IDENTIFYING SIMILARITY OF OBJECTS:
Investigating perceived similarity of designed object for the purpose of Design Rights protection

Achmad SYARIEF, Mohammad IHSAN, and Rizky ADIWILAGA

Industrial Design Section, Faculty of Arts and Design, Bandung Institute of Technology
Jl Ganesa 10, Bandung 40132 West Java INDONESIA

Abstract
A well-designed object attracts consumer’s attention, serves as company’s icon, provides additional values on its use, and is more appreciated by consumers. This appreciation comes in effect mostly on the perceptual respond of consumer and/or users toward object through their visual senses. Thus, consumer/users can be easily swayed by ‘visual appearances’ of similar object without knowingly aware of their ‘actual’ differences. It is understandable to see phony designed objects in the market, trying to expose ‘similarity’ to those of original ones. Without proper training and qualification in design area, one cannot easily differentiate which one is the ‘original’ and which one is not. Unfortunately, this happens in the investigative process of intellectual property rights-more specific in Design Rights protection-in Indonesia, where perceived similarity of object is-by most-defined and acknowledged subjectively through the eye of examiners. As results, objective examination of registering designed objects can be questioned and objected. Thus, a systematic investigation to identify and to evaluate perceived similarity of designed object is in needed and should provide supportive tools for the Design Rights examination process. To address this issue, the present study looks into the concept of perceived matching-similarity of object using comparative assessment toward objects’ similarity on 2 (two) phases of study. On the first phase, subjects were asked to rate the similarity of objects between examined stimuli and referent object, using 3-point scales (1=most likely similar; 2=likely similar, and 3=most likely similar). On the second phase, perceived similar objects were examined for their identifiable elements on similarity. Results indicate that (1) identifying and matching similarity of objects can be determined by examining the perceived similarity rating. Its significance results can be exercised as an objective and logical examination of objects for the purpose of design rights protection; (2) perceived similarity of objects is mostly influenced by the overall appearances and contours, and therefore, one may have to be aware to the overall presentation of object when the process of examining similarity is conducted.

Keywords: feature-similarity, designed object, design rights

1. Introduction
Product’s design and brand identity are key elements of successful product in the market (Bloch, 1995), since a well-designed product attracts consumer’s attention, serves as company’s icon, provides additional values on its use, and is appreciated by consumers; as exampled by SONY’s products, IKEA’s furniture, and BMW’s cars. This appreciation
comes in effect mostly on the perceptual respond of consumer and/or users toward object using their visual senses. Consumers and/or users use the knowledge to identify ‘visual cues’ of those products (Kun-an et al, 2003). Thus, consumer/users can be easily swayed by ‘visual appearances’ of similar object without knowingly aware of their ‘actual’ differences. This happens in Indonesia, where in its pseudo-product market, consumers and/or users are more driven by prices and quantity rather than product-awareness and quality. As results, it is understandable to see phony designed objects in the market, trying to expose ‘similarity’ to those of original ones. For instance, thousands of bogus Louis Vuitton’s bags can be easily found at side-walk market with very cheap prices compare to those of original ones at the boutique stores. Their resemblances to the original products give ‘pleasure’ to the users because the products can provide ‘similarity of spectacle.’ As result, ‘similar products’ becomes norms and their identities tend to be subjectively defined by the users. This is a hefty challenge in the examination of designed objects for the purpose of design rights protection, because without proper training and qualification in the design area one cannot easily differentiate which product is the ‘original’ and which product is not. Unfortunately, this already happened in the investigative process of intellectual property rights-more specific in Design Rights protection-in Indonesia, where perceived similarity of object is-by most-defined and acknowledged subjectively through the eye of examiners. Mostly without proper training and design knowledge to assess. Consequently, objective examination of registering designed objects may be questioned and objected by interested parties. Thus, a systematic investigation to identify and to evaluate perceived similarity of designed object is in needed and should provide necessary applicable technique for the Design Rights examination process. To address this issue, the present study looks into the concept of perceived matching-similarity of object using similarity ratings with bottle of mineral water as sample of examined objects. Results of this identification are used as an objective procedure to examine the characteristic of object’s attributes and distance of similarity/differences (index) between objects. The obtained data are cross-referenced to identify its significance for the examination process of designed object, and therefore-be applied to support objective declaration of design rights protection.
2. Methodology

2.1 Subjects

100 subjects took part voluntarily in this study. They consisted of 57 males and 43 females; 46% are under 20 years of age, 49% are in between 20-40 years of age, and 5% are over 40 years of age. All participants are regular consumers of mineral water, and therefore assumed to have familiar with the function and design of bottle samples.

2.2 Samples

23 mineral water bottles of 500 ml size were used as samples for experiment. All bottles were available and randomly collected from various stores in Bandung area. A bottle of “Aqua” (500 ml, manufactured by DANONE) was used as referential sample for the experiment, due to its patent and acquired design rights. For the experiment, all samples were re-created in 3D digital-renderings (using 3DS Max Software) where they appeared as ‘just’ bottles, colored in 30% gray over black background, and were stripped off their graphics identification (including labels), to provide definitive subjects’ actual respond on bottle designs and not hindered by the appearance of texts and/or graphics. All samples presented in questionnaire with comparison to the referential sample (AQUA 500ml). Bottle samples for the experiment are presented (in order of appearance) below:

![Sample of Bottle Designs](image-url)

Figure 1. Sample of Bottle Designs
2.3 Procedures

Subjects completed an introductory questionnaire containing demographic variables prior to the experiment, which took less than 3 minutes. On separate continuous pages, pictures of bottle samples were presented in accordance with picture of “Aqua” bottle (as sample of reference). On each page, subjects were asked to rate samples matching-similarity between sample of reference (Aqua) and sample of examination (S1..S23) according to the scale of 3 (three): “3” for not similar (unlikely), “2” for a little bit similar (likely), and “1” for mostly similar (most likely). For analysis, those that rated closer to the value of “3” are those that distance itself to the referential sample (not similar); those that rated closer to the value of “1” are those that considered to have reasonable similarity. This assessment rating was followed by questions on the elements of bottle design that may influence each similarity rating: (1) overall bottle appearance [related to the overall perception of bottle design], (2) body contour [related to the body contour of bottle design], (3) details of cap [related to the shape of bottle cap], and (4) details of grid [related to the shape of body grid]. To avoid conventions, no indications nor discussions on each given picture or question was allowed. The entire procedure took less than 30 minutes to complete. Diagram of research procedure is presented below:

Figure 2. Diagram of research procedures
3. Results and Discussions

3.1 Objective Assessment of Perceived Similarity

Results of the assessment of feature-matching similarity on samples indicate that most of the samples have value of 2.00 or more, indicating that most samples are considered to have no similarity with referential sample object. There are only 3 (three) bottle samples that have closer value to 1.00: S16 (value of 1.90), S20 (value of 1.69), and S23 (value of 1.54) [see table below].

Table 1. Results from the First Assessment of Similarity Ratings

Accordingly there are 2 (two) poles of identified groups in the perceived similarity ratings: Group of Most Likely Similar Products (having scores of 1.00-2.00) and group of Unlikely Similar Products (having scores of 2.00 – 3.00). To identify statistical significance of the results, hierarchical analysis was performed. Based on the analysis, results indicate that there are 3 (three) different clusters of similarity ratings which are significantly different. Those clusters possess value of 2.812 (cluster 1), 2.28 (cluster 2), and 1.71 (cluster 3). Minimum distance between centers is 0.670, which is strongly
addressing significance differences between clusters. Cluster 1 includes S1, S2, S3, S5, S6, S8, S9, S12, and S22. Cluster 2 includes S4, S7, S10, S11, S13, S14, S15, S17, S18, S19, and S21. Cluster 3 includes S16, S20, and S23. Cluster 1 and cluster 2 can form new cluster of similarity on 10 plus numbers of iteration (see figure 2).

Statistical analysis indicates that comparatively there are 3 (three) significant groups in perceived similarity ratings. Those differences between clusters (objects that are perceived to have no similarity versus objects that are perceived to have similarity) are found to be highly significance. This confirms determined significance for the examination process of designed objects as this study has been set for. Thus, the method in applying rating of similarity on samples of object is objectively reliable to assess whether one particular object has ‘objective’ similarity of appearance with other objects or not; and therefore, may assist the examination process for design rights protection.

Figure 3. Dendrogram of distance between clusters
3.2 Influential Elements on Perceived Similarity

Results of the influential elements on perceived similar objects (cluster3: S16, S20, and S20) indicate that most subject tend to observe more on the overall appearance (S16: 0.312, S23: 0.272 in average of 0.292) and body contour of bottles (S16: 0.318, S20: 0.279 in average of 0.298) rather than details of their appearances (the average result of cap 0.17 and the average result of body-grid 0.25). This shows that subjects have tendency to perceive object similarity based on the overall attributes of objects (see figure 3 for comparative assessment of perceived similar objects).

![Comparative assessment of the influential elements in perceived similar objects](image)

Figure 4. Comparative assessment of the influential elements in perceived similar objects

4. Conclusion

Based on analysis of results, it can be concluded that:

(1) Identifying and matching similarity of objects can be determined by examining the perceived similarity rating. Its significance results, therefore, may be exercised as an objective and methodological examination of objects for the purpose of design rights protection.
Perceived similarity of objects is mostly influenced by the overall appearances and contours, and therefore, one may have to be aware of the overall presentation of object when conducting the process of examining similar objects.

5. Acknowledgment

Part of this research was funded by 2008 ITB Competitive Grant (Riset Unggulan ITB). The authors wish to thank the Hitachi Scholarship Foundation for its continuous support in the field of design research.

6. Bibliography

- Huang-Lin, M., dan Chin-Wei, T. 2005. *The application of feature matching theory on kettle design*. Proceeding of the 7th International Design Conference, Yunlin-Taiwan