Online snacks shopping: The influence of packaging design in product expectations
ABSTRACT

The growth of online food shopping along with the increasing interest of consumers in adopting healthy eating habits highlights the need to deepen the decision-making process in the online purchase of healthy food. The aim of this paper is to analyze the impact of extrinsic cues—packaging background color and ingredients description—on consumers’ sensory and hedonic expectations of healthy snacks and consequently on purchase intention. The moderating role of consumer design sensitivity has been taken into consideration. For this purpose, a 2x2 full factorial online experiment was conducted with a sample (N = 221) of Spanish consumers recruited through social media. The results partially supported the hypotheses stated. Results show that in the healthy snack category, extrinsic cues can create expectations about what the product consumption experience will be like. These expectations contribute to stimulate purchase intention. In some cases, consumer’s design sensitivity can be considered a moderating factor in the shaping of sensory expectations emerging from packaging. This study helps us to understand the decision-making process in the online purchase of certain food items by focusing on the product exhibition during the search stage. It also discusses managerial implications addressed to healthy snacks firms about packaging design when selling online. The study stresses the usefulness of sensory research as a necessary tool to support the marketing of online products.

KEYWORDS

decision-making process; design; design sensitivity; extrinsic cues; experiment; healthy eating; natural packaging; snacks; sensory expectations; taste

JEL CODES

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1. INTRODUCTION
In January 2021, EuroCommerce and McKinsey conducted a survey on grocery retailing across Europe. Among the new trends identified by this study, there are two key shifts: online is becoming the core –contributing to online growth of 18% on average in Europe –, and consumers` lifestyle agendas are now focused on health food –30% of consumers intend to spend more on healthy food in 2021– (McKinsey & Co., 2021).

Online grocery shopping has nearly tripled in sales between 2012 and 2018 (Statista, 2019). However, this promising but formerly niche industry has come to the forefront since the coronavirus pandemic began. Online grocery shopping has experienced an unprecedented growth during the COVID-19 pandemic, driven by consumers seeking safe shopping alternatives. In 2021, digital grocery shoppers will end up buying approximately 11% more groceries than in 2020. Future trends indicate that consumers will continue to increase grocery shopping through 2024. This growth will occur despite the average consumer is less virus-conscious (Goldman, 2021), and thanks to the positive customer experience. In this context, the snacks category has experienced a growth of over 20% during the Covid pandemic lockdown (IRI, 2020) and according to Nielsen (2019) the product category is very dynamic and has experienced continued growth in recent years.

Digital grocery shopping is not only secure, but also timesaving and convenient, as delivery apps offer an increasing number of features, incentives, and options for ordering groceries online.

Besides the emergence of online grocery shopping, consumers are showing an intention to adopt healthy eating habits and are willing to pay a price premium for products aligned with this goal.

OBJECTIVE
To analyze the impact of extrinsic cues -packaging background color and ingredients description- on consumers’ sensory and hedonic expectations and purchase intention

METHODOLOGY
A 2x2 full factorial online experiment analyzed with a multivariate general linear model (GLM).

RESULTS
Extrinsic cues can create expectations about what the product consumption experience will be like. These expectations contribute to stimulate purchase intention.

LIMITATIONS
There is a need to continue the research by looking at the impact of the extrinsic cues during the consumption experience.

PRACTICAL IMPLICATIONS
This study helps understand the decision-making process in the online purchase of certain food items by focusing on the product exhibition during the search stage.
From millennials to baby boomers, consumers are demanding healthier products, such as plant based, all-natural, and protein-rich products (McKinsey & Co., 2021). Prior research has focused on the specific domain of buying organic and healthy food online and has analyzed certain characteristics, attitudes, and opinions of organic food e-consumers (Bryla, 2018). Some attributes that may influence the intention of using an e-marketplace to buy and sell organic products (Robina-Ramírez, Chamorro-Mera & Moreno-Luna, 2020) can be logistical. The chances of success of an organic online food retailer are dependent on greater customer commitment to a store-based supply of organic food (Murphy, 2003).

As online grocery shopping gains momentum, new under-investigated issues are emerging, such as in-store interventions to promote healthier and more sustainable habits. For instance, the impact of real-time feedback on consumers’ food choices in online supermarkets (Lembcke et al., 2020); the factors influencing the willingness to buy (WTB) organic and fresh products (Hurgobin, Le Floch & Lemercier, 2020); or the influence exerted by the visualization of information on other people’s choices when purchasing organic and healthy food (Katzeff et al., 2020).

There is still a need to go deeper into the decision-making process in the online purchase of healthy food. In particular, the perception of the product online, since it represents the first step in the decision-making process. Given that the packaging acts as a communication vehicle, it would be particularly relevant to understand how healthy products are perceived based on the view of their packaging. Attributes such as color, design, and written messages (Silayoi and Speece, 2007) have become increasingly relevant due to the emergence of online shopping. This paper addresses the perception of healthy products in the digital environment. It reports on how packaging design encourages a taste for naturalness, and healthy expectations of what the product consumption experience will be like.

Thus, the healthy snack category has been selected for this study. For decades, the snack consumer had to choose between taste or health. For the new generation of online shoppers, that choice is no longer acceptable. They demand snacks that are healthy and tasty at the same time (Amplify Snacks Brands, 2017). The challenge facing this product category is to bring together the healthy and tasty attributes, and to be able to communicate both benefits at the same time in the online product display.

Healthy snacks have a small number of easily recognizable and natural ingredients. The opaque packaging of these products plays a key role in the consumer’s decision because it provides the only sensory cues on which the shopper's expectations could be based. The current design trend for these packaging incorporates white background color contrasted with masses of color in greenish and brownish tones. The packaging also displays images of the product’s natural ingredients by using clear and simple language to describe its novel taste.

Therefore, the aim of this research is to analyze the impact of extrinsic cues - information that does not come directly from the product - displayed in the packaging information that refers to the sensory and hedonic expectations of consumers of healthy snacks. A 2x2 factorial experiment was conducted online, in which the impact of the packaging color (natural vs. artificial) and the information provided to describe the ingredients (text vs. images) on taste expectations and on the perception of the product as healthy and natural was compared.
The study of extrinsic cues and their effects in sensory and hedonic expectations has been and continues to be an area of great interest to both academics and practitioners. This research can aid the understanding of the influence of extrinsic cues in the online purchase decision process of the snack’s product category. In particular, this research assists us in understanding the online product exposure during the information search stage and the formation of the consideration set. Results also provide insights for retailers about the strategies they should adopt to promote healthy food consumption, as well as new considerations for grocery firms regarding packaging design suitable for online display.

2. LITERATURE REVIEW

2.1. Consumer in search of healthy and pleasurable food

Consumers’ attitudes towards food choices has changed dramatically in recent decades. These changes are the result of multiple factors such as the emergence of new lifestyles, increased income levels of consumers, greater availability of products, changes in values and technological advances, among others (Mehmeti and Xhoxhi, 2014). In this scenario of change, numerous new and interrelated food trends coexist (BCFN, 2012). These trends include the search for pleasurable experiences through the sense of taste; the focus on health—in terms of improving the overall well-being of individuals; naturalness and simplicity understood as the minimization of food processing interventions; the globalization of flavors rooted in the exchange between cultures; local and regional food that emphasizes the relationship between food and place; or sustainability, which refers to an informed consumer involved in the protection of the environment. All these trends are part of the current landscape facing food brands.

While some of these trends are changing rapidly, the interest in healthy eating continues to grow and evolve. Today, there is greater concern about the nutritional value and quality of the food we eat. This leads consumers to carefully check the information on the packaging before deciding what to buy. Consumers are looking for foods free of unhealthy ingredients and experimenting with new types of food for health (Mehmeti and Xhoxhi, 2014). According to the Healthy Food and Brands report (Google, 2019), 74% of Spanish households consider it important to adopt healthy eating habits, although 62% of respondents who are interested in such a diet do not follow it out of necessity, but as a desire to be well nourished. In fact, searches for healthy eating on the Internet are growing twice as fast as those for food in general.

Interest in healthy eating reaches all generations, including the youngest. In particular, Generation Z shows a clear propensity for simplicity and health, both in product choice and preparation methods. The convenience of ready-to-eat or microwaveable foods is a thing of the past. Generation Z prefers fresh ingredients with the addition of their own personal touch for flavor. Baby Boomers also share an interest in health, which in their case manifests itself in a preference for nutritious foods, richness in protein, fiber, Omega3, etc. The pro-health trend embraces new concepts such as pleasure and indulgence until now reserved for unhealthy foods. Health-conscious consumers want healthy food but without giving up the pleasure of indulgence.

2.2. Healthy food, sensory information, and online shopping

In the realm of food, purchasing and consumption decisions are separated processes that take place in different contexts. However, any interaction with food, even if it is virtual and at the beginning of the decision process in the search stage, sets in
motion a series of psychological, physiological and/or physical processes (Schifferstein, 1996; Spence, 2011). The brain analyzes any clues present on the food or packaging and integrates them with stored information from previous experiences (Barlow, 2001).

Therefore, the information contained on the packaging of food is important as it contributes to creating early expectations about the sensory and hedonic experience that will occur later, during consumption (Liang et al., 2013; Spence and Deroy, 2014). The stimuli present on the packaging that are used to depict the product and its sensory properties influence the perception of the product, its consideration in the purchase decision and in the consumption experience (Asam and Bucklin, 1973; Dubé and Cantin, 2000; Spence and Piqueras-Fiszman, 2014).

In the study of sensory cues given off by foods, a distinction is made between intrinsic cues that emerge directly from the food such as color, aroma, crunch... and extrinsic cues that are unrelated to the product and emerge from the packaging and/or labels such as photographs, design or words used to describe a product, its taste, or its texture... Although consumers prefer to physically examine the sensory attributes of products before purchasing them, when sopping online, consumers’ ability to examine the sensory attributes of products is limited. Customers receive very limited intrinsic cues of food product from products when shopping online and therefore use extrinsic cues to assess the quality and the properties of each food item. The whole set of visual stimuli related to the packaging -images, colors, or shape of the packaging- together with the verbal stimuli –the product name, the label, the information describing the manufacturing process, the nutritional content, the ingredients, or the origin/provenance of the product– contribute to creating consumer expectations. These expectations about the potential qualities of the product and the imagined experience of its subsequent consumption (Spence and Piqueras-Fiszman, 2014; Woods et al., 2010) influence the image, attitude, and purchase intention of online grocery products.

**Extrinsic cues: The role of colors.** Color is probably the most important sensory feature of product packaging. Color suggests the type of product it contains and the taste it will have. The orange color of the picture of a juice on the packaging affects its taste expectations. If the color is deep orange, an expectation is created that the taste of the orange juice will be sweet. If the color of the picture of the juice on the packaging is yellowish, consumers will expect the taste of the juice to be sour. These expectations arise, regardless of whether designers use color deliberately or unintentionally (Spence, 2016).

Colors capture attention. Depending on intensity, hue and saturation, colors communicate specific meanings. Intense colored packaging –red or green– anticipate and promises a more intense taste experience (Piqueras-Fiszman and Spence, 2011).

Consumers tend to form associations between colors and foods. Green is associated with life and nature. By using green in the packaging, products convey naturalness and health. Based on the above, we anticipate that in a snack packaging, the use of an intense natural green background color will favor the creation of expectations of taste and quality, since the meaning of the color highlights both product features.

**H1:** The use of an intense natural green color (vs. an intense but artificial green color) in the background of the packaging of a healthy snack will favor the creation of tasty, natural, and healthy expectations.

**Extrinsic cues: The role of image and text.** In a snack packaging, where the taste of the product is unknown, taste needs to be described. Both the images of the ingredients (Jaeger and MacFie, 2001) as well as the description of the ingredients have important
consequences in creating sensory expectations and a healthy product image (Kähkönen, Tuorila and Rita, 1996). However, there is ample evidence in the communications literature that images, such as pictures, drawings, and illustrations, encourage the processing of mental images (Jai, O’Boyle & Fang, 2014). Compared to a written text, quality pictures tend to exert a stronger attraction, being more rapidly processed in a local and concrete way (Adaval et al., 2019). This is known as the “picture superiority effect” (Childers & Houston, 1984). Therefore, we anticipate the following hypothesis:

\[ H_2: \text{The use of high-quality images of natural ingredients (vs. their verbal expression) in the packaging of a healthy snack, will favor the creation of tasty, natural, and healthy expectations.} \]

When the packaging design of a healthy snack combines an intense natural green background with high quality images of natural ingredients, an interaction effect arises. Therefore, we posit that:

\[ H_3: \text{The use of an intense natural green color (vs. an intense but artificial green color) in the background of the packaging of a healthy snack together with the use of high-quality images of natural ingredients will significantly increase the creation of tasty, natural, and healthy expectations.} \]

\[ \text{Purchase intention: Due to the dominance of taste in food decision-making, taste expectations increase product desirability. Additionally, consumers’ interest in adopting healthy eating habits, which demand plant-based, all-natural food products (McKinsey & Co., 2021) will be more willing to purchase products aligned with their goals. In other words, product expectations emphasizing taste in combination with health can positively influence the purchase decision.} \]

\[ \text{Individual differences: design sensitivity. The study of the influence of sensory cues triggered by food products should consider the variability across consumers. Consumer beliefs, attitudes and personality moderate the formation of consumer expectations (Spence and Piqueras-Fiszman, 2014). There are differences in preferences between men and women. Cross-cultural differences in the meaning of packaging cues have also been observed when it comes to the meaning or influence of color (Velasco et al., 2014).} \]

\[ \text{In online grocery shopping, the information contained on the package is of utmost relevance. However, consumers may also differ in their ability to pay attention to and read this information and in the consequent expectations they form. Design sensitivity has been identified as a specific consumer trait that needs to be considered when analyzing the impact of packaging design on consumers. According to the design sensitivity (Becker et al., 2011) consumers may experience design intensifying or reducing the influence of packaging cues on expectations about food. Bloch et al. (2003) developed a scale to measure this individual difference in the centrality of visual product aesthetics. People with high scores in design sensitivity can be characterized as design-minded, whereas people with low scores are rather indifferent to product design.} \]

\[ \text{Based on the previous, we anticipate a moderating effect of packaging design on the creation of expectations according to consumer’s design sensitivity. Therefore, we formulate the following hypothesis:} \]

\[ H_4: \text{The effect of packaging design on the creation of tasty, natural and healthy expectations is more pronounced for consumers with high sensitivity to} \]
design compared to those with a low sensitivity to product design.

**Purchase intention**: Due to the dominance of taste in food decision-making, taste expectations increase product desirability. In addition, consumers interested in adopting healthy eating habits that demand plant-based natural food products (McKinsey & Co., 2021), will be more willing to purchase products aligned with their goals. In other words, product expectations that emphasize taste in combination with health can positively influence purchase decision.

H5: The packaging of a healthy snack that elicits favorable expectations of taste, naturalness, and health, will increase consumers’ intention to purchase the product.

### 3. Methodology

To test the influence of healthy snacks packaging design on the creation of tasty, natural, and healthy expectations; the intention to purchase accordingly, and the moderating role of consumer design sensitivity, we conducted an online 2x2 full factorial experiment (Fricker & Schonlau, 2002).

#### 3.1. Sample

The participants in the experiment were a convenience sample recruited from social media sites (Mullinix et al., 2015) of Spanish subjects (N = 221), aged between 18 and 70 years (mean age: 33 years). Participants were randomly assigned to one of the four experimental conditions (natural green background -picture of ingredients; natural green background- text of ingredients; artificial green background -picture of ingredients; artificial green background- text of ingredients). Cell sizes ranged from 51 to 59.

#### 3.2. Questionnaire design and data collection

To design the experimental stimulus, the packaging of Grefusa’s Natuchip healthy snack was taken as a reference. Helped by a professional designer, the packaging design was modified to generate 4 images according to each of the experimental conditions of the study. Background color (BC) natural green vs artificial green x ingredients description (ID) picture vs text (Figure 2).
**Figure 2. Stimuli used in the questionnaire**

<table>
<thead>
<tr>
<th>Image of the ingredients</th>
<th>Artificial green background</th>
<th>Natural green background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text description of the ingredients</td>
<td></td>
<td></td>
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</tbody>
</table>
The study was conducted through a web survey (Fricker and Schonlau, 2002) using Google Forms. Before conducting the data collection, the questionnaire was examined by a panel of experts to ensure content validity. To verify the clarity of the questions and gain feedback on its length, the questionnaire was further pre-tested in a group of 20 target participants.

Participants in the experiment received an online invitation to participate. Through the link they accessed the survey which consisted of 4 modules. In the first one, they were randomly assigned to one of the 4 experimental conditions. At this point, participants were informed that the study involved research on food products and online shopping without specifying further details of the goals of the study.

The second module included filler questions about food perception. The image of the snack package that corresponded to their experimental condition was placed between the questions of this module. Participants were allowed to view the snack packaging for as long as they wanted. Immediately after they were asked to rate how tasty, natural, and healthy they thought the product was.

The third module was intended to measure purchase intention and design sensitivity, also among other filler questions related to online shopping habits and preferences. The fourth and final module collected classification data: gender and age.

Data compilation took place from April 15th to April 22nd. Filling in the questionnaire required between 3 and 5 minutes. The task was self-paced.

3.3. Measurement scales
The measurement scales were selected and adapted after a thorough review of the literature. The independent variable measured the four experimental conditions described. To measure the expected taste, naturalness, and healthiness of the snack package displayed a 10-point Likert scale ranging from 0 to 10 (1= not at all to 10= totally) was used.

Table 1. Variables, items, and scales used

<table>
<thead>
<tr>
<th>Variables</th>
<th>Items</th>
<th>Reliability</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tasty (TE), natural (NE) and healthy (HE) expectations</td>
<td>How (tasty / natural / heathy) will you rate this snack?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase intention (PI)</td>
<td>It is likely that I would purchase this snack in the near future</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design sensitivity (DS)</td>
<td></td>
<td>= .9</td>
<td>Adapted from Bloch, Brunel, and Arnold (2003)</td>
</tr>
<tr>
<td></td>
<td>Owning products that have superior designs makes me feel good about myself</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If a product’s design really “speaks” to me, I feel that I must buy it</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes the way a product looks seems to reach out and grab me</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>When I see a product that has a really great design, I feel a strong urge to buy it</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I enjoy seeing displays of products that have superior designs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A product’s design is a source of pleasure for me</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I see things in a product’s design that other people tend to pass over</td>
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</table>
The moderator variable participant’s design sensitivity was measured using seven items adapted from the Bloch, Brunel, and Arnold (2003) scale. The items were measured with a 5-point Likert scale ranging from 1 to 5 (1 = strongly disagree to 5 = strongly agree).

Behavioral intention to purchase the snack was measured with one item on a 5-point Likert scale, ranging from 1 to 5 (1 = very unlikely to 5 = very likely). This item was taken from a previous study (Agarwal & Prasad, 1999) following Fishbien and Ajzen (1980) considerations: the intention was worded in reference to the specific target (to purchase the snack package displayed) but being relatively nonspecific with respect to time frame.

4. DATA ANALYSIS AND RESULTS

To check the influence of the independent variables BC (natural green vs. artificial green) and ID (image vs. text) on the dependent variables TE (taste expectations), NE (natural expectations), and HE (health expectations), a multivariate general linear model (GLM) was run.

Before conducting GLM, DS (design sensitivity) was checked. Reliability was measured with Cronbach’s alpha = .900 (Nunnally, 1978). The 7-items were summed and averaged to form a single index of DS (M = 3.36). There was no significant difference in design sensitivity among the four groups (F(3,217) = 2.49, p = 0.061) and thus the DS variable was incorporated into the GLM analysis as a covariate.

Results show that background color elicits a significant impact in health expectations (M_{NE,natural} = 5.09, DS = 2.07; M_{HE,natural} = 4.35, DS = 1.96; F(1,218) = 7.45, p < 0.05) and natural expectations (M_{NE,natural} = 5.02, DS = 2.35; M_{NE,artificial} = 4.33, DS = 2.34; F(1,218) = 4.63, p < 0.05) but not in tasty expectations. Therefore, H1 that stated the use of an intense natural green color in the background of the packaging of a healthy snack will favor the creation of tasty, natural, and healthy expectations, was partially supported.

The influence of ID (ingredients description) was not significant for any of the sensory expectations that were measured in the experiment. Thus, H2 is not supported.

However, the results show that the interaction between BC and ID is significant for all three sensory expectations measured, TE (F(1,216) = 7.023, p < 0.01) NE (F(1,216) = 4.232, p < 0.05) and HE (F(1,216) = 10.725, p < 0.01). This provides support to H3. See Figure 2.

The use of the natural green background color combined with an image of the ingredients supports the expectations of taste, naturalness, and healthiness. However, these expectations decrease significantly when the image is replaced by a text. On the other hand, the use of artificial green as a background color when combined with the description of the ingredients in text achieves good results.

Sensitivity to design exerts a moderating effect on healthy expectations (HE) (F(1,216) = 8.311, p < 0.01). The influence of stimuli that intensify the perception of a food as healthy is greater the more sensitive the subject is to design. Hence, H4 on the moderating role of design sensitivity is partially supported.

Next, a regression model with purchase intention as the dependent variable and taste expectations (tasty, natural, and healthy) as independent variables, showed a positive and significant effect of TE (β = .531, p < .000) and HE (β = .166, p < .05) as predictors of purchase intentions, while NE remained to be not significant in this model. The regression model had a
satisfactory explanatory power ($R^2 = .446, F = 43.523, p < .000$). Hence, hypothesis 5 was partially supported.

5. DISCUSSION AND CONCLUSION

The growth of digital grocery together with the increasing interest of consumers in adopting healthier eating habits, highlights the need to deepen the decision-making process in the online purchase of healthy food. Therefore, the aim of this research was to analyze the impact of extrinsic cues – packaging background color and ingredients description – on consumers' sensory and hedonic expectations of healthy snacks, taking into consideration the moderating role of consumer design sensitivity. The goal of this study was to relate the influence of these extrinsic cues to purchase intention. The results show that, in the snack category, extrinsic cues create expectations about what the product consumption experience will be like.

It also seems clear that the influence of these cues results from the interaction between the elements, rather than from the independent effect of each one. While the background influences taste expectations, we have not found the influence of the ingredient description by itself to be significant. However, when the interaction between the two variables is measured, the result is significant. In short, design is a whole and the consumer generates expectations about the product based on the overall perception of the design.

Consumer design sensitivity can be considered a moderating factor in the formation of expectations. This variable does not directly influence purchase intention. Indirectly, design sensitivity influences expectations and those expectations lead to purchase intention.

In the food industry, more and more companies are trying to position themselves in the challenging area of flavor and
health. For the new generation of mainstream online shoppers, the choice between flavor and health is no longer acceptable. In fact, we have shown that tasty and healthy expectations—specially the tasty ones— increase purchase intention.

This study has academic implications because the results provide new evidence of the impact of extrinsic sensory cues on the creation of taste expectations in the underexplored context of online shopping. It also demonstrates the moderating role played by consumer sensitivity to design when confronted with supermarket shelves.

The results of this study are encouraging for firms striving to capture consumers attention and interest in snacks. On the one hand, the ability of packaging design to communicate new flavors in a virtual context is demonstrated. On the other hand, it highlights the usefulness of sensory research as a necessary tool to support the marketing of online products.

The research is not exempt from limitations. The work conducted analysis perception in a very specific domain: the pre-decision expectation-building phase. It would be interesting to continue the research by looking at the impact of these extrinsic cues during the consumption experience, together with the extension of the research to a larger number of color and ingredient description variables. Further research is needed to extend the results to distribution channels such as vending machines and HORECA.

Studies that analyze consumers perception and its influence on purchasing decisions show the potential of marketing to impact consumers as well as society. Through marketing actions, the world can be improved or harmed. Marketing can contribute to firms’ growth but harming society. Being conscious of the marketing outcomes should commits us to help organizations growth by bringing benefits to all stakeholders involved.
REFERENCES


