

Responses to Form-Driven Innovations: The influence of utilitarian and hedonic consumer attributes

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Abstract

Aesthetic innovation, or form-driven radical change in product aesthetic, depends upon the consumer's affective interpretation of product form. As a factor to examine differences in subjective interpretation of form-driven, aesthetic innovation, we applied the consumer attributes utilitarian and hedonic to explore how consumer attributes may influence initial response to and purchase propensity of aesthetic product innovation. 50 individuals, equally divided into utilitarian and hedonic consumer groups, participated in a survey to evaluate six form-driven product innovations. The three dimensions: product attractiveness, newness and uniqueness were used to measure responses to the six product stimuli. Results indicated utilitarian consumers showed more positive responses to form-driven innovations but that this had less influence upon propensity to purchase. In contrast, although less easily stimulated by form-driven innovation, the hedonic participants' positive responses were more likely to translate into purchase propensity. Implications for innovative, form-driven product development are briefly discussed.

Product Innovation; Consumer Attributes; Form Aesthetic

Introduction

Innovative product development relies upon an understanding of how novel and innovative solutions will be received by potential users. This is particularly critical when form and aesthetic qualities are employed as leverage to provide radical departures from existing product typologies in attempts to provide new meanings (Verganti, 2009). Well documented examples of form-driven innovations in meaning are the product lines from Alessi such as

the Juicy Salif citrus squeezer by Philip Stark, or Mandarin by Stefano Giovannoni (Alessi, 1998). In designing these highly successful products, Alessi broke from the existing paradigm of kitchen utensil as tool to embed new, more playful meanings within their product lines. Rather than rely upon functional and use aspects, these new meanings stimulate user emotion through unique form and aesthetic. However, these form-driven innovations are also divisive in their appeal, with some hailing their unique form language, while others deride them as extravagant and poorly suited to their function (Cooper & Kleinschmidt, 1987).

This study explores the influence of utilitarian and hedonic consumer types upon initial response to and propensity to purchase form-driven innovations of meaning. In doing we apply theory of innovation, derived from design research, with knowledge from the management fields to the examination of initial response to form-driven product innovations. Somewhat counter-intuitively, our results indicate the utilitarian consumer's more positive response to form-driven product innovations compared to hedonic consumers. However, our investigation also suggests the utilitarian consumer's positive response to form-driven innovations is less likely to drive a propensity for product purchase. In contrast, results suggest how the stimulation of positive responses from hedonic consumers may translate more easily into product purchase. Implications for innovative, form-driven product design and development are briefly discussed.

Form-Driven Innovation

Rampino (2011) defines four types of design-driven innovations in the field of product design: aesthetic innovation, innovation in use, meaning innovation and typological innovation. All four types involve the central concept of differentiation in a product. Product differentiation can be described as the extent to which a product departs from existing products within the same product category. However, departure points for breaking with existing product typologies exist on a number of dimensions, either overlapping or unilaterally. For example, aesthetic innovation relies upon a new formal interpretation of the product's external appearance attributes such as shape, size, proportion of elements and color. An example is the Hot Beretta kettle by Alessi (Alessi, 1998), which relies upon form-driven radical change in aesthetic to achieve product differentiation (Figure 1).



Figure 1 Alessi 'kitchen' products (Hot Bertaa Kettle, 2nd left)

Innovation in use leverages improvement or modification of product usage and function to depart from conventional functionality to provide new approaches to use (Rampino, 2011). The Nintendo Wii games system is an example of how the existing paradigm of individual gaming through sensually narrow physical human computer interactions was transformed to a more embodied interactivity, with players using gesture and movement in play (Verganti, 2009). Technology-driven innovation attempts to embed both emergent and established technologies in the design of products to offer new solutions and experiences. On the other hand, meaning innovation can be described as resulting from innovations in form, use and function to change the emotional and symbolic aspects of a product. The meaning of console gaming was transformed through innovation of use, driven by a design-driven approach to the application of emergent technology, from a solitary, immersive and primarily visual experience to a more physical, embodied and social activity.

The current study examines the effectiveness of form-driven aesthetic innovation as strategy to provide product differentiation from competitors (Bloch, Brunel, & Arnold, 2003), perpetuate consumer willingness to buy and engender innovations in meaning when encountered for the first time.

Response to Form-Driven Product Innovation

When encountering products for the first time the encounter may provoke a sensory reactions triggered by the product, such as emotion, affection, confusion or rejection (Eisenman, 2013). This is especially true for radical form-driven innovations which rely upon radical departures from the product's formal archetype. Related to human perception, these initial responses are affective, based largely on visual form (Coates, 2003). This is because visual perception is the first to be stimulated, with physical performance coming later (Hollins & Pugh, 1990). In terms of human perception of visual form, aesthetic innovation defined as new formal interpretations, is accompanied by two key concepts related to the product's form characteristics. First, aesthetic innovation should be accompanied by the concept of difference in product form. That is, it requires an unprecedented or noticeable visual difference compared to other competitors (Ulrich, 2003), allowing the product to be thereafter recognizable at first glance (Rampino, 2011). The second concept to inform formal interpretation is related to the consumer's reaction to new form through aesthetic response. Aesthetic response refers to what and how a person thinks about an object based upon subjective interpretation (Berlyne, 1974), and as influenced by both instinct and past experience (Norman, 2004). Viewed from the angle of personal interpretation, initial reaction to aesthetic innovation is determined by the individual's subjective perception rather than the product's properties or inherent attributes themselves. However in this study we adopt the stance that both the constructed interpretation and the formal form properties of the product must interact to inform response, although a further exploration of this interaction is beyond the scope of the current study.

Specific scales, methods or criteria to measure initial responses to aesthetic innovation were not found within the design literature. Therefore, we apply the concepts *attractiveness*, *newness* and *uniqueness* as measurable constructs to examine initial reaction to form-driven, aesthetic innovation. We then examine how initial reaction influences propensity for product purchase between utilitarian and hedonic consumers types.

Measures of Initial Response

The first concept we use to measure reaction to form-driven innovation is *attractiveness* of product form. Form attractiveness is related to an individual's aesthetic preference (Radford & Bloch, 2011), or the degree to which the form is seen as preferred or desirable. In terms of initial response, attractiveness of product form relates to the primary requirement for aesthetic innovations to be perceived as attractive and desirable. The second measured construct we define as *newness* of product form. Product form newness refers to the novel or as-yet-unseen attributes of form-driven aesthetic innovations. It can be defined as a trait of a product perceived by consumers, often resulting from encounters with product forms that are unprecedented in the consumer's experience in their experience of the product categories (Blythe, 1999; Johannessen, Olsen, & Lumpkin, 2001). The construct is used in the current study to define the degree to which initial reaction to aesthetic form-driven product innovations may stimulate feelings of newness and if feelings of newness correlate with a propensity for product purchase (Radford & Bloch, 2011). The final constructed used to measure initial reaction to form-driven innovation is *uniqueness*. Although sharing some similarities to the concept newness, uniqueness departs from newness in that it relates to the product's place within the existing product category or type. The form aesthetic of the product provides feelings of uniqueness as related to all other products of the same typology, rather than a feeling of unprecedented newness or wonder. This concept is used here in a way closely related to Rampino's (2011) definition of aesthetic innovation: a factor of differentiation that makes a product distinguishable and noticeable compared to other product in the market. Again, uniqueness is used in the current study as a measure of initial response, followed by an examination of the relationship between feelings of uniqueness, together with attractiveness and newness, and propensity to purchase.

The first encounter and initial assessment of a product critically depends upon its form and visual aesthetic, rather than on any advanced functionality (Radford and Bloch, 2011). External product form works so well that the consumer, after merely an initial glance, will base a purchase decision upon this initial reaction. As such, the product's form aesthetic has been recognized as an important factor in its market success (Bloch, 1995). Thus, a new highly visual form aesthetic appears to provide opportunities to command attention from consumers. However, as the consumer's response to a product's form aesthetic is highly subjective, differing depending upon cultural background and individual diversity and experience, personal held beliefs and culturally driven models of understanding (Desmet & Hekkert, 2007), response to product form is also highly idiosyncratic. Form-driven

innovations (more so than innovations driven by technology, function or use) are highly sensitive to the consumer's own aesthetic preferences. As a result form aesthetic driven product innovation may often involve increased risks in terms of market success due to the level of subjective preference present in the consumer's initial product response. Even though products with high levels of *newness* and *uniqueness* elicit more affective reactions (Radford & Bloch, 2011), this may not always translate into feelings of *attractiveness*, desirability and propensity to purchase. The designer's ability to better understand initial response to form innovation provides opportunities to design typologically uniquely yet desirable product forms. The current study contributes to understanding the relationship between initial response, consumer attributes and purchase propensity, with pragmatic application in the design of form-driven product innovations.

Utilitarian or Hedonic Consumer Types

According to a previous study (Kim, 2009) propensity to purchase is strongly related to consumer type. Although consumer profiles are in reality diverse and varied, for the purposes of our initial explorative study we identify the two consumer attributes *hedonic* and *utilitarian* to define difference in motivations to purchase.

The utilitarian consumer group refers to those who pursue utilitarian products driven by more rational, less emotional, reasons to purchase generally derived from pragmatic benefits (Woods, 1960). The secondary category of consumer is the hedonic consumption group, referring to those who are primarily attracted to and pursue products for affective reasons (Woods, 1960). In case of hedonic products, consumers are stimulated through emotional arousal from factors such as aesthetics, symbolic meaning, taste and sensory experience (Holbrook & Moore, 1981). According to the definition of the two groups, initial response to form-driven product innovation may differ depending upon consumption type, thus influencing purchase probability. Hedonic consumers, who seek sensory and emotional pleasure, may be more sensitive to form-driven product innovations compared to those defined as utilitarian, who are driven by a desire for utilitarian advantages.

Although there have been many studies of product innovation and adoption, such as the study related to success factors in product innovation by Cooper and Kleinschmidt (1987), innovation diffusion model for anticipating adoption of new product by Easingwood, Mahajan and Muller (1983) and the classification of design-driven innovations offered by Verganti (2009), there has been little research related to consumer profiles, initial reaction to form-driven product innovations and implications for likelihood to purchase. This explorative study provides insight into the relationship between consumer profiles and responses to product innovations that leverage form to stimulate affective response.

Research Aims

The project aimed to investigate the influence of utilitarian and hedonic consumer attributes upon initial reaction to and purchase propensity of form-driven product innovations. Here we describe an initial reaction as a personal formal interpretation of a product. Figure 2 illustrates the conceptual framework used to assess reaction to and propensity to purchase form-driven product innovations.

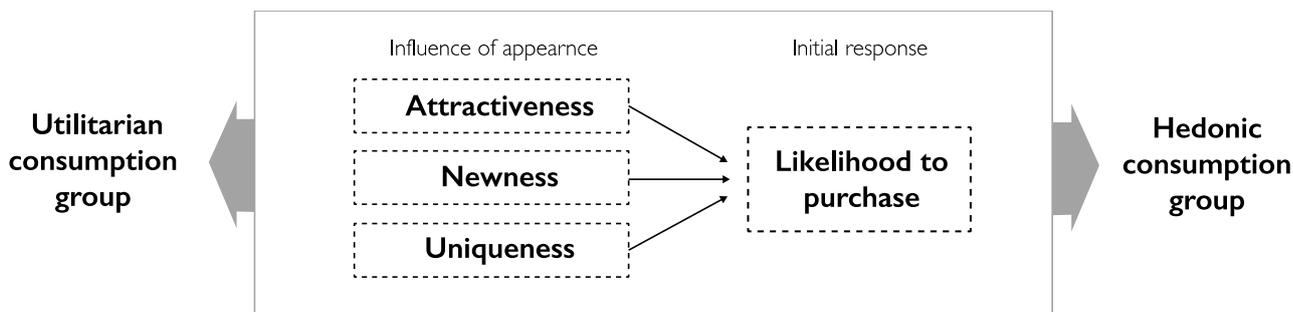


Figure 2 Conceptual framework to examine influence of consumer

We define a form-driven product innovation as a product with an appearance that departs radically from the archetype within the product category. As the parameters for measuring initial reactions towards such products, three dimensions related to interpretation were used: product attractiveness, *newness*, and *uniqueness*. As such, the current study aims to address the following research questions:

1. Do the conditions of hedonic and utilitarian influence initial response to the attractiveness, newness and uniqueness of form-driven product innovations?
2. Do the conditions of hedonic and utilitarianism influence likelihood to purchase form-driven product innovations?

In addressing the research questions above we aim to explore the suitability of the hedonic vs. utilitarian dichotomy as classifications for consumer groups in the context of reaction to form-driven product innovations. Further, we explore the appropriateness of attractiveness, newness and uniqueness as measurable constructs for examining affective responses to form-driven aesthetic product innovations. And in doing so, we aim to contribute to knowledge of the relationship between consumer profiles, initial reactions to form-driven innovations and implications for purchasing propensity.

Research Methods

Participants

A total of 50 participants took part in the study ($n=50$), half each from the two utilitarian and hedonic groups. Table 1 provides a summary of the sample's demographic information.

Table 1 The demographic information of samples

<i>U (Utilitarian)</i>	<i>H (Hedonic)</i>
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The number of samples	<i>N</i> = 25	<i>N</i> =25
Gender	12 male / 13 female	12 male / 13 female
Average age	23.56	23.22

26 female and 24 males were recruited from the student body at the researchers' home institution with a mean age was 23.38 years (*SD*=2.67). The sample consisted of participants from various majors and backgrounds including industrial design, ergonomics and human factors, system engineering, mechanical engineering, urban planning and management.

Research Instruments

Figure 3 illustrates a filtering questionnaire used to determine the participants' consumption type; hedonic or utilitarian.

Consumption Type	Questions	Strongly disagree	Disagree	Somewhat	Agree	Strongly agree
		1	2	3	4	5
Utilitarian	When purchasing a product, price and quality is more important than the current trend.	<input type="radio"/>				
	Satisfaction while using the product is more important than just possessing the product.	<input type="radio"/>				
	When you purchase a product, its functionality is more important than its appearance .	<input type="radio"/>				
	When you shop for products, you check the price information on the internet.	<input type="radio"/>				
	You make a list when you need to buy necessities.	<input type="radio"/>				
	When purchasing a product, you tend to consider the opinion of others.	<input type="radio"/>				
Hedonic	When purchasing a new product, you prefer the trendier option.	<input type="radio"/>				
	You want to buy a product that nobody has, to look different.	<input type="radio"/>				
	You can buy a product because of its design and colour, despite the low quality.	<input type="radio"/>				
	The atmosphere of the shop, for example music or scent, greatly affects what you purchase.	<input type="radio"/>				
	You shop depending on my mood instead of making plans beforehand.	<input type="radio"/>				
	You prefer buying a single piece of expensive designer clothes instead of buying several cheaper ones.	<input type="radio"/>				

Figure 3 Filtering questionnaire used in the study to determine utilitarian or hedonic consumer type

The questionnaire consisted of a total of 12 statements based upon a previous study by Kim (2009) to assess the participants' consumption patterns. Six statements related to the utilitarian consumption pattern category, with a further six relating to a hedonic consumption pattern. Participant responses were recorded through five-point Likert scales (Strongly disagree: 1, disagree: 2, neither disagree nor agree: 3, agree: 4, and strongly agree: 5) and the total sum of responses calculated. The participants' consumption patterns were then determined according to the highest sum score between the two sets of six questions. In the case of the same score, the data was excluded from the study.

Example Products



Figure 4 Experimental products selected in IF product design award winner 2014

Figure 4 illustrates the six products chosen as stimuli for the present study selected based upon two criteria. Each is a recipient of the 2014 IF product design award, and each was selected based upon the judges description of product innovativeness as benchmark products in terms of innovation of form, aesthetic attractiveness, newness and uniqueness: searching keywords such as ‘innovative’, ‘unprecedented’, ‘unique’ and ‘look’. Three graduate students studying for an MSc in industrial design, and who held a BSc in the same subject participated in the process of selecting the six products unanimously based upon the judges’ descriptions from the pool of 2014 award winners. Each product was assigned a product code from A-F.

Questionnaire Development

To gather responses related to the participants’ initial reaction to the six product stimuli, four questions were designed based upon the constructs: attractiveness, newness, uniqueness and purchasing propensity (likelihood to purchase, Table 2).

Table 2 The questions in main questionnaire and reason for questions

<i>Questions</i>	<i>Reason for questions</i>
<i>How do you evaluate appearance of this product in terms of attractiveness?</i>	<i>Measuring the degree to aesthetic preference</i>
<i>How do you perceive appearance of this product in term of newness?</i>	<i>Measuring the degree to familiarity of product appearance</i>
<i>How do you evaluate appearance of this product in terms of uniqueness?</i>	<i>Measuring the degree to differentiation of appearance compared to other competitors</i>
<i>How much are you likely to purchase this product?</i>	<i>Measuring the propensity to purchase the product</i>

As the purpose of the current study was to compare initial responses to form-driven innovations between hedonic and utilitarian consumer groups, adjective pairs were used in five-point Likert scales (Osgood, 1957) to capture participant responses. For example, in case of measuring response in terms of attractiveness, the five points were labeled as follows: Strongly unattractive - 1, unattractive - 2, neither unattractive nor attractive - 3, attractive - 4 and strongly attractive - 5). The numerical scale of 1-5, added to each item, was utilised for statistical analysis. Figure 5 presents an example of the product image stimuli and the four question set for product A.

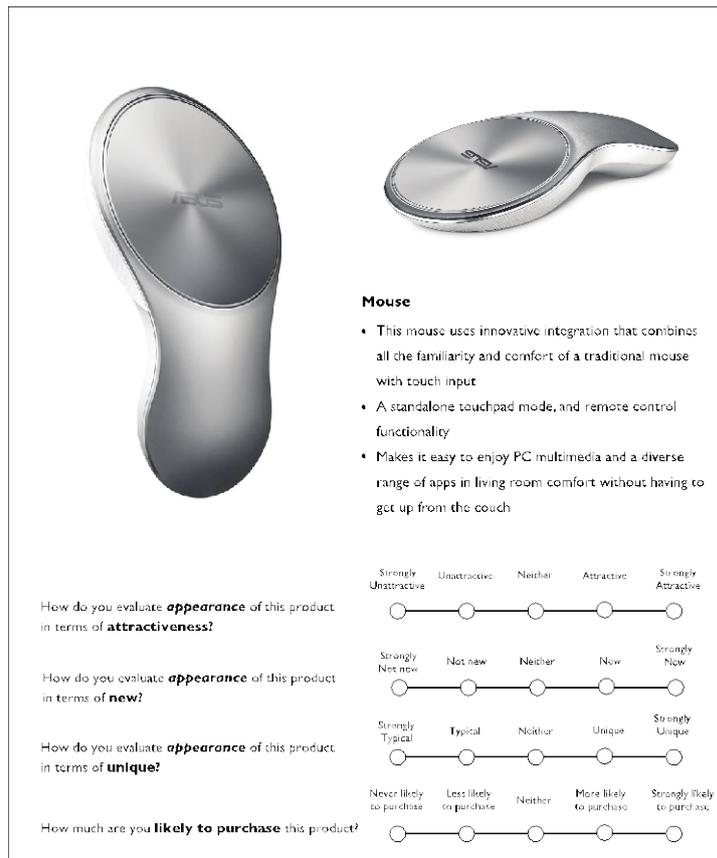


Figure 5 Example product image and question set (product A)

In order to limit the influence of other factors that would no doubt affect the participants' response to the Likert scale questions (name, brand, price, use, function, and materials), product descriptions were limited to a description of the product only.

Procedure

Individual sessions consisted of two tasks. After an initial explanation of the study's aims, participants were asked to complete the filtering questionnaire to determine dominant consumption pattern – hedonic or utilitarian consumption group (Figure 3). This process took approximately five to ten minutes. Participants were then asked to evaluate each of the six products through marking their responses to the five item Likert-scale question sets associated with each of product (A-F). Each product sheet stimuli, including images of the

product, short descriptor and four Likert scale questions, was shown in randomised turn. On occasion participants asked questions related to the type of product or product category, in which case the researcher restricted answers to product type and context of use. Time to completion of the study's second questionnaire was between approximately 10 to 15 minutes.

Results

Firstly, the distribution of scaled responses to each of the four response constructs (attractiveness, newness, uniqueness, propensity to purchase) for each of the six products is visualized in graphic form to identify trends of response between hedonic and utilitarian participant groups (Figures 6-9). Then, independent samples *t-tests* are conducted to examine statistically significant differences between the two groups in terms of initial response to product attractiveness, newness, uniqueness and propensity to purchase. Finally, to examine the relationship between likelihood to purchase and form-driven product innovations, *Pearson correlation coefficient* is reported to explore relationships between response to product attractiveness, newness, uniqueness and propensity to purchase.

Attractiveness

Figure 6 illustrates the two groups' responses to the concept *attractiveness* across the six products. The horizontal axis indicates the type of group (*utilitarian: U, hedonic: H*), the vertical axis illustrates percentile response frequency for each of the five items of the Likert scale question. Positive response frequencies (attractive and strongly attractive) are colored blue while negative frequencies (unattractive and strongly unattractive) are colored red. A black bar is drawn to help illustrate the degree of difference in positive vs. negative response frequencies between the two groups.

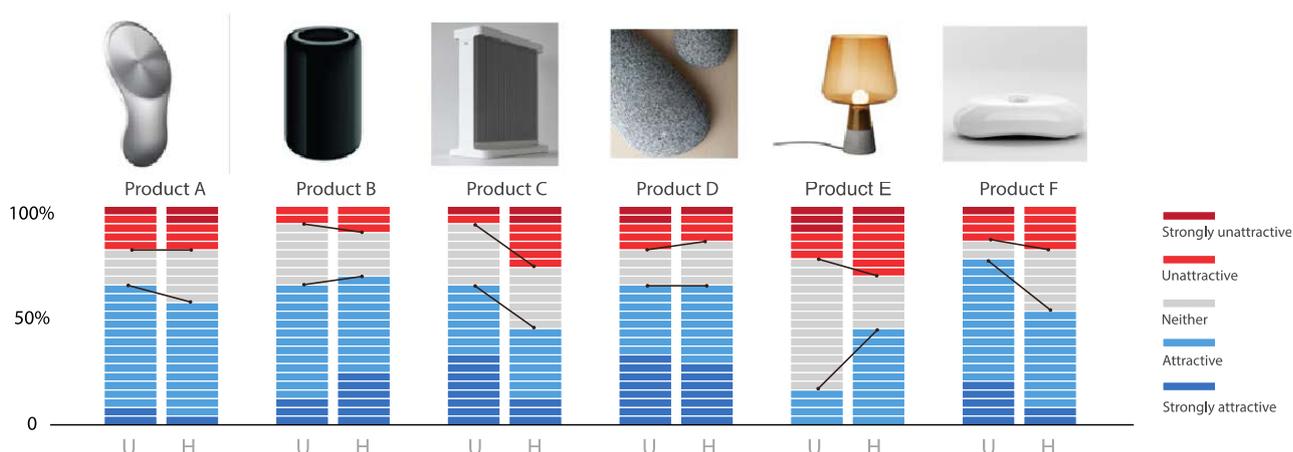


Figure 6 How do you evaluate the appearance of this product in terms of attractiveness?

The products with the greatest difference were product C (*positive U: 64% & H: 44%, negative U: 8% & H: 28%*), product E (*positive U: 16% & H: 48%*) and product F (*positive U: 76%, H: 53%*). The utilitarian participants responded more positively, and less negatively, when asked of product C and F's attractiveness compared to the hedonic group. In contrast

the hedonic participants responded more positively when asked of the attractiveness of product E.

Newness

Figure 7 illustrates a comparison of percentile response frequencies between the two groups in terms of *newness* of appearance across the six products.

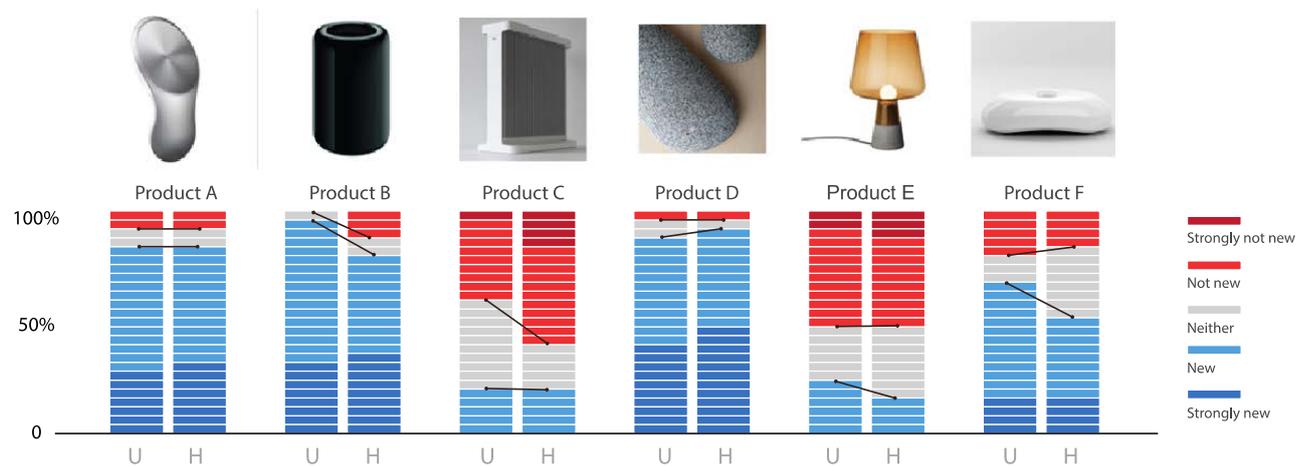


Figure 7 How do you evaluate the appearance of this product in terms of newness?

In terms of responses to the newness of the products' appearance, again, products C and F showed the greatest difference in response frequencies between the two groups. In case of product C, the hedonic group responded more negatively in terms of newness of appearance compared to the utilitarian participants (*negative U: 40% & H: 60%*). However, the hedonic group responded less positively to product F's newness of appeared compared to the utilitarian group (*positive U: 72% & H: 56%*). Generally, across the six products, the hedonic participants' were less positive and more negative in their response to newness of product appearance.

Uniqueness

Figure 8 provides a comparison of percentile response frequencies in terms of the concept of *uniqueness* between the two groups and across the six products.



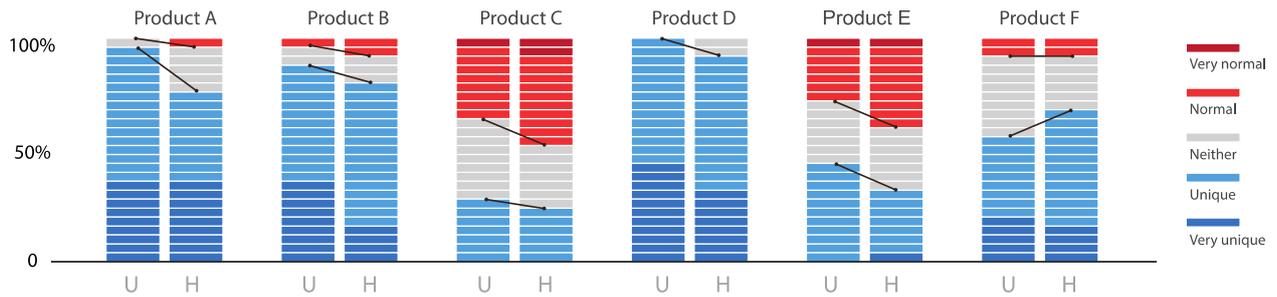


Figure 8 How do you evaluate appearance of this product in terms of uniqueness?

Product A and again products C and E showed the greatest differences in response to the uniqueness of the products' appearance between the two groups. In the case of product C, utilitarian participants were more positive and less negative in response to the uniqueness of product appearance (positive U: 28% & H: 24%, negative U: 36% & H: 48%). In response to product E the utilitarian group were again more positive and less negative in their assessment of uniqueness of product appearance (positive U: 44% & H: 32%, negative U: 28% & H: 40%). Likewise, in terms of product A, utilitarian participants were more positive and less negative in response to product usefulness (positive U: 96% & H: 76%, negative U: none & H: 4%). Across the six products the utilitarian group responded more positively and less negatively to uniqueness of product appearance with the exception of product F, where utilitarian participants were less positive (Figure 8).

Likelihood to purchase

Figure 9 compares the two groups' propensity to purchase (likelihood to purchase) across the six products.

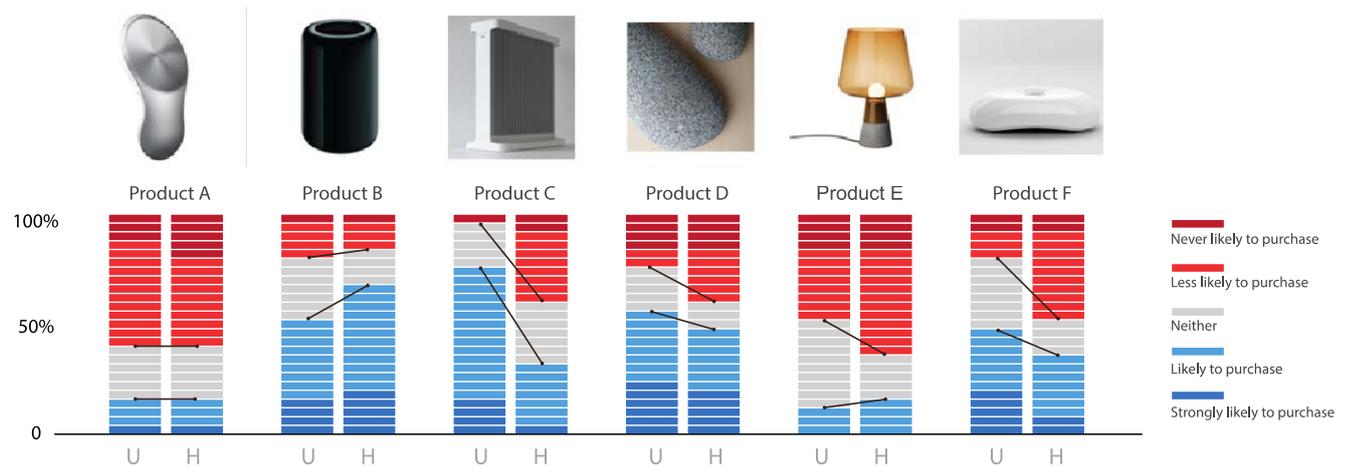


Figure 9 How likely are you to purchase this product?

The most noticeable differences between the two groups were shown in response to likelihood to purchase. These differences were greatest in response to product C (negative U: 4% & H: 40%, positive U: 72% & H: 32%), and again for products E (negative U: 48% & H: 64%) and F (negative U: 20% & H: 48%, positive U: 44% & H: 36%). In the case of products C, D and F, utilitarian participants responded more positively and less negatively to

propensity to purchase compared to the hedonic group. However, in contrast, hedonic participants were more positive in their response towards product B. Product A attracted almost identical responses from the two groups. In terms of response to propensity to purchase, the greatest difference was seen between utilitarian positive and hedonic negative responses. However, this was not true across all six products.

Utilitarian and Hedonic Comparison

An independent-sample *t-test* was run to establish statistically significant differences in responses between the two groups in terms of product attractiveness, newness, uniqueness and likelihood to purchase across the six products. For the statistical analysis, product type was ignored in favour of an analysis of the influence of the two conditions (utilitarian and hedonic) upon reaction to product appearance in terms of attractiveness, newness, uniqueness and likelihood to purchase (Table 3).

Table 3 Differences between utilitarian and hedonic consumer groups

	Sum of squares	df	Mean Square	F	Sig.
Purchase					
Between Groups	6.163	1	6.163	4.326	.038
Within groups	424.567	298	1.425		
Total	430.730	299			
Attractiveness					
Between Groups	2.430	1	2.430	2.090	.149
Within groups	346.407	298	1.162		
Total	348.837	299			
Newness					
Between Groups	.853	1	.853	.677	.411
Within groups	375.493	298	1.260		
Total	376.347	299			
Uniqueness					
Between Groups	2.430	1	2.430	2.459	.118
Within groups	294.487	298	.998		
Total	296.917	299			

As reported in Table 3, differences in response between the two groups across all six products was not statistically significant for attractiveness ($F (2.090), p>0.05$), newness ($F (.677), p>0.05$) and uniqueness ($F (2.459), p>0.05$). However, response to likelihood to purchase was significantly different between the two participant groups ($F (4.326), p<0.05$). This result showed that responses to product appearance, in terms of the three constructs used in this study to measure response, was not significantly different. However, response to propensity to purchase was significantly different between the utilitarian and hedonic groups, suggesting the consumer attributes of utilitarianism and hedonism may influence the consumer's likelihood to purchase products that leverage form-driven product innovation.

Likelihood to Purchase

In order to examine any relationship between responses to the attractiveness, newness and uniqueness of the products' forms and propensity to purchase, bivariate correlation analysis (*Pearson correlation coefficient*) was run (Table 4).

Table 4 Correlation between likelihood to purchase, attractiveness, newness and uniqueness

Variable	Utilitarian				Hedonic			
	P	A	N	U	P	A	N	U
P (Purchase)	--				--			
A (Attractiveness)	.678**	--			.653**	--		
N (Newness)	.189*	.315**	--		.305**	.711**	--	
U (Uniqueness)	.128	.249**	.687**	--	.401**	.401**	.293**	--

Note. *p < 0.05, **p < 0.01

The analysis indicated differences in correlation between likelihood to purchase and response to product attractiveness, newness and uniqueness. For the utilitarian group, the correlation coefficient between uniqueness and likelihood to purchase was not significant ($r=0.128$). However, the coefficient between attractiveness and likelihood to purchase for the utilitarian group was statistically significant ($r=0.678$). Likewise the correlation coefficient between newness and likelihood to purchase for the utilitarian group was also statistically significant ($r=0.189$). The correlation coefficient between attractiveness and likelihood to purchase for the hedonic group was also statistically significant ($r=0.653$), as was newness and likelihood to purchase ($r=0.305$). In contrast to utilitarian participants, correlation coefficient between uniqueness and likelihood to purchase was also significant in the case of the hedonic group ($r=0.401$).

These results show response to product form attractiveness and newness are both positively related to likelihood to purchase for the utilitarian participants. As response to product form attractiveness and newness become more positive, likelihood to purchase also appears to increase. In terms of the hedonic group responses to form-driven product innovations, attractiveness, newness and uniqueness were all positively related to likelihood to purchase. Again as response to product attractiveness, newness and uniqueness became more positive, so likelihood to purchase also increased. However, the result indicates the influence of response to product form newness was significantly related to likelihood to purchase in the case of the hedonic group ($r =0.305$), but not significant in the case of the utilitarian participants (Table 4). From these results we can say, in the case of hedonic participants, positive responses to product form newness and uniqueness were strongly related to likelihood to purchase. In contrast, positive response to newness of product form was less strongly related to likelihood to purchase for the utilitarian group, with uniqueness of form statistically unrelated. As such these results indicate that, for the utilitarian group, form

attractiveness was important as an influence upon propensity to purchase, response to newness of form less so and uniqueness of little influence. In contrast the hedonic participants' inclination for product purchase appeared to be stimulated by positive responses to attractiveness, newness and uniqueness of product form.

Discussion & Conclusion

This study examined the influence of utilitarian and hedonic consumer attributes upon initial reaction to and the purchase probability of form-driven product innovation. To address this research aim participants were first classified as utilitarian or hedonic consumers through the application of a survey to establish consumer type. Participants were then asked to evaluate six form-driven innovative products. To achieve this, questions were composed to measure initial responses to form-driven product innovation through the constructs *attractiveness*, *uniqueness* and *newness*. Participants were then asked of their likelihood to purchase the six form-driven product innovations.

In the case of response to product form attractiveness, three of the six products indicated strong differences in response between utilitarian and hedonic participants. Two of the three showed the utilitarian group was more positive and less negative towards product form attractiveness than the hedonic participants. However, the third (Product E) indicated the hedonic participants were more positive towards form attractiveness than the utilitarian group. The result might attribute to the product property of lamp, which evokes more emotional arousal than the other products.

However, statistical analysis indicated no significant difference in response between utilitarian and hedonic participants towards product form attractiveness across the six products. Response to product form attractiveness was significantly related to propensity to purchase for both groups. A correlation analysis indicated for both utilitarian and hedonic participants, propensity to purchase is likely to rise as response to product form attractiveness becomes more positive.

Results indicate response to form attractiveness may differ dependent upon a relationship between utilitarian and hedonic consumer attributes and the forms of the products themselves. Our research indicates the importance of product form attractiveness as a driver for propensity to purchase form-driven product innovations. This is in agreement with previous studies (Alba & Williams, 2013) that regard consumption as emotion-driven and consider products as mere means to a pleasurable end. We do not take such a strictly constructionist stance here. However, our results do suggest how responses to attractiveness of product form may differ based upon individual sensory pleasure.

In the case of newness, hedonic participants were generally less positive and more negative in their response to the newness of the product forms compared to the utilitarian group, although statistical analysis found no significant difference between the two groups. Positive response to product form newness also significantly influence propensity to purchase for

both utilitarian and hedonic participants, with the significant influence stronger in the case of the hedonic consumers compared to the utilitarian group. These results were interesting in that they indicate the hedonic participants were less positively stimulated by the newness of the product forms compared to the utilitarian group. However, in the case of the hedonic participants, propensity to purchase appeared more strongly driven by the newness of product forms. This was in contrast to utilitarian participants who conversely showed less inclination to purchase form-driven product innovations based upon their more positive response to newness of product form. We may speculate that this result derives from differences of threshold towards newness of product form between the two groups. Since the hedonic consumption group seeks newer experiences and sensations compared to the utilitarian participants, they may have a higher threshold in their evaluation of the new compared to the utilitarian group. However, when newness is stimulated in response to form innovations, this may more substantively drive a propensity to purchase in hedonic compared to the utilitarian consumers.

In terms of product form uniqueness, utilitarian participants were again more positive and less negative in response to uniqueness of product form compared to the hedonic group across the six products. However, no statistically significant difference in response to uniqueness of form was found between the two groups. As with responses to product form newness, a significant relationship was found between response to uniqueness and the hedonic participants' propensity to purchase form-driven innovations. No significant relationship was seen between uniqueness and purchasing propensity for the utilitarian consumer group. Again it is unclear from our investigation as to the reasons for these differences. However, our results do show that, although hedonic participants were less enthusiastic about the uniqueness of the product forms, their propensity to purchase such products appears highly related to form uniqueness compared to the utilitarian group. This indicates, although the hedonic consumer is less easily stimulated by uniqueness of form, the more they are stimulated, the more likely they may be to purchase form-driven product innovations. Conversely, although utilitarian consumers may be more easily positively stimulated by innovative product forms, this may not so easily directly translate into product purchase.

Finally, the two groups showed noticeable difference in their response to likelihood to purchase across the six products which was also statistically significant. This result suggests the propensity to purchase form-driven product innovations can be measured through the definition of utilitarian and hedonic consumer types, agreeing with a previous study by Kim (2009), indicating hedonic and utilitarian influence. Results showed the utilitarian participants propensity to purchase the six form-driven innovative products was significantly greater than the hedonic group. However, variations existed within the six products used in the study.

The current explorative study has indicated how the concepts of utilitarian and hedonic consumer attributes and propensity to purchase, adopted from consumer theory, were

combined with the constructs attractiveness, newness and uniqueness to measure initial response to form-driven product innovations. Our results indicate how the hedonic condition appears to act to dampen or limit positive, initial response to form driven product innovations. In contrast, the utilitarian consumer attribute appears to contribute to greater positivity and increased stimulation. However, greater utilitarian positivity towards form newness and uniqueness does not appear to translate so successfully to product purchase likelihood. In contrast, although hedonic consumers appear less likely to be positively stimulated through innovations in product form, the propensity for product purchase appears more responsive to stimulation compared to the utilitarian consumer.

Further studies are now required to examine the specific attributes of product forms and how different forms may stimulate utilitarian and hedonic response to form attractiveness, newness and uniqueness. These studies should aim to provide designers with a framework for the design of appropriate forms in pursuit of form-driven product innovations, thus providing increased likelihood of product acceptance and purchase in the case of both utilitarian and hedonic consumer. Furthermore, this initial explorative study has indicated the potential for the use of utilitarian and hedonic as attributes to classify consumer types to assess response to form-driven innovations. However, more work is required to prove their validity and reliability as workable constructs for the measurement of response in the context of product design innovation. Finally, although our study has indicated attractiveness, newness and uniqueness as workable concepts for the analysis of user response in the context of form-driven product innovation, these concepts would benefit from application in further studies to refine and develop them as clearly defined criteria.

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Jieun Bae is currently completing a Masters degree in Industrial Design at the School of Design and Human Engineering, UNIST, Korea. She holds an undergraduate (BS) degree in Integrated Industrial Design and Engineering System Design also completed at UNIST. Her Masters research is interested in how to provide users with improved product experiences throughout the various stages of human-product interactions, from product recognition to product use. Through conducting original fundamental and applied research, Ms Bae aims to contribute to the academic field and practice of design.

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Chajoong Kim is an assistant professor at the School of Design and Human Engineering, UNIST, South Korea and the founder of atelab whose focus is on research through design making in the school. He holds a Master of Science (design for interaction) and doctoral degree (product experience) from the School of Industrial Design Engineering, Delft University of Technology in the Netherlands. He was a mechanical engineer and with his engineering knowledge and experiences, he has combined design and engineering in developing products and services. His research interest includes product experience, usability, human-product interaction, user diversity, cultural differences in design and cognitive aspect in usability. His research has been published in peer-reviewed journals such as International Journal of Design and Journal of Design Research. He has also conducted many design projects with companies such as Philips, Bang & Olufsen, Samsung, LG and Fokker Elmo.