INTRODUCTION TO THE STUDY

This study deals with the examining consumer preferences for rice packaging design in Tehran, Iran. The central argument of this study is that rice consumer needs and tastes have changed drastically with change in the quality of demographic factors in today's competitive market. For example, in Iran's young society (with 32% of 15-30 year-olds population) it seems that today's rice consumers do not prefer to buy rice in freezer bags in the traditional way and without the normal visual beauty. Hence, consumers prefer that purchased product in addition to quality have a desired visual beauty in packaging. In fact, packaging makes remarks on product presentation. Product packaging gives body, soul and reason for being (Gilaninia et al, 2013). This is why it has become one of the necessities of human life (Chaneta 2010; Abdalkrim & AL-Hrezat, 2013).

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 (Nickels & Jolson 1977, as cited in Alervall &Saied, 2013). As a result, it's the key component of successful sales (Liu 2011). 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.

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. The most important population features in the study include: age, gender, marital status, family size, education level and income level.

The author knows well that the main target of rice buyers is to eliminate the hungry feeling (fill the stomach) and consumers main focus is on price and quality rather than packaging appearance and its quality. But the main objective of this research is to answer this question that “How the stable food product could be offered in a more proper packaging with regard to consumer preferences?” Definitely the answer while respecting to the consumer rights can lead to greater consumer satisfaction.
1.1. 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, having weight information on label of rice package 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). In the rice example, these attributes can be represented by the ease of reading in attractive typography category. Customers are dissatisfied when the font of information on package is not easy for reading, but when it’s easy to read 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. For example, some customers prefer a high variation in color combinations, while others prefer the single color and will be dissatisfied if a package has too many colors.

2. Material and Methods
2.1 Study location
This study was conducted in three shopping centers in Tehran. Shopping centers include: Shahrvarand Shopping Centers, Refah Shopping Centers and Hyper Star Markets.
2.2 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.

\[ n = \frac{Z^2 pqN}{d^2(N - 1) + Z^2 pq} \]

- \( N \) = Statistical population size = 8,500,000
- \( Z \) = 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 = 600

Figure 1  An Overview of the Theory of Attractive Quality.
2.3 Identifying Quality Attributes of Packaging

To get “out of the box” and not get caught in traditional views of packaging, the authors used four main elements of graphical design and three main structural elements. Graphical design elements include: color, images and symbol, label and typography and structural elements include: size, shape, material.

Identifying consumers’ preferences is the first step in implementing the Kano model. In this regard, the author has tried to do a preliminary interview to identify consumers’ interests and tastes. This was done by asking of the 60 rice consumer and the real question that what updates would you like to have on the appearance of the existing rice pack according to your preferences.

Accordingly, the author identified 18 attributes of graphical design elements and 12 attributes of structural elements in line with consumer.

Graphical attributes include:

- **Religious symbols & images.** Muslim Kaaba, Muslim crescent;
- **Useful information on labels.** Cooking instructions, Maintenance instructions, Nutritional values, Manufacturer information, Production date and expiration date information, Weight information;
- **Attractive typography.** Variations in package font, Ease of reading;
- **Variations in color combination.** % More Blue, % More Orange, % More Yellow, % More Purple, % More Red, % More Gray, % More White, % More Green.

Structural attributes include:

- **Variations in size.** Multiples of 3 kg, Multiples of 4 kg, Multiples of 5 kg;
- **Variation in shape.** Jute Bags, Cotton Bags, Paper Bags, Plastic Gallon, Plastic Jars, Plastic Bags, Metal Cans, Polypropylene Bags;
- **Material.** Durability & Maintenance

2.4 Questionnaire

The questionnaire was divided into two parts: background questions (gender, age, education, and so on) and 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 attribute 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 (cells 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’s tau test its effect on customer satisfaction and buying decisions are evaluated.

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

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

<table>
<thead>
<tr>
<th>Quality attributes</th>
<th>Dysfunction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td></td>
</tr>
<tr>
<td>1. Like</td>
<td>Q</td>
</tr>
<tr>
<td>2. Must - be</td>
<td>R</td>
</tr>
<tr>
<td>3. Neutral</td>
<td>R</td>
</tr>
<tr>
<td>4. Live with</td>
<td>R</td>
</tr>
<tr>
<td>5. Dislike</td>
<td>R</td>
</tr>
</tbody>
</table>

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

**Result and discussion**

The first part of the analysis was concerned with classifying the 18 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). 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).

\[ B = \frac{A + O}{A + O + M + I} \]
\[ W = \frac{O + M}{A + O + M + I} \]

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 tables 1 and 2 show an overview of the quality attributes of packaging design. Furthermore, tables 3 and 4 show the correlation between demographic factors with graphical and structural design elements based on Kendall’s tau test.
### Table 1. An Overview of the Graphical Quality Attributes of Packaging Design Elements

<table>
<thead>
<tr>
<th>Quality Attributes</th>
<th>Classification Category strength</th>
<th>Classification agreement Category strength</th>
<th>Classification Total strength</th>
<th>Classification agreement Total strength</th>
<th>Better</th>
<th>Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religious symbols &amp; images</td>
<td>Reverse</td>
<td>100.66%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim Kaaba</td>
<td>-</td>
<td>-</td>
<td>Reverse</td>
<td>61.16%</td>
<td>0.11</td>
<td>0.08</td>
</tr>
<tr>
<td>Muslim crescent</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>42%</td>
<td>0.21</td>
<td>0.19</td>
</tr>
<tr>
<td>Variations in color combination</td>
<td>Indifferent</td>
<td>387.17%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>49.5%</td>
<td>0.29</td>
<td>0.18</td>
</tr>
<tr>
<td>Orange</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>51.66%</td>
<td>0.30</td>
<td>0.20</td>
</tr>
<tr>
<td>Yellow</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>53.34%</td>
<td>0.30</td>
<td>0.20</td>
</tr>
<tr>
<td>Violet</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>50.67%</td>
<td>0.25</td>
<td>0.17</td>
</tr>
<tr>
<td>Red</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>46.17%</td>
<td>0.33</td>
<td>0.28</td>
</tr>
<tr>
<td>Gray</td>
<td>-</td>
<td>-</td>
<td>Reverse</td>
<td>48.34%</td>
<td>0.12</td>
<td>0.10</td>
</tr>
<tr>
<td>White</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>45.83%</td>
<td>0.37</td>
<td>0.34</td>
</tr>
<tr>
<td>Green</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>48.17%</td>
<td>0.36</td>
<td>0.24</td>
</tr>
<tr>
<td>Usefulness of information on label</td>
<td>Must-be</td>
<td>252.49%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooking instructions</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>30.84%</td>
<td>0.47</td>
<td>0.37</td>
</tr>
<tr>
<td>Maintenance instructions</td>
<td>-</td>
<td>-</td>
<td>Must-be</td>
<td>31.5%</td>
<td>0.39</td>
<td>0.54</td>
</tr>
<tr>
<td>Nutritional values</td>
<td>-</td>
<td>-</td>
<td>Must-be</td>
<td>37%</td>
<td>0.39</td>
<td>0.60</td>
</tr>
<tr>
<td>Manufacturer information</td>
<td>-</td>
<td>-</td>
<td>Must-be</td>
<td>49.5%</td>
<td>0.31</td>
<td>0.72</td>
</tr>
<tr>
<td>Production date and expiration date</td>
<td>-</td>
<td>-</td>
<td>Must-be</td>
<td>57.16%</td>
<td>0.26</td>
<td>0.79</td>
</tr>
<tr>
<td>Weight information</td>
<td>-</td>
<td>-</td>
<td>Must-be</td>
<td>60%</td>
<td>0.27</td>
<td>0.82</td>
</tr>
<tr>
<td>Attractive typography</td>
<td>Indifferent</td>
<td>59.6%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variation in package font</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>36.5%</td>
<td>0.50</td>
<td>0.34</td>
</tr>
<tr>
<td>Ease of reading</td>
<td>-</td>
<td>-</td>
<td>Must-be</td>
<td>35.2%</td>
<td>0.40</td>
<td>0.61</td>
</tr>
</tbody>
</table>

### Table 2. An Overview of the Structural Quality Attributes of Packaging Design Elements

<table>
<thead>
<tr>
<th>Quality Attributes</th>
<th>Classification Category strength</th>
<th>Classification agreement Category strength</th>
<th>Classification Total strength</th>
<th>Classification agreement Total strength</th>
<th>Better</th>
<th>Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variations in size</td>
<td>Indifferent</td>
<td>116.17%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple of 3kg</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>43.17%</td>
<td>0.26</td>
<td>0.30</td>
</tr>
<tr>
<td>Multiple of 4kg</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>43.84%</td>
<td>0.28</td>
<td>0.34</td>
</tr>
<tr>
<td>Multiple of 5kg</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>29.16%</td>
<td>0.51</td>
<td>0.45</td>
</tr>
<tr>
<td>Variation in shape</td>
<td>Reverse</td>
<td>231.99%</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jute Bags</td>
<td>-</td>
<td>-</td>
<td>Reverse</td>
<td>45.67%</td>
<td>0.43</td>
<td>0.44</td>
</tr>
<tr>
<td>Cotton Bags</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>35.67%</td>
<td>0.45</td>
<td>0.33</td>
</tr>
<tr>
<td>Paper Bags</td>
<td>-</td>
<td>-</td>
<td>Attractive</td>
<td>35%</td>
<td>0.60</td>
<td>0.27</td>
</tr>
<tr>
<td>Plastic Gallon</td>
<td>-</td>
<td>-</td>
<td>Reverse</td>
<td>69.67%</td>
<td>0.26</td>
<td>0.26</td>
</tr>
<tr>
<td>Plastic Jars</td>
<td>-</td>
<td>-</td>
<td>Must-be</td>
<td>28%</td>
<td>0.45</td>
<td>0.61</td>
</tr>
<tr>
<td>Plastic Bags</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>33.17%</td>
<td>0.46</td>
<td>0.26</td>
</tr>
<tr>
<td>Metal Cans</td>
<td>-</td>
<td>-</td>
<td>Indifferent</td>
<td>31.84%</td>
<td>0.47</td>
<td>0.24</td>
</tr>
<tr>
<td>Polypropylene Bags</td>
<td>One dimensional</td>
<td>25.9%</td>
<td>0.50</td>
<td>0.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Must-be</td>
<td>49.33%</td>
<td>0.35</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3  An Overview of Kendall's tau Correlation Coefficient Between Demographic Factors and Graphical Design Elements.

<table>
<thead>
<tr>
<th>Graphical Elements</th>
<th>Demographic Factors</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
<td>Gender</td>
<td>HH size</td>
<td>Educational level</td>
<td>Income level</td>
</tr>
<tr>
<td>Muslim Kaaba</td>
<td>.039</td>
<td>-.080*</td>
<td>-.111</td>
<td>.095</td>
<td>.018</td>
</tr>
<tr>
<td>Muslim crescent</td>
<td>.017</td>
<td>-.034</td>
<td>-.072*</td>
<td>.059</td>
<td>-.046</td>
</tr>
<tr>
<td>Blue</td>
<td>-.027</td>
<td>.024</td>
<td>-.034</td>
<td>.061</td>
<td>-.016</td>
</tr>
<tr>
<td>Orange</td>
<td>-.002</td>
<td>.052</td>
<td>.085*</td>
<td>-.040</td>
<td>.040</td>
</tr>
<tr>
<td>Yellow</td>
<td>.020</td>
<td>.045</td>
<td>.042</td>
<td>.051</td>
<td>.039</td>
</tr>
<tr>
<td>Violet</td>
<td>.049</td>
<td>.013</td>
<td>-.025</td>
<td>.030</td>
<td>-.006</td>
</tr>
<tr>
<td>Red</td>
<td>.026</td>
<td>.022</td>
<td>.076*</td>
<td>-.022</td>
<td>-.033</td>
</tr>
<tr>
<td>Gray</td>
<td>.059</td>
<td>-.001</td>
<td>.059</td>
<td>-.001</td>
<td>-.001</td>
</tr>
<tr>
<td>White</td>
<td>.059</td>
<td>.006</td>
<td>.059</td>
<td>.006</td>
<td>.010</td>
</tr>
<tr>
<td>Green</td>
<td>.074*</td>
<td>-.019</td>
<td>-.025</td>
<td>.058</td>
<td>-.067*</td>
</tr>
<tr>
<td>Cooking instructions</td>
<td>.033</td>
<td>.093</td>
<td>.073*</td>
<td>.052</td>
<td>.021</td>
</tr>
<tr>
<td>Maintenance instructions</td>
<td>.010</td>
<td>.051</td>
<td>.124</td>
<td>.026</td>
<td>.020</td>
</tr>
<tr>
<td>Nutritional values</td>
<td>.036</td>
<td>.041</td>
<td>.140</td>
<td>-.076*</td>
<td>-.008</td>
</tr>
<tr>
<td>Manufacturer information</td>
<td>-.013</td>
<td>.062</td>
<td>.016</td>
<td>.081*</td>
<td>-.053</td>
</tr>
<tr>
<td>Production date and expiration date</td>
<td>-.025</td>
<td>.033</td>
<td>.024</td>
<td>.016</td>
<td>-.090</td>
</tr>
<tr>
<td>Weight information</td>
<td>-.057</td>
<td>.132</td>
<td>.093*</td>
<td>-.040</td>
<td>-.025</td>
</tr>
<tr>
<td>Variation in package font</td>
<td>.101</td>
<td>.044</td>
<td>.059</td>
<td>.061</td>
<td>-.021</td>
</tr>
<tr>
<td>Ease of reading</td>
<td>-.001</td>
<td>.144</td>
<td>.004</td>
<td>-.003</td>
<td>.004</td>
</tr>
</tbody>
</table>

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

Table 4  An Overview of Kendall’s tau Correlation Coefficient Between Demographic Factors and Structural Design Elements.

<table>
<thead>
<tr>
<th>Structural Elements</th>
<th>Demographic Factors</th>
<th></th>
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<tr>
<td></td>
<td>Age</td>
<td>Gender</td>
<td>HH size</td>
<td>Educational level</td>
<td>Income level</td>
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<td>.062*</td>
<td>-.012</td>
<td>-.013</td>
<td>.046</td>
<td>.080</td>
</tr>
<tr>
<td>Multiple of 4kg</td>
<td>.081*</td>
<td>-.051</td>
<td>.035</td>
<td>.006</td>
<td>.059*</td>
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<tr>
<td>Multiple of 5kg</td>
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<td>.140</td>
<td>.040</td>
<td>.073*</td>
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<td>-.036</td>
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<tr>
<td>Cotton Bags</td>
<td>-.045</td>
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<td>-.063*</td>
<td>.052</td>
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<tr>
<td>Paper Bags</td>
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<td>-.006</td>
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<td>.001</td>
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<tr>
<td>Plastic Gallon</td>
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<td>.071*</td>
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<td>Metal Cans</td>
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<td>.026</td>
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<td>-.044</td>
<td>.039</td>
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The Kendall’s tau findings, describes the significant correlation between demographic factors with graphical design elements for rice packaging design as follows:

- **Age vs. graphical design elements.** Elderly consumers do not prefer to use the “Religious image” of the rice packaging design. Also, younger consumers prefer to use more percentage of “Green” in package color combination.

- **Gender vs. graphical design elements.** Male consumers prefer to use “Muslim crescent” as a religious symbol on rice package. Also, they prefer to design “Nutritional values” on the rice package. On the other hand, female consumers prefer to use more percentage of “Orange” and “Red” in package color combination. They also prefer to design “Cooking instructions”, “Weight information” and “Nutritional values” on the rice package label, but their preference about “Manufacturer information” is negative.

- **Household size vs. graphical design elements.** Consumer with smaller households does not prefer more percentage of “Green” in package color combination. Furthermore, consumers with larger households do not prefer for “Ease of reading” in typography.

- **Educational level vs. graphical design elements.** Consumers with higher education do not prefer to design the “Maintenance instructions” on the rice package label and consumers in the lower education levels do not prefer to design the “Production date and expiration date”. Consumers in both educational level prefer to design the “Nutritional values” on the label and “Muslim crescent” as a religious symbol on rice package, although the correlation is weak.

- **Income levels vs. graphical design elements.** Consumers at higher income levels do not prefer to design the “Maintenance instructions” on the rice package label. Furthermore, consumers with higher education do not prefer to design the “Nutritional values” on the rice package label, but their preference about “Manufacturer information” is negative.

- **Marital status vs. graphical design elements.** Married consumers prefer to use more percentage of “Orange” and “Red” in package color combination. Also, they do not prefer to design the “Cooking instructions”, “Nutritional values” and “Manufacturer information” on the rice package label but married consumers prefer to “Variation in package font”. On the other hand, single consumers prefer to design the “Maintenance instructions” on the rice package label.

There is not more significant correlation between demographic factors and graphical design elements. Moreover, the Kendall’s tau findings, describes the significant correlation between demographic factors with structural design elements for rice packaging design as follows:

- **Age vs. structural design elements.** Younger consumers prefer to provide rice in “Multiples of 3 and 4 kg packages. Also, they don’t prefer to provide rice in “Plastic gallon” and “Plastic jars”. Elderly consumer’s preference is “Multiples of 5 kg”. Furthermore, “Package durability” is a preference for elderly consumers.

- **Gender vs. structural design elements.** Female consumers do not prefer to have rice in “Multiples of 5 but “Package durability” is a preference for female consumers. On the other hand, male consumers prefer to provide rice in “Cotton bag”.

- **Household size vs. structural design elements.** Consumer with smaller households prefers to provide rice in “Multiples of 3 kg” packages. In addition, consumer with smaller households does not prefer to have rice in “Cotton bags” and they prefer to have rice in “Metal cans”. On the other hand, consumers with larger households prefer to have rice in “Plastic jars” and “Package durability” is a preference for this group of household size. Moreover, consumers in any size of household prefer to provide rice in “Multiples of 4 kg” packages.

- **Educational level vs. structural design elements.** Providing rice in “Multiples of 4 kg” packages and in “Plastic bags” is a preference for higher educated consumers. They don’t prefer to have rice in “Jute bags”. Also, “Package durability” is a preference for higher educated consumers.

- **Income level vs. structural design elements.** Consumers at higher income levels do not prefer to provide rice in “Multiples of 4 kg” packages and they prefer to have rice in “Plastic bags”. Consumers at lower income level prefer to provide rice in “Multiples of 4 kg” and they do not prefer to have rice in “Cotton bags”.

<table>
<thead>
<tr>
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<th>.021</th>
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* Correlation is significant at the 0.05 level (1-tailed).
• **Marital status vs. structural design elements.** Married consumers prefer to have rice in “Plastic jars” and they do not prefer to have rice in “Metal cans”. Also, “Package durability” is a preference for married consumers. Moreover, single consumers prefer to have rice in “Paper bags”. There is not more significant correlation between demographic factors and structural design elements.

**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. Consistent with the changes in demographic factors, it seems natural to be changing consumer preferences. Therefore, packaging designers must have update knowledge of consumer preferences to provide the product properly and influence consumer satisfaction. Accordingly, in addition to identifying consumer preferences in tow main elements of design (graphical and structural), the author was able to classify the preferences by using Kano model. Furthermore, by using the consumer satisfaction index (CSI), the impact of all preferences measured in the consumer’s satisfaction. Finally, Kendall’s tau statistical test evaluates the significant correlation between demographic factors and packaging design elements.

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**References**


