# **CHAPTER 1 INTRODUCTION**

#### I.1 Research Background

Product development is the part of which the product gains its competitive advantages (Creusen & Schoormans, 2005). This activity involves the cyclic interaction between two main entities, which are the product development team and the consumers. The product development team has a role in actualizing the consumer needs into the real product through both research and development and production phases, then the consumer will utilize and evaluate the products which can be represented as the consumer statement or needs to come back to the market research done by product development team. This approach is highly related to market-in concept, or in other words emerged as the term of human-centered design (Nagamachi & Lokman, 2011).

The main part of product development is the product design, in which this phase mostly influences the consumer choice. In system-level design, some values are considered as the importance to form the consumer perceptions and preferences through product appearance communication, which are as follows (Creusen & Schoormans, 2005):

1. Aesthetic value

This value pertains the appearance of product as it firstly attracts the consumer when making the decision of product buying. Aspects mentioned in this value are size, color, shape, and other specific details.

2. Symbolic value

This value represents the symbolic meaning or in what things the product is associated with, therefore this is helpful to communicate the aim of product design through brand or impression such as "expensive", "luxury", "cheerful", or "chic". 3. Functional value

This value shows the utility of product that embodies the aspects of appearance, presence of manual instruction, reliability, and durability to get the best quality.

4. Ergonomic value

This values concerns on how the product is usable for the users by involving the appropriate size, display, or placing based on ergonomics criteria, in order to provide comfort, effective, efficient, safe, and healthy design.

5. Attention-drawing value

This value focuses on the main things or spots of the product, so the consumer will pay attention on it. For instance, the food product has an attention-drawing ability in its packaging to increase the opportunity to purchase.

6. Categorization value

This value relates to how the product appearance will influence the ease of consumers to categorize the product. It means that the visual typical of groups of products may be associated with some categories that help consumers to make a purchasing decision.

Those mentioned values correlate to the human-centered design which can be implemented by some methods. In recent, the product development teams are trying to develop the new product using Kansei Engineering. Kansei Engineering unites the aspect of emotion and feeling through engineering process. This method is aimed to get the human satisfaction after using the product, moreover in technological performance. Product development that utilizes Kansei Engineering is expected to encourage the new technology development through user-centered design (Nagamachi & Lokman, 2011).

Kansei Engineering has been implemented in several product development activities or relevant researches. One of the most trending topics of research related to Kansei Engineering is travel experience in public transportation, which was trying to incorporate the experience requirements of passengers to the product-service system design through travelling activity (Carreira, Patrício, Jorge, & Magee, 2013). This research was involving some factors of customer travel experience in which overall comfort was the most important factor, both physically and psychologically.

In Indonesia, one of the most well-known public transportation is train. The train service has been mainly provided by PT Kereta Api Indonesia (KAI). PT KAI operates three kinds of train classes, which are economic class, business class, and executive class. Compared with other public transportations, such as ship and airplane, train has the highest number of passengers. It is shown by the following data of Badan Pusat Statistik (BPS) from 2011 to 2013.



Figure I. 1 Chart of Passenger Number for Public Transportation

Seeing the trend of leading number of passengers, PT KAI is now developing a strategic plan to streamline the service of train classes in aimed to increase the competitive advantages. Business class is slowly removed in several routes and replaced with the new class. This plan affects the change of interior by upgrading and combining the concept of economic class and business class, therefore there must be a concern on how the interior change gives the impact to the passenger experience. Related to this problem, this indicates that PT KAI has a challenge to provide better or newer travel experience to introduce the new class train concept.

The study of travel experience in train has been conducted (Carreira, Natal, Patricio, Magee, & Hommes, 2013), in which it defines the comfort experience as the result of consideration at behavior, perception, and users' diversity. The issue raised from the study of travel experience is how to develop the product or services in public transportation that can enhance the travel experience as the behavior, perception, and users' diversity become the main consideration. Moreover, some public transportations have involved the users as the part of experts in improving the design, which indicated that the uniqueness of users become very important in providing and enhancing travel experience through the design.

As the Kansei Engineering method has been implemented in specific issue about designing travel experience as a whole activity and the emergence of issue regarding PT KAI strategic plan to design new class, this research is trying to combine those problems as implementation case of Kansei Engineering. Specifically, this research is going to prove the advantages of Kansei Engineering in generating the product concept that involves and emphasizes user emotions or perceptions.

### **I.2 Problem Definition**

This subchapter explains the problem identification of Kansei Engineering implementation for train passenger seats in these following questions:

How to implement the Kansei Engineering for generating the concept design of train passenger seats?

#### **I.3 Research Objectives**

Implement the Kansei Engineering for generating the concept design of passenger seats.

### **I.4 Research Limitation**

This research does not take into account the detail design of the train passenger seats.

### **I.5 Benefits of Research**

- 1. Knowing the benefit of Kansei Engineering for enhancing the travel experience of public transportation
- 2. Helping the company and the stakeholders to propose better design of passenger seats.

### **I.6 Writing Systematics**

Here is a systematics of research conducted as follows:

# CHAPTER I Introduction

The main idea of this research is based on the consumer choice concept in product development and the trend of Kansei Engineering in designing the products or services that related to public transportation. Initial research was conducted by reviewing some literatures that support this research. This is completed by a case study of PT KAI, which is planning the seat concept of new train class. Therefore, this research will be beneficial both for the other researchers and the company to learn more about Kansei Engineering and get the new seat design concept.

# CHAPTER II Literature Review

This chapter contains the relevant basic theories of the research in order to solve the problem. The basic theories consist of scientific literatures and published researches related to three kinds of topics, which are study of travel experience, concept of comfort and discomfort, and Kansei Engineering.

### CHAPTER III Research Methodology

This chapter describes the research frameworks that consist of conceptual model and problem solving systematics. The

conceptual model expresses the correlation of each variables that involved in this research, while the problem solving systematics expresses the steps of conducting research in divided stages. The preliminary stage is done by formulating the problem based on literature review and field observation, then the further steps follow the structure of Kansei Engineering method.

## CHAPTER IV Data Collecting and Processing

This chapter consists of two parts, which are data collecting and data processing. First part contains the collection of Kansei Words from various sources and literatures and the product samples, then the second part shows the data processing by following the steps of Kansei Engineering Type I. This type is known by its method to break down the Kansei Words into very low level, resulting to the technical specifications that form the concept design of new passenger seat.

### CHAPTER V Analysis

This chapter explains the analysis of design result in Chapter IV, by focusing on the success of Kansei Engineering in generating the design of new passenger seats. It also contains the result of design validity test to check whether the proposed design of passenger seat has fulfilled the Kansei Words or not through the Semantic Differential (SD) evaluation questionnaire.

## CHAPTER VI Conclusion

This chapter shows the solution acceptance and recommendation regarding to the implementation of Kansei Engineering in generating the concept design of passenger seats for the new train class.