



# Usability is more valuable predictor than product personality for product choice in human-product physical interaction



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## ABSTRACT

Product personality and product usability are two important factors which can influence consumers' product choice. Published literature are available regarding independent impact of product personality and product usability on product choice but no research has been reported so far for understanding their collective influence on product choice. In addition, which factor between usability and product personality contributing more in product choice is still not clear. Current research thus aimed to bridge these research gaps by establishing inter-relationships among product personality, usability and product choice. To achieve this goal, two separate experiments were conducted. Results of first experiment revealed that products having high product usability also possessed strong product personality. Following second experiment, it was observed that solitary influence of product usability on product choice was more than the standalone influence of product personality in human-product physical interaction. Moreover, it unfolded the fact that product usability mediates the influence of product personality towards product choice. Established interrelationships among product personality, usability and product choice, would help designer and ergonomists to decide how product attributes could be manipulated to enhance product personality and/or product usability to ensure product choice.

**Relevance to industry:** Techniques mentioned in the current paper for product usability/personality assessment, have significant implication in product design. Gained knowledge will be helpful for industrial designer or human factors experts to incorporate various positive product usability attributes to enhance product personality or vice-versa for assuring acceptance of product in market.

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## 1. Introduction

Now-a-days usability evaluation is key design consideration for designing new product as product usability is highly important in consumer's choice making (Chowdhury et al., 2012; Han and Hong, 2003; Mack and Sharples, 2009; Seva et al., 2011; Wichansky, 2000). User–product–interaction plays a significant role in users' experience about product. This experience is directly or indirectly related to acceptance of the product in marketplace (Chamorro-Koc et al., 2009; Sauer et al., 2010). User centred design research has revealed that users' perception about interactivity is associated

with pragmatic qualities of product such as usefulness, multi-functionality and usability, as well as hedonic qualities of product like design novelty and technological appeal (Kuru and Erbu, 2013). Moshagen et al. (2009) observed that a significant relationship existed between visual aesthetics and usability. They noticed that high aesthetics enhanced task performance under conditions of poor usability. Therefore, it can be stated that usability of product also related to its aesthetic elements. Human factors/ergonomics research in the area of product design during last decade is being providing knowledge to designers on how usability of a product can be improved. Designers are now able to manipulate usability of a product with addition or alteration of product features or attributes. It should be kept in mind that after making changes in product features, usability of the product must be tested to confirm expected outcome.

Currently, researchers have recognized that there is a need to go beyond inherent usability which is mainly attributed from physical

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product experience through human-product physical interaction; rather, there is need to focus on apparent usability which can be perceived before use of the product (Kwahk and Han, 2002; Mugge and Schoormans, 2012a,b; Seva et al., 2011). Above fact is important since there are two considerable situations in market when a consumer going to purchase a product. In first situation, consumers are able to physically interact with product before purchasing it. An example of a situation of this type is purchasing of luggage bag after experiencing physically by seeing and/or touching the product in stores. The second kind of situation refers when consumers are unable to experience the product physically but he/she has to take decision for buying only by inspecting visually. Purchasing of products from online stores is an example of the situation of second kind. Therefore, inherent usability plays an important role in product choice in first situation whereas apparent usability is important for second situation. In addition, in recent years scholars are focussing on consumers' perception about product as multi-sensory venture (Vergara et al., 2011). It has been proved that multisensory integration enhances the perception of factors (i.e. ergonomics/appearance, lightness and dynamic effects) that are linked with physical interaction between users and tools; whereas, quality/robustness and efficacy could be detected through a lower level of interaction (e.g. seeing photographs) (Vergara et al., 2011). Therefore, multisensory integration may be better way to evaluate products from ergonomics perspective and is not that much necessary for evaluation of product quality and efficiency which can be appraised by visual scanning.

Some other researchers have stressed on understanding of users' need beyond functional need. These users' needs include emotional bonding with products, cultural perceptions and social value systems which will ultimately provide valuable insights for product developer (Jordan, 1997, 2000; McDonagh et al., 2002). Such influential appeal of researchers led to generation of idea about product personality. The concept of product personality comes from symbolic meaning of the product beyond its functional utility. This symbolic meaning which refers to physical product itself and can be described by human personality characteristics is called product personality (Jordan, 1997, 2000). Consumers not only consider products in terms of their functionality but also often thinking about product's personality like human beings (Govers et al., 2004). For example, a person can be cute, honest, and novel; equivalently, a product may be appearing like cute, honest, and novel. Although, personality of a product is reflected mainly through visual appearance of the product, it may also be perceived through physical interaction (Desmet et al., 2008; Govers and Schoormans, 2005; Mugge et al., 2009). There are some proposed models of product personality which concludes the role of product personality on product choice (Dumitrescu, 2010; Govers et al., 2004; Govers and Schoormans, 2005). Govers and Schoormans (2005) stated that product personality influences product choice due to personality congruence effect of consumers but not due to user congruence effect.

Nurkka et al. (2009) highlighted that products which are more 'fit-to-user' have been designed by understanding the underlying influential factors of user experience. They also suggested that user's impractical needs and aspirations, such as semantic meanings of products to users are attached to the product in a certain design context. Product personality characters are generally representative of different semantic meanings of product and can be perceived through visual appearance. However, most of the literatures are giving emphasis on visual domain of product personality perception while only few scholarly articles are available on perception of product personality through human product physical interaction (Chihara and Seo, 2014; Laparra-Hernández et al., 2009). Therefore, following extensive literature review, it was felt

by the authors of current paper that relationship between product personality and usability still had not been well-established or would need further exploration.

## 2. Role of product personality and usability in product choice

Literature indicates that usability leads to functional adaptation of product (Goodwin, 1987; Rubin and Chisnell, 2008). In other words, if any function which are better in terms of usefulness, ease of use, satisfaction etc. will increase usability of a product. In addition, users would be able to understand the usefulness of a product after experiencing it. Recently, Mugge and Schoormans (2012a,b) established the role of novel appearance of product on apparent usability of product. Desmet et al. (2008) argued that though product personality is being perceived through physical interaction with product, it is more reflected through visual appearance than the interaction style. They studied physical interaction style by changing different functional attributes of the product and how personality of the product changes with physical interaction style. Therefore, there is a need to corroborate how product personality and usability vary simultaneously with change in functional attributes of the product when experiencing it physically. Moreover, if both of these vary then what is the relationship between these two variables and which variable contributes more in product choice? Based on information available from literature, it can be assumed that product personality depends on both visual and functional attributes of the product and it varies with inherent usability which generally varies with functional attributes of a product (Chihara and Seo, 2014; Jordan, 2000; Rubin and Chisnell, 2008). Hence, in the present study an attempt was made to establish inter-relationships between product personality and objective usability in human-product physical interaction and to understand how these two factors are playing role in product choice. To achieve these goals, the whole study was sub-divided into following two experiments.

## 3. Experiment-1

First experiment was designed to understand variations of product usability scores with strength of product personality (high/low). Both product usability and product personality was contributed by products' functional attributes which were experienced through human–physical interaction. Thus, the working hypothesis for experiment-1 was set as “There are significant differences in product personality due to differences in product usability”.

### 3.1. Method

#### 3.1.1. Stimuli

To fulfil the objective, two suitable water bottles (see Fig. 1) were chosen and purchased from Indian market as water bottles are regularly used product and design variations are widely found. Experimenters purposefully selected two water bottles based on difference in functional attributes (functional look and functions) as it is evident from literature that both usability and product personality is dependent on both visual appearances well as users' physical experience about the product (Desmet et al., 2008; Govers et al., 2004; Govers and Schoormans, 2005; Mugge et al., 2009; Mugge and Schoormans, 2012a,b). In addition, it is well established that product form follows function and this ultimately helps in perception of usability of the product (Wake and Das, 2000; Schifferstein and Hekkert, 2009).

Among Nielsen's ten heuristics (Nielsen, 1994) highlighted by Delice and Güngör (2009), three heuristics such as aesthetics and minimalistic design; flexibility and efficiency of use; and, user

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