

## **Purchase Intention of Anthropomorphic Chair is Influenced by Visual Attractiveness and Pleasure**

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### **Abstract**

In today's highly competitive market, success story of a product depends on numerous factors which include human factor issues like consumer's perception towards product's physical attributes. Visual attractiveness and consequent perceived pleasure are two very important determinants for product choice, reported by various researchers. In this regard, form of product plays a crucial role for product's acceptance in market. Empirical research findings indicate that form has definite role in creating visual attractiveness and perceived pleasure. Anthropomorphic form (human like form) has long been used in product design but there is rarely reported study on how anthropomorphic product affects purchase intention through its visual appearance and emotional appeal (pleasure). Hence, present research aimed to observe influence of anthropomorphic form variations of chairs on purchase intention, considering visual attractiveness and pleasure as underlying human factors. The whole study was subdivided into three parts. In first part, effect of anthropomorphic form of chair on level of anthropomorphism was investigated while second part of this study described relationships among anthropomorphism, visual attractiveness, pleasure and purchase intention. Last part of this study described the influence of visual attractiveness and pleasure on anthropomorphic product purchase intention. Results of current research were able to establish that perception of anthropomorphism depends on types of anthropomorphic form; and, participants perceived more visual attractiveness and pleasure for the product (chair) with higher level of anthropomorphic appearance. Moreover, purchase

intention was higher for anthropomorphic chair with more visual attractiveness and pleasure. Therefore, it can be concluded that anthropomorphic chair might have good market acceptance if human factor issues like attractiveness and pleasure can be enhanced.

**Keywords:** Anthropomorphism; pleasure engineering; product choice; product design; visual attractiveness.

## 1. Introduction

Current market is highly competitive for most of the products and market need is changing day-by-day. Therefore, product designers, market researchers and human factor experts are always worried about market acceptance of products and involved in developing different strategies for enriching product value through product's appearance. In this context, product form is an important determining factor in product choice. Generally decision about product form is taken during conceptualization phase of the product design. Beyond usability, product form is related with attractiveness and perceived pleasure. These two factors are playing major role product choice apart from usability.

Dion et al. (1972) reported that people perceived a product good while it is beautiful/ attractive. This principle have widely been acknowledged by several researchers and suggested that people draw positive inferences about attractive objects as consistent judgments were taken by people to prefer objects. Blijlevens et al. (2013) described how aesthetic appraisal positively varied with curvature of the surface of the product.

Perception of pleasure was studied by many scholars and researchers in different context of product's form design. Contextually, it is worthy to mention that product personality assignment is a way of pleasurable product design and it has a positive influence on product choice (Jordan, 2000). Govers et al. (2003) reported about assignment of personality into a product and described how appearance of product is related to different personality characteristics such as happy, cute and tough. Recently, Luo et al. (2012) studied perceptual matching of shape design style between wheel hub and car type and evaluated pleasure as an important measure. Huang et al. (2012) studied different forms of perfume bottles and they were able to classify designs of perfume bottle into different emotional categories.

Study of 'form' is not something new in product design but very limited researches have been carried out on specialized product form like 'anthropomorphic form'. DiSalvo and Gemperle (2003) defined that anthropomorphic products are those having humanlike appearance. They highlighted some state of the art design examples which used anthropomorphic form in products e.g. human body like shapes of perfume/soap bottles and pot scrubbers; humanlike car face etc. Miesler et al. (2011) anthropomorphized headlights of car and studied effect of child eyelike headlights on perception of cuteness. As there are less empirical studies reported on anthropomorphic product development strategy considering cognitive human factors

such as visual attractiveness and visually perceived pleasure, present study has been planned to evaluate the role of these two factors on anthropomorphic product (chair) choice.

## **2. Experimental Study: Role of Visual Attractiveness and Perceived Pleasure in Anthropomorphic Product (Chair) Purchase Intention**

Current experiment was conducted to study relationships among anthropomorphism, visual attractiveness and perceived pleasure, and to understand how visual attractiveness and perceived pleasure influence purchase intention in the context of anthropomorphic product (chairs).

### **2.1 Method**

#### **2.1.1 Stimulus**

Images of two chairs prepared in photoshop-CS-4 were selected as stimuli in which shapes of chairs were different and reflected different levels of anthropomorphism (see Fig. 1). Same colour (red) was used for both images of chairs to control the effect of colour on perception of anthropomorphism, visual attractiveness and perceived pleasure. In case of 'Chair-1', chair legs and seat were anthropomorphized keeping consideration of human leg postures in sitting posture. Legs, seat and arm rests of chair were anthropomorphized in such a way that it appeared as someone would lap the user when sitting on it, in case of 'Chair-2'.



**Fig. 1:** Chairs with different levels of anthropomorphism ('Chair-1' in left side and 'Chair-2' in right side)

#### **2.1.2 Participants, procedure and measures**

For the present experiment, levels of anthropomorphism, visual attractiveness, perceived pleasure and purchase intention of chairs were measured by taking responses from adult participants (female: 47.8% and male: 52.2%) and their age ranges from 19-31 years ( $M_{\text{age}} \pm SD = 24.45 \pm 4.64$ ) using different scales after presenting images of chairs on computer screen (size: 17 inches, resolution: 1280×1024 px) in controlled laboratory condition. All participants had normal or corrected visual acuity and normal colour vision. Anthropomorphism of chairs was measured using a self-designed scale

with six bipolar items viz. fake/natural, machinelike/humanlike, artificial/realistic, lifeless/organic, dead/ lively and non-human animal like /humanlike. Seven-point semantic differential scales were used for rating of these six bipolar items. Visual attractiveness of selected chairs was measured by taking responses using three items questionnaire (visually good/visually bad; unattractive/attractive; ugly/beautiful) on seven-point scale. Among these 3 items, first item was newly introduced and last two items were taken from Page and Herr (2002) and Hekkert et al. (2003), respectively. Perceived pleasure of images of anthropomorphic chairs was measured using a scale containing total thirteen bipolar items related to pleasure and was rated in seven-point semantic differential scale. These items include dignified/cute; implicit/energetic; warm/cool; traditional/modern; mature/youthful; dense/brisk; gentle/stimulating; masculine/feminine; artificial/natural; local/international; relaxed/sporty; monotonous/cheerful and unhappy/ happy. Among these items first twelve items were adopted from Luo et al. (2012) and last item was taken from Govers et al. (2003). Purchase intention was measured by asking two questions which included Q1. Suppose you wanted to buy a 'Chair' from market. How likely would you be to purchase this 'Chair'? Q2. Suppose you wanted to buy a 'Chair' from market. What is the likelihood that you would be selecting this 'Chair'? Answers of these two questions were presented with seven-point Likert scale in which '1' represents least likely and '7' represents most likely. To test reliability of scales, Chronbach's alpha values were calculated for scales of anthropomorphism ( $\alpha = 0.82$ ), visual attractiveness ( $\alpha = 0.89$ ) and perceived pleasure ( $\alpha = 0.87$ ). Alpha values of these scales satisfied the minimum requirement of alpha '0.70' (Field, 2009) for reliability. Pearson's correlation coefficient was calculated for purchase intention scale ( $r = 0.97$ ) and it was found greater than '0.50' which ensured the scale as reliable (Field, 2009).

## 2.2 Results

### 2.2.1 Stimulus manipulation check for of anthropomorphism of chairs

Stimulus manipulation check for two stimuli (images of two chairs) was done through ANOVA (n=44) followed by F-test. Anthropomorphic shape/form and anthropomorphism were considered as independent variable and dependent variable respectively for ANOVA. It was found that there were significant variation in average anthropomorphism scores between selected chairs ( $F(1, 43) = 13.514; p < 0.001$ ). Mean value for anthropomorphism was significantly higher in 'Chair-2' ( $M_{AM-2} \pm SD = 5.94 \pm 0.86$ ) than 'Chair-1' ( $M_{AM-1} \pm SD = 4.45 \pm 1.69$ ).

### 2.2.2 Relationships among anthropomorphism, visual attractiveness, pleasure and purchase intention

Pearson's correlation coefficients were calculated to find out relationships among anthropomorphism, visual attractiveness, perceived pleasure and purchase intention. It was observed that all these variables under study were significantly and positively related with each other ( $p < 0.01$ ) (Table 1).

**Table 1:** Correlation coefficients among anthropomorphism, visual attractiveness, perceived pleasure and purchase intention.

	Anthropomorphism	Visual attractiveness	Perceived pleasure	Purchase intention
Anthropomorphism	1.0	0.36*	0.35*	0.62*
Visual attractiveness		1.0	0.18*	0.36*
Perceived pleasure			1.0	0.47*
Purchase intention				1.0

\*Correlation is significant at the level  $p < 0.01$  (2-tailed t-test).

### 2.2.3 Prediction of anthropomorphic product purchase intention

Multiple regression analysis was done to predict purchase intention of anthropomorphic chair (criterion) on the basis of visual attractiveness and pleasure (predictors). Results of multiple regression analysis indicated that anthropomorphic product purchase intention could be significantly predicted by visual attractiveness and perceived pleasure ( $F(2,209) = 43.854$ ;  $p < 0.001$ ). It was observed that about 30% ( $R^2 = 0.30$ ) change of anthropomorphic chair purchase intention can be predicted by visual attractiveness and pleasure. Regression equation for the present study: Anthropomorphic product purchase intention =  $0.29 \times \text{Visual attractiveness} + 0.41 \times \text{Perceived pleasure} - 1.129$ .

## 2.3 Discussion

### 2.3.1 Variation of anthropomorphism is due to different anthropomorphic forms

Perception of anthropomorphism was found higher in case of 'Chair-2' than 'Chair-1' though both chairs were anthropomorphic. Therefore, it is proved that variations in perception of anthropomorphism chiefly depend on types of anthropomorphic form. This finding is supported by similar findings of Hellén and Sääksjärvi (2013) who reported that round/curvy shape was associated with childlike anthropomorphism. Similarly, in present study, form of 'Chair-2' was curvier than 'Chair-1' and due to this curvy nature more anthropomorphism might be perceived by participants for 'Chair-2'.

### 2.3.2 Anthropomorphism is positively related with visual attractiveness and perceived pleasure

Significant positive relations were found among anthropomorphism, visual attractiveness, perceived pleasure and purchase intention. Observation indicated that consumers were more visually attracted and perceived greater pleasure towards that chair image which had more anthropomorphism in appearance. Miesler et al. (2011) studied anthropomorphised car fronts by modifying headlights. Their study explained similar variations of pleasure (reflected through cuteness) due to incorporation of anthropomorphic attribute in product form (baby like bigger eye size in car face). Present research findings are also corroborated with interpretations of Blijlevens et al. (2013) who investigated influence of curvature upon aesthetic appraisal.

### ***2.3.3 Visual attractiveness and pleasure influence purchase intention of anthropomorphic chair***

Results of multiple regression analysis revealed that visual attractiveness and perceived pleasure could predict purchase intention of anthropomorphic chairs (about 30%). People perceive a product 'good' when that product's appearance is beautiful or visually attractive (Dion et al., 1972). Wells et al. (2011) reported that visual attractiveness of websites contributed towards visual appeal which ultimately positively influenced product purchase intention from e-retailer's website. Jordan (2000) stated that pleasurable appearance of products had positive influence on product choice. Following the same line of these literatures, present study was able to establish that anthropomorphic form of chair helps to make chair visually attractive as well as pleasurable and thus these two variables enhancing purchase intention of chair. From the regression model, it was found that value of regression coefficient for visual attractiveness was ( $\beta_{VA} = 0.29$ ) was lower than regression coefficient of perceived pleasure ( $\beta_{PP} = 0.41$ ). Thus, it can be interpreted that pleasure contributes more in enhancement of purchase intention of anthropomorphic product (chair) than visual attractiveness.

### **3. Conclusion**

It can be concluded that perception of anthropomorphism varies with type of anthropomorphic form and consumers perceive more visual attraction and pleasure for the chair which reflects more anthropomorphism. Therefore, cognitive ergonomists, designers and product innovation management experts need to consider visual attractiveness and visually perceived pleasure in chair design for better market acceptance in addition to other human factors issues such as usability, safety and comfort commonly involved in chair design.

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### **References**

- [1] A Field (2009), *Discovering Statistics using SPSS*, Sage, London.
- [2] C DiSalvo, and F Gemperle (2003), From seduction to fulfillment: the use of anthropomorphic form in design, *Proc. DPPI '03, Intl Conf. Des Pleasur Prod and Interfa*, Pittsburgh, doi:10.1145/782896.782913
- [3] C Page and P M Herr (2002), An investigation of the processes by which product design and brand strength interact to determine initial affect and quality judgments, *J. Consum. Psychol.*, **12**, pp. 133-147.

- [4] J Blijlevens, R Mugge, P Ye and J P L Schoormans (2013), The influence of product exposure on trendiness and aesthetic appraisal, *Intl. J. Design*, **7**, 1, pp. 55-67.
- [5] J D Wells, J S Valacich and T J Hess (2011), What signal are you sending? How website Quality influences perceptions of product quality and purchase intentions, *MIS Quart.*, **35**, pp. 373-396.
- [6] K Dion, E Berscheid and E Walster, (1972), What is beautiful is good, *J. Pers. Soc. Psychol.*, **24**, pp. 285-290.
- [7] K Hellén and M Sääksjärvi (2013), Development of a scale measuring childlike anthropomorphism in products, *J. Market.Manage.*, **29**, 1-2, pp. 141-157.
- [8] L Miesler, H Leder and A Herrmann (2011), Isn't it cute: An evolutionary perspective of baby-schema effects in visual product designs, *Intl. J. Design*, **5**, 3, pp. 17-30.
- [9] P Govers, P Hekkert and J P L Schoormans (2003), Happy, cute and tough can designers create a product personality that consumers understand? In *Design and Emotion: the experience of everyday things* (D McDonagh, P Hekkert, JV Erp & D Gyieds, Eds), Taylor & Francis, London, pp. 345-349.
- [10] P Hekkert, D Snelders and P C W VanWieringen (2003), 'Most advanced, yet acceptable': typicality and novelty as joint predictors of aesthetic preference in industrial design, *Brit. J. Psychol.*, **94**, pp. 111-124.
- [11] P W Jordan (2000), *Designing pleasurable products*, CRC Press, Boca Raton.
- [12] S Luo, Y Fu and Y Zhou (2012), Perceptual matching of shape design style between wheel hub and car type, *Int. J. Ind. Ergonom.*, **42**, pp. 90-102.
- [13] Y Huang, C Chen and L P Khoo (2012), Products classification in emotional design using a basic-emotion based semantic differential method, *Int. J. Ind. Ergonom.*, **42**, pp. 569-580.

