

Consumers' preference leading purchase intention toward manipulation of form and transparency for juice packaging design

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ABSTRACT

Packaging plays a fundamental role on consumer's intention to purchase, as it may be the first contact between the consumer and the product. The product packaging has a crucial role to attract consumer, force them to choose the product and act as a brand communication vehicle. The point of focus is how the elements of the package design affect consumer's perception about products and brand. In this study, to understand the effect of package form and transparency on consumers' pre-purchase preference of juice packaging, the participants (N=60) are asked to assess six designs against a 5-point Likert scale. The findings suggest that form and transparency in juice packaging have significant effect on consumers' purchase intention. In addition, consumers give preference to functionality of the packaging than novelty while purchasing fruit juice product.

KEY WORDS

Juice packaging, Form, Transparency, Purchase intention, Perception

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INTRODUCTION

Packaging is a primary vehicle for communication and branding [1]. It helps to determine consumers' first impression to the product and also capture consumers' attention more effectively in the store as compared to the other similar product stuffed in the shelf [2]. Purchase intention depends on the degree to which consumers expect the product to satisfy them when they consume it [3] and eventually packaging acts as an extrinsic quality cue in pre-purchase condition. Purchase decision of consumer, with reference to daily shopping of food and beverages, often depends on the product's visual appearance [4]. The symbolic and aesthetic qualities of the product packaging not only drive the consumers' decision [5],[6] but also influence subsequent product experiences [7], [8] such as , taste for food products.

The health quality dimension seems to be one of many attributes that influence the perceived quality of food products and finally the purchase decision of consumers. The 'Total Food Quality' [9] integrates the multi-attribute and the hierarchical approaches to the quality perception. The first dimension refers to the cues which consumers consider to infer the healthiness and safety, and how do they perceive the healthiness of different food products. The second aspect is how the evaluation of health aspects enters the buying decision, to what extent is healthiness an ultimate condition of purchase.

According to Lysonski et al. [10] consumer's decision-making deals both with the cognitive and affective orientations and mainly two categories, i.e., visual and informational elements potentially affect consumer purchase decisions. The visual elements of packaging consist of graphics, size, shape which positively influence the choice, mainly for low involvement situation and these elements are predominantly associated to the affective side of decision-making, whereas, informational elements relate to information provided and technologies used in the package tend to play a key role in higher involvement decision-making

[11]. Underwood et al. [12] reported that consumers often spontaneously imagine aspects of how a product looks, tastes, feels, smells, or sounds from the product picture on the package.

Apart from influencing consumer purchase decision, packaging may create expectations in the consumer for the food inside [13], [14]. The consumer may be interested in the product and the purchase preference can be changed if the hedonic expectations created by the package are high. With reference to food packaging, sensory and hedonic expectations could also affect consumers' response when tasting the product. Manipulation of one or more packaging variables e.g., packaging colour, clear packs that allow viewing food colour, incident light, nomenclature and brand name appearance may result in positive effect [15], [16]. Consumers perceive the product as low-quality if the appearance of package signifies a low quality food [11], [17].

It is evident that people intuitively make connections between different sensory domains, a phenomenon referred to as 'cross-modal correspondence' [17]. Manipulation of a small percentage of yellow to the overall green color of the can lead to experience more lemony taste, though the drink itself had not been manipulated [18]. An ample of literature reported the far-reaching impact of product packaging features, such as, shape, angularity, colour usage, layout of packaging elements etc. on consumers' expectation and their actual product experiences [19],[20],[21],[22].

Product form creates the initial impression and generates inferences regarding other product attributes. Schifferstein and Spence [17] reported that product designs having cross-modal correspondence are thought to be preferred. Consumers appear to associate rounded shapes with sweet tastes and angular shapes with sour tastes [23]. Ngo et al. [24] also reported that angular shapes (used in the context of packaging label designs) tended to be associated with sparkling water, whereas rounded shapes with still water.

The visual appearance of its packaging greatly influences the product's acceptance, as they can serve as quality cues for consumers. Package size, shape and elongation affects consumers' judgments and decisions [11]. Consumers may instantly recognize products through appetizing pictures or distinctive brands on packaging, and even simple transparency of the packaging material can attract consumers by allowing them to view the product inside [25]. Food packing design attributes, such as, graphical component of label [26], package shape [27], efficacy of pleasant images on commercial food products [28], packaging color [29], aesthetic packages [30], influence consumers' perception and acceptance towards the food products.

Based on the reviewed literature it is evident that manipulation of package design attributes in a creative manner can support the healthiness of the food product inside the package and simultaneously can design it aesthetically pleasing. The prior research that has been published mainly explored the effects of the visual elements while no research have been done by manipulating form and transparency simultaneously for food packaging as far our knowledge. In this backdrop, the aim of this present study is to understand the purchase intension in effect with different packaging form and transparency on juice packaging design. Hence, the hypotheses for this study are:

H1. Form of a juice package effects the functionality of the package.

H2. Transparency in a juice package influences perceived quality of the product.

H3. Form and transparency simultaneously influence consumers' purchase intention while buying fruit juice.

METHOD

Participants

To achieve the aforesaid objective 60 participants (41 Male, 19 Female) were recruited from Indian Institute of Technology Guwahati, India. The average age of the sample was 23.8 ± 3.7 years. The stimulants were shown to the participants one by one. To have a proper response people who consumed juice on daily basis were taken as participant for the study.

Apparatus and procedure

To understand the effects of different package shape and transparency on the pre-purchase decisions of the consumer for juice packaging design, 6 stimulants have been created by varying form and transparency. The form had two sub-variants, namely, conventional form (F_{conv}) and extracted form (F_{ext}). The conventional form was designed by adding a slight curve (longitudinally) to 4 edges of a regular tetra pack juice package. The regular tetra pack juice package is a rectangular cuboid, according to the context of the Indian juice package industry. Whereas, the extracted form was designed by taking inspiration of the form of the fruit from which the concentrated juice was made. In this case, the fruit was mango and that is why the form of a mango has been extracted. The purpose of having conventional form against extracted form was to understand whether the consumer prefers a form that looks similar to the existing package design or would prefer a fruit-shaped packaging.

The other variable i.e. transparency had three sub-variants; No transparency (T_{no}), - Transparency longitudinally along one edge (T_{long}), Transparency for novelty evenly scattered across the packaging (T_{multi}).

	T _{no}	T _{long}	T _{multi}
F _{conv}			
F _{ext}			

Fig. 1: All the stimulants used in the experiment

The purpose of introducing transparency as a variable was to understand whether the consumer prefers a see-through package for juice packaging. The second and third sub variants have been created to see whether the consumers prefer transparency along the edge or scattered across the package.

Based on the above variables, 6 stimulants were designed (Figure 1). The stimulants were designed using Keyshot and Adobe Photoshop5. The elements of graphics, information, colour of the packaging were kept similar across all the stimuli. The information provided was the quantity of juice i.e. 200 ml and a label of 'JUICE' on the 'mango' graphics. No brand was mentioned on the juice package.

The objective of the study was clearly explained to all the participants before starting the experiment. The stimulants were displayed one after another in a random sequence to the participants on a laptop with a screen resolution of 1366 x 768pixels. The height of the stimulants was kept as approx. 105 mm. The participant were asked to rate the designs using a 5-point Likert scale where 1-strongly disagree, 2-moderately disagree, 3-neutral, 4-moderately agree and 5-Strongly agree. Participants had to rank the following factors: Fascinating, Relevant, Exciting, Needed, Easy to hold, Properly seen, Fresh, Healthy, Tasty, Trustworthy, Like to purchase. There was a

one-on-one interaction with the participants. It has been found from the reliability test, that the questionnaire is reliable ($\alpha= 0.915$) for this experiment. Among these 10 factors, to understand the principal factors for this experiment, Principal component analysis (PCA) with rotation has been done. Based on PCA analysis a between subject analysis of variance (ANOVA) has been carried out on 2(form: conventional, extracted) \times 3 (transparency: no transparency, long transparency, multi transparency) data set consisting of ratings of subjects to understand the significance of form and transparency on consumers' purchase intention. Reliability test has been done to verify the reliability of the questionnaire used for this experiment.

RESULT

Result of PCA with total variance explained in parenthesis has been shown in table 1. It can be seen from the table that all the factors can be explained through three main factors. Among these three principal factors, factor 2 and 3 is defining 18.89% and 17.438% of the total variances respectively whereas, factor 1 explaining 25.932% of total variances.

Table 1: Rotated Component Matrix of Factor analysis

	Component		
	1(25.932%)	2(18.890%)	3(17.438%)
Fascinating	.794	.101	.079
Exciting	.731	.193	.248
Properly seen	.665	-.038	.256
Fresh	.224	.084	.822
Healthy	.129	.198	.827
Tasty	.519	.227	.471
Trustworthy	.404	.453	.489
Easy to hold	-.141	.784	.197
Relevant	.176	.681	.128
Needed	.413	.603	-.007
Like to purchase	.473	.594	.256

Table 2: ANOVA result for form and transparency

Dependent Variable	Form		Transparency	
	F	Sig.	F	Sig.
Fascinating	19.583	.000*	25.594	.000*
Exciting	3.049	.082	40.901	.000*
Properly seen	2.007	.158	395.212	.000*
Fresh	.074	.785	16.369	.000*
Healthy	.895	.345	5.389	.005*
Easy to hold	143.636	.000*	.253	.776
Relevant	10.910	.001*	5.024	.007*
Needed	3.324	.069	21.080	.000*

* denotes the significant factors (P< 0.05)

Table 3: Mean value of different kind of transparency in the packages

Dependent Variable	Mean±SD		
	T _{no}	T _{long}	T _{multi}
Relevant	3.132±.113	3.604±.113	3.186±.113
Exciting	2.667±.102	3.709±.102	3.847±.102
Fascinating	2.883±.108	3.804±.109	3.847±.108
Needed	2.821±.112	3.879±.113	3.322±.112
Properly seen	1.459±.082	4.223±.082	4.254±.082
Fresh	2.696±.109	3.368±.109	3.466±.109
Healthy	3.051±.101	3.504±.101	3.356±.101

Table 4: ANOVA result for form×transparency

Independent Variable	Dependent Variable	F	Sig.
Form × Transparency	Fascinating	6.510	.002*
	Exciting	3.931	.020*
	Properly seen	.233	.792
	Fresh	.153	.858
	Healthy	.103	.903
	Easy to hold	.444	.642
	Relevant	.682	.506
	Needed	.220	.803

* denotes the significant factors (P< 0.05)

According to the factor loading, the factor 1 can be named as 'novelty', factor 2 as 'functionality' and factor 3 as 'quality'. Novelty includes factors like fascinating, exciting and properly seen. The factor represents how much consumers are attracted to the product by looking at the packaging. Functionality consists of easy to hold, relevant and needed, explaining the functional need of consumers for the packaging. Quality includes factors such as fresh and healthy, defining the appearance of quality of the product to the consumers. The significance of these factors was analyzed through ANOVA as shown in Table 2.

H1. Form of a juice package effects the functionality of the package

From table 2 it can be seen that for quality of the product, form has no significant effect on purchase intention whereas functionality of a packaging is significantly dependent on form. The participants preferred to the conventional form ($F_{conv}=4.112\pm.088$) over extracted form ($F_{ext}=2.623\pm.089$) for the variable 'easy to hold'. Similarly preference of participants goes with the conventional form ($F_{conv}=3.524\pm.092$) over extracted form ($F_{ext}=3.092\pm.093$) for the variable 'relevant'. Only in case of 'fascinating' consumers prefer extracted form ($F_{ext}=3.782\pm.089$) over conventional form ($F_{conv}=3.241\pm.088$). Therefore, it can be said that for novelty of the product, consumers prefer extracted form but when it comes for functionality then, consumers prefer conventional form of packaging. So, the hypothesized (H1) effect of form of a juice package on functionality of the package is validated.

H2. Transparency in a juice package influences perceived quality of the product

Table 2 reveals a significant main effect of transparency on consumers' preference while purchasing. It can be seen that transparency has statistically significant effect on novelty, quality and functionality of the product. The mean values of different kinds of transparency in package used in this experiment are shown in table 3.

It can be seen from the table 3 that in case of novelty of product consumers prefer multiple transparency over longitudinal transparency while for functionality and quality of the product consumers' preference go with longitudinal transparency over multiple transparency. In all the cases, package without any transparency has the lowest rating. So, the hypothesized influence of transparency in a fruit juice package on perceived quality of the product as stated in H2 has been validated.

H3. Form and transparency simultaneously influence consumers' purchase intention while buying fruit juice

To verify the H3 ANOVA result of both form and transparency considering simultaneously has been shown in table 4.

From table 3 it can be seen that only in case of perception of novelty of the packaging both form and transparency are significant whereas in view of quality and functionality they are not significantly influencing purchase intention. Therefore, the hypothesized influence of both form and transparency on consumers' purchase intention is partially validated in case of novelty of the packaging but not for other attributes considered.

DISCUSSION

An experiment designed to assess the impact of form and transparency in a juice product packaging has been presented here. The result of the experiment conveys that food packaging plays an important role in attracting consumers' attention and generating expectations in the consumer that in turn affect their product perception and buying behavior as stated by earlier researchers [31]. In this study, it has been found that transparency in fruit juice package helps to influence purchase intention through making perception of good quality product. However, novelty in packaging from the point of view of form as well as transparency, is not that much effective to satisfy the consumers' expectation for the food product. The results obtained provide empirical support for preference of longitudinal transparency over multiple transparency and conventional form over extracted form, which in turn depicts that consumers give preference to functionality of the packaging than novelty while purchasing fruit juice product. So, as founded by earlier researchers [15], non-sensory factors such as packaging play an important role in affecting consumers' purchase decisions but preference of consumers mostly influenced by the functionality of the packaging. Also, in sequence with the earlier findings that the appearance of a product can have a subsequent influence on food acceptability [32], [33] this present study is depicting that transparency in juice package helps to percept the product as fresh and healthy. Therefore, it can be concluded that manipulation of package design has great influence on consumers' purchase intention for fruit juice product.

It has been observed that while considering form and transparency at a time, consumers' perception of quality and functionality of the packaging is not significantly effected. Only the perception of novelty is significantly dependent on both form and transparency. However, as participants have shown their preference based on functionality rather than novelty of packaging, therefore, variation of form and transparency simultaneously may not significantly influence consumers' purchase intention.

It is expected that findings of the present study will help to influence the consumers' purchase intention for any fruit juice product through the appearance of packaging. However, it is important to note here that, materials of the packaging has not been considered in this present study and study has not been repeated for different types of fruit juice product. Therefore, further research can be carried on in this area in order to clarify applicability of the present findings for all kinds of packaged food product.

REFERENCES

- [1] Rettie, R., Brewer, C.: The verbal and visual components of package design. *Journal of Product & Brand Management*, 9 (1), 56 – 70 (2000)
- [2] Rundh, B.: Packaging design: creating competitive advantage with product packaging. *British Food Journal*, 111 (9), 988 – 1002 (2009)
- [3] Kupiec, B., Revell, B.: Measuring consumer quality judgements. *British Food Journal*, 103 (1), 7 – 22 (2001)
- [4] Fenko, A., Schifferstein, H.N.J., Hekkert, P.: Shifts in sensory dominance between various stages of user-product interactions. *Applied Ergonomics*, 41, 34–40 (2010)
- [5] Creusen, M.E.H., Schoormans, J.P.L.: The different roles of product appearance in consumer choice. *Journal of Product Innovation Management*, 22, 63–81 (2005)
- [6] Van Rompay, T.J.L., Pruyn, A.T.H., Tieke, P.: Symbolic meaning integration in design and its influence on product and brand evaluation. *International Journal of Design*, 3, 19–26 (2009).
- [7] Cardello, A.V.: Consumer expectations and their role in food acceptance. In H. J. H. MacFie & D. M. H. Thomson (Eds.), *Measurement of food preferences* (pp. 253–297). London: Blackie Academic (1994)
- [8] Schifferstein, H.N.J., Kole, A.P.W., Mojet, J.: Asymmetry in the disconfirmation of expectations for natural yogurt. *Appetite*, 32, 307–325 (1999)
- [9] Grunert, K, Larsen, H, Madsen, TK., Baadsgaard, A.: *Market orientation in food and agriculture*. Kluwer Academic, Boston (1996)
- [10] Lysonski, S., Durvasula, S. Zotos, Y.: Consumer decision-making styles: a multi-country investigation. *European Journal of Marketing*, 30 (12), 10-21 (1996)
- [11] Silayoi, P., Speece, M.: Packaging and purchase decisions: An exploratory study on the impact of involvement level and time pressure. *British Food Journal*, 106 (8), 607 – 628 (2004)
- [12] Underwood, R.L., Klein, N.M., Burke, R.R.: Packaging communication: attentional effects of product imagery. *Journal of Product & Brand Management*, 10 (7), 403 – 422 (2001)
- [13] Ares, G., Deliza, R.: Identifying important package features of milk desserts using free listing and word association. *Food Quality and Preference*, 21, 621–628 (2010)
- [14] Deliza, R., MacFie, H.J.H.: The generation of sensory expectation by external cues and its effect on sensory perception and hedonic ratings: A review. *Journal of Sensory Studies*, 11(2), 103-128 (1996)
- [15] Imram, N.: The role of visual cues in consumer perception and acceptance of a food product. *Nutrition & Food Science*, 99 (5), 224 – 230 (1999)
- [16] Silayoi, P., Speece, M.: The importance of packaging attributes: a conjoint analysis approach. *European Journal of Marketing*, 41, no. 11/12, 1495 – 517 (2007)

- [17] Schifferstein, H.N.J., Spence, C.: Multisensory product experience. In H.N.J. Schifferstein & P. P. M. Hekkert (Eds.), *Product experience*, pp. 133–161. Amsterdam: Elsevier (2008)
- [18] Hine, T.: *The total packaging: The secret history and hidden meanings of boxes, bottles, cans and other persuasive containers*. New York, NJ: Little Brown (1995).
- [19] Velasco, C., Salgado-Montejo, A., Marmolejo-Ramos, F., Spence, C.: Predictive packaging design: Tasting shapes, typefaces, names, and sounds. *Food Quality and Preference*, 34, 88–95 (2014)
- [20] Westerman, S.J., Sutherland, E.J., Gardner, P.H., Zervos, Z.: The design of consumer packaging: Effects of manipulations of shape, orientation, and alignment of graphical forms on consumers' assessments. *Food Quality and Preference*, 27, 8-17 (2013)
- [21] Schifferstein, H.N.J., Fenko, A.B., Desmet, P.M.A., Labbe, D & Martin, N.: Influence of package design on the dynamics of multisensory and emotional food experience *Food Quality and Preference' Food Quality and Preference*. 27 (1), 18-25 (2013)
- [22] Velasco, C., Woods, A.T., Spence, C.: Evaluating the orientation of design elements in product packaging using an online orientation task. *Food Quality and Preference*, 46, 151-159 (2015)
- [23] Ngo, M. K., Piqueras-Fiszman, B., Spence, C.: On the colour and shape of still and sparkling water: Insights from online and laboratory-based testing. *Food Quality and Preference*, 24, 260–268 (2012)
- [24] Ngo, M.K., Velasco, C., Salgado, A., Boehm, E., O'Neill, D., Spence, C.: Assessing crossmodal correspondences in exotic fruit juices: The case of shape and sound symbolism. *Food Quality & Preference*, 28, 361–369 (2013)
- [25] Selke, S., Culter, J.D., Hernandez, R.J.: Extrusion, film and sheet. In: *Plastics Packaging*, 2nd edn. Cincinnati, OH: Hanser, 193–223 (2004)
- [26] Bone, P.F., France, K.R.: Package graphics and consumer product beliefs. *Journal of Business and Psychology*, 15 (3), 467 – 489 (2001)
- [27] Ares, G., Deliza, R.: Studying the influence of package shape and colour on consumer expectations of milk desserts using word association and conjoint analysis. *Food Quality and Preference*, 21 (8), 930-937 (2010)
- [28] Mizutani, N., Okamoto, M., Yamaguchi, Y., Kusakabe, Y., Dan, I., Yamanaka, T.: Package images modulate flavor perception for orange juice. *Food Quality and Preference*, 21 (7), 867-872 (2010)
- [29] Deliza, R., MacFie, H.: *Product Packaging and Branding*. In Frewer, L. J. and E. Risvik (eds.), *Food, People and Society. A European Perspective of Consumers' Food Choices*. Springer, Germany (2001)
- [30] Reimann, M., Zaichkowsky, J., Neuhaus, C., Bender, T., Weber, B.: Aesthetic package design: A behavioral, neural, and psychological investigation. *Journal of Consumer Psychology*, 20, 431 –441 (2010)

- [31] Gelici-Zeko, M.M., Lutters, D, ten Klooster R., Weijzen, PLG.: Studying the Influence of Packaging Design on Consumer Perceptions (of Dairy Products) Using Categorizing and Perceptual Mapping. *Packaging Technology and Science*, 26, 215-228 (2013)
- [32] Hutchings, Sensory assessment of appearance – methodology. in Hutchings (Ed.), *Food Colour and Appearance*, pp. 105-41 (1994)
- [33] Kostyla, A.S., Clydesdale, F.M.: The psychophysical relationships between colour and flavour. *CRC Critical Review in Food Science and Nutrition* (1978)