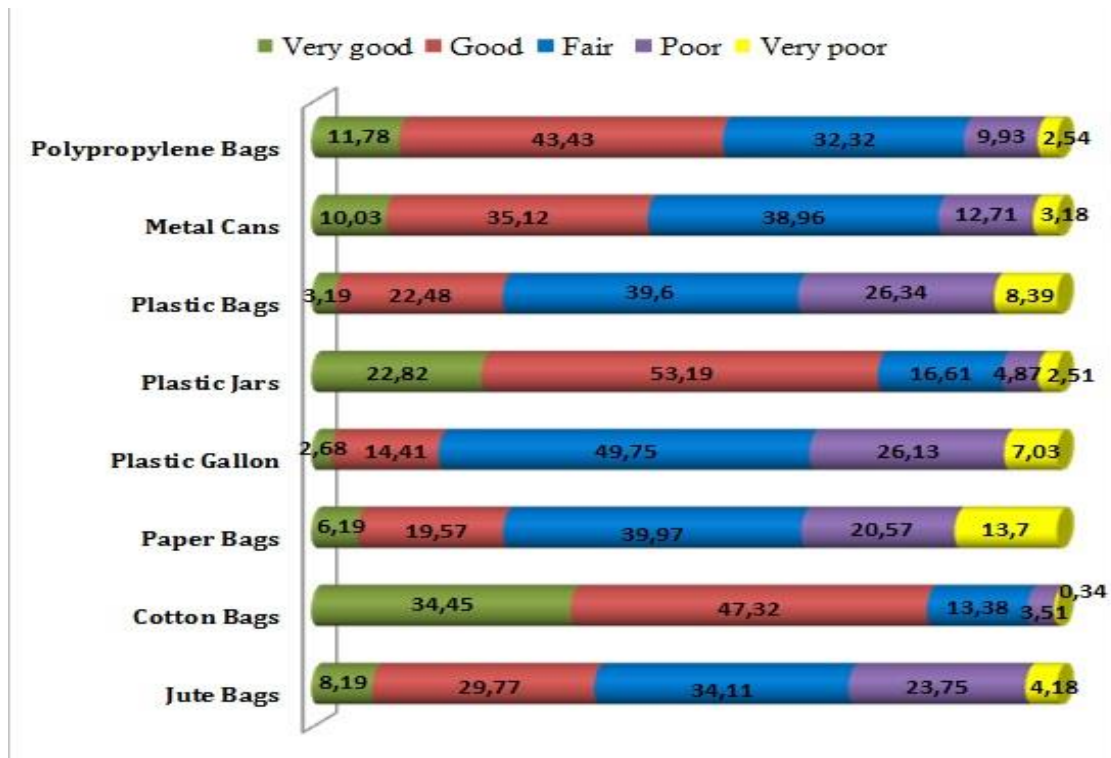
Figure 4   An overview of consumer evaluation in the packaging durability of rice in various shapes.

IV. CONCLUSION

In today's competitive market packaging design is a tool that enables consumers to identify some of the iconic landmarks that differentiate the product from competitors. As a result, it's the key component of successful sales. Consequently, with the changes in demographic factors, packaging designers must have update knowledge of consumer preferences to provide the product properly and influence consumer satisfaction. In this regard, shapes in packaging design are one of the most important influencing factor in consumers' behavior and preferences because visual aesthetics of a product and its packaging are the first aspect of a product that comes in contact with the consumers. Accordingly, in addition to identifying consumer's preferences toward the rice packaging in various shapes, the author was able to measure the correlation between demographic factors and consumer's preferences by using Kendall's tau statistical test and also providing consumers' views about the "durability" features of each shape of rice packaging.

REFERENCE

[1]. Ares, G., & Deliza, R. (B. 2010). Studying the influence of package shape and colour on consumer expectations of milk desserts using word association and conjoint analysis. *Journal of Food Quality and Preference, 21*: 930 – 937.

[2]. Dadras, A. (March 30, 2015). Impact of Consumers Demographic Factors on Rice Packaging Design in the Lens of Kanos Attractive Quality Theory. *International Journal of Innovative and Applied Research, 3*(3), 43-53.

[3]. Goncalves, R. P. (September 2008). Consumer Behavior: Product Characteristics and Quality Perception. *Universitat Autonoma de Barcelona, Department of Business Economics*. Retrieved from

[4]. www.mpra.ub.uni-muenchen.de/.../Consumer_Behavior_Product_Characteristi...

[5]. Jafari, S., nia, M. S., Salehi, M., & Zahmatkesh, R. (2013). Influence of Package on Consumer Behavior. *Arabian Journal of Business and Management Review (OMAN Chapter), 2*(6): 65 – 71.

[6]. karimi, P., Mahdieh, O., & Rahmani, M. (2013). The Study of Relationship between Packaging Elements and Purchase Behavior: Consumers of Food, Cosmetics and Health Products. *Interdisciplinary Journal of Contemporary Research, 5*(3): 281 – 295.

[7]. Löfgren, M., & Witell, L. (2005). Kano's Theory of Attractive Quality and Packaging. *Quality Management Journal, 12*(3): 7-20.

[8]. Nayyar, E. (2012). Packaging - An Innovative source of Impulsive and Abrupt Buying Action. *International Journal of Management & Information Technology, 1*(1): 13 – 16.

[9]. Noble, C. H., & Kumar, M. (2010). Exploring the Appeal of Product Design: A Grounded, Value-Based Model of Key Design Elements and Relationships. *Journal of Product Innovation Management, 27*(5), 640-657.

[10]. Qing, H., Kai, Z., Zhang, C.-F., & Chen, M.-R. (2012).Packaging Design Research and Analysis Based on Graphic Visual, *International Proceedings of Computer Science & Information Tech, 28: 148 – 153.*

[11]. Ritnamkam, S., & Sahachaisaeree, N. (2010). Cosmetic Packaging Design: A Case Study on Gender Distinction. *Procedia - Social and Behavioral Sciences, 50*, 1018 – 1032. Retrieved from http://www.sciencedirect.com/science/article/pii/S1877042812032405

[12]. Rusko, E., Heiniö, S., Korhonen, V., Heilmann, J., Karjalainen, T.-M., Lahtinen, P., et al. (2011). *Messenger Package – Integrating Technology, Design and Marketing for Future Package Communication.*,. Vuorimiehentie (Finland): JULKAISIJA – UTGIVARE. Retrieved from

[13]. www.vtt.fi/inf/pdf/tiedotteet/2011/T2586.pdf

[14]. Schrijver, M. (August 2013). Retail Ready Packaging and the Importance of Design. *University of Twente*. Retrieved from www.essay.utwente.nl/63795/1/MSc_Marieke_Schrijver.pdf

[15]. Silayoi, P., & Speece, M. (2004). Packaging and purchase decisions: An exploratory study on the impact of involvement level and time pressure. *British Food Journal, 106*(8): 607 - 628.

[16]. Silayoi, P., & Speece, M. (2007). The importance of packaging attributes: a conjoint analysis approach. *European Journal of Marketing, 41*(11/12): 1495 – 1517.

[17]. Sioutis, T. (July 2011). Effect of Package Design on Consumer Expectations of Food Product HEALTHINESS. *University of AARHUS, AARHUS School of Business, Department of Marketing and Statistics, Master's Thesis.* Retrieved from www.pure.au.dk/.../EFFECTS_OF_PACKAGE_DESIGN_ON_CONSUMER_E...

AUTHOR PROFILE

Abbas Dadras, received the BS degree in Business Administration and MA degrees in Business Administration Major in Finance from Iran, Islamic Azad University in 2004 and 2008, respectively. During 2012-2015, he stayed in the Graduate School of University of Santo Thomas, Thomas Aquinas Research Complex Espana of Philippines to study PhD in Commerce. His research interests are in the areas of Marketing, Business studies, Finance and Customs affairs.