MARKET SALE PERFORMANCE OF RICE PACKAGING DESIGN IN CORRELATION TO CONSUMERS' DEMOGRAPHIC FACTORS
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Abstract:
The most important purpose of selling a product is consumer satisfaction. Packaging is one of the tools that can severely affect consumer satisfaction because it is a powerful marketing tool to communicate directly, conveying the message of the product and creating added value to the consumer. Nowadays, consumers desire products that match their own attitude toward design and function. It’s all about functionality and visual aesthetics which can be seen as the characteristics that create the product’s appearance and define the product’s totality and also consumers buying decision and finally consumers satisfaction. 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 young or aging 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. Hence, the main purpose of the authors is to determine the correlation of consumers’ demographic factors and packaging design elements and its impact to their buying decision and satisfaction. The paper consists of theoretical and research aspects. The first part encompasses theoretical insights into the Engel-Kollat-Blackwell Model while the practical part represents the methodology and research results.

Key Words: Demographic factors, Packaging design elements, Consumer buying decision, Consumer satisfaction, Engel-Kollat-Blackwell Model.

1. Introduction
This is a study of rice packaging 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 that is prone to wastage. It is the researcher’s view that alongside with the consumers’ fundamental considerations in buying rice for food, is the rice packaging. The reasons for essentially considering rice packaging could be diverse depending on the consumers’ ability for keeping or home stocking a certain volume of rice for certain duration depending on their consumption and buying affordability. Thus, the importance of rice packaging as a major market promotion-factor is equally essential as rice itself as food.

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 (Dadras, 2015).

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

The authors know 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 “What relation is there between demographic factors and packaging design elements? 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.
1.1. Engel-Kollat-Blackwell Model
This model was created to describe the increasing, fast-growing body of knowledge concerning consumer behavior. Engel et al. Model, like in other cognitive models of consumer behavior, has gone through many revisions to improve its descriptive ability of the basic relationships between components and sub-components; which consists of four stages.

First stage: Decision-process stages
The central focus of the model is on five basic decision-process stages: Problem recognition, search for alternatives, alternate evaluation (during which beliefs may lead to the formation of attitudes, which in turn may result in a purchase intention), purchase, and outcomes. But it is not necessary for every consumer going through all these stages; it depends on whether it is an extended or a routine problem-solving behavior.

Second stage: Information input
At this stage the consumer gets the information from marketing and non-marketing sources, which also influence the problem recognition stage of the decision-making process. If the consumer still does not arrive to a specific decision, the search for external information will be activated in order to arrive with a choice or in some cases, if the consumer experience dissonance because the selected alternative is less satisfactory than expected.

Third stage: Information processing
This stage consists of the consumer’s exposure, attention, perception, acceptance, and retention of incoming information. The consumer must first be exposed to the message, allocate space for this information, interpret the stimuli, and retain the message by transferring the input to long-term memory.

Fourth stage: Variables influencing the decision process
This stage consists of individual and environmental influences that affect all five stages of the decision process. Individual characteristics include demographic factors (personal factors), motives, values, and personality; the social influences are culture, reference groups, and family. Situational influences, such as a consumer’s financial condition, also influence the decision process.

The Fig (1) shows the Engel-Kollat-Blackwell Model of consumer behavior.

2. Material and Methods
2.1 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.

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.

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

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

2.3 Study Hypothesis

Hypothesis 1. Consumers’ demographic factors with higher/least computed scores on the preferences of packaging design elements are positively significant to the consumers’ satisfaction level; 1.1 Consumers’ demographic factors with higher/least computed scores on the preference of packaging design elements are negatively significant to the consumers’ satisfaction level.

Hypothesis 2. Consumers’ demographic factors with higher/lower computed satisfaction level on packaging design elements are positively significant to their decision to buy rice; 2.1 Consumers’ demographic factors with higher/lower computed satisfaction level on packaging design elements are negatively significant to their decision to buy rice.

Hypothesis 3. The higher the consumers’ satisfaction level on the graphical design, the more likely will it positively lead to their decision to buy rice;
3.1 The lower the consumers’ satisfaction level on the structural packaging design, the less likely will it positively lead to their decision to buy rice.

Figure 1: An Overview of the Engel-Kollat-Blackwell Model (1995) of Consumer Behavior
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 (Dadras, 2015).

In this regard, the authors have 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, authors 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

Result and discussion

The findings of Kendall's tau correlation coefficient between consumers’ demographic factors and preferences on satisfaction levels confirm that consumers’ demographic factors with least computed scores on consumers’ preferences of graphical design packaging are negatively significant to the consumers’ satisfaction level. Moreover, consumers’ demographic factors with higher computed scores on consumers’ preferences of structural design packaging are positively significant to the consumers’ satisfaction level.

In addition, consumers’ demographic factors with the lower computed satisfaction level of graphical design packaging are negatively significant in their decision to buy rice. Furthermore, it can be argued that consumers’ demographic factors with the higher computed satisfaction level of structural packaging design are positively significant in their decision to buy.

According to findings of Kendall's tau correlation coefficient the higher the consumers’ satisfaction level of the graphical design more likely will it positively lead to their decision to buy rice. Also, the lower consumers’ satisfaction level of the structural packaging design less likely will it positively lead to their decision to buy rice.

The following tables 1 to 3 show an overview of the study hypothesis results by Kendall's tau correlation coefficient.
Table 1. An Overview of Kendall's tau Correlation Coefficient between Demographic Factors and Consumer Preferences on Satisfaction Level of Rice Packaging Design Elements.

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Computed scores on preferences</th>
<th>Significant to consumer buying decision</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
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<tr>
<td>Gender</td>
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<tr>
<td>HH size</td>
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<td>Educational level</td>
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<td>Income level</td>
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<tr>
<td>Marital status</td>
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Correlation coefficient

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Correlation coefficient</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>.052.06044.102*</td>
</tr>
<tr>
<td>Gender</td>
<td>.062.138*.021.070</td>
</tr>
<tr>
<td>HH size</td>
<td>-.002-.073-.017.036</td>
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<tr>
<td>Educational level</td>
<td>-.037-.017-.191*.005</td>
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<tr>
<td>Income level</td>
<td>-.031-.119*.213*.018</td>
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<tr>
<td>Marital status</td>
<td>.028-.042.066.020</td>
</tr>
</tbody>
</table>

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

Table 2. An Overview of Kendall's Tau Correlation Coefficient between Consumers Demographic Factors and Satisfaction in their Decision to Buy Rice

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Computed scores on preferences</th>
<th>Significant to consumer satisfaction level</th>
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<tbody>
<tr>
<td>Age</td>
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Correlation coefficient

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Correlation coefficient</th>
</tr>
</thead>
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<tr>
<td>Age</td>
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<tr>
<td>Gender</td>
<td>.012 .038 .020 .063</td>
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<tr>
<td>HH size</td>
<td>.016 .078 .006 .106*</td>
</tr>
<tr>
<td>Educational level</td>
<td>.037 .000 -.036 .011</td>
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<tr>
<td>Income level</td>
<td>.012 -.114* -.041-.148*</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (1-tailed).
Table 3  An Overview of Kendall's Tau Correlation Coefficient between Consumers Satisfaction Level of Packaging Design Elements to their Decision to Buy Rice

<table>
<thead>
<tr>
<th>Consumers’ satisfaction level of packaging design elements</th>
<th>Correlation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphical elements</td>
<td>Structural elements</td>
</tr>
<tr>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td>.335*</td>
<td>.259*</td>
</tr>
</tbody>
</table>

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

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, the authors were able to measure the correlation between demographic factors and consumer’s preferences in packaging design elements and consumers’ buying decision and satisfaction by using Kendall’s tau statistical test.

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References


