

(Araştırma)

DESIGN NEWNESS EFFECTS ON CONSUMERS' HEARTS AND MINDS, AND THE MODERATING ROLES OF INVOLVEMENT AND RISK PERCEPTIONS

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ABSTRACT

Every product used in every part of daily life has a different design, and different product designs are accepted differently by consumers depending on their emotional and cognitive processes. These emotional reactions and cognitive evaluations have a significant impact on the way consumers experience the world, how they will respond to different stimuli, and how they will make their choices. This research aims to investigate the effects of product design newness levels on consumers' approach/avoidance behaviors. The central premise of the study is that consumers' emotional and cognitive evaluations, while they are faced with a prototypical, novel, or futuristic design, are strong determinants of their behavioral intentions. In addition, product involvement and perceived risk are expected to moderate the hypothesized relationships. Other studies focus on product design and emotion/cognition relationships, but none of them have concentrated on the effects of design newness levels on consumers and the roles of product involvement and perceived risk so far. The current study that has been designed to fill these gaps offers and empirically tests the hypothesized relationships with data collected from 750 usable questionnaires. As expected, the results are in support of the fact that consumers give more positive emotional and cognitive reactions to products with increasing design newness levels. On the other hand, product involvement is found to be not a moderator of design effects, but a significant driver of such emotional/cognitive evaluations. Finally, perceived risk is shown to play an important role in shaping the influence of cognition (but not emotions) on consumers' approach behavior.

Keywords: Product design, novelty, emotions, cognitive evaluations, involvement, risk perceptions

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TASARIMDA YENİLİĞİN TÜKETİCİLERİN KALPLERİNE VE ZİHİNLERİNE ETKİLERİ İLE İLGİLENİM VE RİSK ALGISININ MODERATÖR ROLÜ

ÖZ

Hayatın her alanında kullanılan her ürün farklı bir tasarıma sahiptir ve tüketicilerin duygusal ve bilişsel süreçlerine bağlı olarak farklı şekillerde değerlendirilebilmektedirler. Bu bilişsel değerlendirmeler ve duygular bireylerin dünyayı nasıl deneyimledikleri, neye ne tepki verecekleri ve seçimlerini nasıl yapacakları üzerinde önemli bir etkiye sahiptir. Bu çalışmanın amacı ürün tasarımındaki yenilik seviyesinin tüketicilerin ürünlere yönelik eğilimlerini nasıl etkilediğini açıklamaktır. Çalışmada öne sürülen temel iddia, alışıl gelmiş, yeni/farklı veya alışılmamış bir tasarımla karşılaşan tüketicinin bu uyarıcıya vereceği duygusal tepkinin ve yapacağı bilişsel değerlendirmenin ürüne yönelip yönelmeyeceğini belirleyeceği, fakat bu etkilerin aynı zamanda ürüne yönelik ilgilenim seviyesi ve algılanan risk seviyesine bağlı olacaktır. Ürün tasarımını ve duygu-biliş ilişkisini inceleyen çeşitli çalışmalar bulunmakla birlikte, bu çalışmalardan hiçbiri farklı tasarım yenilik düzeylerinin tüketici üzerindeki etkilerine yönelmemiş; tasarım farklılıklarının ilgilenim düzeyi ve algılanan risk ile ilişkisini incelememiştir. Yazındaki bu boşluğu doldurmak üzere yürütülen bu çalışmada, ortaya konulan önerilerin test edilebilmesi için anket çalışması yapılmış ve toplam 750 kullanılabilir anket elde edilmiştir. Çalışmanın sonucunda, beklendiği üzere, ürün tasarımının yenilik seviyesi arttıkça tüketicilerin duygusal ve bilişsel tepkilerinin daha olumlu olduğu bulunmuştur. Ürün ilgilenim seviyesinin, tasarımın yaratacağı etkiyi değiştirmesi beklenirken, tasarımdan bağımsız başlı başına bir belirleyici unsur olduğu ortaya çıkmıştır. Algılanan risk seviyesinin ise duygusal tepkileri etkilememekle beraber bilişsel değerlendirmeler üzerinde anlamlı derecede etkili bir rol oynadığı gözlemlenmiştir.

Anahtar Kelimeler: Ürün tasarımı, yenilik, duygular, bilişsel değerlendirme, ilgilenim, risk algısı

1. Introduction

Product design refers to the exterior appearance of a product (Talke et al. 2009: 607). Since design has a significant power to shape perceptions (Bloch, 1995: 18; Creusen and Schoormans 2005: 71), a product with a favorable design is mostly perceived to have high quality or to be risk-free, will create positive emotions and stimulate positive word of mouth and will have a greater purchase likelihood (Levy and Tybout, 1989; Ram and Sheth, 1989; Bloch, 1995; Kleijnen et al., 2009)

All the interactions people have with the social and material world are based on emotions and cognitions (Zajonc, 1980: 160; Fenech and Borg, 2006: 709). Human-product interaction is also an emotional experience. The main function of a product is not just to complete its functions or facilitate daily life; it also involves emotions. A person may feel fascination, happiness, or fear, etc. about a product or about using a product (Mugge and Schoormans, 2012). Product design is a significant stimulus that triggers psychological tendencies (Desmet, 2008: 383). Since product design triggers different psychological reactions, both emotional and cognitive responses may occur simultaneously (Bitner 1992; Bloch 1995). Although cognition is a mental process that involves reasoning and interpretation, it is also an emotion initiator as well (Chowdhury et al., 2015: 335).

Product design influences spontaneous emotions related to the visible structure. Further, emotions have a primary effect on preferences and sometimes precede cognitions (Zajonc, 1980; Zajonc and Markus, 1982). However, before an evaluation, objects must be recognized, and people need some knowledge about them. An emotional reaction, such as liking, disliking, preference, evaluation, or the experience of pleasure or displeasure, is elicited only after considerable information processing. In another way, emotional reactions are evoked at the end of a cognitive process (Schachter and Singer, 1962; Zajonc, 1980). Although emotions and cognitions are under the control of independent systems, they can influence each other in a variety of ways (Zajonc, 1980). Accordingly, both affect and cognition create an independent but, at the same time, the interdependent source for information processing.

This study is an attempt to link available information on product design and consumers' emotional and cognitive processes to highlight their potential influence on approach or avoidance behavior. Additionally, since risk perceptions and involvement are also known to be acting as intervening factors on consumers' responses to products, it is believed that a new theoretical framework that integrates these constructs would be a significant contribution to literature. Specifically, it is proposed here that different levels of product design newness (i.e., prototypical, novel, futuristic) will influence consumers' emotional and cognitive responses differently, where product involvement also

has a moderating influence. In addition, emotional and cognitive evaluations will shape approach/avoidance behavior, and perceived risk will moderate the proposed effects. Thus, the main research questions of this study are; a) How do different product design newness levels influence consumers' emotional and cognitive evaluations, which, in turn, shape their approach/avoidance behavior? b) What are the roles of product involvement and perceived risk on those relationships?

In most studies, researchers make comparisons of elements of design attributes (color, shape, symmetry, etc.) and try to understand aesthetics and usability or preference relationships (Hekkert et al. 2003; Creusen and Schoormans, 2005; Mugge and Schoormans, 2012; Wu, Hsu and Lee, 2015). But the effects of a prototypical, novel, and futuristic designs on human emotions and cognitions relatively lack here. To develop the current level of knowledge, the present research aims to empirically test the influence of prototypical, novel, and futuristic product designs on consumer approach or avoidance behavior. The most significant contribution of the study to the marketing literature is that it reveals how the level of design newness affects emotional and cognitive evaluations, and accordingly affect the approach and avoidance behavior of consumers. The most recent study on design newness and consumer preferences date back to 2008. Hence this study plays an important role in filling the gap between consumer behavior and design literature.

2. Literature Review

2.1. Product Design

Through the ages, humans used the tools best suited for fixed tasks and rejected the less suited ones, and continuously modified the extant tools so that the surviving artifacts operated their assigned functions better. As a consequence, although people were unaware of the implications of such improvements on tools, changes in artifact forms have shown a long progressive path (Basalla, 1988). See Figure 3 for the evolutionary path of a hammer.

Almost everything used at home, at work, in sports, in education, apparel worn, vehicles used during the transportation of people or goods, many of the things eaten have been physically designed. Design accompanies people in public and private spheres, from dawn till after dusk (Bürdek, 2005; Forty, 1992). In spite of the fact that the "design" concept has been so much in daily life, it is not easy to define what design exactly is.

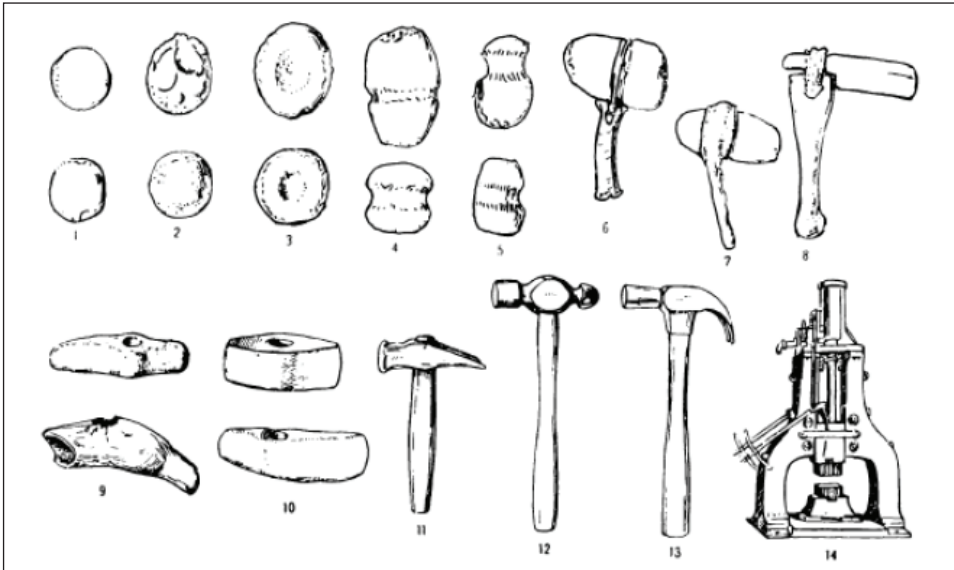


Figure 1. The Evolutionary History of the Hammer

Reference: George Basalla (1988), *The Evolution of Technology*

Veryzer (1995: 642) defined product design as an external cover, something to protect the inner working of a product. Bloch (1995: 19) focused on consumer responses to define product design where design is formulated and perceived as the “physical form.” Some scholars defined product design as instructions for creating something (Walsh, 1996: 511) or as the combination of technology and human needs into the production of a product (Crawford and Di Benedetto, 2007). Ulrich (2011: 395) defined product design as “*conceiving and giving form to goods and services that address needs.*”

Various definitions of the term such as product form (Bloch, 1985: 21), the product shape (Berkowitz, 1987: 281; Raghbir and Greenleaf, 2006: 96), exterior appearance (Nussbaum, 1993: 55), or product appearance (Creusen and Schoormans, 2005: 70) have been repeatedly used in the literature; where all refer to the visible features of a product which can be observable by consumers (Talke et al., 2009: 605). In this study, “product design” is considered as both the functional and visual characteristics of a product.

Prototype, Novel, Futurist Design Types

Consumers may use product designs for categorizations (Bloch, 1995; Veryzer, 1995). It will be easy to identify and categorize a product when it resembles other items in the same group (Loken and Ward, 1990). In other words, categorization is related to familiarity. Familiarity, accordingly categorization, indicates something known through experience (Gefen, 2000), being ready to handle things that have been gained from the previous years (Turner, 2008). Familiar or prototypical

products are evaluated more positively (Meyers-Levy and Tybout, 1989). When it is difficult to categorize a product just by looking at its design, i.e., something novel or futuristic, consumers may not consider an approach behavior.

Similar to the use of various terms for prototypicality, the design literature uses different concepts to emphasize newness in design; such as novelty (e.g., Hekkert et al., 2003), uniqueness (e.g., Bloch, 1995), or atypicality (e.g., Loken and Ward, 1990). Novelty can be described as how different design is compared to those of competing products (Talke et al., 2009). Prototypical designs can be altered and become a newer or more novel design. This change process is called prototype distortion in some marketing articles (Talke et al., 2009; Mugge and Schoormans, 2012). Distortion can be explained as various physical changes made on a prototype product (Veryzer and Hutchinson, 1998). As a result of prototype distortion, the related product category is introduced as a novel design. Novelty or design newness mentions a deviation in a prototype product appearance (Talke et al., 2009). In the rest of this study, distortion of a prototype product appearance will be referred to as “novel design,” emphasizing a product design that consists of a new combination of already experienced elements. Another type of design newness is called the “futuristic design.” The futuristic design emphasizes a product design that has never been seen before. A futuristic concept is defined in the free dictionary as “ahead of its time; advanced” and “relating to the future”. Hence, in this study, the “futuristic design” concept is preferred to be used to explain unfamiliar product designs.

2.1.1. Consumers’ Emotions and Cognitive Evaluations

“Emotion” has been derived to the marketing literature from various disciplines, especially through the theories from the psychology field (Bagozzi et al., 1999: 186; Havlena and Holbrook, 1986: 402; Mano and Oliver, 1993: 455; Westbrook and Oliver, 1991: 86). Some of the contemporary emotion theorists evaluate emotions as logical, organized, and functional systems (Smith and Kirby, 2001: 125; Desmet, 2008: 381). Most of the human thought, motivation, and behavior are enhanced and affected by emotions. Essentially, all human interactions with the social or material world involve emotions. An individual may experience an attraction, admiration, fear, disgust, etc. for a product or while using a product. In other words, human product interaction is an emotional experience. According to Jacobs (1999), the primary task of a product is not just to accomplish a function or facilitate human life; but to fulfill emotions. Moreover, product design is an important channel to obtain customers’ attention and to communicate with consumers (Nussbaum, 1993:56; Moon et al., 2015: 227). Research results indicate that emotions trigger behavioral tendencies such as approach-avoidance, inaction, etc. (Arnold, 1960; Desmet, 2008: 388).

In this study, it is hypothesized that products with different design newness levels will trigger different approach or avoidance behavior, through different levels of

emotions (such as pleasure and arousal). Specifically, products with prototypical designs are expected to generate positive emotional reactions. Thus, the following hypothesis is proposed:

H₁: Product design prototypicality has a positive effect on emotions.

Cognition is about comprehension and perception of objects, events, and the environment. In other words, it is a mental process that includes reasoning and interpretation. Cognition is also an emotion initiator (Chowdhury et al., 2015: 335). In this study, it is proposed that performance, functionality, durability of a product should be considered as important indicators of cognitive evaluations (Ziamou and Ratneshavar, 2003; Zhao et al. 2011).

Durability is a measure of a products' life both in economic and technical aspects. More specifically, durability can be described as the amount of use someone gets from a product before it becomes obsolete. Moreover, it is evaluated as a significant element of quality (Garvin, 1984).

The performance level is the main feature of a product, and there is a relationship between performance and quality perceptions. Especially when the wide range of needs, interests, and past experiences are considered, individual performance evaluations become an indicator of consumer's cognitive perceptions (Garvin, 1984).

This study tries to examine Sullivan's (1896) doctrine that 'form (ever) follows function.' According to this definition, the design of a product offers specific benefits to the customers. Functionality refers to the action opportunities provided by a product (Dourish, 2001; Ziamou and Ratneshwar, 2003). Functional features are added into a product to avoid the prevention tendencies of customers and to trigger positive emotions, confidence, and security. Missing or underperforming attributes may generate unhappiness and worry (Chitturi, 2015). Thus, an evaluation of a product's functionality becomes a signal of cognitive perceptions.

The level of design novelty is associated with technological advancements by consumers (Rindova and Petkova, 2007: 221). Since consumers usually have limited knowledge about technological developments and generally do not use products with unfamiliar designs, they need cues to evaluate product quality (Mugge and Schoormans, 2012: 475). Dickson (1994) emphasizes that quality is an intangible thing, and it is related to the feeling, looking, or hearing the sound of an item. People cannot explain it but know it when they see it. Past research has demonstrated that it is not possible for consumers to verify the objective quality of a product and. Thus, the general notion is that product design is used as an alternative cue to have an idea about it (Kirmani and Wright, 1989: 347; Dawar and Parker, 1994: 90; Bloch, 1995: 20; Page and Herr, 2002: 138; Creusen and Schoormans, 2005: 68; Mugge and Schoormans, 2012: 471).

Although past studies have highlighted the importance of product design on quality perceptions, these studies' findings usually focus on how product color, texture, shape, etc. affect the quality perception. Nevertheless, in this study, the level of design novelty is thought of as a determinant of cognitive evaluations, and cognitive evaluation is considered as a manifold concept which is based on functionality, durability, and performance. Thus, it is hypothesized that:

H₂: Product design prototypicality has a negative effect on cognitive evaluations.

Emotions and cognitions are under the control of independent systems, and they can influence each other in a variety of ways (Zajonc, 1980: 158). Accordingly, both affect and cognition create an independent but, at the same time, the interdependent source for information processing. Product design may elicit different psychological responses that include both cognitive and emotional components, and these responses may occur simultaneously (Bitner, 1992: 65; Bloch, 1995: 22). Thereby, emotions and cognitions can be an explanatory factor in understanding consumer preferences and can perhaps be used to determine the approach or avoidance of differently designed products. Accordingly, the following hypothesis is proposed:

H₃: There is a positive correlation between emotions and cognitive evaluations.

2.1.2. Approach and Avoidance

Consumers' psychological senses influence their judgments about the perceived product information (Crilly et al., 2004). Psychological responses to product design also affect the behavioral responses of consumers (Bloch, 1995). Different product designs trigger various cognitive and emotional responses that also affect the perceived value of a product and the behavior of the consumer (Rindova and Petcova, 2007; Bloch, 1995). Thus, consumers' emotional or cognitive responses to a product design have an impact on the way they behave and on their perceptions of the products.

Behavioral responses to product design can be defined either as approach or avoidance. When a particular product design causes positive psychological reactions, the consumer will have an approach tendency. Also, negative psychological responses cause avoidance behavior.

Approach or avoidance behavior categorize consumers as interested or uninterested (Bloch, 1995; Crilly et al., 2004; Bitner 1992, Foxall and Greenley, 1999). Approach behavior refers to being attracted by product design. It tends to elicit detailed and further exploration of the attracted product, such as seeking information, extended viewing, touching purchase, and product use (Crilly et al., 2004; Bloch, 1995). Avoidance behavior refers to the opposite of approach behavior, i.e. avoidance behavior is an outgrowth of negative emotions about a product (Bitner, 1992; Donovan and Rossiter, 1982; Mehrabian and Russell, 1974;

Bloch, 1995). When a product elicits a negative emotion, consumers may ignore or be disinterested in the product, and they will be unwilling to buy the product (Bloch, 1995; Crilly et al., 2004). In this study, the effects of design novelty levels on consumers' approach or avoidance behaviors have been put under investigation rather than examining the effects of product design on actual purchase behavior.

Approach behavior refers to being attracted by product design. It tends to elicit detailed and further exploration of the attracted product, such as seeking information, extended viewing, touching, purchase, and product use (Crilly et al., 2004: 551; Bloch, 1995: 22). Avoidance behavior refers to the opposite of approach behavior, i.e., it is an outgrowth of negative emotions about a product (Bitner, 1992: 61; Donovan and Rossiter, 1982: 38; Mehrabian and Russell, 1974; Bloch, 1995: 23). When a product elicits a negative emotion, consumers may ignore or be disinterested in the product, and they will be unwilling to buy the product (Bloch, 1995: 25; Crilly et al., 2004: 561). Consequently, positive emotions and cognitive evaluations tend to underlie positive intentions; in other words, cause approach behavior and negative emotions, and cognitive evaluations underlie negative intentions, namely avoidance behavior. Thus, the following hypotheses are proposed:

H₄: Emotions have a positive effect on approach behavior.

H₅: Cognitive evaluations have a positive effect on approach behavior.

Product design is an important channel to obtain customers' attention and to communicate with consumers (Nussbaum, 1993; Moon et al., 2015). Research results indicate that emotions trigger behavioral tendencies such as approach avoidance, inaction, etc. (Arnold, 1960; Desmet, 2008).

Product design may elicit different psychological responses that include both cognitive and emotional components, and these responses may occur simultaneously (Bitner, 1992; Bloch, 1995).

Design is also deemed to be a significant factor in consumer product evaluations (Bloch, 1995, Crilly et al., 2004). Based on product design, consumers make inferences about the functional features, performance quality, safety, durability, etc. (Crilly et al., 2004; Creusen, and Schoormans, 2005; Blijlevens et al., 2009) In addition; product design elicits specific associations such as luxury or cuteness (Bloch 1995, Crilly et al., 2004; Creusen and Schoormans 2005; Mugge and Schoormans, 2012). All these psychological reactions to product design, in the end, trigger behavioral responses (Bloch, 1995).

Some of the contemporary emotion theorists evaluate emotions as logical, organized, and functional systems (Smith and Kirby, 2001; Desmet, 2008). Most of the human thought, motivation, and behavior are enhanced and affected by emotions. Essentially, all human interactions with the social or material world involve emotions. An

individual may experience an attraction, admiration, fear, disgust, etc. for a product or for using a product. Various emotions can be experienced in response to people, events, or objects. Ignoring the emotional side of product experience would be like refusing that these products are designed and preferred by people.

2.1.3. Involvement

Day (1970) defined involvement as the level of interest of a person to an object. Extant research indicates that when customers are involved in a product category, this product-human involvement can elicit customer emotions and, in turn, affect cognitions (Seva et al., 2007: 725). According to Zaichkowsky (1986: 10), as a motivational construct, involvement partially relies on a person's values and needs. This description does highlight an affective component, as self-reliance is an effective process. In this context, triggering a value may spontaneously and unconsciously extract an effective response. As a result, these emotional and cognitive responses to the product design can affect consumers' preferences (Creusen and Snelder, 2002: 72; Wu et al., 2015: 489). In a similar vein, Hoyer and Stokburger-Sauer (2012: 168) indicate that consumers' emotional and cognitive reactions can be influenced by high product involvement.

While an individual's emotional states triggered by an object accentuate affect (McGuire, 1974: 171), individual's informational processing performances and efforts of idealization states shape their cognitions when they are faced with a product; and the level of involvement with the object in question plays a significant role in these relationships. As a result, in this study, involvement is expected to be functioning as a moderator on the relationships between design newness levels and emotions and cognitive evaluations. In other words, it is assumed that consumers' emotions are moderated by the involvement processes in perceiving a product's design newness. As a result, it is expected that:

H₆: Product involvement increases the effect of prototypicality on emotions.

H₇: Product involvement increases the effect of prototypicality on cognitive evaluations.

2.1.4. Risk Perception

Risk is not only about technical parameters or probabilistic numbers; it is also related to psychological, social, and cultural contexts. Individual characteristics and the social environment influence risk perceptions and affect the reactions towards perceived risk (Schmidt, 2004). Based on Bauer's definition (1960: 391), uncertainty and negative consequences are the two dimensions of perceived risk.

Research findings indicate that consumers try to diminish risk by obtaining information that enables them to act more confidently in an uncertain situation (Bauer, 1960: 393; Berlyne, 1960; Bettman 1979). Since emotion is a type of knowledge and knowledge that affects risk, emotion and perceived risk are related

concepts. Emotions are a type of knowledge based on subjective experience, i.e., not based on descriptions. Prior knowledge about a product such as a price or quality influences the risk perception of a consumer, and this is rational information based on past experiences with the product (Dowling and Staelin, 1994: 121). However, rational knowledge can also be obtained by emotions through personal experiences. Besides, when people have positive emotions toward an activity, they are more likely to judge risk as low and benefit as high; whereas when feelings toward an activity are negative, people are more likely to perceive risk as high risk and benefit as low (Finucane et al., 2000: 9; Slovic and Peters, 2006: 323). In addition, people prefer a familiar or previously seen stimulus rather than a novel or an unfamiliar stimulus, and novel or unfamiliar stimuli are associated with uncertainty, and hence, they are evaluated as risky situations (Zajonc, 1968: 165). Furthermore, when a product is difficult to categorize based on its design, consumers may not regard the product as a purchase alternative or approach to the product (Creusen and Schoormans, 2005)

Based on these explanations, it is assumed that when a product design is perceived as risky, consumers are prone to avoid it. Also, when people do not consider a product design as uncertain or risky, they will approach the product. Thereby, it is hypothesized that:

H₈: Perceived risk decreases the effect of emotional evaluations on approach behavior.

H₉: Perceived risk decreases the effect of cognitive evaluations on approach behavior.

In light of the review of the literature and based on the hypotheses stated above, the following conceptual framework is developed (see Figure 1):

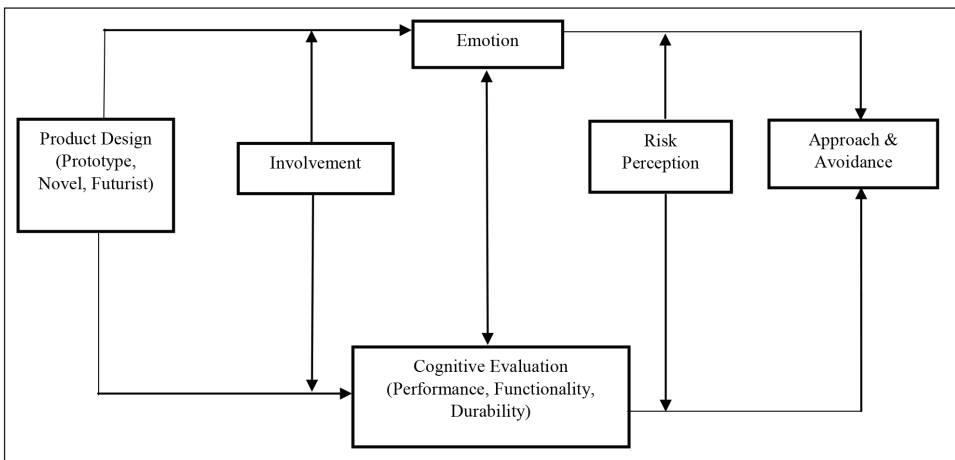


Figure 1. Conceptual Model of The Study

3. Methodology

3.1. Preliminary Study

The study aims to test the effects of design newness levels on consumers' product approach and avoidance behavior. To accomplish this, a product that is almost available in every living environment, and that is relevant for men and women with different demographic characteristics is chosen: kettle.

In addition, consumers, to a certain extent, may hold some aesthetic and ergonomic concerns regarding their product choices. However, since this study tries to clarify the sole influence of design newness levels on consumer behavior, the product chosen to be used as a stimulus is intended to be free from such concerns. The choice of kettle satisfies this objective as well. For instance, a desk lamp will be more likely to be purchased for an aesthetic reason. Likewise, consumers may have serious ergonomic expectations from furniture, chair, table, etc.

To be able to manipulate different design newness levels (i.e., prototype, novel, futuristic) for the selected product category, various kettle photos have been analyzed and three photos that are thought to be most representative of each category, nine photos in total, are selected (see Figure 2). According to the design definitions, visual examination of related products was made by the researcher on the internet. Since the study is a part of a doctoral thesis, the advisory board members of the doctoral jury decided which product image to use in the study. All the photos are standardized in terms of product details (e.g., no buttons, same color), size of the photo, and shading.



Figure 3. Selected Photos for Each Category

In addition, a pretest is conducted to choose only one photo from each design newness category (i.e., prototype, novel, futuristic). 138 participants who are volunteer students at Istanbul Bilgi University are included in the pretest. Definitions of three design types (i.e., prototype, novel, futuristic) are given on the cover page of the pretest with one sentence for each. Each participant is exposed to the nine photos shown in Figure 2, and they are required to select three photos that represent each category best, respectively. As a result of the pretest, three photos for prototype, novel, and futuristic product design types are designated to be used in the experiments during the main study (see Figure 3).




Prototype Product Design	Novel Product Design	Futuristic Product Design
		
132	91	129
Number of Respondents		

Figure 4. Chosen Product Design Categories

3.2. Measures

An online survey website is used to create a digital survey. Three questionnaires, which include the same thirty-six questions, and only one photo representing one of the design newness categories (i.e., prototype, novel, or futuristic) are created. Besides, the demographic characteristics of the participants are measured with five questions.

All the constructs in the study are measured using previously developed scales. To measure emotions, the shorter version of the Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance (PAD) scale, which was developed by Havlena and Holbrook (1986: 396) is adopted. Five-point Likert scale is used to assess the items, where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree.

Cognitive evaluation is deemed as a consumer's assessment of a product in an aggregate way. To measure it, Grewal, Monroe, and Krishnan's (1998) scale, including ten items in which perceived quality is linked to reliability, dependability, durability, has been adopted here. Five-point Likert scales are used to assess the items. Scales are labeled as 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree.

Zaichkowsky's (1985) involvement scale, including ten items, has been adopted as well, and five-point Likert scales are used where 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree.

Consumers' risk perceptions are measured by Jacoby and Kaplans' (1972) scale where there are four items to reflect the functional, physical, financial and psychological risk dimensions (measured by five-point Likert scales and the scales are labeled as 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree) and an overall risk item which is assessed by a scale where 1 = Very risky, 2= Risky, 3= Neither risky nor riskless, 4= Riskless and, 5= Very riskless.

Approach and avoidance tendencies have been empirically examined by different researchers (e.g., Cunningham et al., 2005: 208; Elliot and Thras, 2002: 408; Watson et al., 1999: 825). However, there is not one specific scale to measure the behavioral tendencies of customers towards a specific product. According to Bloch (1995), consumer's affective and cognitive responses towards products, influence their way of acting. Interested and disinterested consumer behavior is distinguished with "approach" and "avoidance to" in the marketing literature. Approach behavior is associated with a detailed analysis of a product, product purchase, and product use. Avoidance behavior is associated with ignoring the product, failure to purchase, and product abuse (Bloch, 1995, Crilly et al., 2004). In this regard, approach and avoid concepts will be used in the current study rather than choice. Hence consumer judgment and behavioral intention scales are used in the study. "Consumer judgments of a new product" is measured according to Ziamou and Ratneshwar (2003), and "Behavioral intention" scale of Krishnamurthy and Sivaraman (2002) is adopted here to get a sense of approach/avoidance likelihood. Five-point Likert scale is used to assess the items in Krishnamurthy and Sivaraman's (2002) scale (1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree). The three items from Ziamou and Ratneshwar (2003) are also measured by five-point scales, while one item is measured by a three-point scale. For the first item (please see page 14, Figure 4), the scales are labeled as 1= Very negative, 2= Negative, 3= Neither positive nor negative, 4 = Positive, and 5= Very positive. The second item (please see page 14, Figure 4) is labeled as 1= Not at all useful, 2= Not useful, 3= Neither useful nor useless, 4= Useful, and 5= Very Useful. The third item (please see page 14, Figure 4) is measured by a three-point, and the scales are labeled as 1= Familiar design, 2= Minor variation of the existing product, and 3= Completely new product. Finally, in the last question, scales are labeled as 1= Very unlikely, 2= Unlikely, 3= Neither likely nor unlikely, 4= Likely, and 5= Very likely.

3.3. Sample Profile

A convenience sample of 750 respondents makes up the sample of the main study. Demographic characteristics (gender, age, income, education, and marital status) of the participants are shown in Table 1. Sixty-seven percent of the respondents are women, and thirty-three percent of the respondents are men. Furthermore, nineteen percent of the respondents are at or below the age range of twenty-one, and thirty, thirty-four percent of the respondents are at or below the age range of thirty-one and forty, twenty-nine percent of the respondents are at or below the age range of forty-one and fifty. Finally, eighteen percent of the respondents are at or above the age range of fifty-one. Sixty-two percent of the participants have a university degree. Finally, sixty-two percent of the participants are married.

Table 1. Sample Characteristics

Characteristics	Frequency	Percentage
Gender (<i>n</i> = 750)		
Female	503	67.1%
Male	247	32.9%
Age (<i>n</i> = 750)		
≤ 20	2	.3%
21 - 30	145	19.3%
31 - 40	251	33.5%
41 - 50	216	28.8%
≥ 51	136	18.1%
Income (<i>n</i> = 750)		
< 2.000TL	64	8.5%
2.000 – 5.000TL	297	39.6%
5.001 – 8.000TL	156	20.8%
8.001 – 10.000TL	78	10.4%
10.001 – 15.000TL	79	10.5%
> 15.000TL	76	10.1%
Education (<i>n</i> = 750)		
Primary school	3	.4%
Secondary school	9	1.2%
High school	58	7.7%
University	466	62.1%
Master	176	23.5%
PhD	38	5.1%
Marital Status (<i>n</i> = 750)		
Single	291	38.8%
Married	459	61.2%

4. Analyses and Results

To test whether design prototypicality creates more negative emotional and cognitive evaluations or not, as well as to comprehend the moderating role of involvement on emotions and cognitions for different product design types (prototype, novel, futurist), two separate factorials ANOVA is conducted. First of all, all the involvement items are aggregated to create an aggregate score, and high and low involvement groups are determined by doing a median split (Median=3.57).

The analyses reveal interesting findings. Results are in support of the fact that design newness types create statistically different emotional experiences. According to the research results, unfamiliar designs didn't create negative emotions. Likewise, involvement has a statistically significant effect on emotional reactions. However, there is no statistically significant impact on design types and involvement interaction ($p = .208$). In other words, involvement does not moderate the relationship. It is an independent variable on its own that affects the emotional responses. Therefore, H_4 is rejected (See Table 2).

Table 2. Factorial ANOVA Results – Emotions

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	177.839479206999a	5	35.568	46.194	.000
Intercept	4598.840	1	4598.840	5972.819	.000
Design type	20.203	2	10.102	13.120	.000
Involvement	161.055	1	161.055	209.173	.000
Design*Involvement	2.427	2	1.213	1.576	.208
Error	572.851	744	.770		
Total	6052.958	750			
Corrected Total	750.691	749			

a. R Squared = .237 (Adjusted R Squared = .232)

Different than emotions, design newness types do not create a statistically significant difference in cognitive evaluations. However, involvement has a statistically significant effect on emotional reactions, while there is no statistically significant effect of design types and involvement interaction ($p = .208$) on cognitive evaluations. Again, this means that involvement does not moderate the relationship; it is an independent variable on its own that affects the cognitions. Therefore, H_5 is rejected as well (See Table 3).

Table 3. Factorial ANOVA Results – Cognitive Evaluations

	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	140.880409131246a	5	28.176	35.581	.000
Intercept	7162.565	1	7162.565	9045.038	.000
Design type	3.859	2	1.929	2.437	.088
Involvement	127.586	1	127.586	161.118	.000
Design*Involvement	.582	2	.291	.368	.693
Error	589.157	744	.792		
Total	9015.440	750			
Corrected Total	730.038	749			

a. R Squared = .193 (Adjusted R Squared = .188)

Following the factorial ANOVA findings on the effects of different design types on emotions and cognitions under different involvement levels, an ANCOVA test is performed to investigate further the pure effect of product design on emotions and cognitions while controlling for the effect of involvement. When the effect of involvement is controlled, the pure effect of design on emotions and cognitions are proved to be significant. As hypothesized, design prototypicality affects emotional and cognitive responses negatively, as can be seen from the corresponding Beta values in Tables 4 and 5. Thus, H₁ and H₂ are supported.

Table 4. Beta Values for the Pure Effects of Design Types - Emotions

Parameter Estimates		
Dependent variable=Emotions		
Parameter	B	Sig.
Prototype	-.580	.000
Novel	-.257	.000
Futurist*	0a	0
*Reference category		

a. This parameter is set to zero because it is redundant.

Table 5. Beta Values for the Pure Effects of Design Types – Cognitive Evaluation

Parameter Estimates		
Dependent variable=Cognitive Evaluation		
Parameter	B	Sig.
Prototype	-.270	.001
Novel	-.177	.016
Futurist*	0a	0
*Reference category		

a. This parameter is set to zero because it is redundant.

Multiple regression and moderated multiple regression analyses are used to test hypotheses H₆, H₇, H₈, and H₉.

According to Step 1 results in Table 6, emotions and cognitive evaluations affect approach and avoidance statistically significantly and positively as expected. Therefore, H₆ and H₇ are supported. The main aim of this analysis is to understand how perceived risk affects this relationship. Based on Step 2 results in Table 6, since the interaction term is not significant, the perceived risk does not moderate the effect of emotions on approach and avoidance behavior. The results confirm that when a consumer is emotionally influenced by design, risk perceptions cannot affect their approach or avoidance behavior. However, since the interaction term is significant, perceived risk moderates the effects of cognitive evaluations on approach and avoidance behavior. In other words, as risk increases for a rationally high-quality, durable, etc. product, preferences are adversely affected. Therefore, H₈ is rejected, and H₉ is supported.

Table 6. Regression Analysis

Dependent variable: Approach/Avoidance				
		Unstandardized Coeff.		Standardized Coeff.
		Beta	Std. Err.	Beta
Step 1				
	Constant	-.002	.087	
	Emotions	.588	.030	.533*
	Cognitive evaluations	.403	.030	.360*
Step 2				
	Constant	.476	.097	
	Emotions	.499	.076	.452*
	Cognitive evaluations	.541	.065	.484*
	Emotions*Risk	.011	.029	.026
	Cognitions*Risk	-.098	.024	-.241*

Model 1: $F = 666.545$; Sig. = .000; $R^2 = .641$; * $p < .001$

Model 2: $F = 400.151$; Sig. = .000; $R^2 = .681$; $\Delta R^2 = .042$; * $p < .001$

The positive correlation between emotions and cognitive evaluations are hypothesized in H₃. As expected, a significant positive correlation is observed between the constructs, and H₃ is supported (see Table 7).

Table 7. Correlations

		Emotions
Cognitive Evaluations	Pearson Correlation	.590**
	Sig.	0.000
	N.0	750

5. Conclusion

Product design has a very important element in communicating the product to the customers. Consumers may infer an idea about the performance, durability, functions, and other characteristics of a product just by looking at its design. Hence, it has a significant effect on the consumer decision making process. Moreover, the design is a tool for people to express themselves. In other words, product design supports the way people communicate and interact with each other in their everyday lives as well.

The main aim of this study is to investigate and analyze the influence of product design on consumers' emotional and cognitive responses and how these reactions affect their approach or avoidance behavior.

The fundamental area of interest, on the other hand, is the power of product design newness level (due to its communicative capability) to shape consumer approach-avoidance behavior. Three levels of product design newness (i.e., prototype, novel, and futuristic) are studied in terms of their possible effects on the above-mentioned constructs.

Prior studies have not demonstrated consistent results regarding product design newness levels and their effects on product preferences. This study's results support the findings of Hirschman and Holbrook (1982), and Baumgartner and Steenkamp (1996). It is found here that prototypical design influence cognitive and emotional reactions in a negative way. Moreover, results show that when the product design is futuristic, cognitive evaluations become even more positive. The study's findings are noteworthy. First of all, supporting Zajonc (1980), Bloch (1995), and Chowdhury et al. (2015), emotions and cognitions are proven to have differential effects on consumers' product choices. However, the analysis didn't reveal a significant relationship between product design newness level (i.e., prototype, novel, futurist) and emotional experiences. Said differently, contrary to the expectations, design unfamiliarity didn't create negative emotional reactions. On the other hand, data proved a significant product design – cognitive evaluation relationship. In other words, different product designs (prototype, novel, and futuristic) influence cognitions.

It is assumed that, as a moderator variable, involvement will affect emotions and cognitions. However, surprisingly, when the moderating role of product

involvement on the product design – emotions and product design – cognitions relationships are analyzed, it is seen that involvement act as an independent variable on its own rather than a moderating variable. As involvement with the product increases, so do the emotional and cognitive reactions. People tend to feel more positive and make better product evaluations, regardless of product design. This study contributes to the growing marketing literature about product designs by revealing that involvement can influence product preferences as an independent effect on its own.

Having this in mind, to comprehend the pure effect of design on emotions and cognition, the effect of involvement is controlled, and the second round of analysis is conducted. This time, as expected, prototypicality is shown to influence emotions and cognitions negatively. Specifically, people give more positive emotional and cognitive reactions (i.e., product evaluation) to products with new designs, despite their relative unfamiliarity.

Emotional experiences and cognitive evaluations triggered by a product design are found to exert positive effects on consumers' approach behavior, as hypothesized. However, the study's main objective is to enrich the current state of knowledge on consumers' product choices by investigating the moderating role perceived risk on emotion – cognition and approach behavior relationships. Results show that, when a consumer is emotionally influenced by design, risk perceptions cannot affect their approach behavior. In other words, emotions play an effective role in decision making, even in a risky situation. However, it is not the same when the effects of cognitive evaluations are of concern. When consumers' perceived risk is high, product evaluations in terms of quality, durability, etc. may lose their power to shape approach behavior. To put it differently, even if they have favorable evaluations of product characteristics, this may not translate into a purchase likelihood under a risky situation. Since design newness creates unfamiliarity, which increases perceived risk, people tend to be more cautious about novel or futuristic product designs even if they have good product evaluations.

6. Managerial Implications

Technological developments enable firms to produce similar products from various perspectives, such as features, quality, price, etc. Firms are searching for alternatives to gain a sustainable competitive advantage in the hope of preserving or developing their market positions (Kotler and Rath, 1984: 19; Veryzer, 1995: 642). Hence, product design may be an alternative for firms to differentiate themselves from their competitors. This study's results may be of great concern for companies while launching products with new designs.

The current study sheds extra light on the power of customers on influencing the market with their approach or avoidance reactions. In other words, it offers a detailed exploration of consumers' sensitivity in their emotions and cognitive

reactions to different product design newness levels. Therefore, it is an attempt to enrich the common understanding of behavioral economics by investigating details of the link between product design, customer choices, and their effects on firms and the economic environment.

The results of this study are believed to be beneficial for new designers in the development of new products. One of the most significant results of the study for the designers is that futuristic and novel product designs are found to be a major stimulator of approach behavior. Designers should also be careful about the relationship between emotions and risk perceptions. Based on the research results, consumers' approach to a product which evokes positive emotions, even if the product is perceived to be risky. Hence, designers must understand consumers' expectations and behaviors clearly and should have empathy for the people they are designing for.

The other significant point is that brands should be careful about the balance between prototypicality and novelty of product designs. If the design tends to be prototypical or novel, consumers may categorize the product easily. However, products with futuristic designs meet customers' latent needs better. Hence, firms that launch more futuristically designed products can generate higher sales relative to prototypical or novel product designs.

7. Limitations and Future Research Suggestions

This study has several limitations that can provide opportunities for future research.

A web-based survey site is used to collect data through convenience sampling. In this study, the relationships of interests are studied with only one product type, which is kettle. A kettle is selected as the stimuli for specific reasons mentioned in the previous chapters. However, further studies can be conducted with other types of consumer goods to improve the generalizability of the findings.

The results of this study are based on a product that has only one function, i.e., kettle can be used just to heat water. Further research might be conducted to develop the framework presented here to combining multi-functional products with different levels of designs and see whether the respondents will still prefer the futuristic design or not.

People can have different involvement levels regarding various products (Clarke and Belk, 1979: 314). Rather than examining a single product, products with different levels of involvement can be examined in future studies.

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