

Design of Rest Area in Floating Market Based on Ergonomic Aspect

Aubry Sahadat Mayasa¹, Sheila Andita Putri², Martiyadi Nurhidayat³

Telkom University, Jl. Telekomunikasi No.1, Bandung
aubrysahadat97@gmail.com, Chesheila@telkomuniversity.ac.id, martiyadi@telkomuniversity.ac.id

Abstract

Sitting facilities is one of the facilities available in most tourist attractions, not only to take a short break to unwind but can be used as a place to chat, take pictures and take a rest, the means to sit usually only has one part, the seat, this can cause inconvenience. by tourists, this design aims to maximize the function of the sitting facilities in floating market, this design uses observation techniques on the object designed, so that the data obtained is directly on the target population. Ergonomics in this design is needed related to the comfort and safety of the users of this product, the designed products secure three main components, namely the roof, back and legs of the product to be designed, with Ergonomics resilience and quality of the design can be worth more, the target of the product is tourists who come to the Floating Market.

Key Word : Furniture, Product, Family

1. Introduction

Recreation places are one of the tourist facilities for the community to spend vacation time as well as releasing fatigue and stress due to work. The majority of each family chooses a trip to a recreation place that has beautiful natural scenery. In this era with limited land available, recreational entrepreneurs make artificial facilities by combining natural philosophy. Floating Market itself has many facilities that can support the needs of tourists while recreation, besides this facility has its own theme by using traditional rural elements, this is also one of the main attractions for tourists from that place. Facilities available at the place are toilets, souvenir shops, parks, boat rentals, floating markets, time, rental of Japanese costumes, swimming pools, sitting facilities and lakes. Sitting facilities is one of the important aspects of the recreation area, in addition to a place to relax, this facility can be used as a place to capture the moments of tourists visiting the Floating Market. The facilities to sit are quite wide ranging from materials, shapes, and ergonomics.

2. Design Approach

The approach that I use in this design uses a qualitative approach, according to John W. Creswell (2016: 5) qualitative research is a method used to understand the meaning and exploration of a number of individuals or groups whose origin has a social or humanitarian problem. The researcher makes important efforts in this qualitative approach by asking questions and analyzing from general problems to specific problems, which focus on a particular context in the design problem.

3. Theoretical basis

In designing the means to sit the rest area floating market, divided into two foundations, namely the theoretical foundation and empirical foundation.

3.1. Theoretical basis

Aspects that will be discussed by researchers in literacy data have limitations that cover ergonomic aspects. According to Hardianto Irdiastadi and Yassierli (2014: 4) "Ergonomics can be defined as a discipline that examines a limitation, human characteristics, advantages, and utilization of information in designing products, machinery, environment, facilities, and work systems." Not only that ergonomics It also has a goal to achieve security, quality work, safety and comfort for those who use it.

The design that the researcher did with the discussion of ergonomics aspects was further discussion related to anthropometry, according to Hardianto Irdiastadi and Yassierli (2014: 24) "Anthropometry is a science that deals with aspects of the physical size of humans." We know that this science covers a measurement, dimensions and distance to the human body.

In addition, the backrest is one of the parts that is not overlooked in the ergonomic aspect, according to Bambang Suhadri (2008: 34). "The main function of the backrest is to hold the lumbar area, or the small part of the back, which is a concave bottom starting from the waist to mid-back."

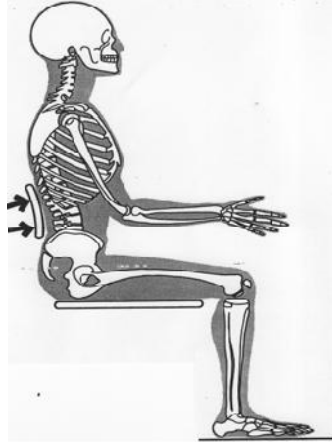


Figure 1. Backrest
 Source : Perancangan Sistem Kerja dan Ergonomi Industri, page 34

In the ergonomics sub-chapter about sensing systems has an outline that will discuss the visual system and the human hearing system from the limitations and capabilities of humans in carrying out work solutions that are obtained through the design of work systems for humans.

In this theory for the light part is divided into two, namely light and light measurement, according to Hardianto Irdiastadi and Yassierli (2014: 128), that "Light is a beam of energy obtained evaluated visually, as part of the spectrum of electromagnetic radiation".

This lighting also affects the human work system for the comfort and safety of the work system used, for which light regulation plays an important role in human effectiveness in working and optimizing work from work tools.

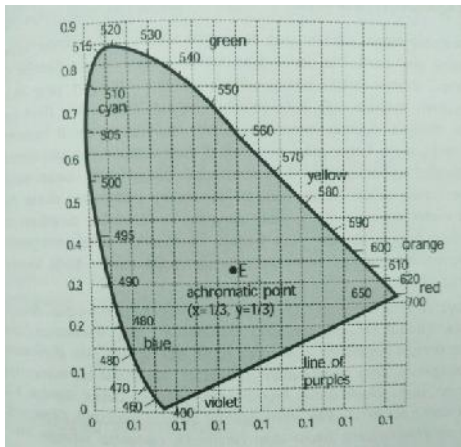


Figure 2. CIE Color System.
 Source : Ergonomi Suatu Pengantar. Page 129

3.2. Empirical basis

Floating Market is one of the tourist attractions located in Lembang, Bandung. This place was established on December 19, 2012. The founder is Mr. Perry Trisianto. He is the owner of several factory outlets in Bandung. Floating Market is a group of companies with Tahu Susu Lembang and d'Ranch which are also in Bandung. The company which has just been established for almost two years has some unique among them as a substitute for kiosks for food

sellers, so boats are used to sell on water, then as a means of exchanging do not use direct money but exchange it for prepared coins can only make a purchase transaction.



Figure 3. Floating Market Area
 Source: Author Data

3.3. Scope

The means to sit on the floating market has scope in certain places, through survey data that has been obtained by the majority of sitting facilities placed at the entrance to the park, the middle of the park and the exit of the park, which means the park here is part of one of the facilities in the floating market.



Figure 4. Product Scope
 Source: Author Data

In addition, the means to sit in the floating market is placed on the outskirts of the floating market in the front of the food seller, and is also placed in the boat rental queue. From the data that has been observed the seating facilities are placed at the starting, middle, & end points of a facility.

4. Product Analysis

The table below is one of the three main aspects of the design process, namely the primary, secondary & tertiary aspects:

Table 4. 1 Aspect of Analysis
Source: Author data, 2019

Aspek Primer	Aspek Sekunder	Aspek Tersier
- Ergonomic	- body attitude	- Physical
- Anthropometry	- Vision direction	- Environment.

In the table above the grouping of aspects of the design means the sitting area of the floating market area, has the criteria on the primary aspect, which covers the most important needs that must exist in the design of this seating facility, and if there is no problem for the product to be designed this aspect covers ergonomics and anthropometry, ergonomics was chosen as the primary aspect because of the interrelationship with comfort, safety and security for users of this rest area product while anthropometry discusses measures that will support a dimension of the product, the second criteria for this secondary aspect are to support while helping to design the primary aspects whose needs as a complement to the design on aspects of posture are quite important to know how users sit and do activities on the product to be designed, and for tertiary aspects as supporting aspects or additional aspects of the primary and secondary.

This analysis mapping is done to facilitate the analysis of the three aspects to be discussed, this mapping is divided into three parts, namely Primary, Secondary & Tertiary.



4.2 Primary Aspects

In the discussion of the primary aspects of ergonomics, it covers several sub-topics, but here the researcher will briefly explain the relationship of ergonomics to the products to be designed. its use and included several images to help strengthen the analysis of ergonomic aspects.

In the same aspect of anthropometry, some forms of angle of slope are shown from the data obtained, this analysis helps to determine the exact size of the product based on the problems taken and adapted to anthropometric theory. In general analysis the researchers can divide the slope to sit relax, sit down and sit normally.




This primary aspect is more indicated by how the design will be made from the size and users of the seating facility, so that by imposing the primary aspects it is expected that the design can meet the safety and security rules for users that are adjusted to the floating market theme.

Table 4. 2 Ergonomic aspect

No	Product	Ergonomic Aspect
1.	 <p>Figure 5. Source: https://kursicafebar.com/kursi-taman-kayu-jati-terbaru/</p>	- Reason: The shape that is made sturdy has the armrest and the slope angle of the backrest is 90 degrees.
2.	 <p>Figure 6. Source:http://www.saudagarfurniture.com/bangku-taman-bench-garden/kursi/</p>	- Reason: This second image does not have an armrest, and for the width of the stand is shorter.

The conclusion obtained in the ergonomics table above is to add a roof to the stand, this allows comfort when tourists sit on it, besides the above table it can be concluded that the slope of the angle needed to design the rest area is 90 degrees, because the angle is most effective if used for short breaks for tourists.

Table 4. 3 Anthropometry Aspects



No	Product	Anthropometry aspects
1.	 <p>Figure 7. Source: http://www.tentangkayu.com/2008/05/merencanakan-kursi.html</p>	- Reason: This backrest is less effective because it is still too upright for the back type in the rest area.
2.	 <p>Figure 8. Source:https://sobhome.blogspot.com/2018/07/kumpulan-kursi-taman-besi-coralang.html</p>	- Reason: the function on this backrest is not effective because it is too upright with the holder and the armrest that is too small to use.
3.	 <p>Figure 9. Source: https://ru.aliexpress.com/item/PURPLE-LEAF-Outdoor-Furniture-Garden-Swing</p>	- Reason: in the picture beside this the anthropometry created between the frame and the holder is quite balanced on its strength.

In the table above, it can be seen in the anthropometric aspects, the size will affect the shape and dimensions, this analysis will be used as a discussion for the measurement of products that will be adjusted to what garden in the Floating Market.

4.3 Secondary Aspects

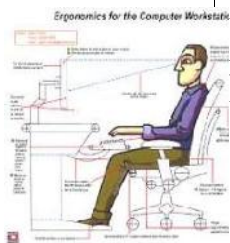


This aspect of the student is an aspect of analysis that helps to refine the primary aspects, this sitting attitude discussion also helps researchers to facilitate the placement and activities of what is done so that it will produce a conclusion for the product designed. That aspect is very important.

Table 4. 4 Body Attitude Aspects

No	Product	Body Attitude Aspect
1.	 <p>Figure 10. Source : author data.</p>	- Reason: This sitting attitude is not good because the seat is too close to the pedestrian path.
2.	 <p>Figure 11. Source : author data.</p>	- Reason: This attitude is enough to show a relaxed attitude towards the product to be designed.

From the table above it can be concluded that the design made must be right, not too short or not too long in the seat because if it is too short it will cause discomfort when sitting and if it is too long it will be too comfortable because the rest area will be designed for a short break.



Table 4. 5 Vision Direction Aspect

No	Product	Vision Direction Aspect
1.	 <p>Figure. 12 Source : https://kursikantorbandungmurah.wordpress.com/tag/kursi-ergonomi/</p>	- Reason: The direction of vision for the backrest product is enough for a visibility for tourists.
2.	 <p>Figure. 13 Source : http://www.lemari pajanganjepara.com/kursi-ayunan-minimalis-jari-jari/</p>	- Reason: The direction of vision in this product is facing the user so that visibility is limited to see towards the park.
3.	 <p>Figure. 14 Source : https://www.mydeal.com.au/vidaxl-solid-acacia-wood-sun-lounger-reclining-chair-table-set-outdoor-garden</p>	- Reason: The product in addition has a direction of vision in all directions that allows users to enjoy the environment around the park, but does not have a roof to take shelter.

The conclusion that can be drawn from this aspect of the direction of vision is that the sitting facilities that the design writer will analyze are more just one point of view, namely towards the garden so that the product is placed to adjust the condition of the park in the floating market.

4.4 Tertiary Aspect

Table 4. 6 Physical Environment.

No	Product	Physical Environment.
1.	 <p>Figure 15. Source : Author Data</p>	- Reason: Products designed will face summer.
2.	 <p>Figure 16. Source : Author Data</p>	- Reason: Products designed to face the rainy season.

This tertiary aspect has a discussion on environmental analysis so that researchers can consider the things that can happen to the environment in the floating market. Because in Indonesia the tropical climate has only two seasons, namely summer and rainy season.

4.5. Design Concept

The design in making a product has a certain meaning according to Agustinus Purnama Irawan (2017: 17) that "product design is the process of creating product ideas until the product is introduced to the market". Intended in a design must be able to have a sale value to the community in order to have the competitiveness of the product designed.

Products designed must have specific aims and objectives so that they can benefit and have value in the eyes of the community, in essence the design of products has five specific dimensions in the development and profitability of products, according to Agustinus Purnama Irawan (2017: 17), including the following:

1. Product quality, from the quality of this product can be produced a product that meets the needs of consumers that are important to note.
2. Product costs, this point is intended to calculate profits on sales volume.
3. When developing a product, competitors play an important role in developing a product and consumer needs.
4. Development costs, to achieve profit costs are also needed for development.
5. Development capability, product quality can be determined by the capacity and experience of the product development team.

5. Conclusion

The results of the design of the Seating Facilities product Rest Area Floating Market can be concluded, With the new design of the seating facilities, visitors no longer need to worry about the hot mahatari light in the afternoon, so that the use of this sitting facility can function optimally. In this seating facility, the seating position is adjusted according to ergonomics sourced from the Ergonomics Basic Concept Book and its Application. The design concept of this seating facility product leads to a patent system and is easy to use.

REFERENCES

- [1] Bullinger. H-J.1994, *ErgonomieProdukt- und Arbeitsplatzgestaltung*, Fachmedien Wiesbaden : B.G. Teubner Stuttgart.
- [2] Cuffaro, Daniel F.et al.2013,*The Industrial Design*, United States of America: Rockport.
- [3] Creswell, John W,2016, *Research Design*, Yogyakarta: PUSTAKA PELAJAR.
- [4] Iridiastadi Hardianto, Yassierli. 2014, *Ergonomi Suatu Pengantar*, Bandung : PT. Remaja Posdakarya.
- [5] Nurmianto, E., 1998, *Ergonomi Konsep Dasar dan Aplikasinya*, Surabaya:PT Guna Widya.
- [6] Purnama Irawan, Agustinus, 2017, *Perancangan dan Pengembangan Produk Manufaktur*.Yogyakarta: ANDI (Anggota IKAPI).