

a Critical Overview on Customized Additional Storage on the Motorcycle in Bandung

Dandi Yunidar^{1,2}, Ahmad Zuhairi Abdul Majid²

¹Product Design, Telkom University, Bandung, Indonesia

²Product Design, University Sains Malaysia, Penang, Malaysia

dandiyunidar@telkomuniversity.ac.id (Dandi Yunidar), majid.zuhairi@usm.my (Ahmad Zuhairi Abdul Majid)

Abstract: For the last several years motorcycle has becomes the most operating vehicle type on the road in Indonesia. There are also several problems that arise along with the increasing role of motorcycles as the main means of transportation for some Indonesians. One of the issue is the lack of goods storage facilities, because motorcycles are basically designed as human transportation vehicles rather than goods, this caused a lot of use of homemade goods transport facilities that seemed forced and often harmful to drivers and other people. This article criticizes the design of customized additional (homemade) storage on motorcycles in Bandung using the kansei approach, and further will describe the needs of motorcycle users in Bandung Indonesia. This article will also provide an overview of issues that can be solved by the small-scale motorcycle accessories industry in developing their products in the future with a product design approach.

Keywords: Motorcycle, Customize, Kansei Engineering, Small-scale industry

1. Introduction

In their daily activities motorcycle riders in the city of Bandung often drive while carrying goods, and some carry excessive amounts of goods so that it is impossible to place them in the trunk of a motorcycle.

For example, the illustration as shown in figure 1 where there is a motorcycle fitted with additional storage in the form of a wooden box arrangement that serves to carry vegetables in order to support the rider's profession as a motorize vegetable seller.



Figure 1. Motorcycle with custom luggage for professional purposes.

There are several problems resulting from the use of additional storage such as Figure 1 above, of course the most important is the safety problem of the rider itself and other road users. because the additional storage unit as in the pic-

ture above is certainly not made by taking into account the maximum dimensional regulations legalized by the Dinas Perhubungan Darat (Land Transportation Agency), and most likely the motorcycle factory has never designed its motorcycle products to be fitted with additional storage unit with the shape, size and distribution of the load balance like that.

If we look at the background of the people of Bandung city who are 98% (data from the Central Statistics Agency of West Java, 2013) are residents who can read [11] (received basic education), then it can be concluded they should be aware of the simple problems that can be caused by these additional storage units on the motorcycle.

2. Literature Review

If we talk about "customize" then the first thing that comes to mind is to change something that already exists into something new in whole or in part in accordance with the wishes or needs of the user, or when referring to the Cambridge dictionary it means: to make or change something according to a customer's particular user's needs [12].

Regarding the customization of a product, two economists named Goebert & Rosenthal once expressed their views. In their view this customization action was carried out within the framework of emotional motivation, "the real problem had nothing to do with product's intrinsic value, but instead represented emotional connection that links a product to its user [4]". So in their view, if there is a process of customization on a finished product then it is actually not the product

that is not perfect, but rather the needs and desires (expectations) of users who exceed the designation of the product.

Another thing stated by Norman (2004) about customization in his book entitled Emotional Design, where Norman mentioned that the customization process is motivated by a conflict between the desire to meet the needs and availability of finished products in the market [5]. Fortunately Norman also pointed out the steps that users are likely to take in dealing with such conflicts, where the steps are as follows:

1. Live with it
2. Customize
3. Customized mass-production
4. Design our own product
5. Modified purchased product

Out of the five alternative actions that might be carried out by users, the fifth step is the action most often done by users [5].

3. Methods & Data

This research was conducted using Atlas.ti software version 7.5 as a data processing facility that will be used for visual analysis of field data. And the steps taken to complete this research are as follows:

1. Observation: Performed in the area around the traditional markets in the city of Bandung
2. Data processing: Using Atlas.ti software version 7.5 the data will be analysed using Kansei approach.
3. Conclude: Data generated from atlas.ti will be compared with emotional design theory and concluded.

In phase no.2 (data processing) there are several aspects that will be highlighted and analyzed based on the steps used in the Kansei method.

Kansei's engineering terms are understood by researchers in the field of design as a paradigm that is related to the concepts of mental images and mental preferences of users [8].

4. Analysis & Results

In visual observations there are several parts of additional storage unit that are highlighted, some of these parts are (figure 2):

1. Additional wooden boxes to sell vegetables that can be dismantled on the back of motorcycle.
2. Appearance of the rough surface of the box without good finishing but has good function to withstand collision and friction with other object surfaces.
3. Lower wooden boxes to store vegetables.
4. Limited driver seat.
5. The dimension of the motorcycle towards the side which becomes wider and the balance of the

motorcycle becomes disrupted due to dimensions of the additional storage unit that is lacking in calculation.



Figure 2. Some parts of the spotlight of observation in atlas.ti.

From the results of visual analysis using atlas.ti by using the emotional design approach and kansei as the analysis parameters created a relationship diagram like the following in figure 3:

1. There is a main code with the label "Modification is needed".
2. The main code with the code labeled "Modification is needed" arises because of the code labeled "Unsatisfied with the original condition".
3. Code with the label "Unsatisfied with the original condition" connected to the code labeled "unique / personal".
4. Code with the label "Unsatisfied with the original condition" is also another form of addition or change to the motorcycle.

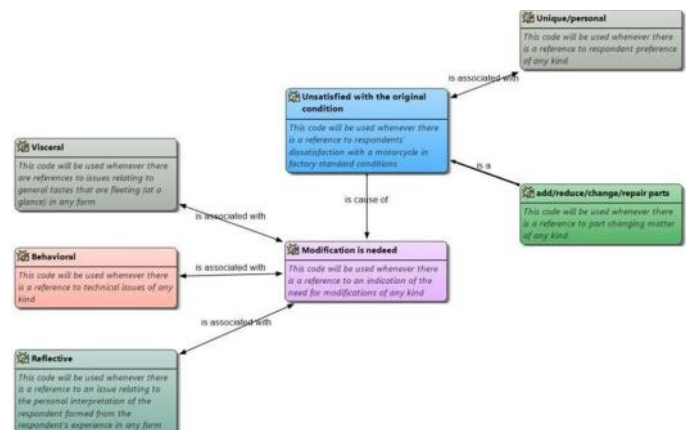


Figure 3. The diagram of the relationship between additional baggage requirements and the initial design of the motorcycle.

On the left of the diagram there are three codes with the label:

1. "Visceral"
2. "Behavioral"
3. "Reflective"

Those are three codes that originate from the emotional approach (Norman, 2004) and are associated with the main code labelled "Modification is needed".

5. Discussion

The data generated from the visual analysis if it is associated with the Emotional Design theory (Norman, 2004) can be interpreted as follows:

1. Additional wooden boxes to sell vegetables that can be dismantled on the back of motorcycle means that the rider uses his motorcycle for other purposes besides trading vegetables, which creates the decision of the additional wooden boxes unit can be dismantled in demands.
2. Appearance of the rough surface of the box without good finishing but has good function to withstand collision and friction with other object surfaces means that the driver is a very practical type of person, where he does what he does based on technical efficiency calculations. He is not too concerned with the appearance of his motorcycle and the most important unit for him is that his activities can run smoothly by his standards.
3. Lower wooden boxes to store vegetables means that the rider also does not pay much attention to the quality of his merchandise but rather considers the quantity aspect, it can be concluded by the appearance of luggage in the form of vegetables stored in the lower box adjacent to the wheels of his motorcycle where it can be predicted that the merchandise will be exposed to biological, physical and chemical elements that are disruptive.
4. Limited driver seat means that the driver is the type of person who is goal oriented where he can accustom himself to physically adapt (homo mechanicus) to the limitations of the means of sitting and sacrifice comfort for the achievement of his target.
5. The dimension of the motorcycle towards the side which becomes wider means that the driver is also a type of person who is selfish and does not care about the safety of other road users. Where the dimensions created by his additional storage unit will disrupt the balance of his motorcycle and ultimately prone to disrupting the path of other riders.

The five conclusions from the visual analysis if it is related to emotional design theory (Norman, 2004), it is most likely that the design of additional wooden boxes which is the case study above (figure) is the result of habitual behavior or Norman calls it there can be a level of "behavioral" awareness.

While the data analysis of the relationship diagram that is created if it is associated with Emotional Design theory (Norman, 2004) can be interpreted as follows:

Most likely modifications are made on the basis of behavioral awareness where as homo mechanicus, humans can do things without the need for careful and detailed calculations but more automatically due to habits, repeated experiences so that in this case even though the additional

storage unit cannot be said to be comfortable and safe for common people but for the offender the opposite is true, and physically the offender is also accustomed and trained so that he no longer detects any physical irregularities caused by his additional storage unit.

The need for modification that occurs in the motorcycle is a result of dissatisfaction with the ability of the motor in the market, and this dissatisfaction is strongly related to the personal preferences of each individual user, the need for modification is also indicated from the addition or change to certain parts of the motorcycle.

6. Conclusion

What can be learned from the case above is that a design (in this case specifically an example of a motorcycle case) must consider the user factor, not only from the aspect of physical ergonomics but also as important as the psychological aspects of the user that are formed from living values in daily life and is an indication of the normal habits of a larger people (sub-culture).

The value of life of motorbike riders in Bandung (especially as a case study site) is very unique which results in the way they ride their motorbikes on the road, and the way they interact with other vehicles while on the road, may seem awkward and unnatural or It might even seem dangerous for the stranger to see it, but what actually happened is the opposite where it is very normal for the motorcycle riders in the city of Bandung.

In the end, what is most important is that the manufacturing industry should make the sub-cultural aspect one of the main aspects of consideration in designing mass products that will be marketed in a market segment.

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