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The role of perceived novelty,the perceived value of a product design on consumer responses.

دور الحداثة المدركة والقيمة المدركة لتصميم المنتج على استجابات المستهلك.

Dr.Djilali Chafik [1*], Dr.Belboula Imene [2]

[1] Blida- 2- University, djilali.chafik@gmail.com.

[2] Blida -2 - University, imenebelboula@gmail.com.

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Abstract

The objective of this research is therefo re to treat the effect of the perceived moderni ty of product design and its perceived value on consumer's attitudes towards it, where Th e study was conducted on a sample consisted of 159 students.

The results obtained show that the prod uct design novelty influences directly percei ved value and indirectly attitude toward prod uct design .The proposal model added attitud e as a mediator between perceived values an d purchases intention. Research implication and managerial applications are discussed.

Keywords: product design, novelty, perceived value, attitude toward product design.

ملخص

يهدف هذا البحث إلى معالجة تأثير الحدا ثة المدركة لتصميم المنتج وقيمتة المدركة على موا قف المستهلكين تجاهه، حيث أجريت الدراسة على عينة مكونة من 159 طالب.

تظهر النتائج التي تم الحصول عليها أن حداثة تصميم المنتج تؤثر على القيمة المدركة بشكل مباشر وبشكل غير مباشر على الموقف تجاه تصميم المنتج.كما أن نموذج الدراسة المقترح أضاف الموقف كوسيط بين القيمة المدركة ونية الشراء. كما تمت مناقشة نتائج البحث والآثار المترتبة عنها.

الكلمات المفتاحية: تصميم منتج،حداثة، قيمة مدركة، موقف تجاه تصميم لمنتج.

* Corresponding Author: Dr.Djilali Chafik, Email: djilali.chafik@gmail.com

1. INTRODUCTION

Developing a successful innovative product is crucial for companies (Dougherty, 1992). The success of an innovation depends not only on the kn ow-how of the company, but also on how consumers respond to it. Consume rs have complex attitudes towards innovative products. On the one hand, the y may be attracted to the new advantages that innovations bring. On the othe r hand, they may be reluctant to adopt the innovation because of its high co mplexity.

Among the various marketing strategies allowing a company to acquire a su stainable competitive advantage, the differentiation strategy which consists i n attributing to the product important characteristics shared with the other pr oducts of its category while ensuring that it presents a character unique in t he minds of consumers (Windal, 1990).

Product design is a central element, allowing the company to materialize pro duct positioning (author, 2015). By product design we mean the end result o f a multi-disciplinary design and manufacturing process embodied in the ph ysical attributes, functionality and form of the product. The exterior design o f the product refers to visual elements such as color, shape, size or proportio ns that will constitute the final appearance of the product (Bloch, 1995).

Research on the psychological and behavioral responses of consumers to pr oduct design has been the subject of increasing interest in the academic liter ature over the past twenty years (Bloch, 1995; Dell'Era et alii, 2008; Veryze r, 1999). While the initial work has mainly focused on aesthetic responses, t he more recent ones have helped to understand the influence of product desi gn semantics on consumer behavior (Dell'Era et al., 2008; Karjalainen and S nelders, 2010). The semantic approach to product design comes down to con sidering that the design of a product is an arrangement of elements which, th rough their formal properties, will be vector of meaning (Karjalainen and Sn elders, 2010).

The semantic approach to product design, however, does not imply a mecha nistic view of the creative process that would reduce it to an assembly of ge ometric shapes; materials and colorsthat unequivocally lead to meaning. The styles of the product, its aesthetics, the innovativeness of its design are also vectors of meaning (Truong et alii, 2014; Verganti, 2008). According to a se

miological approach, product design appears as a discourse because it can b e broken down into distinctive and differentiated features from one product t o another which are sources of meaning. These distinctive features can be pe rceived as contributing to the final meaning of the object, a homogeneous whole integrating all the visual statements (Bobrie, 2015). According to Blo ch (1995) the design or: "The product-form represents a certain number of elements chosen and mixed as a whole by the designers in order to achieve a particular sensory effect. Designers choose features such as proportion of sh ape, color, materials; etc. The level of congruence is determined by the mixt ure of these elements".

Furthermore, Verganti (2008) postulates that go od design conveys senses a nd values emotional and symbolic about the product. He suggests that while the functionality of the product aims to satisfy the utilitarian needs of consu mers, the senses conveyed by design elicit emotional and socio-cultural nee ds. The design translates the real values, facilitates the understanding of the message and the intrinsic benefits.

Several researchers have been interested in form theories (Veryzer and Hutc hinson, 1998; Mathieu and Le Ray, 2006). A form is made up of different el ements, but is approached as a whole, a "Gestalt". It is instantly perceived a s a whole and is mentally organized as a structured global vision. This first l aw is based on physiological laws as well as on the concepts of the m echanism of vision. Veryzer (1993, 1998) relied on the theory of the golden ratio and stressed the importance of the proportion of products and the gener al preference for the golden ratio. Thus from 1876, Gustav Fechner (cited in Mathieu, 2006) presents 10 rectangles whose width over length ratios vary f rom 1 to 0.40 via the golden number 0.618, and asks subjects to select the preferred (most aesthetic) and the one they like least. Indeed, 35% of subje cts chose the rectangle whose proportions correspond to a golden number. T hus, the preference for the golden ratio is never rejected again. The golden r atio is thus considered an aesthetic standard.

In addition, recent theories and design principles such as uniqueness, contra st, proportion (Mathieu, 2006), and prototypicality (Veryzer and Wesley, 19 98), suggest that consumers perceive the elements of design (shape, color, m aterials) in a constitutive way and organize them in a global construct (Very zer, 1999). The multidimensional features of the design are determined on t he basis of the measurable elements (Geistfeld et al, 1977). Thus, expedient

elements and attributes of product design (color, shape, materials, symbols, symmetry, texture, etc.) are aggregated during the process of perception and combined into a more complex cognitive component (Veryzer, 1997, 1999) that transmits a particular character for the consumer (Veryzer, 1999). For e xample, the use of a stainless steel material, combined with the modular sha pe of a watch, is likely to promote the perception of particular characteristic s such as durability and quality.

Although the literature deals with the perceived novelty of a product design and the perceived values independently, we offer an integrative framework a rticulating these two concepts. Our research will focus on demonstrating ho w perceived novelty and values expand our understanding of consumer perc eption of product design. The first part provides a theoretical framework and introduces the concept of product design, the issue of perceived novelty and values. Based on this theoretical framework, we propose a conceptual model and introduce our research hypotheses. In a second part, we will present an e mpirical study and the results obtained. We will conclude with a discussion of the results and the academic and managerial implications of our research .

2. Conceptual framework, literature review and research hypotheses

From art to technology, design has evolved over time to become today a lever of differentiation (Kotler and Rath, 1984; Olson, Cooper and Slater, 1998; Verganti, 2006) and a factor of anticipation and stimulation of innovat ion (Talke et al., 2009; Verganti, 2008; Veryzer, 2005). It helps to create a competitive advantage in the market (Hoegg, Alba and Dahl 2010, Creusen and Schoormans 2005; Bloch, 1995), attracts the attention of consumers (Bl och, 1995), conveys values, arouses more or less emotions positive (Veryzer , 1993; Bloch, 1995; Desmet, 2002), and reinforces the perceived benefits of an offer. It constitutes an element of identification of the product or of a bra nd through iconicity (Floch, 1982), thus facilitating its recognition and categ orization. It is a source of inference for the consumer (Luchs and Swan, 201 1).It allows you to modify and strengthen an existing belief, even to create a new belief. Thus, product design can be an element that enriches the positio ning of a product or a brand in a market. (Kreuzbauer and Malter, 2005).

In this sense, the attractiveness of a product results from a harmonization of design elements - shape, color, materials -(Creusen and Schoormans 2005, Bloch 1995), but also from the interaction between the product and the user-

the consumer- (Normann,1988), based on the identification of the characteri stics, as well as on previous experience (Ackermann, 2012). Such an approa ch improves the understanding of the process of evaluation and perception o f functional and/or hedonic benefits –beliefs- (Mugge and Schoormans, 2 012). Indeed, the value of a product goes far beyond the utilitaria dimension, to take into account aesthetic and symbolic dimensions (Mathwick, Milhotr, and Rigdon, 2001), which comes from the harmonization of its attribute.

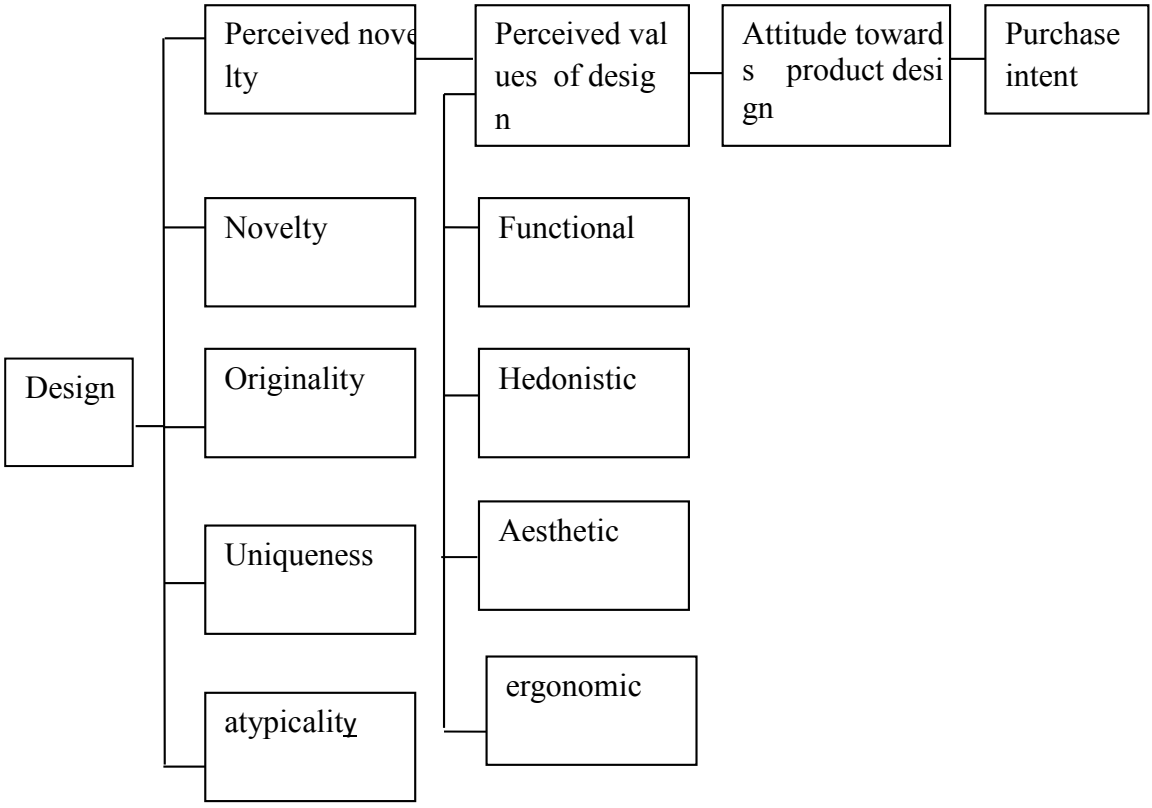
3. Model and assumptions

In this study, we examined the relationship between the perception of novelty of product design and values. Previous studies have postulated a pos itive effect of perceived novelty on sales. Thus, consumers prefer to buy pro ducts perceived as "new". Bloch (1995) in his model had shown the effect of design on the aesthetic responses of consumers. Consumers use the appeara nce of the product and therefore the design as a source of information to dr aw conclusions about the functional performance of the product (Bloch, 199 5, Hoegge & Alba, 2011).

We also considered novelty perceived as a multidimensional construct: “nov elty”, “originality”, “uniqueness” and “atypical” and examined their effects on the different values: “aesthetic”, “functional” and “ergonomic”.

The literature review carried out throughout the first part enabled us to gene rate four dimensions which are functional value; hedonistic value, aesthetic value and ergonomic value. We therefore propose the following conceptual model:

Figure 1: Conceptual model



The literature on consumer behavior asserts that consumer's assessment or a ttitude towards a product depends on their perception of value (Baker, Paras uraman, Grewe & Voss, 2002; Bolton & Drew, 1999; Zeithaml, 1988), whic h leads to a approach or avoidance behavior in summary, the novelty and fra grance of products can affect their perceived hedonic value as well as their s ignificance to ultimately influence their utility value. The utilitarian and hed onic values, in turn, are expected to impact customers' attitude towards the p roduct.

Therefore we postulate the following hypotheses:

H1: There is a significant difference between the product design and the diff erent dimensions of the perceived novelty.

H2: Perceived novelty influences the formation of design values.

H3: Perceived values have an effect on attitude towards product design.

H4: Attitude towards product design has an effect on purchase intention.

4. Methodology and results.

4-1. Sample and choice of stimuli

159 students, aged 18 to 22, participated in this study. We used the des igns of coffee pod machines because it is a consumer product and therefore f amiliar to respondents. In addition, the models offered on the market vary in appearance which suggests the existence of a difference in perceived novelt y while minimizing the effect of confusion.

We have selected four different designs of coffee pod machines as stimuli (s ee appendix). The choice is made on this category of product because there are on the market great truths of designs (different shapes and colors). The s elected images present semillary quality and size. We have blurred the nam e of the brand.

We used literature measurement scales to operationalize the concepts: the measurement scale to measure perceived novelty. This short scale has good internal consistency and its external validity is satisfactory. It has four dimensions: novelty, originality, uniqueness, atypicality.

These scales were measured at five points.

4.2 Preliminary treatments

After data collection, an exploratory factor analysis was implemented (Churchill, 1979), both for perceived novelty, perceived values, attitude and purchase intention. In the end, a confirmatory analysis (AMOS / SPSS) mad e it possible to verify the structure of the scales used; these were subjected t o a control of their reliability and their convergent validity.

We can conclude that the reliability of the scales is satisfactory, the scales ha ve good internal consistency, given that Jöreskog's Rhôs are greater than 0.8 . The convergent validity presents a satisfactory value: indeed, the shared va riance between the construct and its items is greater than 50% (RhôVC (Pvc)> 0.5) according to the method of Fornell and Larcker (1981). Finally, the discriminant validity is satisfactory, because the average variance extract ed is greater than the largest shared variance.

The exploratory and confirmatory analyzes have satisfactory indices of valid ity and reliability (see Table 1).

Table 1. Reliability and validity of measurement

		Values				Attitude 5 items	Purchase intention 3 items
		Hedonistic values 5items preserved	utilitarian values 5 items preserved	Values aesthetics	Values ergonomic		
ACP	Var.expl.	55.95%	51.86%	66.34%	59.71%	74.57%	65.23%
	Communities	> 0.622	> 0.553	> 0.541	> 0.612	> 0.553	> 0.673
	KMO	0.647	0.705	0.723	0.741	0.84	0.90
Reliability	Alpha of Cronbach α	0.75	0.72	0.78	0.80	0.92	0.89
	Rhô de Jöreskog P	0.83	0.82	0.88	0.89	0.96	0.95
Convergent Validity	Rhô of convergent validity Pvc	0.75	0.79	0.81	0.82	0.85	0.82

By favoring the multidimenionality of the lost novelty (novelty, original, uni queness and atypicality) rather than the unidimensionality of the construct, t he categorial approach (joy, anger, disgust, etc.), we have highlighted the va riations of two dimensions of perceived novelty: the "novelty" dimen sion and the "atypicality" dimension according to the coffee pod machine design.

We found a significant difference for the "novelty" dimension:

$$F (2.477) = 12.791, p <.05$$

and the "atypicality" dimension:

$$F (2. 477) = 3.248, p <.05$$

On the other hand, we do not note any significant differences for the "uniqu eness" dimension and the "original" dimension. Thus, design 4 is perceived as being atypical compared to the others designated. Hypothesis H1 is theref ore partially validated.

The perceived novelty dimension, on the other hand, highlights characteristi cs such as the novelty and atypicality of the product design. Innovative desi gns produce distinct answers. In addition, the perception of novelty leads to

a perception of distinct values. Thus, the perception of "Novelty" impacts th e formation of "hedonistic" and "utilitarian" values, while the perception of "atypicality" impacts the formation of "aesthetic" and "ergonomic" value s. We can thus say that the perception of "hedonistic" values can be achieve d by concentrating efforts on the "novelty" dimension. The concentration on the "atypical" dimension leads to an evaluation of its ergonomic value.

The literature on consumer behavior asserts that the assessment or attitude o f customers towards a product and the ultimate decision to adopt it depends on their perception of its value (Baker, Parasuraman, Grewe and Voss, 2002 ; Bolton & Drew, 199; Zeithaml, 1988). In summary, the novelty and fragra nce of the products can affect its perceived hedonic value as well as its signi ficance to ultimately influence its utility value. The utilitarian and hedonic v alues, in turn, are expected to impact customers' attitude towards the product .

To test the hypotheses and the effect of mediation, regression analyzes were carried out separately for each product, according to the mediation test of Ba ron and Kenny (1986). The VIF (variance inflation factor) between 1.2 and 4.3 indicating a weak multicollinearity. The results of the mediating effect o f perceived novelty (H2) test indicate that the effect of novelty on value is si gnificant for designs and the effect of perceived novelty on hedonic value an d ergonomic value is significant for all products.

A regression between perceived value and attitude was found to be significa nt. The Fisher test is 0.047 (<0.05) and Student's t is equal to 0.029 (<0. 05). Hypothesis H3 is therefore confirmed. Likewise, a regression between a ttitude and purchase intention is significant. Fisher's test is 0.032 (<0.05) as well as Student's t is 0.017 (<0.05). Hypothesis H4 is therefore confirmed .

5. Limits and avenues for future research

The choice of the sample and the category of product certainly allows us to establish the significance of our results, but does not allow them to be generalized.

Thus, we used a convenience sample, composed of 159 students. It would b e opportune to repeat the study with a larger public and more representative of the population of a given country.

Regarding the product category, we have chosen the category of coffee mak ers, because it is a consumer product and therefore familiar to the responde

nts. However, to generalize the results, the study could be replicated for othe r product categories, in particular for products with a strong hedonic dimens ion, such as products offered by the luxury or fashion industry.

6. Conclusion

This research aims to better understand the influence of the perceived novelty of a product design in the formation of perceived value and its impa ct on the various dimensions.

Perceived value provides a "fuller" assessment. Indeed, it allows a global as sessment upstream of the decision-making process.

This research shows the difference between the dimensions of the value of a n innovative design. Considering the subjective and multidimensional nature of perceived value, the results provide a better understanding of the effects o f perceived value on consumer attitudes.

From a theoretical point of view, our research complements the literature on the concept of the perceived value of a design and allows an enrichment of t he latter.

Finally, from a managerial point of view, our research presents perspectives for practitioners wishing to determine the attractiveness of a product design. Thus, by controlling for the different characteristics of the design, practition ers could determine which combination of design elements cause their prod uct to convey a distinct dimension of perceived novelty as well as desired va lues.

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8. Appendices: The stimuli

Design 1	Design 2	Design 3	Design 4